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Editor's Note

The journey of Carmelight journal has crossed the milestone of 13 issues and is abreast with its 14th Volume with a lot of new beginnings and exchange of ideas. It is known for its promotion of various disciplines of academic interest in each of the issues. The motto of this publication is to update the developments in diversified fields at National and International levels.

India has the potential for great diversity to develop and establish in the field of one's own interest. Efficient input of knowledge based ideas as research papers, review articles and photo essays from different disciplines is to encourage the creative minds to engage in new findings. The very purpose of the journal is to encourage the youngsters to learn to interpret the collected information in appropriate, acceptable format. It is also intended to encourage the youngsters to become academically active. This is reflected in the abstracts of the selected project work carried out by students.

Focus of the current issue is mainly in the fields of humanities and Commerce. This very well merges with the need of the hour that is concentrating on gender equality, tourism promotion and pros and cons associated with micro service enterprises including health care sector on implementation of GST. The papers have tried to analyze the psyche as well as dilemma that are faced by different sectors of society. It is interesting to note that the overall conclusion from these papers is that these are temporary phases and normalcy can be achieved within short span of time in future.

Promotion of tourism is another sector that supports economic growth of the nation. Surprisingly, paper that appears in the issue has thrown light on the importance of unraveling the destinations that have remained obscure and how their developments can make them important tourist spots.

Only one paper from the field of Science is from Electronics discipline which is directly linked with the application in the field of medicine. More intensive progressive studies are expected from the researchers.

This, in brief is about the coverage of the important contributions of researchers in respective fields of their interest. It is an important responsibility of mine to welcome more and more contributors to this journal and encourage younger generations to publish their findings that can reach far and wide.

Some minor changes in the Editorial committee resulted in the delay in bringing out this issue and skip the previous issue. I deeply regret for this.

Sincerely Yours
Radha Kale

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IMPLICATIONS OF GST ON HEALTH CARE SECTOR – AN ANALYTICAL STUDY WITH REFERENCE TO HOSPITALS AT MALUR (Kolar District)

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Abstract: *Is GST implications affected the Health care sector ? The answer to this question is the major concept of this research paper. This paper is prepared and presented on the basis of primary data and secondary data (internet, study materials, journals magazines and other news letters). Hospitals at Malur were visited and collected data regarding impact of GST on their health facilities. It is concluded that at diagnostic level there is no impact of GST and at Pharmacy and Surgical level there is a drastic changes in the rate of GST which varies from 5% to 28% which is burden on patients, where there is a need for thought provoking.*

Key words: *GST, Health care sector/facility, medical treatment and impact*

INTRODUCTION

GOODS AND SERVICE TAX

In India many types of tax systems were prevailing in the past, and during British period, there were significant changes in the taxation system. Thereafter many changes took place time to time. To make the Indian Tax System more uniform, Goods and Services Tax has been introduced in India from 1st July 2017. The goods and services tax (GST) is an indirect federal sales tax that is applied to the cost of certain goods and services. The business adds the GST to the price of the product; a customer who buys the product pays the sales price plus GST; and the GST portion is collected by the business or seller and forwarded to the government.

France was the first country to implement the GST in 1954, and since then an estimated 160 countries have adopted this tax system in some form or another. Some of the countries with GST include Canada, Vietnam, Australia, Singapore, UK, Monaco, Spain, Italy, Nigeria, Brazil, and South Korea. Most countries with a GST have a single unified GST system, which means that a single tax rate is applied throughout the country. A country with a unified GST platform merges central taxes (e.g. sales tax, excise duty tax, and service tax) with state-level taxes (e.g. entertainment tax, entry tax, transfer tax, sin tax, and luxury tax) and collects them as one single tax. These countries tax virtually everything at a single rate.

In India we follow dual GST set up, which is the biggest reform in the country's tax structure in decades. The main objective of incorporating the GST is to eliminate tax on tax i.e. double taxation which cascades from the manufacturing level to the consumption level.

HEALTH CARE SECTOR or HEALTH FACILITIES:

The healthcare sector is the sector of the economy made up of companies that specialize in products and services related to health and medical care. Companies that provide goods or services relating to medicine or health care that includes pharmaceuticals, health maintenance organizations, hospital management firms, and medical device manufacturers. Healthcare has become one of India's largest sectors - both in terms of revenue and employment. Healthcare comprises hospitals, medical devices, clinical trials, outsourcing, telemedicine, medical tourism, health insurance and medical equipment. The Indian healthcare sector is growing at a brisk pace due to its strengthening coverage, services and increasing expenditure by public as well as private players.

Market Size

Deloitte Touche Tohmatsu India has predicted that with increased digital adoption, the Indian healthcare market, which is worth around US$ 100 billion, will likely grow at a CAGR of 23 per cent to US$ 280 billion by 2020. The revenue of India's corporate healthcare sector is estimated to grow at 15 per cent in FY 2017-18. India is experiencing 22-25 per cent growth in medical tourism and the industry is expected to double its size from present (April 2017) US$ 3 billion to US$ 6 billion by 2018. Medical tourist arrivals in India increased more than 50 per cent to 200,000 in 2016 from 130,000 in 2015. The Healthcare Information Technology (IT) market is valued at US$ 1 billion currently (April 2016) and is expected to grow 1.5 times by 2020. Over 80 per cent of the antiretroviral drugs used globally to combat AIDS (Acquired Immuno Deficiency Syndrome) are supplied by Indian pharmaceutical firms. There is a significant scope for enhancing healthcare services considering that healthcare spending as a percentage of Gross Domestic Product (GDP) is rising. Rural India, which accounts for over 70 per cent of the population, is set to emerge as a potential demand source. A total of 3,598 hospitals and 25,723 dispensaries across the country offer AYUSH (Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy) treatment, thus ensuring availability of alternative medicine and treatment to the people.

Objectives

- To know whether GST has affected health care sector.
- To analyse the price variations in medical treatment before and after implementation of GST.
- To draw conclusion with this regard

Method

This research paper is done on the basis of primary data and secondary data. The survey was done on hospitals at Malur and information was gathered on the basis of questionnaire and personal interview. Medical officers, duty doctors, administrative officers and AEO were out of chief respondents. The questionnaire was divided into two units: First unit questions were framed to gather information regarding primary data of health facility and the second unit regarding application of GST in medical treatments at health facility. Five hospitals were considered as sample survey. These were Sri Vinayaka Hospital, Sri Venkateshwara Hospital, Sanjana Hospital, St. Mary's Hospital and Government Hospitals at Malur town.

Limitations of study

This paper concentrates only on hospitals at Malur among other health facilities. Time was another constraint for the survey. Availability of required officials at hospitals were another challenging task. Respondents were limited only to hospital officials.

IMPACT OF GST ON HEALTHCARE SECTOR

The GST is going to affect all the components of health care in various ways.

GST and Pharmaceutical Industry

About two thirds of the out of pocket expenditure on healthcare is on drugs in India. The burden of all the taxes on drugs in general was about 13 percent in the pre GST period and the current GST is 12 percent as a whole including ayurvedic drugs. The medicines for HIV-AIDS, malaria, tuberculosis and diabetes will be imposed 5 percent GST. The GST on the drugs produced under excise free manufacturing zone is yet to be clarified. The best thing for the pharma companies is that their cost of purchase is going

to reduce. Moreover the burden of multiple tax and complexities associated with multiple tax system slowed down the business. GST will give hassle free business environment to the pharma companies. For the consumer the cost of drugs will come down.

GST and Medical Devices and Equipment

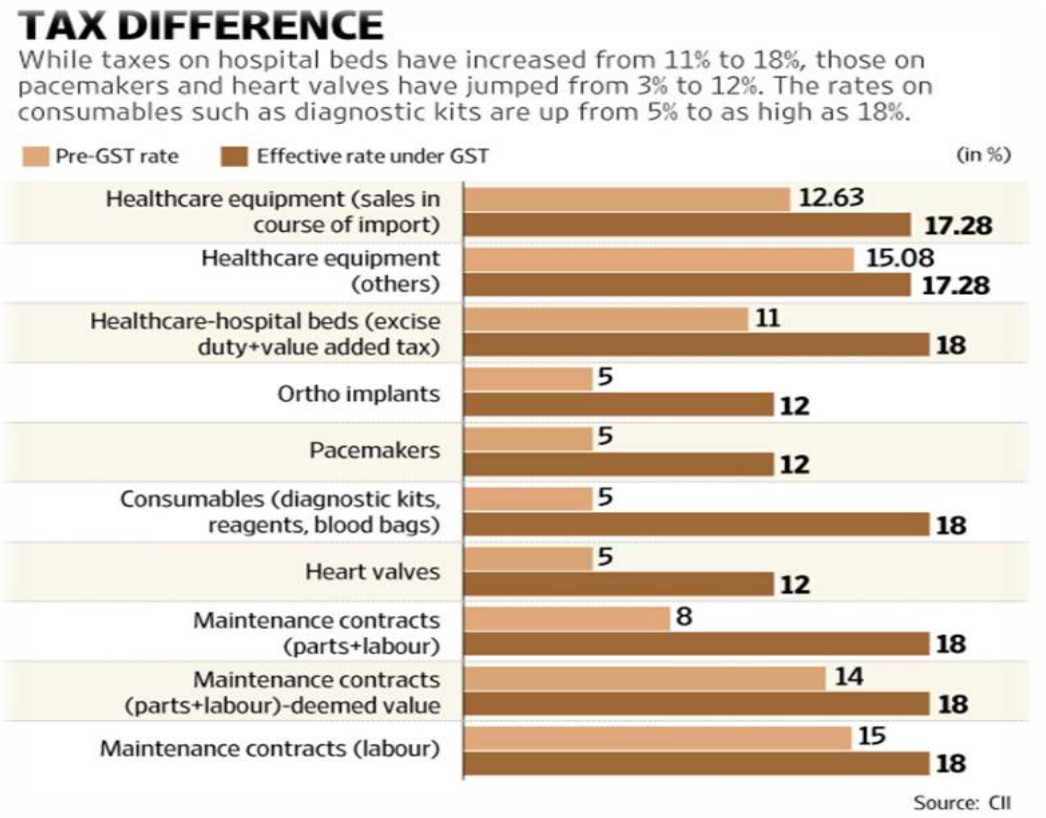
The manufacturers of medical devices are also joining the party as medical devices and surgical equipments are proposed to be taxed 12 percent under the GST. The previous burden of taxes on the medical devices and equipment was over 13 percent including all the bunch of taxes. So one percent tax benefit is clearly visible under the new tax system for the medical device and equipment industry. This will clearly give a boost to the industry in the near future. The consumer will also share the benefits in terms of lower price and affordability.

GST and Health Insurance

There is lot of scope for health insurance in the country like India where the coverage under health insurance is only 18 percentage in urban and 14 percent in rural India in 2016. The GST rate on the insurance sector is 18 percent as against 15 percent service tax in the pre GST era. It clearly indicates that the health insurance premiums are going to increase.

GST and Diagnostics

There is expected rise in the prices of diagnostics such as blood tests, X-rays, MRI and strip based diagnostics as they are put under either 12 or 18 percent slab which is higher than the previous tax rate on these services. In the pre GST era the 10-15 percent of out of pocket expenditure is on diagnostics which is expected to increase in the post GST period.



These Health-care Products also in the List of Expensive Category:

Items	**Pre-GST**	**Post-GST**
Surgical Item	5.5%	12%
Wing Scale	5%	28%
Hot Water Bag	5.5%	28%
Wheel Chair	5%	18%

Source: *Frost & Sullivan, LSI Financial Services, Deloitte*

Results & Discussion

As per the above data the Survey was conducted at Hospitals in Malur and questionnaires were distributed and collected the information.

Table - Basic information regarding hospitals at Malur

Hospitals visited	Operated By	Respondent	Type of treatment	No. of patients treated per day	No. of Beds	Health Cards
Sri Vinayaka Hospital, Malur	Private	Doctor	Medical consultancy with medicines	20-30	4	No
Sri Venkateshwara Hospital, Malur	Private	Doctor	Medical consultancy with medicines, Surgery and ICU and Trauma	40-50	15 beds	No
Sanjana Hospital	Private	Medical Officer	Medical consultancy with medicines, Surgery and ICU and Trauma	40-50	30 beds	Yashswini Card
St. Mary's Hospital	Charitable Trust	PRO	Medical consultancy with medicines, Surgery and ICU and Trauma	90-100	75 beds	Employees Health insurance cards . Applied for permission to accept other health cards.
Government Hospital, Malur	Government	AEO	Medical consultancy with medicines, Surgery and ICU and Trauma	1000	100 beds	Yes all Government Health cards

The number of hospitals visited was only five. The hospitals visited include private owned/rented. Charitable Trust, and Government owned hospitals. The respondents were Doctors, Medical Officers, PRO and AEO. The type of medical treatments in few hospitals was only consultancy and medicines provided in their own pharmacy and other hospitals provided treatments including surgery and trauma. The number of patients treated per day varied from 20-100 in private and charitable hospitals and 1000 in government hospital. The beds in the hospital ranged from 4 to 75 in private and charitable hospitals and 100 in government hospitals. Health cards accepted only at charitable and government hospitals.

Implications of GST on hospitals visited at Malur - Findings

1. Most of the hospitals are aware of GST.
2. No effect of GST on medical treatment fees.
3. Rates of GST vary from 5% to 28% depending on the rates of medicines. 5% to 12% on normal tablets or medicines and 18 to 28% on surgical medicines and I V fluids. Again 50% of tax is divided among CGST and SGST.
4. Implications of GST on medical treatments according to some it is beneficial at long run and a few are not aware of it and according to some there are no changes.
5. According to the respondents there is an impact of GST on Medical Tourism.
6. The patients are not much aware of rates of GST as there is no change in medical treatment. But they feel the cost of medicines have gone up. And thereby overall it has become burden on the patients.
7. According to a few doctors the old tax system was better than GST as the rates were only 5-5.5% which has gone up after implementation of GST to 15 – 18% and for some treatments it has increased to 28% which has made the treatment cost too much of burden for patients.
8. According to the expert doctors mentioned earlier the health sectors and medicines should have been exempted from GST. As the rate of medicines have gone up from 5% to 28% .

9. Top hospitals have approached the GST Council and have urged it to lower the tax rates for inputs while also recommending that input tax credit be made available to them.

10. Hospital services were taxed at 2-5% before GST came into effect. "Now this has gone as high as 12-18%. Hospital operations have been severely impacted, given the high rates of GST," said Dr B.S. Ajaikumar, President, Association of Healthcare Providers, India.

CONCLUSION

Healthcare has become one of India's largest sectors both in terms of revenue and employment. The industry is growing at a tremendous pace owing to its strengthening coverage, services and increasing expenditure by public as well as private players. From the above findings it is clear that there are no treatment variations compared to old tax system. But as the cost of medicines have gone up by 5% to 28% which has become heavy burden on the patients indirectly. Though the treatment cost remains unchanged but they have to bear heavy cost on medicines. Experts opine that the health services and its allied sector (pharmacy) must be exempted from GST. Finally, we could conclude that the health sector is to be exempted from GST as it is a basic requirement for people to get medical treatments at cheaper rate. But still impact of GST on hospitals at Malur has no major changes in medical treatments and MRP of medicines includes GST and the difference in the price is not noticed by the patients.

REFERENCES

Rastogi, A. 2017. Has GST benefited healthcare sector retrieved from http://www.financial express.com published : August 11,2017

ET HealthWorld , 2017. Impact of GST on Healthcare Sector; The GST is going to affect all the components of health care in various ways.

Kumawat,S. 2017. GST impact on health care industry in India, retrieved from SAG-info-tech official blog.

Impact of GST on health care and pharma sector retrieved from http://www.cleartax.in December 2017

NIIT computer Education Pvt Limited: Tally solutions Pvt Ltd Goods and Service Tax: Ready Reckoner pg 4 - 6

GST impact on health sector: New tax regime will be a boon for diagnostics sector retrieved from http://www.financial Express.com Published: July 4, 2017

Impact of GST on healthcare retrieved from http://www.caclubindia.com published on July12,2017

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GST- IMPACT ON IMPULSIVE BUYING BEHAVIOUR OF CONSUMER WITH RESPECT TO APPARELS AND FOOTWEAR

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Abstract: *Impulse buying is a process in which a consumer experiences an instant desire to buy a product at an impulse. Impulse buying behavior is a buying of products spontaneously caused by the attraction of a particular product. GST is an indirect tax for the whole nation which will make India a unified common market. Earlier there was a very complex tax system with 4 or 5 of subgroups of tax which is now unified into a single and simple tax. The main reason for this study is to understand if the impulse buying behavior has changed for the common man after the increase in the GST rate by 12% to 18%.*

Keywords: - *Impulse buying behavior, GST, Apparels, Footwear.*

INTRODUCTION TO IMPULSE BUYING

The basic framework of impulse buying is characterised as planned, unplanned and impulse behavior[1]. Planned purchases involve time-consuming information-searching with rational decision making, whereas unplanned buying refers to all shopping decisions made without any advance planning. Impulse buying is distinguished from the unplanned buying in terms of quick decision making[1]. In addition to being unplanned, an impulse purchase also involves experiencing a sudden, strong, and irresistible urge to buy.

There are four types of impulse buying:

i) Planned impulse buying

ii) Reminded impulse buying

iii) Suggestion or fashion-oriented impulse buying

iv) Pure impulse buying

Planned impulse buying is partially planned but specific product or categories are not decided by the shopper. They are further determined on the basis of the different sales promotions inside the shop. Reminder impulse buying occurs when the buyer is reminded of the need of the product noticing it in the shop. Pure impulse buying is a novelty or escape purchase which a shopper breaks the trend of usual shopping.

Factors Influencing Impulse Buying

1. External Stimuli and Store Environment
2. Internal Stimuli
3. Situational and Product Related Factors
4. Demographics and Socio-Cultural Factors

Dramatic increases in personal disposable income, life style and credit availability have made impulse buying a widespread phenomenon across the different retail formats. Current Indian retailing environment will provide lot of scope for consumer to become impulsive in offline as well as online retail situation for different product categories[2]. As the universal nature of impulse buying, it can be capitalized by retailers to benefit their respective businesses which could lead to more sales turnover hence benefiting the marketers and retailers.

INTRODUCTION TO GST (GOODS & SERVICE TAX)

The Goods and Services Tax (GST) is a vast concept that simplifies the giant tax structure by supporting and enhancing the economic growth of a country. GST is a comprehensive tax levy on manufacturing, sale and consumption of goods and services at a national level. GST Bill is also referred to as The Constitution (One Hundred and

Twenty-Second Amendment) Bill, 2014. GST is an indirect tax at all the stages of production to bring about uniformity in the system. After bringing GST into practice, there is an amalgamation of Central and State taxes into a single tax payment. It enhances the position of India in both, domestic as well as international market. At the consumer level, GST reduces the overall tax burden. Under this system, the consumer pays the final tax that is the consumer will not need to pay the tax involved in manufacturing of goods[3].

In order to avoid the payment of multiple taxes such as excise duty and service tax at Central level and VAT at the State level, GST unifies these taxes and creates a uniform market throughout the country.

Experts have enlisted the benefits of GST as under:

- It introduced two-tiered One-Country-One-Tax regime.
- It subsumes all indirect taxes at the center and the state level.
- It not only widened the tax regime by covering goods and services but also made it transparent.
- It freed the manufacturing sector from cascading effect of taxes, thus by improving the cost-competitiveness of goods and services.
- It will bring down the prices of goods and services and hence, increased consumption.
- It created business-friendly environment by increasing tax-GDP ratio.

GST Rate for Apparel and Clothing

Any piece of apparel or clothing would be taxed at 5% GST if the goods do not exceed Rs.1000 per piece. All types of apparel and clothing of sale value exceeding Rs. 1000 per piece would be taxed at 12% GST. GST Rate for Footwear having a retail sale price not exceeding Rs.500 per pair is taxed at 5% GST. The second category or the second slab they have created is 18% category for footwear exceeding Rs.500

Opinion about GST on footwear and apparel

The industry is totally disappointed while apparel is having the similar tax structure of 12%. There is no logic that when a shirt of Rs. 1000 is sold and whereas shoes of 500 and if it is above 500, there is a 13% differential from 5 to 18. There is a dispute in this concept or the calculation because the excise duty was 6% earlier whereas now it is 18%, there is a clear advantage of 5% to the government in terms of revenue they will generate. The total excise revenue collected by the center in the last one year was nearly 160 crores and with this new tax structure, they will be making almost about 1000 crores extra.

Change in shopping online

Since GST, the goods are delivered to a customer much faster than the previous taxes due to removal of paperwork to be filed with state authorities. Though goods reach on time, a problem that the consumer will face is the returns and cancellations as e-commerce companies may make this a tad difficult since they would now have to bear the tax amount on their own and only later be able to get a refund from the government in case of returns and cancellations. The companies will face a major cash-flow disadvantage due to returns and cancellations. However, everything being online, it is expected to be easier. Also, now such businesses would have to deal with one tax authority rather than multiple authorities as in the past regime.

METHOD

The research is conducted to measure the impact of GST on apparel and footwear customers based on the primary data. To know the customer's opinion, structured questionnaire was used. The pattern of questionnaire was classified as both, quantitative and qualitative method depending on the nature of questions. Specifically, the first 17 question answers were obtained as it was closed-ended questions with multiple choice answer options hence are analyzed using quantitative methods and they involve bar-charts and percentages, whereas the last 2 answers were obtained to open-ended questionnaire questions and was analyzed using qualitative methods and they involve discussions and

critical analysis without use of numbers and calculations. The questions were focused to check the customer opinion before and after GST.

Objectives:

The main objectives of the research of impulse buying behavior post and prior GST is:

1. To find out the factors of Impulse Buying Behaviour
2. To find out the impact of GST on Impulse Buying Behaviour
3. Compare the Impulse Buying Behaviour prior to GST and post GST implementation
4. Compare the GST rates and impacts on Retail buying and online buying.
5. Compare the consumer increase in commercial street/ K.R Market when compared to malls or branded shops.

Data:

Primary data: The questionnaire consists of quantitative and qualitative questions. The data collected consists of individuals of 20 - 35 age group both men and women. The questionnaire had basic information about the reason for the purchase of apparels or accessories. Information has been collected from the people who were shopping in the malls, commercial streets, and colleges. The sample size for the study is 100.

RESULTS & DISCUSSION

- More than 70% of respondents have same buying behaviour even after GST as they are dependant (Students).
- 20-25% of respondents have no idea about GST, they only know the full-form.
- 65-75% wants GST to exist and 22-30% wants taxation system to be changed.
- 4% of working and elderly respondents have limited their incomes.

- More than 75% of student respondents say that they don't see prices and taxes because they are not independent.
- 82% of respondents buy without thinking.
- Before GST 45% of respondents have agreed on shopping from Commercial Street/ K.R Market while 57% agreed on shopping from malls and brand store.
- After GST 49% of respondents agreed on shopping in commercial street while only 16% agreed for malls and brand stores.
- After GST branded clothes are purchased occasionally because commercial street buying has been increased.
- There is very less change in impulse buying behaviour post GST.
- People prefer buying from both retail shopping and online shopping.

General Opinion

As per the above questionnaire it clearly shows that the impulse buying has not reduced considerably for the students when compared to the working class. The opinions when discussed in the qualitative analysis, the consumers have mentioned that GST has brought a lot of changes to the society. GST will undeniably help in the economic growth and development of the country. They also mentioned that GST has changed their mindset towards the impulse buying behavior. The consumers have reduced shopping in mall or branded stores and moved to commercial street or K.R Market as the casual/every day clothes can be bought from there. The party-wear or special occasion clothes are brought from the mall or branded stores, which is very rare as per the study. The opinion of the students has not changed much as they are not independent.

CONCLUSION

The GST system is basically structured to simplify current indirect tax system in India. A well-designed GST is an attractive method to get rid of deformation of the existing process of multiple taxation and government has promised that GST will reduce

the compliance burden at present. The GST system is basically structured to simplify current indirect tax system in India. Impulse buying has been a challenge for market researchers due to its complex nature. Impulse buying is complicated and multifaceted phenomenon which accounts for a huge volume of the products sold each year[2]. In emerging economies, there is a need to study the impulse buying behaviour due to recent development in retailing and huge cultural differences when compared to developed economies. Prices of garments over Rs.1000 has been raised for yarn and cotton, and readymade garments below Rs.1000 is 5%. For garments above Rs.1000, the tax rate is 12%. There is not much change in impulse buying behaviour of apparels post GST for dependant consumers. Very few have noticed the change in prices of apparels and have changed the mode of shopping and the place.

REFFERENCES

1. Kumar,S. 2017. *Asia Pacific journal of marketing and management review* (APJMMR) **6:** Issue 9
2. Muruganantham , G and Bhakat, R.S, 2013. A review of impulse buying behavior
3. Dani, S. 2016. A research paper on impact of Goods and Service Tax (GST) on Indian Economy

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A STUDY ON THE IMPACT OF THE GOODS AND SERVICES TAX ON MICRO SERVICE ENTERPRISES IN BANGALORE

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Abstract : *The problem of evasion of direct as well as indirect taxes in India was and is still existent. With many under the table transactions, which include purchase and sale of ordinary products, the present Government, which has a vision to bring about the necessary growth which India so requires, is persistent on the removal of corruption and illegal trading from the economy. Thus, it implemented a tax system which would bring majority of the business organisations under the tax net. Keeping this in mind, the Government passed the long awaited GST bill and implemented the Goods and Services Tax, in India. The Goods and Services Tax is said to be the biggest indirect tax reform in India. The Government, during its implementation made huge claims about the benefits of the new tax system on the Indian economy. However, before the date of its implementation, the tax system met with mixed opinions, receiving a good amount of backlash as well positive reactions. Many experts stated that the worst impact would be felt by the micro enterprises. However, the actual effect of the new tax system on organisations and the economy as a whole is seen only after its implementation. This study intends to analyse the impact of the Goods and Services Tax on retailers and wholesalers in the micro service sector, in Bangalore.*

Keywords: *Goods and Services Tax, wholesalers, retailers, impact, micro services sector.*

INTRODUCTION

Prior to July 1st, 2017, the Indian tax structure was divided into two – direct and indirect taxes. Direct Taxes are levies where the liability cannot be passed on to someone else.

In the case of indirect taxes, the liability of the tax can be passed on to someone else. Hence, the customers had to pay the price of the product inclusive of taxes (such as excise duty, customs duties, etc.) on which VAT was calculated and needed to be paid in excess. This led to tax being calculated on tax, which is called the double taxation effect or cascading effect.

In order to avoid the payment of multiple taxes, GST was introduced to unify these taxes and create a uniform market throughout the country.

The Goods and Services Tax (GST), is a comprehensive tax levy on the manufacturing, sale and consumption of goods and services, in India. It is a multi-stage, destination based tax which is levied on every value addition made. The different indirect taxes which were previously present are condensed into this one tax (i.e) GST.

GST has been implemented already in a vast number of countries. In India, it was proposed initially in the year 2000 by the Vajpayee Government. Subsequently, on 6th May 2015, the constitutional amendment for the same was passed by the Lok Sabha and it finally came into force on July 1st, 2017. It is governed by the GST Council with, the Finance Minister of India, Mr. Arun Jaitley, as its Chairman. It was implemented with the intention to enhance the growth of various sectors in India.

The Government has specified the different tax slabs for varied products / sectors which are expected to benefit the consumer at the end. Under this system, the consumer pays the final tax but an efficient input tax credit system ensures that there is no cascading effect of taxes.

It is estimated that, eventually, there will be many advantages to the economy with the implementation of this tax structure, such as, increasing the consumption level by bringing down the prices of products and services, increasing the GDP growth rate, enhancing the ease of conducting business in India as well as attracting foreign direct investment into the country.

REVIEW OF LITERATURE

There are many opinions on the Goods and Services Tax, its implementation and its impact. There are positive as well as negative opinions. Some are as follows:

Positive opinions:

1. The implementation of GST in the Indian framework would bring about commercial benefits which were untouched by the VAT system and would eventually lead to economic development. Hence, GST may have the possibility of providing a collective gain for industry, trade, agriculture, and the common consumers as well as for the Central Government and the State Government[1].
2. The electronic processing of tax returns, refunds and tax payments through "GSTNET" without human intervention, will reduce corruption and tax evasion. Further, it is said that built-in check on business transactions through seamless credit and return processing will reduce scope for black money generation leading to productive use of capital[2].

Negative opinions:

1. The current GST rates have a possibility of pushing inflation. A strong IT network is needed for proper implementation of GST and since India is not very well developed when it comes to internet connectivity, it might become a challenge with regard to the successful implementation of GST[3].
2. The article provides the opinion of Chidambaram, former Finance Minister on the new tax regime. He states that the micro, small and medium scale traders will suffer huge losses due to GST. Reacting harshly to the GST launch, he said that it is not the original GST that experts had drafted and this will impact inflation[4].

Statement of the problem

Under GST, the tax slab for each sector is specified. However, since it has newly come into force, we are only aware of the conceptual impact of it on businesses, particularly

only regarding the different tax rates for different products and not about the practical impact on the wholesalers and retailers in the micro service sector. Thus, this study is aimed at determining the actual impact and problems faced, due to the new tax system, by the retailers and wholesalers in the micro service sector, in Bangalore.

Objectives

- To assess the level of awareness of GST and identify the hindrances faced by the micro service enterprises – wholesalers and retailers.
- To examine the impact of GST on the sale of products of these enterprises.
- To determine the level of support towards the implementation of the aforementioned tax system.

Hypothesis

- H_o1 – There is no support towards GST amongst micro service enterprises – wholesalers and retailers
- H_a1 – There is support towards GST amongst the micro service enterprises- wholesalers and retailers.

Importance of the study

This study is aimed to determine the level of awareness of GST amongst micro service enterprises- retailers and wholesalers. Since GST is a paradigm shift from the previous tax structure, the study also helps analyse the actual impact of the new tax system on these organisations. The study also focuses both on identifying the hindrances faced as well as determining the level of support towards the tax system, amongst the wholesalers and retailers, in the micro service sector, in Bangalore.

METHODOLOGY

The study is empirical in nature and based on both primary and secondary data.

Secondary data was collected from various websites and research papers. The primary data was collected by conducting a survey with a structured questionnaire. A sample of 60 respondents was chosen and their responses were collected from various areas in Bangalore. These 60 respondents comprised of 30 retailers and 30 wholesalers. Respondents were from three sectors- hardware, electronics and textile sectors. The data collected includes 20 respondents(10 from retailers and 10 from wholesalers) from each sector. Along with questionnaires, short interviews were carried out in order to gather extra information from the retailers and wholesalers for the analysis of the research. The sampling technique used was "Stratified Random Sampling".

The data collection process was carried out in various parts of Bangalore, such as, J.P Nagar, Jayanagar, Vasanthnagar, Avenue Road, Chickpet and Raja market. For statistical analysis, the tools used are tabulation, graphical representation, SPSS software and EXCEL. For interpretation and analysis, the data is represented as percentages.

RESULTS & DISCUSSION

1. A study on the awareness of GST and the respective rules of filing of returns, amongst the micro service retailers and wholesalers.

Table No.1- Proportion of retailers and wholesalers who are aware of GST

Particulars		**Response**	
Sectors		**Yes**	**No**
Retailers	Hardware	10	0
	Electronics	10	0
	Textile	10	0
Wholesalers	Hardware	10	0
	Electronics	10	0
	Textile	10	0

Findings with respect to proportion of retailers and wholesalers who are aware of GST

From the analysis, it was identified that 100% of the wholesalers and retailers are aware of GST. However, through the interviews it was observed that, only 20% of retailers and 20% of wholesalers had an in-depth knowledge of the tax structure. The remaining percentages of enterprises were aware of only the basics of the tax and largely depended on their auditors for support.

Table No. 2- Proportion of retailers and wholesalers who are aware of filing of GST returns

Particulars		**Response**	
Sectors		**Yes**	**No**
Retailers	Hardware	10	0
	Electronics	10	0
	Textile	6	4
Wholesalers	Hardware	10	0
	Electronics	10	0
	Textile	8	2

Findings with respect to proportion of retailers and wholesalers who are aware of filing of GST returns

It was observed that 100% of retailers and wholesalers in the hardware and electronics sector had the basic knowledge of the rules of filing of returns under GST. In the textile sector, only 60% of retailers and 80% of wholesalers were aware. The rest of the enterprises still lacked the basic knowledge of rules of filing the returns.

2. ***To identify the proportion of wholesalers and retailers who faced problems due to GST.***

Table No. 3- Proportion of retailers and wholesalers who faced problems due to GST

Particulars		**Response**	
Sector		**Yes**	**No**
Retailers	Hardware	9	1
	Electronics	6	4
	Textile	3	7
Wholesalers	Hardware	9	1
	Electronics	10	0
	Textile	9	1

The above table gives an understanding of the proportion of retailers and wholesalers in the micro service sector who have faced problems due to GST. 90% of retailers and 90% of wholesalers in the hardware sector, 60% retailers and 100% wholesalers in the electronics sector and 30% of retailers and 90% of wholesalers in the textile sectors have faced various hindrances due to the implementation of GST in their organization.

Findings with respect to hindrances faced by retailers and wholesalers due to GST

1. *Lack of knowledge and problems with the software*

   Through the analysis, it was observed that majority of the retailers and wholesalers faced various problems with regard to the introduction of GST in their respective organizations. Many retailers and wholesalers were not completely aware and lacked knowledge about the tax structure and its filing of returns. They largely depended on their auditors for help. Even after

implementing it, they were not confident on the way it worked. A few retailers and the wholesalers found problems with the software and faced obstacles whilst using it. They specified that the software such as Tally was not updated on all the tax slabs. Two retailers had to use only the 5% tax rate even though the tax rate was supposed to be 12% on the specified product.

2. *Decline in sales*

From the research, it was identified that majority of the wholesalers and retailers in all three sectors faced a decline in the sale of their products.

3. *Unable to obtain supplies from supplier*

From the research it was observed that, some of the retailers (10%) and wholesalers (20%) in the textile sector, were not covered under GST. They faced problems regarding acquiring the products from suppliers since the suppliers would not get the input tax credit facility, if goods were provided to firms not covered under GST.

4. *Problem with presentation of receipts.*

Through the interviews and analysis, it was understood that majority of the wholesalers in all the three sectors faced problem with regard to presentation of receipts. Previously, the customers did not wish to acquire the bill for the product, so the wholesalers would evade taxes by not recording the sale in their books of accounts. However, due to GST, the wholesalers are unable to do this as they will not be able to avail the benefit of input tax credit if they do not provide bills and record the sales. Thus, due to this, customers do not wish to purchase the products. This is one of the causes of the decrease in sales amongst wholesalers.

3. A study on the proportionate impact of GST on the sales of wholesalers and retailers.

Table no. 4: Impact of GST on the sales of products by retailers and wholesalers in the micro service sector

Particulars		**Level of decrease in sales**					
Sectors		**20%-30%**	**30%-40%**	**40%-50%**	**50%-60%**	**60%-70%**	**70%-80%**
Retailers	Hardware	0	0	3	2	3	0
	Electronic	0	3	2	2	0	0
	Textile	1	1	0	1	0	0
Wholesalers	Hardware	1	3	0	0	3	2
	Electronic	0	4	1	4	1	0
	Textile	1	1	2	3	1	0

Table No.5: Proportion of decrease in sales of products by retailers and wholesalers in the micro service sector

Particulars		**Impact**		
Sectors		**Increased**	**Decreased**	**No impact**
Retailers	Hardware	0	8	2
	Electronics	0	7	3
	Textile	0	3	7
Wholesalers	Hardware	0	9	1
	Electronics	0	9	1
	Textile	0	8	2

Table.4 and Table. 5 show the number of retailers and wholesalers who faced a decline in sales. About 80% of retailers in the hardware sector, 70% in the electronics

sector and 30% in the textile sector faced an average of 50%, 40% and 33% decline in sales in the hardware, electronics and textile sectors respectively.

In the wholesale sector, 90% of hardware wholesalers, 90% of electronics and 80% of textile sector wholesalers faced a decline in sales. On an average, the hardware, electronic and textile wholesalers faced an approximate decline in sales of 48%, 42% and 43% due to GST. This was because; the customers did not wish to pay the tax rate of 28% (previously it was 14.5) and 18% and 12% (previously it was 5.5%) on some of the products especially in the hardware sector and electronics sector.

Thus, we can see that huge losses have been faced by the businessmen is all the three sectors due to the GST implementation.

Regression analysis

The regression analysis at P<0.05, R square value of 0.549 showed that the dependant variable (support for GST) has a significant influence on the level of support amongst the respondents towards GST

Table No.1: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.741[a]	.549	.516	.34580

Source: Primary Data

Table No.2: ANOVA[a]

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	8.007	4	2.002	16.740	.000b
	Residual	6.577	55	.120		
	Total	14.583	59			

Source: Primary Data

Table No.3: REGRESSION ANALYSIS

Dependent variable	Do you support the Goods and Services Tax
Independent variable	Level of implementation procedure, Do you face any problem due to GST, Have your sales increased or decreased, Approximate percentage by which sales have increased or decreased
R square value	.549
F value of the model	16.740
Significance	.000

The results are analyzed to test the hypothesis H1, that is, the micro service retailers and wholesalers do not support GST. As the R square value is approximately equal to .6, the result shows that the model is significant and the regression coefficients are also significant. From the above table, we can observe that the F value is 16.740 and the significance value is .000 which is lesser than 0.05.

Therefore, the null hypothesis which shows that there is no support towards GST amongst micro service retailers and wholesalers is rejected and the alternative hypothesis, that is, the micro service retailers and wholesaler support GST, is accepted.

H1	$H_0$1	There is no support towards GST amongst micro service enterprises –wholesalers and retailers	Rejected
	H_a1	There is support towards GST amongst the micro service enterprises- wholesalers and retailers.	Accepted

Thus, we can state that majority of the retailers and wholesalers support the implementation of the Goods and Services Tax

Subsequent findings

1. Majority of the retailers and wholesalers are covered under the Goods and Services Tax. Only 10% of retailers and 20% of wholesalers are not covered under it.
2. An average of 40% of the retailers and 30% of the wholesalers utilized technology, while the remaining retailers and wholesalers carried out activities related to GST manually in books.
3. 80% of the retailers and 90% of the wholesalers, on a whole, acquired support only from their respective organization's auditors. The remaining retailers and wholesalers acquired support from the auditors as well as the helpdesks set up by the Government for GST information purposes.
4. Whilst collecting the information from around Avenue Road, the researcher witnessed protests by hardware wholesalers against GST. There were banners in various streets of the markets by the Karnataka Hardware and Allied Merchants Associations stating their protest against the 28% tax on hardware, sanitary products, etc. Also, the textile sector was closed for 3 days, on protest.

Suggestions

The following recommendations are suggested based on the findings of the study**:**

1. There is a mind-set amongst a large section of the society that GST is bad. The Government should continue to explain the GST procedure and assure the public (including the businessmen) that it has been carried out in good faith and that it benefits the society as a whole.
2. The Government should specify how the previous tax structure had a cascading effect on products and increased the prices, and how GST has removed that issue. This should be shown in print media, on televisions, internet, etc.
3. The public (including businessmen) is under the assumption that the tax rate of many products has doubled (for example, on nuts and bolts- 14.5% was the tax

previously and it is changed to 28% under GST). However, they are unaware of the cascading effect of taxes which took place previously, making the previous tax rate more than 14.5%. Therefore, the difference between the 2 taxes is only a small percentage, taking into consideration the cascading effect. On some of the products, the rate has also decreased but a vast portion of the public is unaware of it. The Government must take steps in order to tend to this problem.

4. The implementation procedure should have been made simpler so that every businessman would have found it easy to implement.

5. The Government should continue to conduct seminars and the retailers and wholesalers should mandatorily attend the seminars held on GST by the Government.

6. The Government should specify a time frame within which the retailers and wholesalers should implement the required IT infrastructure and also provide support for its implementation, in order to reduce the evasion of taxes which is continuing due to manual work.

7. There are many software glitches. The Government and the specific authorities should immediately rectify it. They should also continue to work on it so that there may be fewer glitches in the future.

CONCLUSION

There is a general mind-set in various market sectors against the Goods and Services Tax. People are hesitant about it due to the fact that they are not properly educated on the subject matter at hand. There is a panic in the market with regards to it. They are under the assumption that GST is doing more harm than good. However, since the tax system is newly implemented, a significant amount of time must be given to the public in order to understand it and implement it in a proper manner. The Government, in order to have a successful implementation of its plan, must make sure that all or almost all the businessmen are in support of GST.

REFERENCES

1. Guptha, N.2014. Goods and Services Tax: Its Impact on Indian Economy, *IOSR Journal of Business and Management* (IOSR-JBM), e-ISSN: 2278-487X, p-ISSN: 2319-7668, **17**, Issue 12.Ver. III (Dec. 2015), pp: 01-05
2. Lourdunathan, F. and Xavier,P. 2016.A Study on Implementation of Goods and Services Tax (GST) in India: Prospectus and challenges, *International Journal of Advanced R*esearch 2017; 3(1): 626-629, pp: 626-629.
3. Dani, S.2016 A Research Paper on an Impact of Goods and Services Tax (GST) on Indian Economy, *Business and Economics Journal,* ISSN: 2151-6219
4. https://www.thequint.com/news/india/gst-day-1-reactions

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WOMEN'S PARTICIPATION IN EMPLOYMENT: A KERALA SCENARIO

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ABSTRACT : *Among the different states in India, Kerala is famous for its achievements in human development index. With respect to GII components, the indicators of maternal mortality rate, adolescent birth rates and proportion of adult females with secondary education are impressive in Kerala; but the indicators of labour market participation and proportion of parliamentary seats occupied by females shows poor performance and is below all India average. Thus a paradoxical situation of high achievements and equality in health and educational attainments with poor performance and inequality in terms of economic and political participation exists in the state.*

Key words: *Kerala; employment; women's participation.*

INTRODUCTION

The status of women and gender disparities are the subjects of debate and action in recent years. All over the world, women are being accepted as active and potential agents in all public realms. Gender disaggregated Human Development Indices is being published by UNDP in the form of Gender Development Index (GDI) and Gender Empowerment Index (GEM) and captured gender specific status of health, education, economic participation, control over economic resources and political participation. UNDP in 2010 introduced the Gender Inequality Index (GII) as the index for measuring gender disparity. This covered three aspects such as (i) reproductive health, (ii) empowerment and (iii) economic status.

Of the different states in India, Kerala is known for the human development achievements. Among the GII components indicators like maternal mortality rate, adolescent birth rates and proportion of adult females with secondary education are impressive in Kerala; but indicators like labour market participation and proportion of parliamentary seats occupied by females show poor performance. In the state, a paradoxical situation exists with high achievements and equality in health and education corresponding to poor performance and inequality in economic and political participation.

In Kerala, women constitute 52 percent of the population with a sex ratio of 1084 females per 1000 males. The female literacy rate is 92 percent. In the case of education, enrolment is universal at the primary level and gender parity has been achieved in schools, both in secondary and higher secondary levels. At the tertiary level also, the enrolment of girls is higher than boys. But the intake of girls in engineering colleges and polytechnics, the situation is different. Most of the health indicators are also favourable to women. Life expectancy at birth of women is 76.9 years and the Maternal Mortality Rate is 66 per one lakh live births.

In many developmental indicators, the performance of women in Kerala is better to their counter parts. But in the case of economically active persons, the indicator is not favourable to women. In countries with high human development, the share of economically active women seems to be high. Labour Participation Rate (LPR) of women in 10 countries having highest Human Development Index is around 60 and that of men is around 70 (Human Development Report, 2015). Therefore an analysis of women's participation in employment of Kerala is attempted in this study.

REVIEW OF LITERATURE

Women's participation in employment was studied in theoretical and empirical terms. Increase in wage for women can exert only substitution effects causing an increase

in labour force participation. Increased participation of women is often observed during times of economic crisis in response to declining household income on account of unemployment. Analysis has reported negative impact of the number of young children on women's participation in both rural and urban India. The fall in female labour force participation rate is due to decline in the number of women working in rural areas and this emerged as a major surprise to academics and policy-makers. Focus on the situation of women in urban India was found that higher social status had a negative impact on women's labour force participation. Observations on individual countries display great heterogeneity in female labour force participation rates that change over time in response to both short and long-term movements in economic growth and other factors.

METHODOLOGY AND MATERIALS

The study used secondary data obtained from various printed and electronic sources of the Department of Economics and statistics, Thiruvananthapuram, State Planning Board, Thiruvananthapuram, Directorate of Economics and statistics, NSSO reports, Government of India and Human Development Reports.

ANALYSIS AND DISCUSSION

In Kerala, the difference between male and female Labour Participation Rate (LPR) is very high. The Female Work Participation Rate (FWPR) of the state has increased by 2.8 points in the last decade (Govt. of India, 2011). The Female Work Participation Rate (FWPR) of Kannur, Kozhikode, Malappuram and Pathanamthitta districts is lower than state average. Idukki has the highest FWPR in the state. In Kerala, it is lower than that of many states in India as well as all India average (Table 1). The FWPR of Kerala is below the national level (Figure 1).

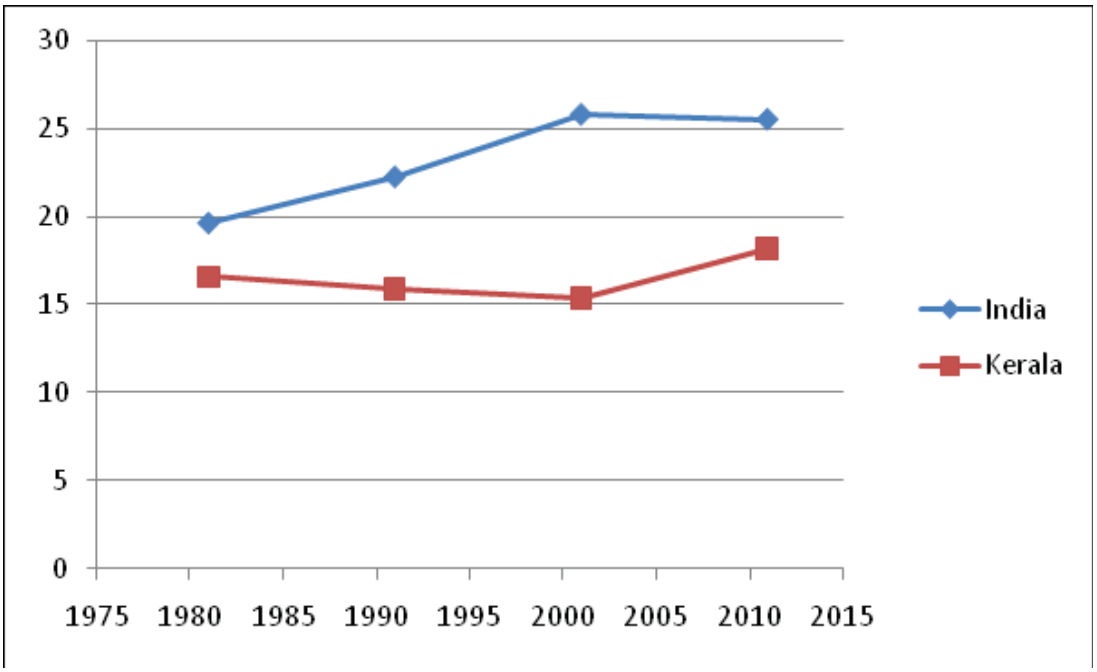

Figure 1: Female Work Participation Rates (FWPR) in India and Kerala

Source: Government of India (2011), *Census-2011*, Census Commission, New Delhi

The Work Participation Rate of females is much lower than that of males in Kerala. In human development, among the Indian states, Kerala's position is highest; but wide gender gap in Work Participation Rate is observed in the state (Figure 2).

Gender disaggregated data on employment revealed women's economic empowerment. The sectoral distribution of employment of women in Kerala shows that women are more engaged in agriculture (32 percent) than in service (30 percent) and industry (38 percent) compared to men. Women's participation in traditional industries is also very high in the state, where remuneration is comparatively low.

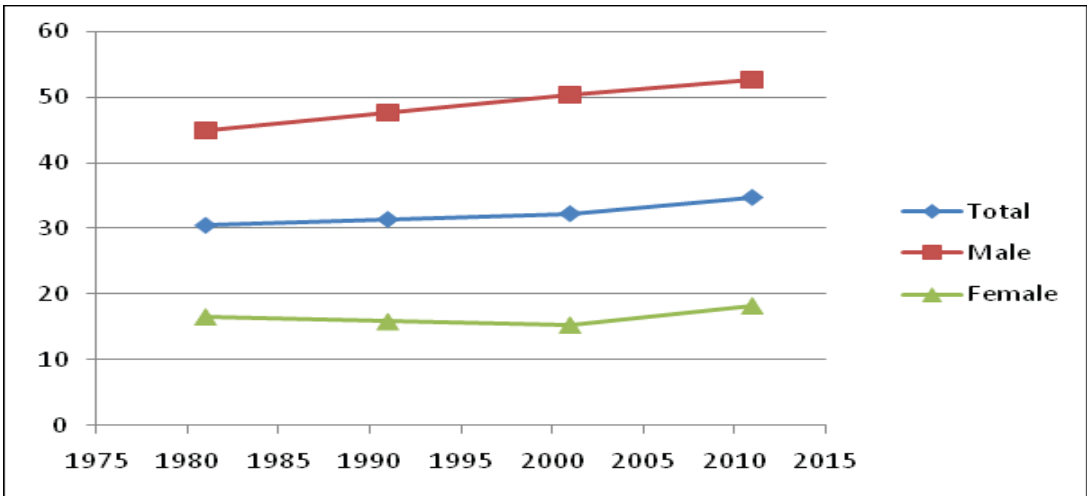

Figure 2: Work Participation Rates (WPR) of Males and Females in Kerala

Source: Government of India (2011), *Census-2011*, Census Commission, New Delhi

Table 1: State-wise female work participation rates in India

States/ NSSO	Urban Females					Rural Females				
Rounds	50th	55th	61st	66th	68th	50th	55th	61st	66th	68th
Andrapradesh	19.9	17.8	22.4	17.6	24	52.1	47.8	48.3	44.3	62.2
Assam	9.2	11.2	10.9	9.3	12.2	15.9	15.1	20.9	15.8	17.8
Bihar	6.9	7.5	6.5	4.7	7.1	17.2	17.3	13.8	6.5	8.5
Gujarat	14.2	13.5	15.1	14.3	19.3	39.6	41.3	42.7	32	40.3
Haryana	15.2	9.8	13.2	13	14.4	27.1	20.2	31.7	25	23.4
Karnataka	18.1	17.8	18.1	17	23.5	43	38	45.9	37	40.6
Kerala	20.3	20.3	20	19.4	27.8	23.8	23.8	25.6	21.8	30.8
Madhyapradesh	14.2	13.4	15.4	13.1	17	41	38.2	36.6	28.2	38
Maharashtra	16.9	13.7	19	15.9	23.6	47.7	43.4	47.4	39.6	56.5
Orissa	15.1	14.5	14.8	11.9	21.6	31.7	29.9	32.2	24.3	36.1
Punjab	9.3	12.5	13.3	12.4	19.4	22	28	32.2	24	32.9
Rajasthan	16.3	13.8	18.2	12	20.6	45.7	38.8	40.7	35.7	53
Tamilnadu	23	21.5	24.1	19.1	27.9	47.8	43	46.1	40.5	51.9
Uttar Pradesh	10.2	9.4	11.7	8	14.5	21.9	20.1	24	17.4	28.1
West Bengal	14.3	11.7	15.5	14.1	23.8	18.5	16	17.8	15.2	27.9
All India	15.5	13.9	16.6	13.8	21	32.8	29.9	32.7	26.1	37.2

Source: Govt. of India, Various Employment and Unemployment Surveys of NSSO.

In terms of wages and remuneration, significant gender inequality exists in the unorganized sector. Table 2 shows the average daily wage rates in agricultural occupations in Kerala compared to all India level. The average wage rate of women in Kerala is higher than all India average, but it is much lower than that of males.

Table 2: Average daily wage rates in agricultural occupations in Kerala (in Rs)

	Sowing occupations			Harvesting occupations		
	Male	Female	Gender Attainment Index	Male	Female	Gender Attainment Index
Kerala	638.29	446.88	0.70	582.14	439.10	0.75
India	238.67	194.32	0.81	238.43	203.16	0.85

Source: Govt of India (2015), *Wage Rates in Rural India*, Ministry of Labour and Employment, New Delhi.

CONCLUSION

For effective gender development, women of Kerala should be empowered economically, socially and politically. Economic, social and political empowerments are complementary to each other. Economic empowerment of women is achieved when they become an integral part of labour force and ultimately be gainfully employed. Therefore, an effort on the increase in Female Work Participation Rate (FWPR) of the state has to be attempted.

REFERENCES

Abiroop Mukhopadhiya and Indira Rajraman., 2007. Rural Unemployment 1999-2005-who gained, who lost. Economic and Political Weekly, XLII (30): 82-89.

Abraham, V.2009. Employment growth in rural India: Distress driven. Economic and Political Weekly, 44 (16): 97–104.

Bhalla, S. and Kaur, R., 2011. Labour force participation of women in India: Some facts, some queries. Working Paper 40, London School of Economics and Political Science.

Gopal Prasad., 2001. Employment – Recent Trends. Yojana, 5: 48-49.

Government of India, 2011. Census-2011, Census Commission, New Delhi.

Government of India, 2012. NSSO Report on Key Indicators of Household Consumer Expenditure in India 2011-12, NSS 68th round, National Sample Survey Organisation, New Delhi.

Government of India, 2015. Wage Rates in Rural India, Ministry of Labour and Employment, New Delhi.

Government of Kerala, 2015. Economic Review, State Planning Board, Thiruvananthapuram: 215-220.

Himanshu, 2011. "Employment Trends in India: A Re-examination", Economic and Political Weekly, XLVI (37): 234-241.

Kamol Singha, 2006. "Educational Employment problem in Nagaland an assessment", Southern Economist, 45 (14): 21-24.

Kapsos, S. Silberman, A. and Bourmpoula E., 2014. Why is female labour force participation declining so sharply in India. ILO Research Paper No. 10.

Klasen, S. and Pieters, J., 2012 Push or pull, Drivers of female labour force participation during India's economic boom. Working Paper No. 6395, IZA Discussion Paper Series, Institute for the Study of Labour, Bonn.

Mammen, K. and Paxson, C. 2000. Women's work and economic development. Journal of Economic Perspectives, 14 (4): 141–164.

Masood, T. and Ahmad, I. 2009. An econometric analysis of inter-state variation in women's labour force participation in India. MPRA Paper No. 19297.

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A STUDY ON LESSER KNOWN DESTINATIONS IN KOLAR DISTRICT, KARNATAKA, INDIA

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Abstract : *Tourism, from a humble beginning of leisure opportunity for mankind, has evolved into a phenomenon of Industry of Industries. There are numerous tourist spots which receive heavy tourist traffic. Yet there are many lesser known destinations which can be tapped for their tourism potential in Karnataka. Karnataka is famously known as Mini-Incredible India. There are many hidden jewels here which are yet to be explored and embraced by the tourism industry. Some of the hidden jewels in Kolar, a district 70 km from Bengaluru are Antargange, Shivgange and Gauri Gangadhareshwara temple in Kolar. It has tremendous potential to be a popular tourist spot for eco-tourism, adventure tourism and pilgrimage tourism but due to various reasons it is still a lesser known destination. In this digital era, improved usage of Social Media is creating a platform for the global business offer that include customer- specific products and services using tailor made customized methods. This paper attempts to probe into the possibilities of promoting lesser known destinations in Kolar District through Social Media Marketing for the awareness and development of Tourism in Kolar, Karnataka.*

Key Words: *Kolar Tourism, Antargange, Shivgange, Gauri Gangadhareshwara Temple, Cave exploration, Social Media Marketing*

INTRODUCTION

Tourism emerged on the quest of leisure by mankind. This curiosity of mankind led to exploring the lesser known destinations and bringing forth to the world a myriad of such spots which are still untapped. Traveling in Karnataka is a voyage that excels an ordinary travel experience. The diversity in Karnataka delights even the most seasoned traveler.

From the daunting Western Ghats to the holy Cauvery, beach waves to hill stations, the serenity, vibrancy, beauty and colours enthralls one and all in Karnataka aptly regarded as 'the mini Incredible India[1]. There are many breathtaking destinations in Karnataka which are yet to be explored. Such jewels are assets for Indian tourism but there are some hidden treasures in every state in India which have not got into the limelight. Kolar which is situated in Karnataka has many such hidden jewels in our very own Karnataka like the Antargange, Shivagange and Gauri Gangadhareshwara temple. It has tremendous potential to be a popular tourist spot but due to various reasons it is still an unexplored tourist destination especially as a Weekend Getaway from Bangalore.

Antaragange in Kolar is set at a distance of seventy kilometers from the city of Bengaluru. It is a series of rocky hills placed within the Shathashrunga chain of mountains. It is popularly known as Dakshina Kashi or Kashi of the south. Antargange in Kannada language is 'Ganges from the deep'[2]. Antaragange is known for the water popping out of stone Bull (Nandi). There is a temple of Lord Shiva known as Kashivishweshwara Temple. The lake gets continuous water from the mouth of the demigod and mount of Lord Shiva, Nandi. Nobody is aware of the origin of the water and it is believed that the water (Ganga) is falling from head of Lord Shiva. Water can be seen streaming out throughout the year.

It is the belief of the locals that the ailments of a person can be easily cured by the drinking of this water. There are many temples on the hill top which might be reached with the assistance. Antargange is not just a site of religion but also a wonderful place to hang out with friends and family. The charming site of the water falling from the top is enthralling. It has huge potential to attract nature lovers, religious minded people and for spelunkers. This spot can attract foreign tourist and has potential for cave exploration.

REVIEW OF LITERATURE

In his article, Opportunities of Tourism in Kolar District of Karnataka-A Study, throws light on the opportunities and major challenges faced by Kolar District in the

tourism industry. It is observed from the study that lack of various supporting systems, amenities and facilities restricted Kolar District to attract more number of tourist particularly foreign tourists in spite of having exotic tourist locations across the district. The author highlights the importance of promotion of any place as a tourist destination which leads to the economic development of that area[3].

In her article, Silence and Solitude: Surprising Kolar, the author talks about the fascinating Kolar town with interesting places like Kaivara, Nandi Hills, caves of Kailashgiri, Antargange Falls and Kashi Vishweshwara Temple. This article clearly shows the tourism potential of the destination alongside its flora and fauna which is yet to be explored by many tourists[4].

Karnataka Tourism Policy (2015-2020), Department of Tourism, Government of Karnataka has programmes to promote adventure tourism which is one among the many types of tourism in Karnataka they wish to promote. Kolar also is in the radar of the Karnataka State Tourism Development Corporation. In comparison, the private tour operators like Tripoto and Thrillophilia are into marketing tourism in Kolar in a more effective manner through attractive tour packages[5].

The fundamental changes Social media is bringing about the way travellers and tourists search, find, read and trust, as well as collaboratively produce information about tourism suppliers and tourism destinations is discussed[6].

RESEARCH GAP

The reviews listed, elaborate on the potential of tourism growth in Kolar. However, there is a dearth of research material on promoting lesser known destinations of Kolar through Social Media Marketing. Hence, the study is validated and the researchers have decided upon this topic with the aim of researching the following objectives.

OBJECTIVES OF THE STUDY

The objectives of the study are as follows:-

1. To showcase the tourism potential on the lesser known destinations in Kolar District
2. To detail on the potential of social media as a marketing tool in tourism in Kolar

METHODS

Qualitative and Quantitative research methods used to study the focus area. The Primary data used for conducting the survey are Interview schedules, Questionnaires-Mail, Telephonic, Manual, Observation system and Field Visit. Secondary data used for the research are online blogs, Journals, Organizational Reports and related website links

200 respondents have been chosen through simple random sampling varying all age groups and occupation levels residing in Bengaluru.

SIGNIFICANCE OF THE STUDY

The results of the study can provide various opportunities for the tourism industry to harness the tourism potential of Kolar. Tourism promotion for the Lesser Known Destinations of Kolar has potential for cave exploration and heritage tourism for domestic and foreign tourists which will be a revenue generator and can boost the economy in Kolar. Government and state tourism board will pay better attention to conserve and develop the spot. Once the spot is developed, efforts can be made for local woman empowerment. Tourists will have better options for Weekend Getaways around Bangalore

TOURISM IN KOLAR

Kolar, historically was ruled over by the emperors belonging to various kingdoms viz. Ganga, Nolamba, Baana, Vydumba, Chola, Hoysala, Chalukya, Vijayanagara, Marathas, Mughals, Hyder, Tippu, British and Mysore Wodeyars[3]. The dynasties of feudal lords from the 13th to 19th century were confined to places like Gummanayakanapalya,

Chikkaballpura, Sidlghatta, Gudibande, Yagavakote, Sugaturu, Harappanayakanahalli and Tadigol. The district has the proud privilege of having very important places like Banahalli, Arabikothanuru, Santhekallahalli, Peresandra, Srinivasapura, Kadagathur and Budikote which reflect the rich cultural heritage of the Stone Age.

The taluk of Srinivasapura has attractive tourist places like Hebbatta, Tadigol, Pulagurakote, Sunakallu, Haralakunte, and Gummareddypura. The sculptures of the town date back to the Stone Age culture. These hillocks became adventurous places for tourists. The famous taluk of Malur has many tourist places like Madivala, Chikkatirupati, Thoranahalli, Kadathuru, Shivarapatna and Tekal. Chikkatirupati is one of the sacred places in the taluk of Malur. The Stone images of Shivarapatna are well-known all over the world. The stone images of various gods and goddesses were exported to several countries. The Dharmarayaswamykaraga celebrated during "Chaithra Masa" has assumed national importance.

Banahalli which belonged to New Stone Age is also found in the taluk of Malur attracting tourists. The taluks of Mulabagilu, Chikkaballapura, Bagepalli, Gowribidanur, and Chintamani have an attractive heritage, historical and religious tourist places like Avani, Kurudumale, Harappanayakanahalli, Skandagiri, Nandi village, Hariharapura, Rangasthala and Gopinatha hill.

Kolaramma temple

This temple is an ancient shrine dating back to the Ganga period[1]. The temple is dedicated to Goddess Parvati who is the presiding deity of Kolar town. It is built in Dravidian style with a lot of renovations from Chola and Vijayanagara Kings. The main temple and its beautifully carved statues are attributed to Ganga Kings while certain structures in the southern part of the temple are built by Chola King, Rajendra Chola. There are many Chola inscriptions in Tamil, Kannada and grantha characters inside the temple dating back to the 10th century.

Someswara temple

This is an ancient 14th century temple of Shiva and is every architecture enthusiast's delight considering the heavy work done in the temple. Different parts of the temple have been built in different periods with the main temple being Dravidian style and the rest of the temple in Vijayanagara style .The magnificent entrance, the main temple, and the marriage hall are all beautifully sculpted in Dravidian style.

Kotilingeshwara temple

Kolar has to its pride the temple of Kotilingeshwara (which means one crore Linga idols) at Kammasandra. Here one can find Shiva idols of all sizes. The biggest Shiva Linga is 108 feet high and is one of the largest in Asia. Opposite to this Linga is a statue of a bull which is 35 feet high. Apart from Shiva temple one can find eleven other temples dedicated to various deities like Santhoshima, Hanuman, Ganesha etc. There is also a big Bilwa tree where scores of cradles and turmeric threads are tied by devotees wishing to conceive a child.

Lesser Known Attractions

Antharagange

It is one of the most attractive lesser known destinations in Kolar. Antaragange is known for the water popping out of stone Bull (Nandi). The fresh spring water from an unknown source gushes out from the mouth of Nandi. Nobody is aware of the origin of the water and it is believed that the water (Ganga) is falling from head of Lord Shiva. The main highlight of Antargange is the temple of Kashivishweshwara Temple[7]. The authentic idols of Lord Shiva, Ganesha and Parvathi in the temple next to the perennial spring water attracts pilgrims from far and wide for *Jatres* (Annual Fairs). It is the belief of the locals that the ailments of a person can be easily cured by the consumption of this water. This scenic spot has the rocky ShathaShringaParvatha with rare flora and fauna. The presence

of a viewpoint gives a good view of Rock boulders and the highlight is a snake hooded rock.

Gauri Gangadhareshwara Temple

Lapped in the untouched region of Teruhalli, Kolar District lies the Sri Gauri Gangadhareshwara Temple which was our surprise discovery during the field visit by sheer accident. The temple is dedicated to the holy couple, Lord Shiva and Goddess Parvati which is 700 years old and was built during the Chola Dynasty and later went on to become a part of the Vijayanagara Empire.

The Gauri Gangadhareshwara Temple is a culmination of six other similar temples that are placed at a nearby distance from the temple. One of them is the Jamadagnishvara Temple which is 8 km away from Gauri Gangadhareshwara. There are also the Chandramaleshwara Temple and also Suryavaneshwara temple.

A further trek of two km to the west takes one to another village called Paparajanahathi. The specialty here is a stone umbrella that has been carved out of a single stone in front of the Shiva temple. The temple stands true to the excellence of Chola Dynasty's architectural work. The walls of the temple depict carvings of scriptures of Ancient Tamil literature.

Recently, the temple came under the care of the Aanda Arasu Shivalaya Seva Sangha organization which took care of the maintenance and development of the temple. They also took up the challenge of introducing the temple as a tourism destination at a promotional level by putting up route maps, sign boards and information about the temple on their website

The Aanda Arasu Shivalaya Seva Sangha organization is an independent venture taken up by a group of software engineers that work towards the betterment and maintenance of Lord Shiva temples all over the country. The organization does not take any support from the government or any private investors and sponsors. Sri Gauri Gangadhareshwara Temple is the 118th temple taken up by them for maintenance.

Shivagange

The place of 'Aadima' attracts many of tourists during the full moon. Several art groups of the state of Karnataka perform cultural activities in this place. The tourists who come here prefer this place for trekking. A unique cultural programme titled 'Hunnime Haadu' (the song of the full moon) has been held regularly since 2006. Hunnime Haadu was started under the joint auspices of two cultural organisations, Chowki Samskrithika Kendra and Adima. Later, it was continued by Adima alone. A group of people interested in promoting cultural activities started Adima by contributing one rupee a day.

Baba Hazrat Khaja Usman Shawali Dargah

The village is also known for this Dargah which is visited by one and all displaying a sense of cultural diversity within the region.

Accessibility

By Air: The Kempegowda International Airport in Bengaluru is about 54 km from Kolar.

By Rail: Kolar has its own railway station 3 km away from city center.

By Road: Kolar is just 70 km from Bengaluru. The Kolar bus stand is 3 kms from city center which makes it a highly accessible destination for tourists. Karnataka State Road Traffic Corporation operates bus services to Kolar

Accommodation: The district of Kolar holds the potential of catering to the needs of tourists as it has facilities like accommodation. Kolar has lodges, budget hotels like Gangotri Lodge, Shri Shante Sagar Lodge and restaurants near the main road.

Amenities: The town near Antaragange in Kolar has good roads and does not lack basic facilities. The route also has well asphalted roads which does not make commuting by

vehicle difficult. Other such facilities include shops which sell basic food items, pharmacy, nursing home, cyber cafes, banks and digital studios.

Activities: Tourists are offered day and night trekking tours along with cave exploration at Antargange. Tour operators have online adventure tour packages for tourists who are keen on off-beat experiences.

CHARACTERISTICS OF LESSER KNOWN DESTINATIONS

The major characteristic features of Lesser Known Destinations (LKD) are

1. They are known for their pristine environment.
2. They receive only highly Responsible Tourists.
3. They have low tourist traffic and naturally low transport snarls.
4. They are just waiting in their wings to become Well-Known Destinations (WKD's).
5. They have great revenue generators that are yet to be tapped upon.
6. They lack organised infrastructure.
7. They are providing economic leakages that need to be regulated for the betterment of the State Tourism Revenue.
8. They lack off season which is an advantage for tourism professionals to synchronize it with the existing tourism calendar of the WKD's.
9. They have great opportunity for Public-Private-Partnership (PPP) Projects.
10. They are spring-boards for Socio-Cultural empowerment for the Local Community.

In this backdrop, it is paramount for the Tourism Administration to Professionalise the development using appropriate means of Marketing. In the current scenario of advanced digitalized World, it is felt that, Social Media Marketing plays a very important

in promoting destinations. It creates a great degree of awareness for potential tourist. Social media marketing can pin point customers who are interested in certain type of tourism since they follow and like pages. The tourism industry has begun to witness the advantages of social media marketing through online platforms through booking tour packages, photo sharing, testimonial videos, product customization based on customer requirements.

RESULTS & DISCUSSION

- The most popular weekend gateway for Bengalureans were places like Goa (25%), Puducherry (24%), Ooty (23%), followed by Coorg (19%) and Bandipur (09%).
- A fresh spring waterfall as a place of tourist interest was regarded attractive by 36% of the respondents.
- 49% of the respondents had visited a waterfall once in their lifetime, with Jog falls reigning top of the list as the most visited.
- 74% feel that Antargange, Gauri Gangadhareshwar Temple and Shivgange are not very popular and the remaining respondents had no idea about it in Kolar.
- Adventure is the most preferred tourism activity for 36% of the respondents, 31% chose relaxation, 21% preferred sightseeing and 12% were interested in shopping.
- 44% of the respondents showcased their desire of having a tourist guide, 34% voted against having a tourist guide and 22% said they would prefer a tourist guide sometimes depending on the type of destination.
- 48% of the respondents were interested in visiting unexplored places of Kolar as part of a tour package, 31% said maybe and 14% refused.
- 81% said they would pay below Rs.10,000 for a trip of 1 night 2 days, while the rest were willing to shell out between Rs11,000- 20,000
- Budget hotels were the most popular preferred place of stay with 41%, followed by Resort with 30%, Luxury Villas with 17% and Homestays with 12%.

- 40% felt that not all scenic locations are well maintained by the government, 29% felt it is neglected, 23% said sometimes and only 8% believed the scenic locations were well maintained by the government.
- 55% of the respondents felt that Kolar is not well promoted.

Strengths

a) It is a pilgrimage, heritage and adventure tourism spot.
b) There are various species of flora and fauna in Kolar such as Butterflies like Striped Tiger, Lime Butterfly and Blue Mormon
c) Age old custom of an annual *jathre* (fair) at the temple still continues.
d) Good Network of roads.
e) Communal Harmony-presence of mosque near the temple.
f) Existence of private ostrich farms and rose gardens.

Opportunities

a) It can serve to be the next Nandi Hills for Bengalureans.
b) It can be promoted both as a pilgrimage spot and also for adventure tourism where organized Cave Exploration can be promoted in a full-fledged manner.
c) The temple can serve as great pilgrimage tourism spot for travelers.
d) Can be an attraction for the youth such as Biker Groups for road trips.
e) Agro farming can be promoted under Agri-Tourism.

Weaknesses

a) No entry fees for visitors at the destinations.
b) Commercial shops for souvenirs are not available.
c) There is no guide service available.
d) There is no description of the temple anywhere though it has an ancient history.
e) No presence of roadmaps in the premises of the temple for the trekking route or towards.

f) Lack of route maps or sign boards that inform or show the exact location of all the spots.

g) No facilities for the disabled.

h) Lack of comfortable lodges as well hotels.

Threats

a) As there is no entry fees, there are no sufficient funds for maintenance and upkeep

b) There are no tour guides or information desk at the destination.

c) The Gauri Gangadeshwar temple too is located in such a location that it can be easily missed if not given proper attention. Even the signboard for this temple was installed by the *Andru Arusu Shivalaya Sangha*.

d) There is also no assistance for any language other than Kannada. This poses as a disadvantage for travelers who are not familiar with Kannada.

e) The site is completely neglected as there are no tourism services available for tourists.

f) The temple lacks cleanliness as there is a lot of garbage thrown around.

g) There are clear signs of vandalism in the vicinity.

SUGGESTIONS

- Karnataka State Tourism Development Corporation (KSTDC) may please venture into Pin-Point Marketing through Social media to focus on target markets like adventure tourists, pilgrimage and cultural tourists and launch marketing campaigns for promoting Kolar tourism
- Kolar can be promoted with an official Blog or website gives a better insight and more information through KSTDC.
- Inclusion of better instructions pertaining to the distance in English, Hindi along with the regional language Kannada.
- Promoting Responsible Tourism based Eco Lodges for accommodation will be ideal here.

- The place can be better in terms of cleanliness if there is an entrance fee.
- Entrance fees can also fund the employment of Guides in and around the location.
- The inclusion of Road and trek route maps to the lesser known destinations can guide the trekkers will be useful.
- KSTDC under its new tourism policy can adopt these less known places as a heritage tourist spots and develop it for tourism.
- Archaeological Survey of India (ASI) can declare Antargange and Gauri Gangadeshwara temple as a Protected Monument as these ancient heritage sites are at a state of neglect.
- Government bodies can fund NGOs to take up maintenance activities for the up-keep of these heritage sites.
- Voluntary self-help groups needs to be encouraged for protecting and conserving such spots with the involvement of locals.
- A heritage tourist circuit can be designed for Kolar keeping in mind the popular and unexplored spots. This will boost the tourist traffic and put the lesser known destinations on the tourist map of Karnataka.
- As the waterfalls are seasonal, other attractions such as the Kashivishweshwara temple and caves may please be developed for the visits of tourists in an appropriate manner.
- It can very well serve as the best spot for Bengalureans as a weekend getaway.
- The area needs to come under the protection of the government boards which will result in improved healthcare, accommodation and drinking water facilities and amenities for tourists.
- It has all the characteristics to be promoted as a pilgrimage tourist destination and adventure tourism. So, if done, it will be the first-of-its-kind in the entire Nation.

CONCLUSION

Kolar when compared to other places of tourist interest that are under the Government's concern, lacks many of the necessary facilities. With an increase in promotion and development, Kolar can become a potential successful tourist destination. It will increase employment opportunities for the local people, apart from their usual agricultural and farming occupations thereby developing the entire destination. Kolar is an attractive place and has a good history to chronicle. It has the potential to attract tourists if it is promoted along with the Lesser Known Destinations (LKD's). The tourism industry has a great deal of untapped potential to help expand economic opportunities in local communities.

The potential hinges upon inclusive business models that integrate the poor into value chains as employees, suppliers, retailers, customers, and beneficiaries, thereby enabling them to build their economic and human capital assets. The tourism development of the district can be effectively taken up by addressing the challenges of transportation, hospitality, and health care. Social Media, a recent online phenomenon, has opened up the marketing venture into new avenues. It is important for the Government of Karnataka, KSTDC and Tourism service providers and individuals promote tourism in Kolar in a way that creates exclusive products and services to attract specific target markets through pin-point marketing.

REFERENCES

1. Tourism | kolar.nic.in., 2017. Kolar.nic.in. Retrieved 26 October 2017, from http://kolar.nic.in/tourism.html
2. http://intelligenttravel.nationalgeographic.com/2009/09/17/50_places_of_a_lifetime_1/Posted by Intelligent Travel, National Geographic Traveler on September 17, 2009
3. Raghu, M.N. 2014. Opportunities of Tourism in Kolar District of Karnataka- A Study. International Journal Of Science And Research, 3(8), 381-383.

4. Pereira, M. 2010. Surprising Kolar. Silence and Solitude. Retrieved from http://waltzin-matilda.blogspot.in/2009/01/surprising-kolar_18.html

5. Karnataka Tourism Policy 2015-2020, Department of Tourism, Government of Karnataka http://www.airda.org/assets/docs/ktpolicy2015to2020.pdf

6. Sigala, M; Christou, E and Gretzel, U. 2012. Social Media in Travel, Tourism and Hospitality: Theory, Practice and Cases, Ashgate Publishing Limited, U.K.

7. Antaragange, 2017. Bengaloorutourism.com. Retrieved 8 March 2017, from http://www.bengaloorutourism.com/antaragange.php

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COMPARING INTELLIGENCE AMONG BILINGUALS AND MULTILINGUALS OF INDIAN AND FOREIGN LANGUAGES

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Abstract : *In today's age of networking, knowing several languages is more of a norm than an option. The Indian subcontinent is home to many bilinguals and multilinguals. Learning a foreign language is a favourable fad in the country. The present study aims to compare the intelligence among bilinguals, multilinguals who are fluent in Indian languages and multilinguals who have learnt foreign language. A total sample of ninety members with thirty in each group (fifteen males and fifteen females) was chosen from cities of Bengaluru, Pune, Coimbatore and Calicut. A screening test to determine language proficiency was carried out before administering test of Intelligence (Raven's Progressive Matrices). The scored data was subjected to statistical analysis using SPSS 24, One-way Analysis of Variance revealed that all three groups differed significantly from each other. The foreign language multilingual group were better than the Indian language multilingual group who were in turn better than bilinguals. These results help us understand the usefulness of language acquisition in cognitive betterment.*

Keywords: *Intelligence, Bilingualism, Multilingualism, Foreign Language*

INTRODUCTION

Language is more than means to communicate one's thoughts and emotions. In today's world of networking, language plays a key role; Knowledge of one language is considered more of a hindrance to development. According to the census of 2011, India has around 122 languages and 234 mother tongues. Being a bilingual would therefore be more or less a norm, as the education system is also structured in a way that children learn more than two languages during their schooling years.

In the Indian context, even individuals devoid of formal learning opportunities possess knowledge of a minimum of two languages, at least limited working level proficiency in the second language. Factors such as migration for economic reasons, marriage, self-motivated learning and compulsory subjects at school result in the process of learning many languages. A bilingual in a metropolitan city, would be proficient in English and a native tongue which is either Indo-Aryan or Dravidian language. With the availability of opportunities, several individuals also equip themselves with the knowledge of a foreign language which is any other language apart from the Indo-Aryan or Dravidian language.

Prior notion indicated that learning more than one language would lead to an increase in the cognitive load and burdens the attentional processes. Myriad of research thereafter, have negated the above fact by demonstrating the benefits. Studies report that knowledge of two languages results in meta-linguistic awareness, cognitive control , neural efficiency, and executive attention[1,2,3]. Bilingual children display better working memory capacities, planning, set shifting, response inhibition when compared to monolingual children[4]. Bilingualism has also been found to benefit Alzheimer's, by enhancing the cognitive reserve and helps in language recovery in Aphasia[5,6].

Multilinguals out-perform trilinguals who outperform bilinguals on tests of general cognitive ability and intelligence[7,8]. Learning a foreign language in young adults is seen to increase cortical thickness and hippocampal volumes.[9] Thus, a lot of benefits have been attributed to knowledge of more than one language. However, literature on multilingualism and intelligence is sparse and this study aims to compare cognitive differences among bilinguals and multilinguals, if any to understand the benefit of learning a foreign language.

METHOD

A group of 90 participants, between the ages of 18-35 years, from the cities of Bangalore, Coimbatore, Calicut and Pune were included in the study. The subjects were all college educated and demonstrated proficiency in English. The total sample was

divided into three groups (Bilingual, Multilingual Indian and Multilingual Foreign) of 30 individuals each with 15 male-15 female ratio. The Bilingual group (B_i) consisted of individuals with knowledge of two languages, Multilingual Indian group (M_i) consisted of individuals with knowledge of English and two other Indian languages. The Multilingual Foreign group (M_f) consisted of individuals with the knowledge of English, one or more Indian language(s) & one foreign language. Foreign languages known to the subjects of the study were German, French, Spanish, Japanese Portuguese, Italian, Chinese, Russian, Arabic and Nepali. NIMHANS Language Screening Test was used to ensure a minimum of limited-working level proficiency in the languages known. Raven's Progressive Matrices (RPM), a non-verbal test of intelligence, was administered to assess intelligence. One-way ANOVA was conducted to test the differences among the three groups.

RESULTS AND DISCUSSION

The statistical analysis revealed that all the three groups differed from each other with respect to intelligence scores ($p<0.01$) as displayed in Table 1.1 below.

Table: 1.1

One-Way ANOVA conducted for Intelligence

		Sum of Squares	df	Mean Square	F	Sig.
Intelligence	Between Groups	1167.267	2	583.633	16.939**	.000
	Within Groups	2997.633	87	34.456		
	Total	4164.900	89			

**. The mean difference is significant at the 0.05 level.*

***. The mean difference is significant at the 0.01 level.*

Table:1.2

Post-hoc Analysis - LSD Test

	Group	Group	Mean Difference	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Intelligence	B_i	M_i	-3.533*	.022	-6.55	-.52
		M_f	-8.767**	.000	-11.78	-5.75
	M_i	B_i	3.533*	.022	.52	6.55
		M_f	-5.233**	.001	-8.25	-2.22
	M_f	B_i	8.767**	.000	5.75	11.78
		M_i	5.233**	.001	2.22	8.25

**. The mean difference is significant at the 0.05 level.*
***. The mean difference is significant at the 0.01 level.*

In order to identify where the difference lies among the groups and which group has higher intelligence, LSD, a post-hoc analysis was computed (Table1.2). The results showed that there were significant mean differences among all three groups. The mean difference between bilingual (B_i) and multilingual Indian (M_i) group was found to be -3.533 which shows that the M_i group had scored 3 points significantly higher ($p<0.05$). The mean difference between multilingual Indian (M_i) and multilingual Foreign (M_f) group was found to be -5.233 which shows that the M_f group had scored 5 points significantly higher ($p<0.01$). Consequently, the multilingual Foreign displayed a superior intelligence when compared to both multilingual Indian and bilingual group, highlighting the positive effect of a foreign language acquisition and increment in the number of language learnt on intelligence.

CONCLUSION

Results indicate that people with the knowledge of foreign language significantly fared better in the non-verbal test intelligence. Based on the results of the study, perhaps learning a foreign language can be correlated with better intelligence. This stands a

testimony to create awareness of the advantages that learning a foreign language entails. However, this study comes with the limitation that it cannot be conclusive that learning of a foreign language leads to improvement in cognitive capacities due to its non-experimental nature, a knowledge gap which must be bridged by future research,

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REFERENCES

1. Bialystok, E. 2001. Metalinguistic aspects of bilingual processing. *Annual Review of Applied Linguistics.***21**, pp.169-181.
2. Gold, B.T., Kim, C., Johnson, N.F., Kryscio, R.J. and Smith, C.D., 2013. Lifelong bilingualism maintains neural efficiency for cognitive control in aging. *Journal of Neuroscience,* **33(2),** pp.387-396.
3. Yang, S. and Lust, B., 2007. Cross-linguistic differences in cognitive effects due to bilingualism: experimental study of lexicon and executive attention in two typologically distinct language groups. In Proceedings of Boston University Conference on Language Development (BUCLD) .**31**, pp. 692-703.
4. Morales, J., Calvo, A. and Bialystok, E., 2013. Working memory development in monolingual and bilingual children. Journal of experimental child psychology, **114(2),** pp.187-202.
5. Craik, F.I., Bialystok, E. and Freedman, M., 2010. Delaying the onset of Alzheimer disease Bilingualism as a form of cognitive reserve. Neurology, **75(19),** pp.1726-1729.
6. Ijalba, E., Obler, L.K. and Chengappa, S., 2004. Bilingual aphasia. The handbook of bilingualism, pp.70-89.

7. Kavé, G., Eyal, N., Shorek, A. and Cohen-Mansfield, J., 2008. Multilingualism and cognitive state in the oldest old. Psychology and aging, **23(1),** p.70.

8. Clément, R., 2015. Bilingualism and Multilingualism. The Concise Encyclopedia of Communication, pp.1-6.

9. Lövdén, M., Wenger, E., Mårtensson, J., Lindenberger, U. and Bäckman, L., 2013. Structural brain plasticity in adult learning and development. *Neuroscience & Biobehavioral Reviews*, **37(9)**, pp.2296-2310.

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AN ECONOMIC INQUIRY INTO HIGHER EDUCATION – WITH REFERENCE TO EXPENDITURE, INSTITUTIONSAND ENROLMENT

(2000-01 to 2014-15)

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Abstract *: India's higher education system is the third largest in the world, next to the United States and China. Indian higher education system has expanded at a fast pace by adding nearly 20,000 colleges and more than 8 million students in a decade from 2000 to 2011. The paper concentrates on the impact of this intellectual revolution on higher education – with reference to public expenditure, number of institutions and enrolment from 2000 to 2015. The analysis of data has revealed a positive result in terms of enhanced public expenditure, a higher number of institutions and increased enrolment. The influence of government expenditure, the number of institutions and the working age population on the level of enrolment has been studied with the help of a regression model. The model revealed that there is a significant relationship between the studied variables. The paper also touches upon a few qualitative factors that exert influence on higher education.*

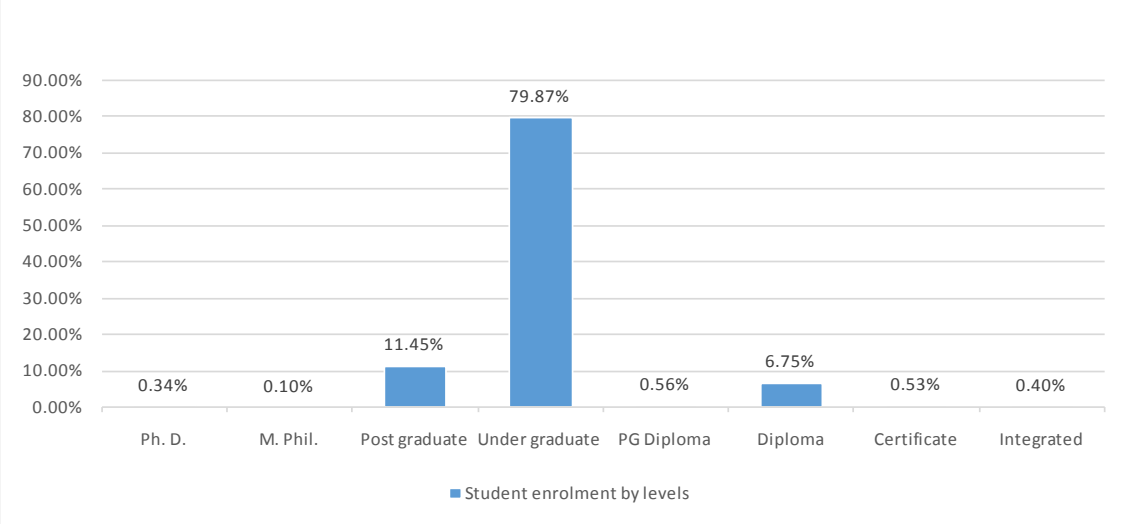
Keywords**:** *higher education, enrolment, government expenditure, number of institutions, demographic dividend, skill*

INTRODUCTION

India, prior to 1991, was amidst a crisis that dragged the entire nation on a lower growth trajectory. The condition was such that only a major reform could save the nation. High inflation, high fiscal and current account deficit, low foreign exchange reserves are few of the many problems India faced at that time. It is then that India took a leap

of faith in the new economic reforms. Since then, India has been performing at global standard levels in almost each sector – manufacturing, agricultural, services, health, education, etc. The present ruling government has even introduced measures like the Make in India campaign, Skill India, Digital India catering to economic development of the nation. The focus of this paper is on as impacted the higher education sector – with reference to government expenditure, number of institutions and enrolment. (Higher Education is defined as the education obtained after completing 12 years of schooling or equivalent and is of the duration of at least nine months (full time) or after completing 10 years of schooling and is of the duration of at least 3 years The education may of the nature of General, Vocational, Professional or technical education). Higher education, post-secondary education, or third level education is an optional final stage of formal learning that occurs after secondary education. Often delivered at universities, academies, colleges, seminaries, and institutes of technology, higher education is also available through certain college-level institutions, including vocational schools, trade schools, and other career colleges that award academic degrees or professional certifications. India's higher education system is the third largest in the world, next to the United States and China. According to U21 Ranking of National Higher Education (2016), India is ranked 49th overall, which combines ranks of 38 for Resources, 43 for Environment, 49 for Connectivity and 47 for Output. It is ranked 15th for government expenditure on higher education as a share of GDP, but this serves a large number of students so that expenditure per student is ranked much lower at 48.

Total Student enrolment has been classified in 8 levels viz – Ph.D., M.Phil., Post Graduate, Under Graduate, PG Diploma, Diploma, Certificate and Integrated. The percentage shares of student enrolment in these levels are shown in Figure 1.



Student Enrolment by levels

With India having a higher youth population i.e. 18-23 years, the demand for higher education is ever growing. India is the only country which has an advantage in this aspect until 2050.

Expenditure by the Higher Education department is in higher education, technical education, language development, book promotion and copyright and UNESCO related activities and planning and administration.

REVIEW OF LITERATURE

Ashu Bhojwani, Viveka Dubey, Deepa Joshy (2013)**,** in their paper have examined the impact of globalisation on higher education in India and the major challenges faced as a result of globalisation. Globalisation is the ongoing process that links people, neighbourhoods, cities, regions and countries more close. There has been an ever increasing demand for higher education, increased mobility of students across countries and there has been rapid expansion in the field of science and technology. Globalization leads to challenges and threats also. The need for financing of higher education for

students, especially those coming from low income households needs special attention. We should encourage foreign universities to come to India to setup in collaboration with existing Indian institutions, colleges to promote global research activities for sustainable development.

Kamar Jahan, Christy Selvarani (2015) in their paper highlighted the issues and challenges faced by the Indian higher education system. The basic problems faced include inadequate infrastructure and facilities, large vacancies in faculty positions, low student enrolment rate, traditional methods of teaching, declining research standards, non-motivated students, overcrowded classrooms and widespread geographic, ethnic and socio-economic imbalances. One of the greatest challenges to higher education in India is providing access to the growing segments of the population demanding post-secondary education. The government data reveals that one out of seven children in India goes to college. Religion is another area where exclusions can be observed. At the aggregate level, Christians are ahead of every other religious group in terms of overall enrolment in higher education. The Central and State Governments jointly fund higher education. The Central Government's share is about 30% while the State Government's share is 70%, mostly under the non-plan head. Education loans have become a popular method of funding higher education in India as the higher education is becoming expensive. In case of high chances of default, the private sector banks do not offer education loan. Whereas the public sector banks prefer giving loans to meritorious students because the RBI has extended supportive measures to them to minimize the risk in case of defaults.

Varghese (2015) in his paper talks about the challenges faced by the massification of higher education in India, which has around 30 million students, 0.70 million teachers and 36 thousand institutions (in 2012-13). The country has the second largest higher education sector in the world after China. The growth and expansion of higher education in India during the post-Independence period can be broadly categorized into three stages: i) a stage of high growth and limited access (1950-70); ii) a stage of declining growth in enrolment (1970-1990); and iii) a stage of revival and massive expansion of enrolment in higher education (post 1990)

Massification has changed the nature of courses offered by institutions and the choice of courses by the students. In 2011, 79%, 12%, 9% and 0.4% of the total students were enrolled in undergraduate courses, post graduate courses, diploma programmes and in research programmes respectively. The enrolment in post-graduate courses is not only low but it also declined from 0.6% in 2005 to 0.4% in 2011. It has been argued in the paper that unlike in the developed countries where massification was facilitated through public institutions, in India, this process is market- mediated and the non-state actors play an important role.

Objectives

- To study the trend of expenditure on higher education by the Government of India
- To trace the total enrolment in Indian higher education
- To analyse gender-wise total enrolment in higher education
- To study the growth of number of institutions catering to higher education
- To analyse the trend of demographic dividend of India
- To determine the inter-relationship of total enrolment in Indian higher education with its determinants i.e. public expenditure, number of institutions and demographic dividend.

Limitations

- The study is based on secondary data sources only.
- The role of private sector in higher education has not been considered.
- Enrolment in Open University is not included
- Expenditure by the Higher Education department is in higher education, technical education, language development, book promotion and copyright and UNESCO related activities and planning and administration.

Analysis and Interpretation

Objective 1:

Public expenditure on higher education		
Year	**Total Expenditure (in crores)***	**Growth rate**
2000-01	NA	-
2001-02	NA	-
2002-03	4613.96	-
2003-04	4740.39	2.7
2004-05	5160.62	8.9
2005-06	5828.48	12.9
2006-07	6919.81	18.7
2007-08	6256.49	-9.6
2008-09	11212.28	79.2
2009-10	13963.58	24.5
2010-11	15422.48	10.4
2011-12	19505.03	26.5
2012-13	20444.65	4.8
2013-14	24518.1	19.9
2014-15	23152.48	-5.6

Source: Ministry of Human Resource Development, Outcome Budget Report (Higher Education)

*Total expenditure comprises of Plan and Non-Plan budget expenditure for higher education

The above table shows the trend of total expenditureby the Central government on higher education from 2002-03 to 2014-15. It can be seen that the total expenditure has

been gradually increasing from 2002-03 to 2006-07. During the year 2008-09, there was a sharp increase by 79% because:

- Centre wanted to increase the percentage of each cohort going to higher education from 2008
- there was a rapid increase in tax collection the initial years of the Eleventh Plan (2008-2012), which translated into higher growth of revenues on account of education cess (while the rate of growth of cess collection slowed towards the end of the plan)

Post-2009, there has been a fluctuating trend in the total expenditure level.

Objective 2:

Enrolment (in lakhs)	
Year	**Total**
2000-01	8626332
2001-02	9541826
2002-03	10716558
2003-04	11200584
2004-05	13032186
2005-06	14323566
2006-07	15257893
2007-08	17211216
2008-09	18500325
2009-10	20740740
2010-11	27499749
2011-12	28562693
2012-13	29629022
2013-14	32336234
2014-15	33272722

Source: MHRD, Higher Education (Statistics) Annual Report

The total enrolment has been consistently increasing over the years. It has increased by almost 4 times since 2000. Gross Enrolment Ratio (GER) in Higher Education in India is 23.6, which is calculated for 18-23 years of age group. Chandigarh has the highest GER of 55.6, followed by Delhi with 43.3 and the lowest being in Lakshadweep (3.9).

Objective 2(a)

	Enrolment (in lakhs)				
Year	**Boys**	**% of boys enrolment to total enrolment**	**Girls**	**% of girls enrolment to total enrolment**	**Total**
2000-01	5443829	63.1	3182503	36.9	8626322
2001-02	5795417	60.7	3746409	39.3	9541826
2002-03	6681558	62.3	4035000	37.7	10716558
2003-04	7044205	62.9	4156379	37.1	11200584
2004-05	8191957	62.9	4840229	37.1	13032186
2005-06	8831748	61.7	5491818	38.3	14323566
2006-07	9408097	61.7	5849796	38.3	15257893
2007-08	10573890	61.4	6637326	38.6	17211216
2008-09	11227810	60.7	7272515	39.3	18500325
2009-10	12444600	60.0	8296140	40.0	20740740
2010-11	15466559	56.2	12033190	43.8	27499749
2011-12	15874800	55.6	12687893	44.4	28562693
2012-13	16328303	55.1	13300719	44.9	29629022
2013-14	17495394	54.1	14840840	45.9	32336234
2014-15	17906704	53.8	15366018	46.2	33272722

Source: MHRD, Higher Education (Statistics) Annual Report

The total enrolment level has been consistently increasing each year. It can be noted that the number of girls enrolled has improved since 2000.As of 2015, total enrolment in higher education has been estimated to be 33.3 million with 17.9 million boys and 15.4 million girls. Girls constitute 46% of the total enrolment.GER for male population is 24.5 and female it is 22.7.

Objective 3

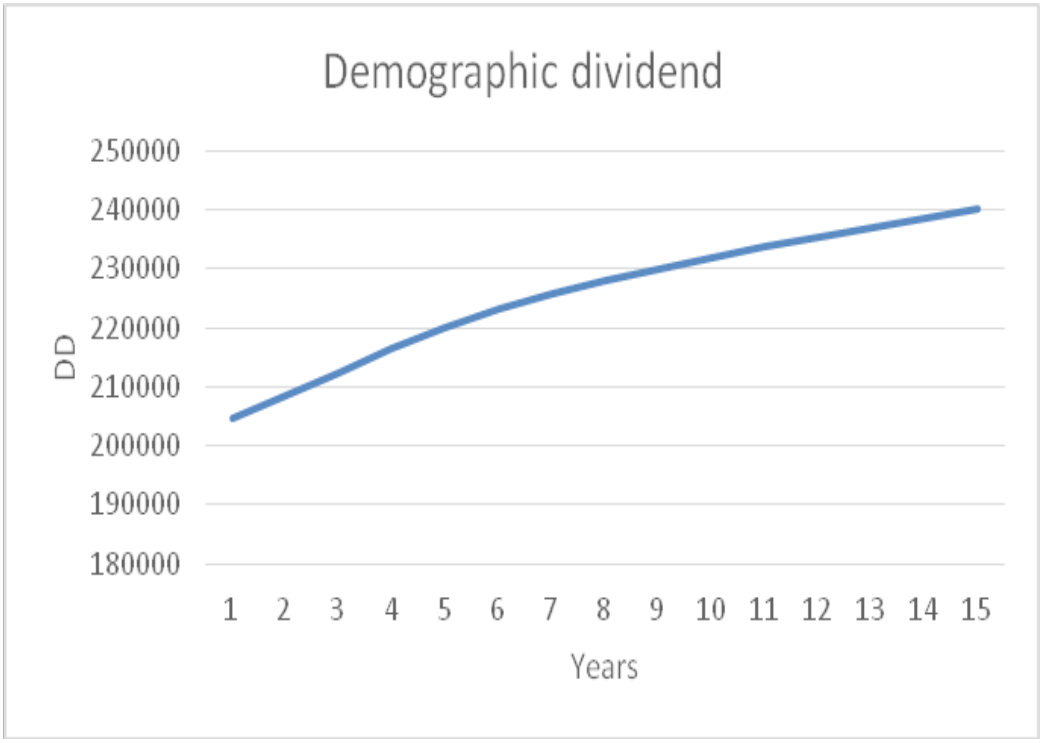
As of 2014, India has 757 Universities, 38056 Colleges and 11922 Stand Alone institutions. 267 Universities are privately managed. The top 7 States in terms of highest number of colleges in India are Uttar Pradesh, Maharashtra, Karnataka, Rajasthan, Andhra Pradesh, Tamil Nadu and Telangana.In the UTs of Andaman & Nicobar Island, Dadra & Nagar Haveli, Daman & Diu and Lakshadweep, there is no University.

Number of Recognised Educational Institutions (in '00)			
Year	**Colleges**	**University**	**Total**
2000-01	10152	254	10406
2001-02	11146	272	11418
2002-03	11776	304	12080
2003-04	12178	304	12482
2004-05	13578	343	13921
2005-06	16982	350	17332
2006-07	19812	371	20183
2007-08	23099	406	23505
2008-09	27882	440	28322
2009-10	25938	436	26374
2010-11	32974	621	33595
2011-12	34852	642	35494
2012-13	35525	667	36192
2013-14	36634	723	37357
2014-15	38056	757	38813

Source: MHRD, Higher Education (Statistics) Annual Report

Assam and Puducherry have not supplied the data for the year 2009-10, therefore their complete data has been repeated from the year 2008-09. Also, there are some data gaps in the data provided by the State Governments which has been filled with the data provided by UGC, AICTE and DEC and in some cases have been repeated from 2006-07, 2007-08 or 2008-09. The table shows an increase in the number of institutions from 2000 to 2015. It has increased by almost 3 times.

Objective 4



Demographic dividend (15 - 24 years) (in '000)	
Year	**Demographic dividend (DD)**
2000-01	204538
2001-02	208527
2002-03	212512
2003-04	216370
2004-05	219936
2005-06	223114
2006-07	225785
2007-08	228077
2008-09	230070
2009-10	231911
2010-11	233696
2011-12	235343
2012-13	236938
2013-14	238502
2014-15	240038

Source: UNESCO

The number of people in the age group of 15-24 years has shown an upward trend each year, which indicates that the youth population has been rising gradually. This phenomenon gives India an advantage over other countries and has increased the demand for higher education.

Objective 5

The relationship between the totalenrolment, government expenditure, the number of institutions and demographic dividend (working age population) has been analysed with the help of correlation and a regression model.

	Enrolment	*Expenditure (in crores)*
Enrolment	1	
Expenditure (in crores)	0.979390018	1

There is a high positive correlation between total enrolment and government expenditure.

	Enrolment	*No. of Institutions*
Enrolment	1	
No. of Institutions	0.982019691	1

There is a high positive correlation between total enrolment and no. of institutions.

	Enrolment	*Demographic dividend*
Enrolment	1	
Demographic dividend	0.929264351	1

There is a high positive correlation between total enrolment and demographic dividend.

Dependent variable: Total enrolment

Independent variables: Government expenditure, number of institutions, demographic dividend

To study the relation, the following regression model is framed:

Total enrolment = f(government expenditure, number of institutions, demographic dividend)

$E = \alpha + \beta_1 G + \beta_2 I + \beta_3 DD$

where, E = total enrolment

G = government expenditure

I = no. of institutions
DD = demographic dividend

The model bears the following result –

```
Call:
lm(formula = Enrolment ~ Expenditure + Demographic.dividend +
No. of Institutions, data = regdata)

Residuals:
    Min      1Q  Median      3Q     Max
-2698887 -273777  -51583  771673 1783682

Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)         1.190e+06  4.085e+07   0.029  0.97740
Expenditure         5.844e+02  1.633e+02   3.579  0.00594 **
Demographic.dividend 1.145e+01  1.984e+02   0.058  0.95523
No..of.Institutions  3.821e+02  2.248e+02   1.700  0.12342
```

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1305000 on 9 degrees of freedom
Multiple R-squared: 0.9812, Adjusted R-squared: 0.975

F-statistic: 156.8 on 3 and 9 DF, p-value: 4.374e-08

The model reveals that 97.5% (R^2) of variation in the dependent variable (total enrolment) is explained by the independent variables (government expenditure, thenumber of institutions, demographic dividend). Thus, there is a significant relationship between the studied variables. The remaining 2.5% is due to residual factors. These residual factors may be as follows –

- Income of the family is a major factor that defines a person's career. Higher education demands a high fee. Low income families may only be willing to send their children till schooling, or may not be even that.
- Attitude of the people is another contributor, where a person may not be willing to pursue higher education and would rather go for a job. Also, there are cases in India where parents are reluctant to send their girl child to pursue education.
- Locational status – urban areas have higher enrolment levels and better education institutes than in rural areas, which is another reason why developed regions may see higher levels of enrolment in higher education.

```
>vif(model1)
        Expenditure Demographic.dividend  No..of.Institutions
          10.53629            20.90505            35.23165
```

```
> model2<-lm(Enrolment~Expenditure+Demographic.dividend,data=regdata)
>summary(model2)

Call:
lm(formula = Enrolment ~ Expenditure + Demographic.dividend,
data = regdata)

Residuals:
    Min      1Q  Median      3Q     Max
-2336858 -617470  104776  530104 2777822

Coefficients:
                      Estimate Std. Error t value Pr(>|t|)
(Intercept)         -5.617e+07  2.510e+07  -2.238 0.049182 *
Expenditure          7.654e+02  1.350e+02   5.670 0.000207 ***
Demographic.dividend 2.956e+02  1.164e+02   2.539 0.029415 *
```

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1423000 on 10 degrees of freedom
Multiple R-squared: 0.9752, Adjusted R-squared: 0.9702
F-statistic: 196.6 on 2 and 10 DF, p-value: 9.391e-09

The above table suggests that all the independent variables have a VIF value greater than 10, indicating the problem of multicollinearity. Therefore, we eliminate the variable with the highest VIF value i.e. no. of institutions and perform the regression once again, this time only expenditure and demographic dividend being the independent variables.

The output now suggests that 97.02% (R^2) of variation in the dependent variable is explained by the independent variables. The remaining 2.98% is due to residual factors.

```
>vif(model2)
        Expenditure Demographic.dividend
          6.056782           6.056782
```

After eliminating 'no. of institutions' as an independent variable, the VIF values of expenditure and demographic dividend is reduced to less than 10. Thus, the model is now free from the problem of multicollinearity.

Model interpretation and conclusion

E = (-5.617e+07) + (7.654e+02) G + (2.956e+02) DD

- Government expenditure (here, G) and demographic dividend (DD) have a positive impact on total enrolment
- Expenditure has a greater impact than demographic dividend

Government expenditure and demographic dividend have a significant impact on total enrolment, as 97.02% of the variation in total enrolment is explained by G and DD. Thus, the model is fit.

RESULTS & DISCUSSION

The findings from the objectives are:

- The total expenditure on higher education by the Government of India has been on a steady rise in the study period. It has increased by nearly 5 times since 2002.
- The total enrolment has been consistently increasing over the years. It has increased by almost 4 times since 2000.
- Since 2000, the number of enrolled girls is witnessing an improvement. As of 2015, there are 15 states + UTs (out of the total 36) where the number of girls enrolled exceeds that of boys.
- The number of people in the age group of 15-24 years has increased by around 17% since 2000, which indicates that the youth population has been rising gradually. Total enrolment = f(government expenditure, number of institutions, demographic dividend)
- Public expenditure has the greatest impact on total enrolment.

Recent policies / schemes

Rashtriya Uchchatar Shiksha Abhiyan (RUSA) has aimed to achieve 25% national level GER which will include (a) upgradation of autonomous colleges with College with Potential for Excellence status and NAAC-A grade accredited colleges as university level institutions; (b) promoting evening universities/evening colleges; (c) introduction of undergraduate programmes in universities as integrated UG/PG programmes; (d) enhancing intake capacity of existing institutions of higher education; (e) developing the 'College Cluster Universities' regionally and by (f) establishing "Meta university complexes" in association with Public/Private sector undertakings as a part of their corporate-social responsibilities on an industry academia mode.

Setting up of 374 Degree Colleges in Educationally Backward Districts - The Ministry has decided to set up Model Degree Colleges in those educationally backward districts of the country, where the Gross Enrolment Ratio (GER) is less than the national average.

Setting up new and developing the existing Central Universities - The campuses to be upgraded during the Twelfth Plan include ISM Dhanbad to IIT-level, BESU Shibpur to an Indian Institute of Engineering, Science and Technology and NIFFT Ranchi as a premier institution for forging and foundry technology.

Expansion of Skill-based programmes - The Skill India campaign, launched on 15 July 2015,aims to train over 40 crore (400 million) people in India in different skills by 2022. It includes various initiatives of the government like "National Skill Development Mission", "National Policy for Skill Development and Entrepreneurship, 2015", "Pradhan MantriKaushalVikasYojana (PMKVY)" and the "Skill Loan scheme".

Way forward

The demand for higher education and the magnitude of planned reforms over the next ten years in India will provide the largest opportunity in the world for international higher education institutions and education businesses. As India currently has 26 million students enrolled in tertiary education, it would need another 800 universities and over 40,000 colleges in the next eight years. The state government is planning for strategies like digital learning technologies to encourage collaboration between industry and higher education. Massive Online Open Courses (MOOCs), on the whole, were regarded as potentially transformational for India. There is a sense of urgency in policy makers, institution leaders and faculty to expand the system at a fast pace to meet the surge in demand, while increasing quality and ensuring equitable access.

REFERENCES

Jahan, K. and Christy Selvarani, D. 2015 Higher Education in India: Issues and Challenges, International Conference on Humanities, Literature and Management. Pp. 1-6

Varghese, N.V. 2015 Challenges of Massification of Higher Education in India, Centre for Policy Research in Higher Education, Pp. 1-48

All India Survey on Higher Education (AISHE), Ministry of Human Resource Development, Government of India

http://www.universitas21.com/ranking/map

http://www.ibef.org/industry/education-sector-india.aspx

http://aishe.nic.in/aishe/viewDocument.action;jsessionid=252553987B2E6BA05495C7DED07CFA30?documentId=204

http://mhrd.gov.in/sites/upload_files/mhrd/files/statistics/AISHE_2014-15%28P%29.pdf

https://www.academia.edu/3510099/An_Analysis_of_Globalisation_and_Higher_Education_in_India

http://mhrd.gov.in/schemes

https://www.britishcouncil.org/sites/default/files/understanding_india_report.pdf

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MEDICAL TOURISM – AN UPCOMING INDUSTRY FOR THE ECONOMIC DEVELOPMENT OF INDIA

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Abstract : *Medical tourism is a new form of niche tourism increasingly becoming popular in the current world and India has emerged as a popular destination for providing global standards of health care at affordable costs. Generally, most procedures in Indian hospitals cost a quarter or less of what they would cost in developed countries. The medical tourism sector in India has attracted global attention, given its phenomenal growth in the past decade. India is second only to Thailand in the number of medical tourists that it attracts every year. According to ASSOCHAM (Associated Chambers of Commerce and Industry) India saw 8, 50,000 medical tourists and the number has risen to 3.2 million in 2016. It is also expected to double in size from USD 3 billion in 2015 to USD 8 billion by 2020. The FDI inflow in hospitals and diagnostic centers has been for 4.1 billion between April 2000 and September 2016, while medical and surgical appliances attracted FDI worth 1.4 billion. As of November 2016 medical tourism contributes less than 0.1 percent of the nation's GDP and with concerted efforts she can target a modest GDP share of 2 percent. Indian government is vigorously promoting medical tourism by providing tax concessions and by creating a conducive cum friendly environment enabling the same to thrive and forge ahead.The study is based on secondary data (from 2012 to 2016) and appropriate statistical tools have been used for analysis. The paper aims to highlight the status, potential and growth of medical tourism in India with respect to economic development and interpret the positive externalities associated with it.*

Keywords: Tourism, Medical, Health, Asia, India, Economic Development

INTRODUCTION

Medical tourism is becoming an increasingly popular option for patients looking to

access procedures (typically via out of pocket payment) that are seemingly unavailable to them in their home countries due to lack of affordability, lack of availability, and / or lengthy waiting list, among other reasons**.** The four main countries involved in medical tourism are India, Singapore, Thailand and Malaysia[1]**.** The number of medical tourists to Asian countries is increasing by about 20 percent to 30 percent each (Confederation of Indian Industries McKinsey 2002)**.**India is second only to Thailand in the number of medical tourists that it attracts every year.

The OECD differentiates between medical and health tourism. Medical tourism encompasses all those services that consumers use when travelling with the intention of getting some form of treatment. This treatment can contain a full or a partial scope of medical treatments. It is necessary to clearly define the boundary to what health includes, how it is medically treated and what kind of tourist services is included. Health tourism is a wider term. It includes organized travel outside of the place of residence for the purpose of improving or restoring an individual's health through various forms of medical services[2].

Growing at CAGR of 27 percent, the inflow of medical tourists is likely to cross 3.2 million in 2016 as India is emerging as preferred health care destination for patients across the globe. The medical value travel industry has emerged as one of the fastest growing segment of tourism industry despite the global economic downtown. According to FICCI- KPMG report, the global medical value travel industry was estimated at USD 10.5 billion in 2012. It is expected to grow at a CAGR of 17.9 percent from 2013-19 to reach USD 32.5 billion in 2019[3].

The Indian Medical Tourism has started a new category of visas for medical tourists called the 'M' or medical visas which implies deep commitment to facilitating trade in medical tourism. The fast growth of medical tourism has augmented to positive externalities in the course of generating direct or indirect employment to the residents. Direct employment includes jobs, such as taxi services, hotels, restaurants and sale of memento, on the other, indirect employment comprises the delivery of goods and different

other services required by the medical tourism industry. Simultaneously it provides a platform for development of an array of travel services, benchmarking India at a global level through products including adventure, wildlife, historical monuments, culture and heritage, nature and pilgrimage which are contributing to hospitality, airline and tourism industry. The other areas that are likely to witness growth due to medical tourism are marketing, linguistic services and back office operations in the hospitals.

Primary objective

The primary objective is to review the available data and infer the status, growth and potential of medical tourism with respect to economic development in India. The secondary objective is to analyze the impact of medical tourism with major focus on its positive externalities.

REVIEW OF LITERATURE

In Asia, three countries (India, Thailand and Singapore) are estimated to account for 90 percent of all medical tourism within the continent, much of it regional in origin India has been developing its medical tourism industry for over a decade, and is an established destination for patients from neighboring countries such as Sri Lanka, Bangladesh, Nepal, Bhutan and Pakistan. In the late 2000s, estimated 50,000 neighboring Bangladeshi annually crossed borders for care in India[4].

The prevalence of English in India's healthcare facilities also lends itself to aggressive marketing for foreign patients from English-speaking high-income countries (the UK, the USA, Canada, and Australia). Regional flows are more evident in South East Asia, where Malaysia, Thailand and Singapore all together attracted over 2 million medical tourists in 2006-2007, generating US$3billion in revenues[5].

The acceptance of new economic policy and within it, of the health sector reforms by 1992 legitimized cutbacks in public sector investments in health as well as the commoditization of health services has been articulated. Rise of medical tourism has

emphasized privatization of health care due to accelerated globalization of both health care and tourism[6].

The cutbacks in public sector has no doubt led to its shrinkage and the deterioration of public institutions and this has been used to rationalize the introduction of public private partnership and opening up the public sector for private investment[7].

Medical tourism was a product of this process. The government policy of merging medical expenditure and tourism was announced by finance minister Jashwant Singh in his 2003 annual budget speech when he called for "India becoming a global health destination". He glamorized the potential of high tech, complex technologies that offered relatively at cheaper rates and earned profits. Today, even government's teaching hospitals are being encouraged to promote medical tourism by strengthening their private facilities given the extremely low level of public investment[8].

The government is expected to play an important role in regulating the private sector. However, in India, state interventions have been minimal. There is no policy framework to have a common set of regulations for the private health care sector. The implementation and enforcement of existing regulations has been weak, and many of these regulations have not been updated and hence have lost their relevance. There are no institutional mechanisms within the government to address private sector issues. Moreover, there has been considerable resistance from various constituents of the private health care sector to accept in principle the applicability of certain regulations to their profession[9].

Medical tourism hospitals in LMICs have worked hard to shed the negative images and stereotypes associated with the 'Third World' that are often held by residents of the high income countries. This includes shifting the perception that goods and services produced in LMICs are of inferior quality. The rise of the internet has been integral in this shift, as it has allowed destination hospitals to distribute details about facilities, staff and services to a previously unimaginably wide audience, while maintaining tight control over the presentation of information. For example, websites prominently feature the

credentials of physicians, many of whom have trained in prestigious institutions in high income nations. Also featured are international safety accreditations that hospitals have secured to further build the confidence of prospective clients[10].

Indian hospitals numbering 27 are accredited by joint commission international which is the world central body for accreditations for hospitals headquartered in USA and its accreditation is considered a gold standard for health care. India has positioned itself as an inexpensive destination for medical treatment compared with the US and the Euro. Additionally, Indian private hospitals have a large pool of skilled doctors, nurses and supporting staff which would attract medical tourists. The costs of comparable treatment in India are on average one-eighth to one-fifth of those in the west.

A small but steadily increasing number of transgender are travelling to socially conservative India for sex change procedures which are cheaper. It cost about 6000 dollars which is 1/5th of the price in US and Euro. The cost of sex change surgery in India is relatively cheaper than in Thailand. Also Indian surgeons are developing their own techniques for transgender operations, including for female to male surgeries, which are complex and less widely available according to industry experts[11].

ART clinics based in India and other developing countries has emerged in part in response to these barriers. The niche marketing of fertility tourism to infertile couples from abroad gained traction particularly in India, which became the world's top destination for commercial surrogacy. Key reasons for India's dominance include its much lower costs, the large number of women willing to engage in surrogacy, top-notch private healthcare, English-speaking providers, a business climate that encourages the outsourcing of Indian labor, world-famous tourist destinations, and the total absence of government regulation. It is also one of just a handful of countries around the world in which commercial surrogacy is legal. One estimate calculates India's rapidly growing commercial surrogacy industry is worth U.S. $445 million per year. Infertility clinics, healthcare providers, medical tourism companies, the broader tourism industry, the Indian government, and the women who provide surrogacy services all profit from this industry[12].

Current Status, growth and potential of Medical Tourism in India

India faces competition from several countries, mainly within Asia but also globally as a destination for medical value travel. The main competing destination is Thailand, in terms of price and quality, owing to its image as a tourism destination and its efforts in accrediting hospitals. Other notable competitors include Singapore due to the latter's modern healthcare infrastructure, Malaysia for its price competitiveness and government efforts to attract foreign patients from the region, and the Philippines given recent government initiatives in that country to boost its medical tourism industry.

Quality care, relatively cheaper services compared to the west, package deals and cheap services provided along with tourism and hospitality sector. The options offered by holistic medicines are the biggest attraction in India. India is known as the cradle for test tube babies and is popular for surrogacy services[13].

Other than these, India offers high tech cardiac, pediatric, dental, cosmetic and orthopedic surgical services as well as traditional healing systems[14]. The most striking feature of India's healthcare sector is the dominance of the private healthcare segment, which accounted for around two-thirds of total expenditure and for around 80 percent of the 16,386 hospitals in the country in 2009**.** The Growth of Healthcare industry is explained below in Fig. 1. The public sector was the predominant service provider for the most of post-Independence era. Over the last two decades, the private sector in India has steadily grown and enhanced its quality of operations to emerge as the leading provider of the entire array of healthcare services.

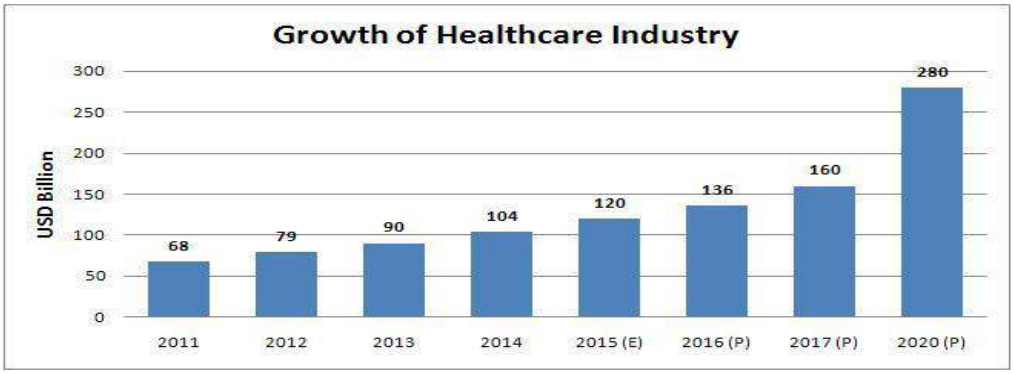

Figure 1: Growth of Healthcare Industry

Large investments by private sector players are likely to contribute significantly to the development of India's hospital industry and the sector is poised to grow to $120 billion by the year 2015 and further to $280 billion by 2020. Private sector's share in healthcare delivery is expected to increase to 81% by FY 2015. Private sector's share in hospitals and hospital beds is estimated at 74% and 40%, respectively.

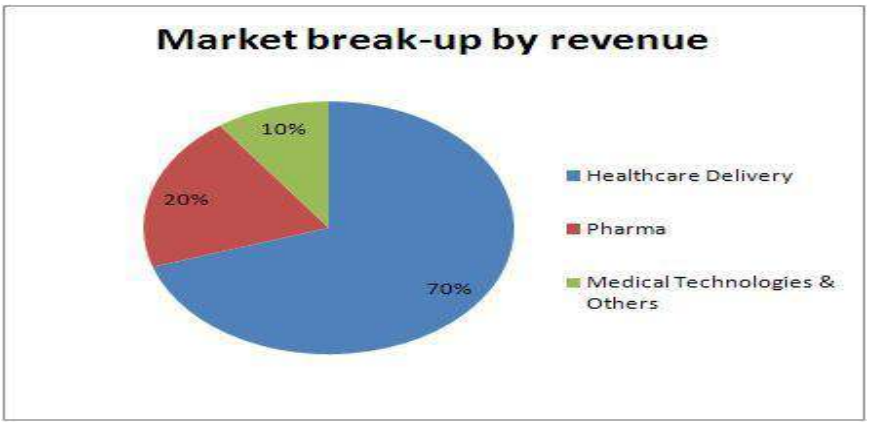

Figure 2: Market Break-Up by Revenue

The Indian healthcare sector consists of Healthcare delivery, Pharmaceuticals, Medical technologies and others. Within the industry, Healthcare delivery is the largest segment contributing 70% of the industry revenue followed by Pharmaceutical at 20% of

the total revenue and Medical technologies and others contributing to 10%. The Hospital segment is highly fragmented with 90% of the hospitals being established and operated by doctors & trusts and the balance are being managed by corporate hospital chains (Apollo Hospital, Fortis Healthcare, etc).

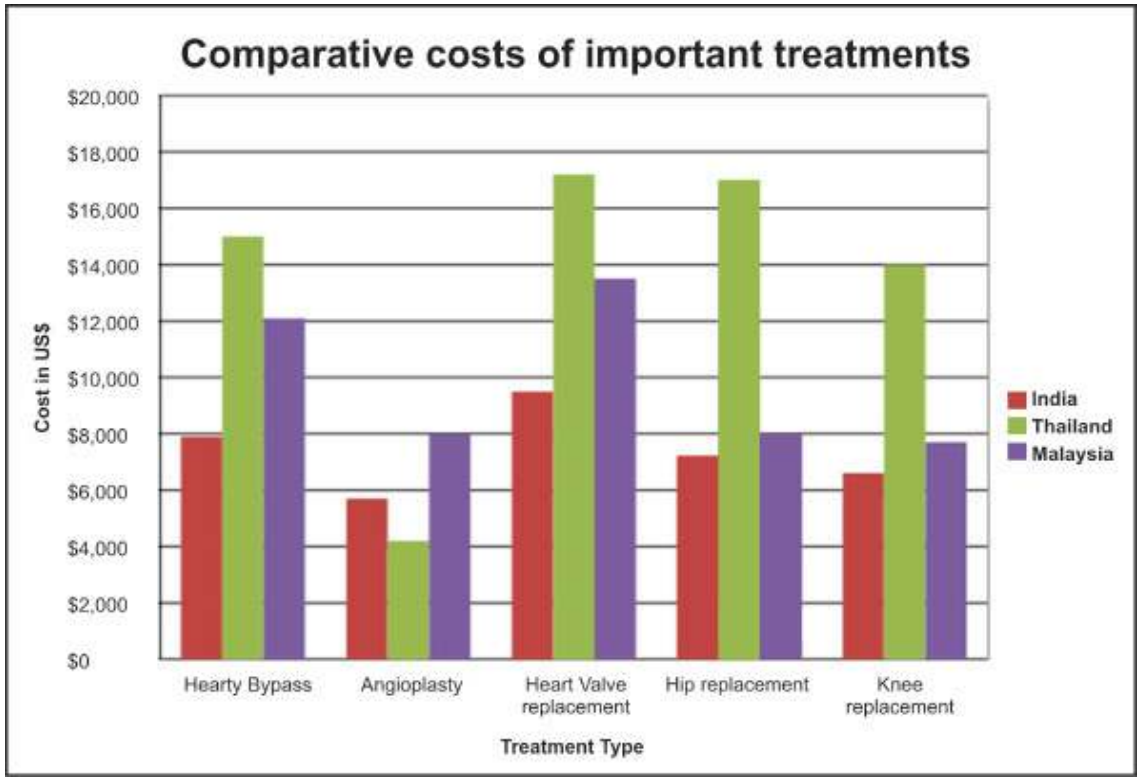

Figure 3: Comparative costs of important treatments

India is competitive in healthcare costs as compared to the developed countries and other nations in Asia. It offers the same standards and quality care at a substantially lower cost. India has the most number of US FDA approved drug manufacturing units and its healthcare system is based on western medicine (predominantly). One of the most important drivers has been India's cost advantage. Data on relative costs for different medical procedures shows India's cost competitiveness in a wide range of treatments, such as heart bypass, angioplasty, heart valve replacement, hip and knee replacement.

India compares favorably with developing country destinations and is one-fourth to as much as one-tenth cheaper than developed countries.

For instance, in India a heart valve replacement costs $9,500 which is relatively cheaper than the costs in Thailand and Malaysia which is $17,200 and $13,500 respectively. The same treatment costs $1,70,000 in the USA.

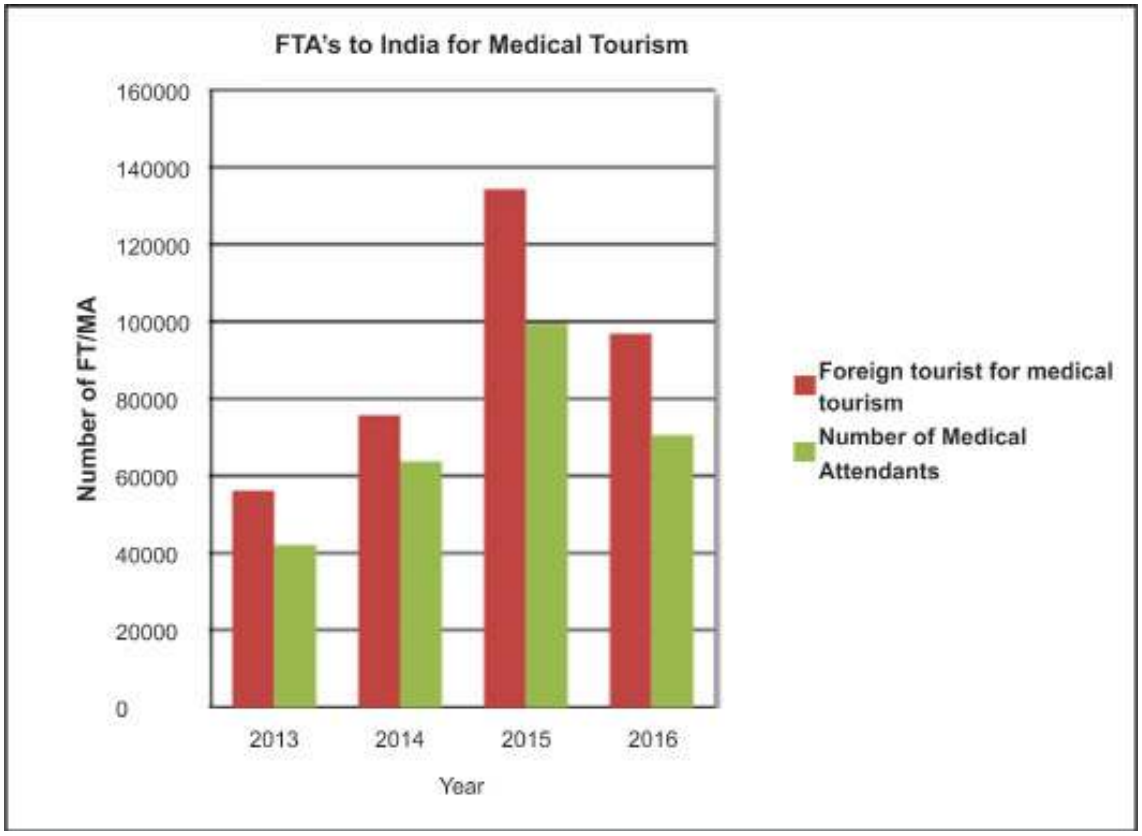

Figure 4: Foreign tourists for Medical tourism and Medical attendants

The foreign tourists for medical tourism have been increasing consistently. In 2013 the FTA was 56129 which increased to 75671 in 2014 and a whooping 134344 in 2015. In 2016 it has FTA of 96856 (Jan – June). The numbers of medical attendants in 2013, 2014, 2015, 2016 are 42017, 63776, 99574, 70537 (Jan – June) respectively.

Secondary objective

Positive externalities of medical Tourism

The state is proposing medical tourism in its own institutions. It invests directly in infrastructure and tourism to push its policy support to the corporate sector in earning foreign exchange by treating medical tourism as a trade, encouraging all the players directly or indirectly involved in medical tourism to invest and expand their business – corporate hospitals, the aviation industry, private tour services, travel operators, the hotels and hospitality industry.

The flow of medical tourists to India has benefited the hotel industry very much. Many hotels and resorts have tied up with leading hospitals for providing accommodation for post treatment and also provide rejuvenation therapies. Some rooms are reserved for particular hospitals who have tied up with them and they assure them confirmed rooms for their patients. Star hotels have reported increased booking from medical tourists, especially in the cities of New Delhi, Bangalore, Hyderabad and Chennai.

Travel industry is also much benefited by medical tourist inflow especially aviation industry like Spice Jet which is the only private Indian carrier with direct flights to war-torn Afghanistan, a route that is busy even after Taliban militants fired rockets at Kabul airport and the MH17 disaster in Ukraine underscored risks in conflict zones. It flies about 1000 Afghan medical tourists from Kabul to New Delhi, which may earn the company about 15.6 crores a year based on average ticket prices. Afghan patients are part of Indian medical tourism industry that will double in value to $6 billion by 2018 with 4 lakh arrivals is the estimate of the PHD chamber of commerce and industry estimates.

The cascading effect of tourism money being spent throughout the host economy begins at frontline tourist establishments, example hotels, restaurants, taxis. The effect of this spending permeates through the economy creating impacts at three different levels: direct, indirect and induced levels[15]. This is the multiplier effect that sets off positive externalities.

The areas that are likely to witness huge growth in the coming years include:

- Marketing – The leading hospitals offering medical tourism market services through the Internet, healthcare facilitators and sometimes, personal visits to patients abroad for which efficient marketing personnel are required.
- Linguistic services – For patients coming from the non-English speaking European, African and West Asian countries, translators are critical since the patient needs to understand the protocols around their medical treatment.
- Back office operations – The back office functions in medical tourism are as demanding on talent as they are in the other service industries with good communications and interpersonal skills being the baseline requirements[16].

CONCLUSION

India has a competitive advantage in the facet of medical tourism not only in terms of cost effectiveness but also in the increased success rate of Indian companies in getting Abbreviated New Drug Application (ANDA) approvals. Investing in medical industry is a way to increase GDP, generate foreign exchange and create a favorable balance of trade and boost tourism and generate employment.

The healthcare services industry will need to work towards addressing the key issues plaguing the sector. In addition to the shortage and the inequitable distribution of health infrastructure across the country, the sector will have to tackle the shortage of doctors as well as the growing burden of lifestyle diseases. This will require innovative solutions and high investment and government intervention.

India established itself as a prominent destination in the global medical industry. The critical dimension of this growing industry is the probable impact it has on the countries it serves. Asian medical tourism is seen differently by different stakeholders. The insurance companies and medical organizations see its outsourcing potential for lowering their own

costs and enhancing profits. The uninsured see it as an opportunity. The state sees it as mechanism for savings.

Medical tourism is a gamble for quick money while the markets last. The so called lower costs of these services are at the cost of lower level personnel while others make huge profits. Medical tourism has unstated implications of treating healthcare as a commodity to be traded and accepting a market based approach to healthcare provisioning while this approach has revenue generating potential for the host economy and cost saving potential for the foreign patients but this revenue generating potential comes with the caveat of cost escalation for domestic patients, substantial expenditure on technology imports and unequal distribution of income effect itself. Moreover, mere focus on income generation while ignoring other factors brings us to the debate of measurement of development based on income.

REFERENCES

1. Byron, N. Medical tourism, Optometry, 2006. *Journal of the American Optometric Association*, **77:**12.
2. Kumar, G. S. and Raj, R. K., 2015. Status, Growth and Impact of Medical Tourism in India.
3. Medical Value Travel in India, 2014. FICCI Heal Conference, KPMG
4. Naranong, A., Naranong, V. 2011. The effects of medical tourism: Thailand's experience, Bull World Health Organisation.
5. Pocock NS, Phua KH. 2011. Medical tourism and policy implications for health systems: a conceptual framework from a comparative study of Thailand,Singapore and Malaysia. Globalization Health.
6. Baru, R.V., Nundy, M. 2008.Blurring of Boundaries: Public Private Partnerships in Health Services in India, Economic & Political Weekly.

7. Kumar, G. S., Raj, R. K. 2015. Status, Growth and Impact of Medical Tourism in India.

8. Dogra, S. 2003. Can Delhi Be a Successful Model for Medical Tourism? Express Healthcare Management, September.

9. Bhat, R. 1994. Private Investment in Medical Technology: The Need for Policy in India, Policy Formulation Case Study; IIM, Ahmedabad.

10. Johnston, J.V.A.2010. What is know about the effects of medical tourism in destination and departure countries? A Scoping Review. *International Journal of Equity in Health*

11. Banerji, A. B. 2016. Sex-change Surgery: India's New line in budget medical tourism .

12. Points, K. 2010. Commercial surrogacy and fertility tourism in India. The Kenan Institute For Ethics

13. Qadeer, I. and John, M. 2009. The Business and Ethics of Surrogacy. Economic and Political Weekly, 44(2), 10-12. Retrieved from http://www.jstor.org/stable/40278374

14. Reddy, S, I. Q, 2010. Medical tourism in India: progress or predicament? Jstor.

15. Zaei, M. E., & Zaei, M. E, 2013. The Impact of Tourism Industry on Host Community. *European Journal of Tourism Hospitality and Research.*

16. Hariharan, D, 2016. Medical tourism. Exporting health care.

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A DECONSTRUCTION OF HISTORIOGRAPHY IN THE TWENTY FIRST-CENTURY PERSPECTIVE - A CRITICAL STUDY

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Abstract : *Though Historiography is relatively a new area of study, the application of the same is not new. It is in fact a pre-Christian terminology. It represents the sensibility of man in a holistic sense. Historiography fact has been undergoing ideological and conceptual transformation during contemporary times. As history grows more complex and comprehensive, it is quite natural that the ways of writing history too change in terms of ideological and conceptual framework. During recent times a few schools of historiography have come-up with novel and more scientific ways of construction of history. To have an unambiguous conceptual understanding of the evolution and growth of Historiography, this research paper makes a constructive effort to demarcate Historiography in its vivid sense. The paper widely covers the meaning, nature and scope, its evolutionary perspective and modern schools and post modernist historical theory, implications, critical assessment of Indian Nationalist Historiography.*

INTRODUCTION

History comprises a study of the Development of man's sense for the past. It guides scholars and professional historians to trace how history has been written all through centuries? Historiography is an integral part of History. It is a methodology or way of writing history. Generally, Historiography has been acclaimed as a full-fledged science of writing history. It is in fact history of the historical thought. The study of a chain of successive phases of Historiography reveals the ideas, techniques and variant ways of writing history. It also points-out the changing attitude towards the nature of history itself.

Meaning, Nature and Scope of Historiography in Different Cultural Belts

Historiography had its origin with relatively advanced people of ancient Greece and China. This is the prime reason why the Greek and the Chinese Civilizations are more sophisticated in literary and historical works like *Iliad* and *Tzu-chih t'ung-chien* respectively. According to Oxford English Dictionary, Historiography is a structural and epistemic representation of facts and events of a given period. Thus, history reconstructed is structured in an unambiguous ideological and methodological mould. Hence history of a specific region is presented in different perspectives of the historian's preferred historiography. Because history deals with evidence the material that the past leaves behind as records, has to be used with great care for the simple reason that they may not be wholly authentic or genuine. This very procedural technique evolved to arrive at truth of the past events being chiefly analytical is known as "Historical Method". It consists of external and internal criticism. External criticism or critical scholarship determines the authorship, place, and the time of a document. Internal or interpretative or higher criticism finds out whether the content of a document can be accepted as true or not. This refines the content from already afflicted distortions and moulds it, in adopted historiography of the Historian. In this sense, Historiography is a sterilized methodological science that distills and presents history. In this rapid era of change, the currently accepted definitions of reality, shifts like the seasons, under our feet. The demerits of a traditional historiography may not be visible to the present generation, but the same is not true with the succeeding generations. This is because it can only employ the current dominant trends in historiography. It looks-up myth as nature and spirit at their shaping work. The characteristic which marks history out from other disciplines is a specific concern with the element of change through time. The social scientist looks for the common factors, the regular patterns, discernible activities in society; the historian looks at the way societies differ from each other at every diverse points of time, how through time societies change and develop.

An Evolutionary Perspective of Historiography

All true history should take four characteristics. Firstly, History is a science with the collection of facts but with efforts to discover them, for example: origin of the caste system in India. Secondly history is that it is humanistic. Every science has an object. The object of science of history is to find-out actions of human beings done in the past. Thirdly just as science has an enquiry procedure history proceeds by the interpretation of evidences in the form of documents. Finally every human endeavor has a purpose behind it. The purpose of history is human self-knowledge. The value of history is that it teaches us what man has done and thus, what man is. History is humanity's knowledge. It happens to most resolute of men to find oneself at grips not only with unknown forces, but with a well-known force, the real might of which has not under stood. Balanced view of competing ideas and it leads the reader into a vast arena of the subject.

At the outset, the information historiography in course of time follows a certain trends different forms include:- (i) Greek Historiography (ii)Hellenistic Historiography (iii) Roman Historio graphy (iv) Ancient Chinese Historiography (v)Medieval Christian Historiography (vi) Historiography of West Asian Tradition (vii) Ancient Indian Historiography (viii) Medieval Indian Historiography (ix) British Imperialist or Colonial Historiography (x) Indian Nationalist Historiography (xi) Marxist Historiography (xii) Subaltern Historiography (xiii) Post-Modernist Structural Historiography.

Modern Schools of Historiography

In the Contemporary World, there are certain preferred schools of Historiography usually favoured by historians of the present era. They are:- (i) British Imperialist or Colonial Historiography (ii) Indian Nationalist Historiography (iii) Marxist Historiography (iv) Subaltern Historiography (v) Post-modernist Structural Historiography.

British Imperialist or Colonial Historiography is synonym to Eurocentric Historiography this was propounded by many historians like James Mill, Munroe and others. These historians represented the evangelical stance expressed by John Shore,

James Grant's observations on the state of society among the Asiatic subjects of Great Britain, the application of Christianity and Western Education to change what he rightly thought was the hideous state of Indian Society. The *raison d'etre* of the British rules in India which has provided the prime basis for British thought on the character of Indian which has Civilization and on the way to govern India. History of British India was written on the enlightenment utilitarian assumption that, human nature was the same everywhere, irrespective of climate and age, and that differences should be accounted for by the custom of the people. This historiography thought that the happiness of the governed might be ensured by strong executive government and the rule of law was more important than self government. The ultimate result of the new intellectual influences was in this way to emphasize than reduce the gap between India and Europe, and this historical view provided a rational and dispassionate justification for the continued maintenance of British rule. The colonial stinge is observable. "The *Early History of India"* of the condition of Northern India after Harsha's death which is an unconcealed justification of the continuation of British rule in India. A notion was that when the country was always has been when released from the control of a supreme authority, and what she would be again, if the hand of the benevolent despotism which now holds her in her iron grasp should be withdrawn. The Imperialist strain runs through the later work of Smith, *Oxford History of India*, too. Even now, in the twentieth century, she (India) would relapse quickly into political disruption an withdrawal of control exercised by the paramount power is Havell's criticism of Smith's approach to early India reveals certain facts. It was humiliating to Indians to be constantly reminded by Britishers that freedom has never spread her wings over their naïve land, and they were heirs to untold centuries of 'Oriental Despotism'. Whether it was intentional or not, no greater spiritual injury could be done to people than to teach them to despise the achievements of their forefathers and to overvalue them was hardly a mistake. Overall British ruling India point out that, a despot responsible to a free people twelve thousand miles away was better than a despot responsible to none but himself.

Post-Modernist Historical Theory and Its Implications

Heidge, reacting to the humanism of the Enlightenment in his *Being and Time* had shown the way to the postmodern critique of humanism. Philosophical humanism is supposed to be a detailed conception of 'Man' as a universal category. The postmodern critique of Enlightenment social thought posed a greater challenge to historical thought than the one voiced by more than three hundred years ago. In general, the post structuralists argue that there is no such thing as history. In this regard, one has to consider. According David Hoy, the progressive story of man told by speculative philosophers of history which is understood to be simply a faction now bankrupt, a dead metaphor from a defunct rhetoric. Philosophy conceived as the account of the nature of man is itself part of this fiction, and even its hero, since the freedom was equated with the progress of man's reason that was a part of this fiction. Gare explains that, the "post-modern condition is marked by a loss of faith in modernity, progress and enlightenment rationality; it signifies people's awareness that, it is just these conditions that are propelling humanity to self destruction; it is a special condition in which the whole of modern civilization is being forced to adopt a critical attitude towards itself. History as a department of knowledge had from time to time been compelled to tackle problems of its study, research and writing. There was grave crisis of existence during the wake of scientific revolution of the seventeenth century. It was "described that method" impugned the validity and usefulness of historical knowledge. Vico's *Scienza nouva* had met this challenge and established the subject firmly on philosophical, epistemological and critical basis. From the time of Niebuhr and Ranke, the position of history has been so well established that men began to talk boldly of the nature of the subject and concepts like historical truth and objectivity. This optimistic belief in the progress of the discipline has come to be rudely shaken, the appearance of post modernist theory, particularly in its linguistic garb, which as Lawrence stone has been aptly said, that thrown the historical profession in to a crisis of self-confidence about what it is doing and how it is doing it. By the end of twentieth century, the prospects of the historians were observed to be bleak 'observes Richard Ivans due to the power and influence of the post-modernist critique of history. A growing number of historians

themselves abandoned the search for truth, the belief in objectivity, and the quest for a scientific approach to the past. No wonder, so many historians are worried about the future of their discipline.

A Critical Assessment of Indian Nationalist Historiography

A task the first generation of modern Indian Historians had to perform was to defend their culture and civilization against the British imperialist attack. The Imperialist prejudice in Indian historiography had first expressed itself in a series of value judgments on Hindu nature and character. The most prominent vice of the Hindus is want of veracity, in which they out do most nations even of the East. The conservative historian Geoffery Elton declared that, "postmodernist ideas were a menace to historical study. The socialist-radical historian Richard Samuel said that the linguistic, deconstructive turn reaches people to look upon history not as a record of the past as an invention or fiction of historians themselves. The left liberal historian, Lawrence Stone has called upon historians to repel the new intellectual barbarians at the disciplinary gates. When we study history we are not studying the past, but what historians have constructed about the past.

Nationalist historians and Nationalist historiography are merely terms used in a keen analogical sense in contrast to the colonial or imperialist stance of foreign writers more particularly, British in the writing of Indian History. Majumdar restricts the very term Nationalist historians to those Indians who in reconstructing their country's history aimed at examining or reexamining some points of nationalist interest or importance, which have been misunderstood or misconceived or wrongly represented. Such object is not necessarily in conflict with a scientific and critical study. A nationalist historian is not, therefore, necessarily a propagandist or a charlatan. The nationalist historiography often consciously fanned hatred of the British Government and of individual English men. The calm and moderate tone of Dadabhai Naoroji and Dutt, in their criticism of British Government on economic grounds was not to be heard amongst the diatribes of historians like Basu. Basu's books are well documented and his charges supported as they are by facts and figures and are not that easy to disprove.

As the freedom movement progressed, Nationalist historiography attempted a delibe rate reinterpretation of Indian history in order to infuse enthusiasm in the fight for freedom. It was the patriot in Savarkar that renamed the Revolt of 1857 as the Indian War of Independence". Savarkar's book of that tide is a typical example of representation of history from an extremely Nationalist point of view. Choudhuri's Civil Rebellion in Indian Munity1857-59 asserted that the civil rebellions which accompanied the Mutiny gave it the character of a national war of independence.

Indian Nationalist Historiography, while anxiously exploring India's national identity amidst European charges embedded in colonial historiography of India, at times, betrayed a complete lack of historical propriety. Nationalist Historiography in India was at times at fault of methodological lapses of deviation from the ideal of objectivity which is the sub stance of all true history. Basham tells us of the manner in which Jayswal arrived at his conclusions in his famous Hindu Polity. In order to prove his thesis Jayswal not only employed a large range of sources but used them in the manner of a barrister trying to win a favorable judgment, emphasizing every passage which tended to support his case, and interpreted it in the most favorable light, while virtually ignoring the evidence which went against him. The Imperial historians were prone to see everything bad in the Indian past. Some of their nationalist counterparts betrayed a tendency to see everything good in it. The Human emotion and sentiment usurped the place of reason; detachment, balance, perspective, and objectivity all of which became a casualty. Romila Thaper called attention to such an instance from ancient Indian history. There was an unshamed glorification of the ancient Indian past. This was in part a reaction to the criticism of Mill and other writers and in part a necessary step in the building of national self-respect. The glorious past was also a compensation for the humiliating present. Nationalist historians could at times be seen asserting or justifying contradictory positions: "Military power and values of non-violence; democratic traditions and those of imperial glory the spiritual superiority of Hinduism and the worldliness of the ancient Indians and the high status of women in the Vedic period and position of inferiority on social, economic, religious and moral grounds. A by-product of Nationalist historiography which had dangerous

potentialities was communalism. Sensational accounts drawn-up by Hindu historians of the heroic struggles of the Rajputs the Marathas and the Sikhs against the Muslims were a challenge which Muslim historians could hardly afford to miss. It became such that the friend of a Hindu automatically became the enemy of a Muslim and vice versa.

However, Nationalist historiography stimulated historical studies and encouraged a class of historians to prosper with Nationalist School of Historiography. It also motivated professional historians to take interest in local and regional histories. It promoted out right critiques of imperialism in economic aspects: Dadabhai Naoroji's '*Poverty and UnBritish Rule in India*',Romesh Chandra Dutt's 'Economic History of India' , Ranade's 'Industrial Economy' are major works of Indian historians exposing the exodus of the drain of India's wealth to Britain. These critical works became the economic platform of the national movement. Those works exposed the annual economic drain in the context of the poverty of Indian people. In this context, historiography served the vital cause of the national movement rather than being a mere intellectual analysis of facts.

REFERENCES

Basham A.L. 1961. Modern Historians of Ancient India, Oxford University Press, p.283

Collinghood R.G, 1946. Idea of History, Oxford University Press, Oxford, pp.9-10

David Hoy.1962. Jacques Derrida in Skinner edited Return of Grand Theory in Human Science, Oxford University Press, Oxford, p.49

Fuber. 1916. The Theme of Imperialism in Modern Historical Writings on India, Oxford University Press, p.386

Gare Aran, E. 1997. Postmodernism and the Environment Crisis, Manchester , p.1-2

Ivans J. Richard, 1997. In Defence of History, Granta Books, London Ibid, p.7, p.97, p.274, p.433 , p 440

Joseph Conrad.1956. Chance, Mithuen and Company Ltd, Fakenham, p.358

Louis, C.S. 2011.The Allegory of Love, Oxford University Press,Brussels,p.11

Majumdar R.C.1967. Historiography in Modern India, Asia Publishing House, Bombay

Marwick, A.1972. What History Is and Why It Is Important, OUP, Buckinghamshire

Philips C.H. 1961. Historians of India, Pakistan and Ceylon, Oxford University Press

Fritz, R.S, 1972.Varieties of History, Vintage Books, NewYork, p.144

Sreedharan, E. 2012. A Textbook of Historiography, Orient Blackswan, Hyderabad

Stokes, E.T. 1961.The Administration of Historical Writings on India, Oxford University Press, 1961, p.393

Thaper.1984.Ancient Indian Social History-Some Interpretations, Orient Longman, New Delhi, p.12

Trends in Post-War Poetry: The American Review, Vol.XIV., No.1

Turner, V.M. 2012. The Liminal Movement, Oxford University Press, Brussels, p.14

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CHARACTERIZATION AND COMPARATIVE STUDIES ON THIN FILMS OF OXIDES PREPARED BY CHEMICAL METHODS

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Abstract : *SnO_2 films were prepared on glass substrates using microprocessor- controlled spray pyrolysis unit and spin coating unit. In spray pyrolysis, SnO_2 films were prepared on glass substrates using 0.1 M solution at substrate temperatures 350° C, 380° C and 410° C. In spin coating, SnO_2 films were prepared on glass substrates using 0.4 M and 0.5 M solution. In each case, five films were coated on separate glass substrates by increasing the number of layers of coat from 1 to 5. These films were characterized for their optical, electrical and structural properties and a comparative study on the properties of these films was carried out.*

Key words: Spray pyrolysis, Spin coating, Tin oxide thin films.

INTRODUCTION

Transparent conducting oxide (TCO) films such as tin oxide have been extensively used in recent years as they exhibit more stable mechanical and chemical properties compared to thin films of other oxides. It can be prepared by several methods from inexpensive material. The performance of tin oxide devices is strongly influenced by the film structure, its electrical and optical properties. As they exhibit very good transparency in the visible region, high reflectance in IR region and high conductivity, tin oxide based thin film devices are useful in many fields such as display devices, solar cells, gas sensors, anti reflecting coating and transparent heating element for aircrafts.

It is possible to prepare thin films with required properties and morphology for any specific application by proper selection of deposition process and optimizing the deposition parameters. Structural, optical and electrical properties of oxide films strongly depend on the quality of the film which in turn depends on the deposition techniques and conditions.

MATERIALS AND METHODS

Preparation of SnO_2 thin films by spray pyrolysis

Thin films of pure SnO_2 were deposited on glass substrates .The solution was prepared from Stannous chloride ($SnCl_2$. $2H_2O$) as a salt and methanol as a solvent. The substrate temperature was kept at 350º C with an accuracy of $\pm$ 5º C. The molarity of the starting solution was 0.1 M. Solution (0.1 M) was prepared by dissolving 2.2563 g of Stannous chloride ($SnCl_2$. $2H_2O$) in 100 ml of methanol. With 0.1 molar (0.1 M) solution, subsequently thin films of pure SnO_2 were deposited on glass substrates by setting the substrate temperature to 380º C and 410º C.

Table 1

Deposition conditions maintained for preparation of tin oxide films by spray pyrolysis

Parameter	**Set value**
Substrate temperature	350° C, 380° C and 410° C
Solution flow rate	20 rpm
Carrier gas pressure	2 kg/ cm^2
Number of intermittent sprays	45 to 50
Spraying time	10 seconds

Preparation of SnO_2 thin films by spin coating technique

Preparation of solution

Solution (0.4M) was prepared by dissolving 9.03g of Stannous chloride ($SnCl_2$. $2H_2O$) in 100 ml of methanol and 0.5 M solution was prepared by dissolving 5.64 g of Stannous chloride ($SnCl_2.2H_2O$) in 50 ml of methanol. Three drops of concentrated hydrochloric acid were added to get a transparent solution. Solution was stirred in the magnetic stirrer at room temperature for 45 minutes, filtered and used for spin coating. With the vacuum switch on, the deposition conditions shown in the following table 2 were maintained for preparation of tin oxide films by spin coating.

Table 2

Deposition conditions maintained for preparation of tin oxide films by spin coating

Parameter	**Set value**
Speed	2500 rpm
Acceleration time, deceleration time	200 ms
Frequency	17.5 Hz
Spinning time	30 seconds
Number of coats	1 to 5

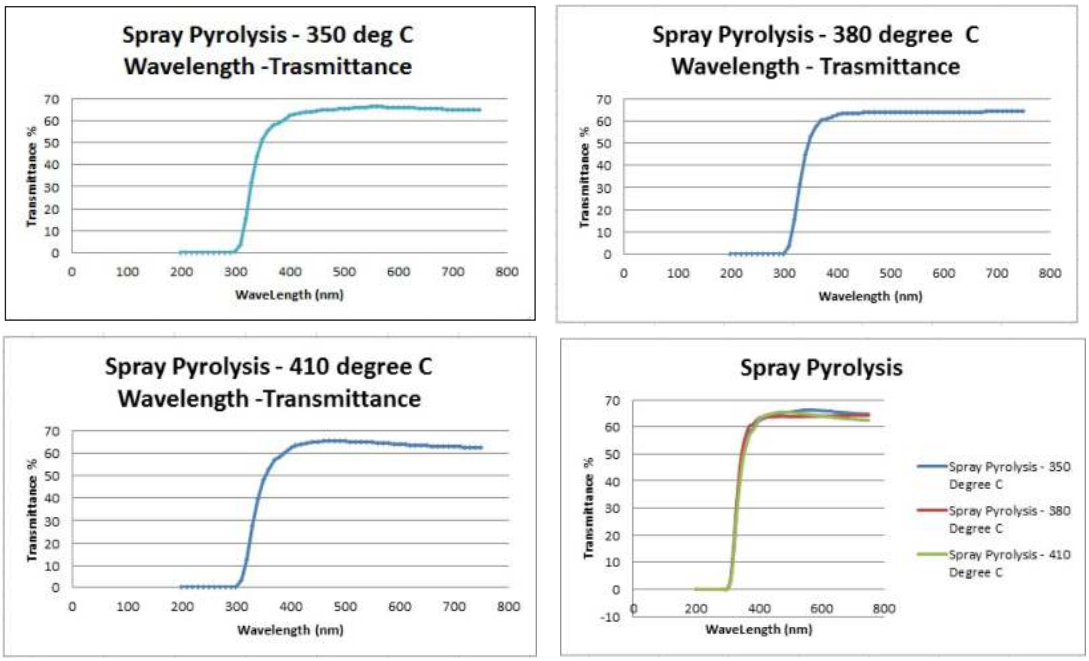
Films were coated on glass substrates of area 2.5 x 2.5 cm^2.This is approximately equal to the size of the film holder in the spectrophotometer used for optical studies and the size of the base plate, which holds the film in the four probes set up for resistance measurement.

Using 0.4 M and 0.5M solution, thin films of pure SnO_2 were deposited on 5 glass substrates by varying the number of layers of coating from 1 to 5. In between the coats, the film deposited on the glass substrate was dried up at 50º C.

Optical transmission studies

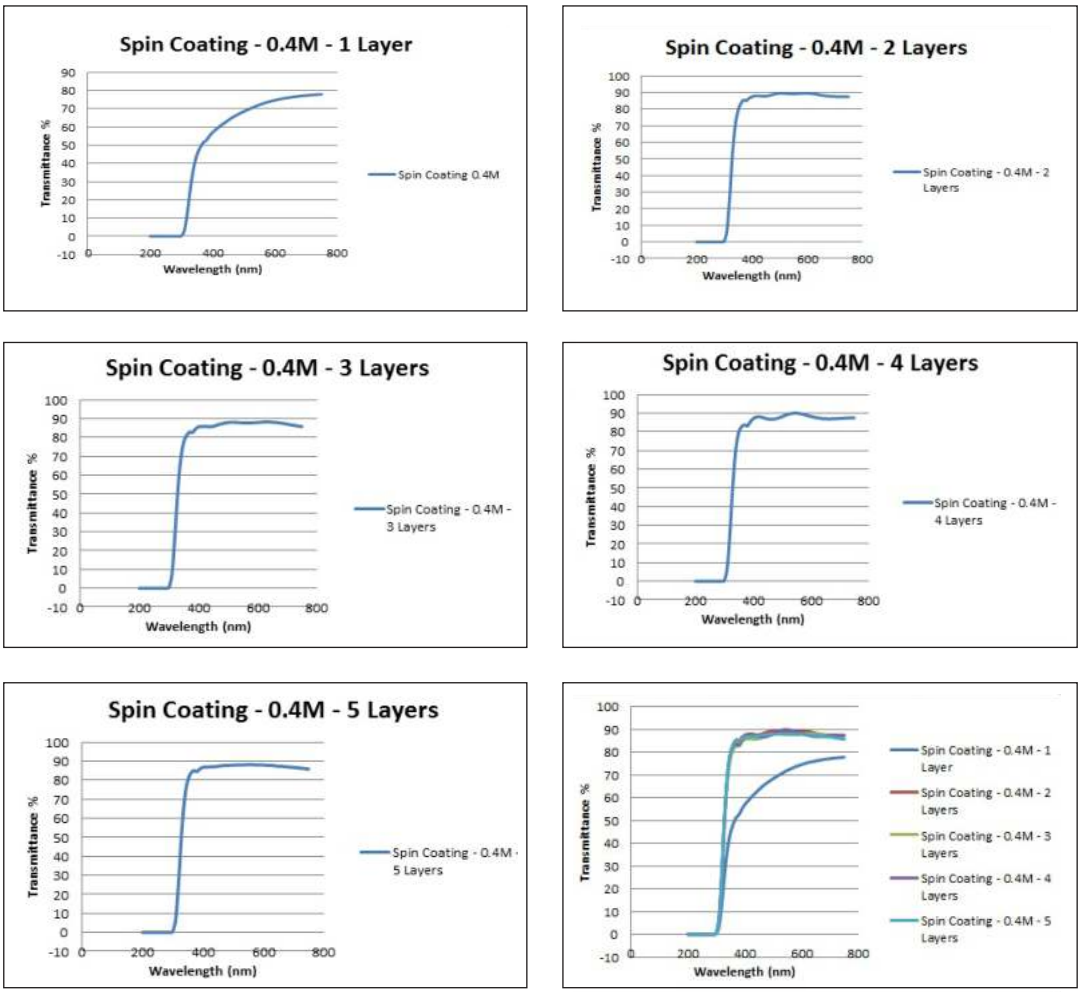
Optical transmission studies were carried out in the wavelength range 200 nm to 1100 nm by using UV-VIS-NIR Spectrophotometer (UV- SHIMADZU)

Spray pyrolysis



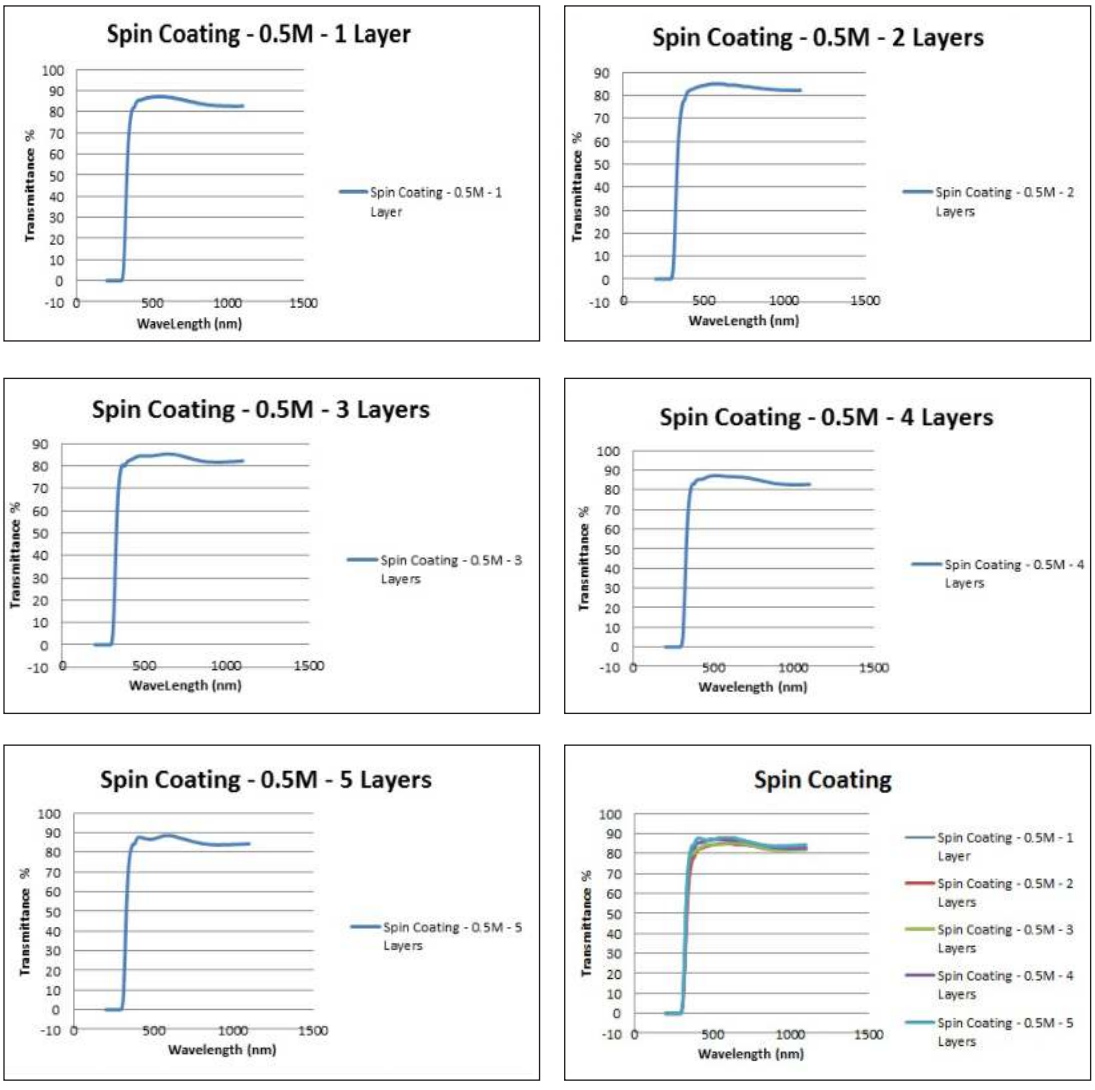
Spray pyrolysis - 350˚C, 380˚C, 410˚C
Wavelength - Transmittance

Spin coating-0.4 M



Spin coating-0.4 M- 1 to 5 layers

Spin coating-0.5 M



Spin coating-0.5 M- 1 to 5 layers

RESULTS & DISCUSSION

Table 3

Optical properties-Comparative study

Preparation method	Molarity (M) /deposition parameter	Wavelength range (nm)	Transmittance range (T%)	Wavelength for maximum transmittance (nm)	Maximum transmittance (T%)
Spray pyrolysis	0.1M/ substrate temperature 350°C	450 to 750	65 to 66	560	66.28
Spray pyrolysis	0.1M/ substrate temperature 380°C	400 to 750	63 to 64	710	64.33
Spray pyrolysis	0.1M/ substrate temperature 410°C	430 to 560	65 to 66	470	65.50
Spin coating	0.4 M/1 layer	670 to 750	77 to 78	750	77.88
Spin coating	0.4 M/2layers	410 to 640	88 to 89	590	89.49
Spin coating	0.4 M/3layers	470 to 680	87 to 88	630	88.39
Spin coating	0.4 M/4layers	510 to 750	89 to 90	550	90.01
Spin coating	0.4 M/5layers	400 to 710	87 to 88	550	88.17
Spin coating	0.5 M/1 layer	420 to 710	86 to 87	560	87.24
Spin coating	0.5 M/2layers	460 to 800	84 to 85	580	84.97
Spin coating	0.5 M/3layers	440 to 770	84 to 85	630	85.36
Spin coating	0.5 M/4layers	460 to 750	86 to 87	510	87.26
Spin coating	0.5 M/5 layers	530 to 650	88 to 89	590	88.51

DISCUSSION

Transmittance of SnO_2 films prepared by spray pyrolysis method is about 64 to 66 % in the visible region as shown in Table 3[1]. There is no appreciable change in the transmittance of SnO_2 films prepared by spray pyrolysis method with the change in the substrate temperature. Transmittance of SnO_2 films prepared by spin coating method is about 88 % in the visible region as shown in Table 3.

There is no appreciable change in the transmittance of SnO_2 films prepared by spin coating method either with the change in the molarity of the solution or with the increase in the number of coats[2]. SnO_2 films prepared by spin coating method have better transmittance than films prepared by spray pyrolysis method. This may be due to the following two reasons. In spray pyrolysis method the SnO_2 films were coated at substrate temperatures 350^oC and above whereas in spin coating method, SnO_2 films were coated at room temperature. The molarity of the solution in spray pyrolysis method was 0.1M, whereas in spin coating method, the molarity of the solution was higher, 0.4 M and 0.5 M. Films coated using 0.1M solution in spin coating method were not of good quality and hence 0.4 M and 0.5 M solutions had to be used.

Since there is more absorption in the UV region, SnO_2 films can be used as UV sensors[3]. Since all the films prepared by spin coating method show high transmittance in the visible region (78% to 90%), they can be used as anti reflecting coating materials[4].

Electrical studies using Four probe set up

Table 4 - Resistance- Comparative study

Preparation method	Molarity (M) /deposition parameter	Resistance (KΩ)
Spray pyrolysis	0.1M/ substrate temperature 350°C	2.45
Spray pyrolysis	0.1M/ substrate temperature 380°C	0.765
Spray pyrolysis	0.1M/ substrate temperature 410°C	0.265
Spin coating	0.4 M/1 layer	2850
Spin coating	0.4 M/2 layers	2500
Spin coating	0.4 M/3 layers	1800
Spin coating	0.4 M/4 layers	2140
Spin coating	0.4 M/5 layers	2000
Preparation method	**Molarity (M) /deposition parameter**	**Resistance (KΩ)**
Spin coating	0.5 M/1 layer	1900
Spin coating	0.5 M/2 layers	2000
Spin coating	0.5 M/3 layers	2500
Spin coating	0.5 M/4 layers	3000
Spin coating	0.5 M/5 layers	2900

Resistance of films coated by spray pyrolysis is of the order of ohm (2450 Ω, 765 Ω, 265Ω).

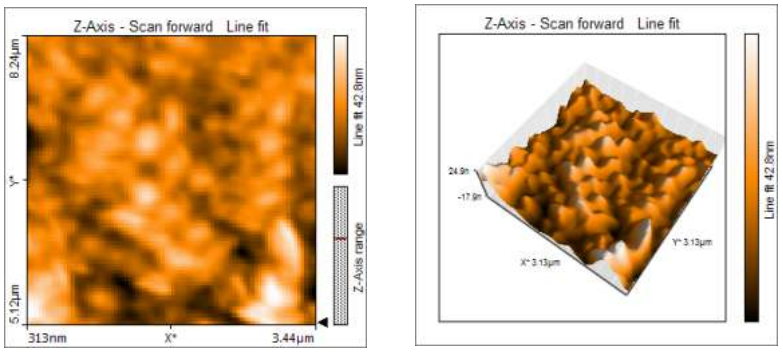
The resistance of these films decreases considerably with the increase in the substrate temperature[5].

Resistance of films coated by spin coating is of the order of Mega ohm.The resistance is much lower for films coated by spray pyrolysis, when compared to films coated by spin coating and it is least for higher substrate temperatures.

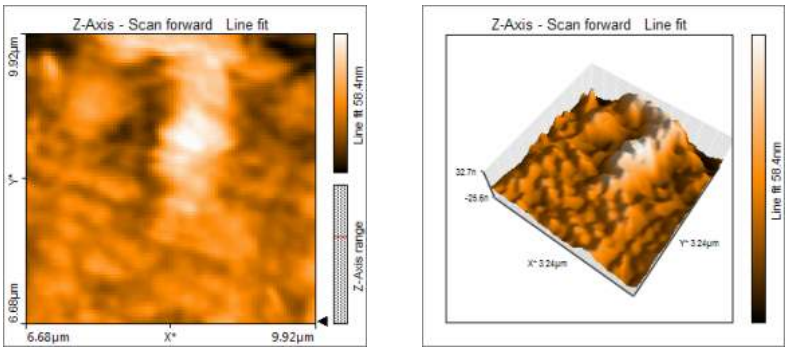
Hence thin films coated by spray pyrolysis at higher substrate temperatures (400° C to 450° C) are more suited for applications in electrical circuits.

Surface morphology studies using Atomic Force Microscope (AFM)

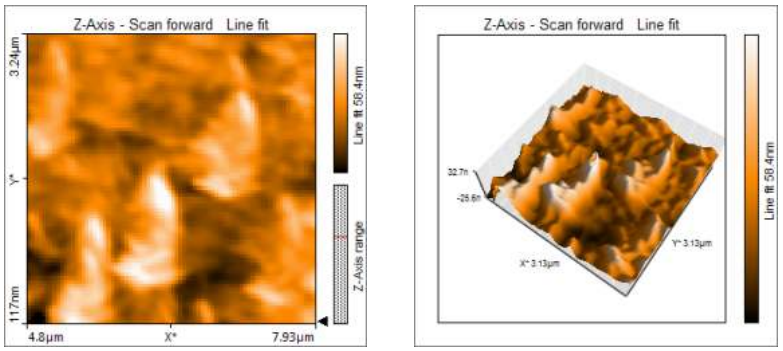
Spray pyrolysis-0.1 M- 350°C



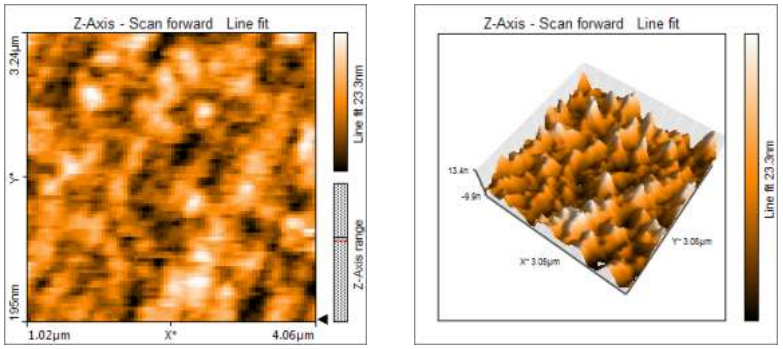
Spray pyrolysis-0.1 M- 380°C



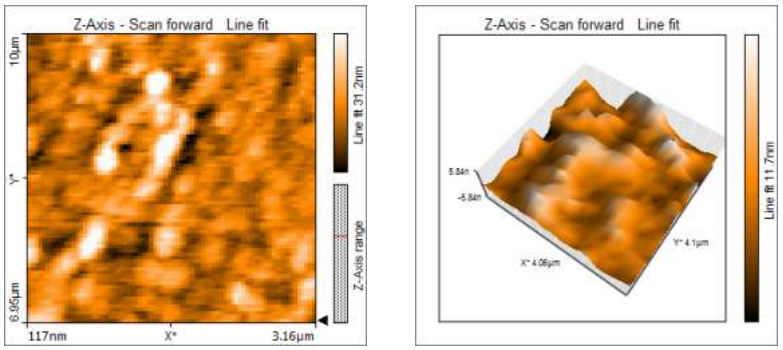
Spray pyrolysis-0.1 M- 410°C



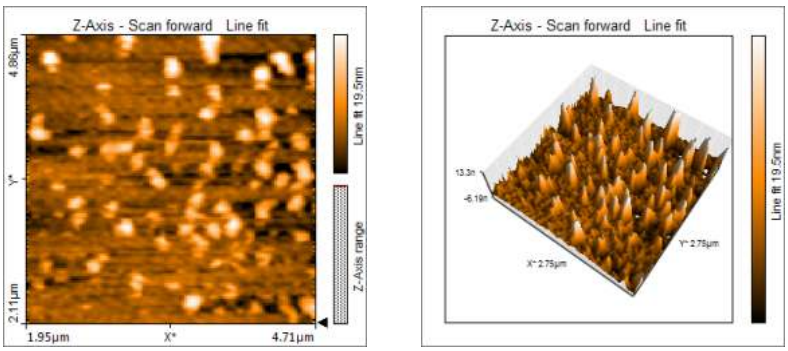
Spin coating-0.4 M-2 coats



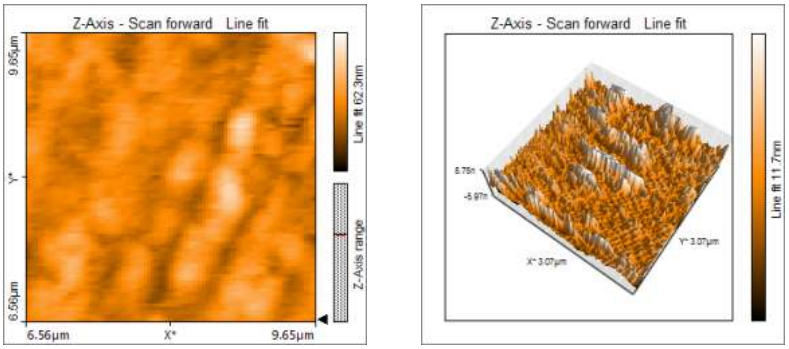
Spin coating-0.4 M-3 coats



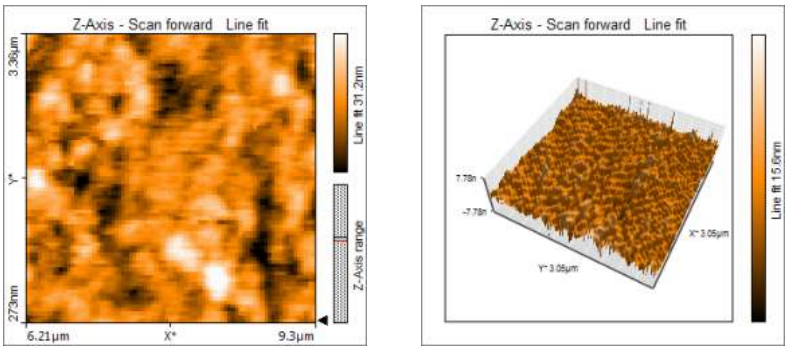
Spin coating-0.4 M-4 coats



Spin coating-0.5 M-3 coats



Spin coating-0.5 M-4 coats



Spin coating-0.5 M-5 coats

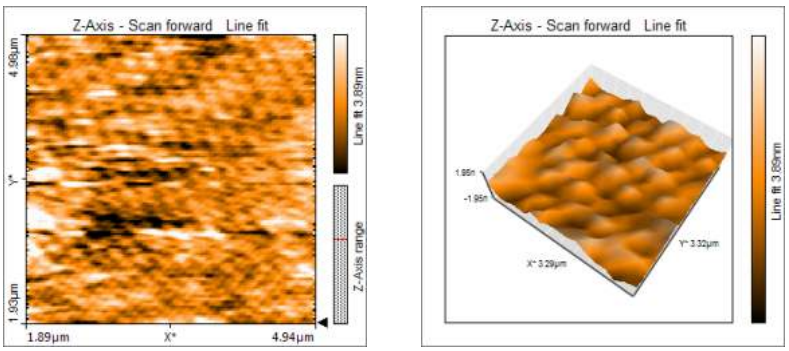


Table 5

AFM data for SnO_2 films

Sample	Area roughness S_a nm	Root mean square S_q nm	Peak value S_p nm	Valley depth S_v nm
Spray pyrolysis-0.1M-350°C	5.4985	7.0662	27.288	-18.69
Spray pyrolysis-0.1M-380°C	7.2115	9.7484	37.523	-25.395
Spray pyrolysis-0.1M-410°C	7.8944	10.232	39.453	-31.182
Spin coating-0.4M-2 coats	3.596	4.4971	17.416	-13.032
Spincoating-0.4M-3 coats	1038.7	1038.9	1101.3	986.15
Spin coating-0.4M-4 coats	0.22395	3.2613	16.288	-10.416
Spincoating-0.5M-3 coats	0.11879	1.766	16.743	-11.849
Spin coating-0.5M-4 coats	0.64065	0.91746	19.167	-12.538
Spin coating-0.5M-5 coats	0.43676	0.53577	0.15167	-0.16034

From the 2D and 3D Atomic force Microscope (AFM) images of SnO_2 films prepared by spray pyrolysis and spin coating methods, the following conclusions were drawn.

Film deposited at 410°C by spray pyrolysis was found to be more crystalline than the film prepared at 350°C[6]. This may be due to the complete oxidation of Tin to Tin oxide at higher substrate temperatures.

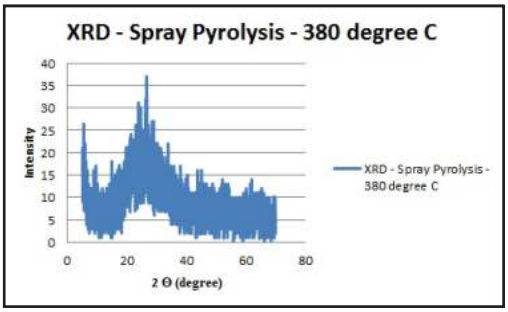
Films with more crystalline nature exhibit better electrical conductivity. This is seen in table 4 for the film deposited at 410°C by spray pyrolysis[7].

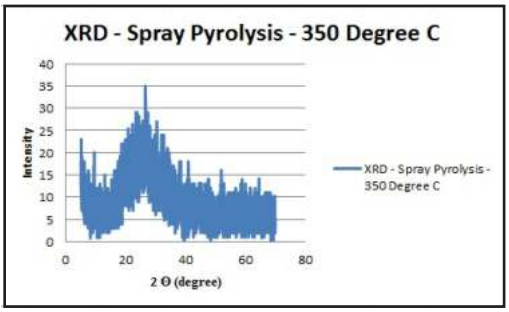
AFM images for spin coated films is fine and more uniform with well grown crystallites[8].

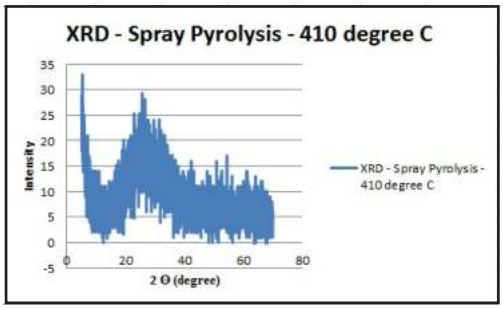
This may be the reason for high transmittance of films prepared by spin coating method.

Structural studies using X-ray diffraction data (XRD)

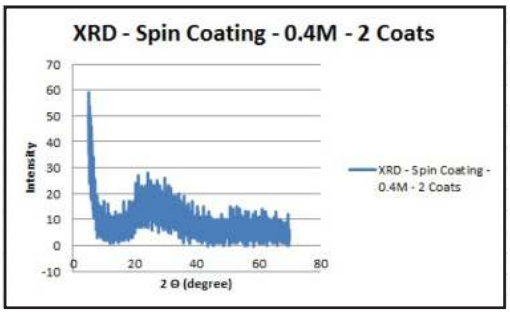
Spray pyrolysis

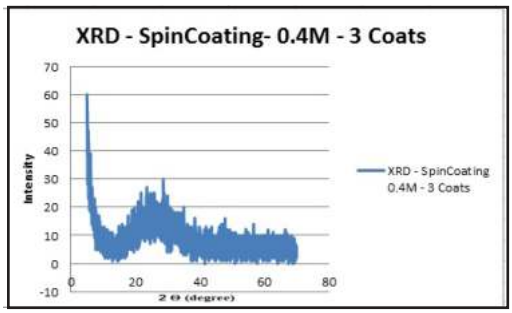


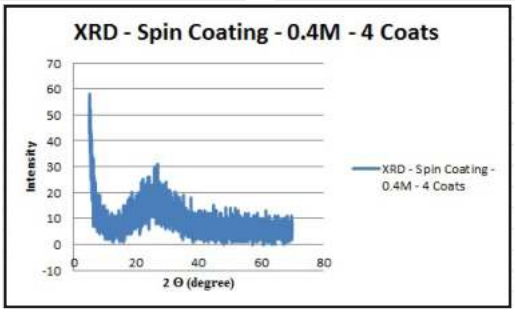




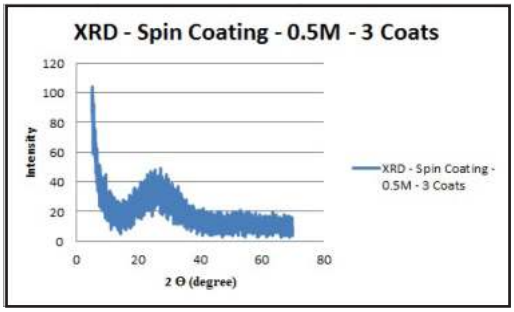
Spin coating-0.4 M

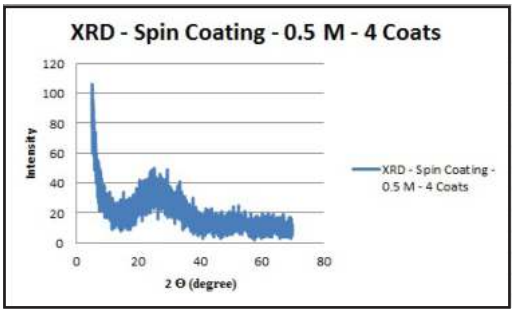






Spin coating-0.5 M





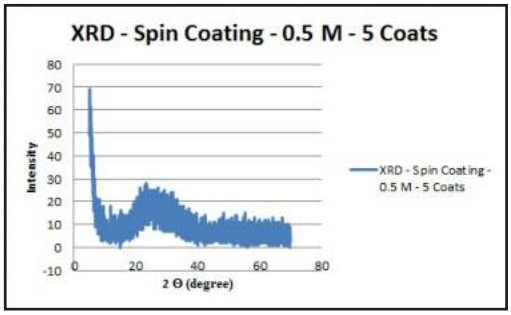


Table 6: Structural studies - Comparative study

Preparation method	Molarity (M) /deposition parameter	Maximum relative intensity	2θ (degree)
Spray pyrolysis	0.1M/ substrate temperature 350°C	35	26.53
Spray pyrolysis	0.1M/ substrate temperature 380°C	37	26.59
Spray pyrolysis	0.1M/ substrate temperature 410oC	33	5.29
Spin coating	0.4 M/2 layers	59	5.09
Spin coating	0.4 M/3 layers	60	5.01
Spin coating	0.4 M/4 layers	58	5.1
Spin coating	0.5 M/3 layers	104	5.13
Spin coating	0.5 M/4 layers	106	5.07
Spin coating	0.5 M/5 layers	69	5.07

X-ray diffraction data was recorded for '2θ' from 5.01° to 69.99° with an interval of 0.01° for the selected films prepared by spray pyrolysis and spin coating methods. From the XRD pattern of SnO_2 films prepared by the two methods, the following conclusions were drawn.

XRD pattern confirms the formation of SnO_2 films.

The thin films prepared by both spray pyrolysis and spin coating showed prominent peaks around 26.5° and 5° [9].

XRD intensities of films prepared by spin coating were much stronger than the films prepared by spray pyrolysis.

XRD intensities of films prepared by spin coating using 0.5 M solution were much stronger than the films prepared by spin coating using 0.4 M solution.

An enhancement in the XRD intensity of the spin coated samples compared to that of the spray coated samples and the increase in the XRD intensity of the spin coated samples using solution of higher molarity indicates the improved crystalline quality of the films coated.

For an amorphous or fine grained structure, we do not get any peaks while for a crystalline structure we get a sharp peak for (h k l) lattice plane that is oriented along.

For a polycrystalline film, we get number of peaks showing reflections from different lattice planes.

CONCLUSION

Since there is more absorption in the UV region for SnO_2 films prepared by both spray pyrolysis and spin coating methods, SnO_2 films can be used as UV sensors.

Since all the films prepared by spin coating method show high transmittance in the visible region (78% to 90%), they can find application as anti reflecting coating material.

The films coated by spray pyrolysis method showed good electrical characterization.

The resistance is much lower for films coated by spray pyrolysis, when compared to films coated by spin coating and it is least for higher substrate temperatures (265 Ω for 410° C)

Hence thin films coated by spray pyrolysis at higher substrate temperatures (400° C to 450° C) are more suited for applications in electrical circuits.

XRD pattern confirms the formation of SnO2 films. XRD intensities of films prepared by spin coating were much stronger than the films prepared by spray pyrolysis. XRD intensities of films prepared by spin coating using 0.5 M solution were much stronger than the films prepared by spin coating using 0.4 M solution.

REFERENCES

1. Chaitra, V., Shamala, K.S., Uma,V. 2011. Construction of versatile advanced microprocessor based controller for spray pyrolysis unit and study of characterization of nano crystalline Tin oxide thin films**,** *Recent research in science and technology*, **3**(10): 77 to 80.

2. Tripathy, S.K., Rajeswari, P.V, Bhabani Prasad Hota. 2012. Synthesis of Tin oxide thin film and effect of number of coating on transmittance and film thickness, *The African review of physics*, **7**: 265 to 268.

3. Shahane, G.S. 2015. Synthesis and characterization of nano crystalline Tin oxide thin films, *International Science Journal*, **2**(1): 19 to 22.

4. Diana, K; Nomita Devi, H, Nandakumar Sarma. 2010. On the optical properties of SnO_2 thin films prepared by sol-gel method,*Indian Journal of Physics*, **84**(6): 687-691**.**

5. Daoli Zhang, Liang Tao, Zhibing Deng, Jianbing Zhang, Liangyan Chen. 2006. Microstructure and Electrical properties of undoped and Antimony doped Tin oxide thin films deposited by Sol-gel process. Materials Chemistry and Physics, 100 : 275 to 280.

6. Chaitra V, Shamala K.S , Uma. V 2010**.** Characterization of Sb doped and undoped SnO_2 films prepared by microprocessor controlled spray pyrolysis unit. Proceedings of the International conference on Nanoscience and Nanotechnology (ICONN 2010): 163-164.

7. Rozatis, S.M and Shadman, E. 2010. Study on surface morphology of nanoscale structure of pure and zinc-doped tin oxide uniform thin films. Surface and Interface Analysis, **42**(6): 1160–1162.

8. Mohamed Shaban, G. F., Attia, Mohamed, A., Basyooni, Hany Hamdy. 2015. Morphological and structural properties of spin coated Tin Oxide thin films. *International Journal of Engineering and Advanced Research Technology* (IJEART), **1**(3): 11 to 13.

9. Zhao Jie, Huo Li-Hua, Gao Shan, Zhao Hui, Zhao Jing-Gui. 2006**.** Alcohols and acetone sensing properties of SnO_2 thin films deposited by dip coating, Sensors and Actuators, B 115: 460 to 464.

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Abstracts of Research Projects of Post Graduate Students

Department of Biotechnology
M. Sc Biotechnology
Project Guide: Preetha Nair

COMPARATIVE *IN VITRO* ANALYSIS OF THE FUNCTIONAL RESPONSE OF VERTEBRATES AND INVERTEBRATES IMMUNITY AND METABOLISM

Nivetha Mala M and Sanchayita Ghosh

Abstract: *Comparison of invertebrate systems to vertebrate systems offers an insight to the evolutionary directions that occurred. This study was an attempt to unravel the extent of similarity/variation in the functional behavior of invertebrate and vertebrate cells in response to stress. The study concentrates on immune and metabolic aspects of both the systems. In this study to compare the immune response; earthworm Coelomocytes and mammalian T-cells were selected as experimental systems. Earthworm Coelomocytes were isolated from species Eudrilus eugeniae. Similarly, T-cells were also isolated from blood. Antibiotic stress (Penicillin) was used to assess the immune response. Cell viability was checked and* LD_{50} *was found to be 50ppm. Rest of the assays were conducted at 50ppm of penicillin for both types of cells compared with control. The assays performed are fast green staining, hemolytic activity, lysozyme activity, phagocytic activity, free radical assay using NBT, intracellular calcium level, intracellular* Mg^{2+} *level for both the cultures. The results exhibited more similarity compared to marginal variations which has to be investigated further in detail. Another study was conducted with earthworm Chlorogogen cells and Mammalian liver cells to study their functional and metabolic variation as well as similarity. Chlorogogen cells were isolated from earthworm species Eudrilus eugeniae. Liver cells were isolated from bovine liver obtained from slaughter house. Antibiotic stress was induced by using Penicillin.* LD_{50} *was found to be 50ppm. Various functional aspects like free radical generation (NBT), catalase, Glucose-6-phosphatase, amylase and LDH were assayed. Tests showed significant similarity between the two systems. Due to functional similarity between vertebrate and invertebrate system, invertebrates like earthworm or other annelids could be used for preclinical studies than sacrificing animals in the course of drug development.*

Abstracts of Research Projects of Post Graduate Students

Department of Biotechnology
M. Sc Biotechnology
Project Guide: Telphy Kuriakose

INFLUENCE OF Bt AND NON Bt COTTON RHIZOSPHERE SOIL ON THE ENVIRONMENT

Khazi Misbah and Poonam Sharma.V.

Abstract: *Comparative analysis between soil rhizosphere and non-rhizosphere of Bt and Non Bt Cotton plants were done to get a complete understanding of Bt plants impact on the soil health during their growth period. The Bt Cotton plants that carry a gene from bacteria Bacillus thuringiensis (Bt) that allows the plants to produce Cry protein which is toxic to bollworms, that distinguishes Non Bt and Bt plants. The three varieties of cotton seeds were sown in soil and cocopeat alone and the plantlets were obtained after 7-8 days of germination. The germination frequency was observed in plantlets. Soil parameters like pH, conductivity and organic matter by enzyme assays were also conducted. It was found that pH of the soil was found to be same while conductivity showed 1% variation. The organic matter requirement was found to be 10% more in Non Bt Cotton variety, enzyme assays to characterize the organic matter were found to be similar. The rhizosphere soil sample was collected using the plant uproot method and the diversity of microflora especially bacteria was assessed using the standard serial dilution technique. Normal microflora was observed in both the types of plants. The rhizosphere soil was also assessed for its effect on biofauna using earthworm cells invitro and earthworms invivo as bioindicator. Invitro exposure resulted in morphological changes under higher concentrations of rhizosphere soil extract but invivo studies with earthworm had not exhibited any significant effect. This shows that the normal rhizosphere soil environment is more or less preserved in Bt cotton cultivated conditions.*

Abstracts of Research Projects of Post Graduate Students

Department of Botany
M.Sc Plant Science and Herbal Wealth
Project Guide: Roshni Rao

QUALITY ASSESSMENT OF LIPIDS IN HYDROPONICALLY GROWN MEDICINAL PLANTS

Serly Pavithra, Alisha Rubia and Harini R

Abstract*: Soil less culture has gained immense importance of late for enhancing the quality and also the yield of crop plants. The present study was conducted to check the effect of hydroponics on the medicinal plants and also the quality of the oils produced in plants grown hydroponically, using the hydroponic kit. The test was conducted on three medicinal oil yielding plants, Brassica campestris, Ocimum sanctum and Centella asiatica. Total lipid content estimated gave better results from hydroponically grown plantlets than soil grown plantlets in all the three plants studied. Hence hydroponics can be employed to grow these plants for the enhancement of total lipids.Plants when treated with different concentrations of NaCl, showed an increase in the lipid content and similarly addition of a nitrogen source (Urea) increased the lipid content of the plants studied.The chlorophyll is an important pigment responsible for photosynthesis. It can be used as an index to diagnose the nutrient status of the plant. Generally, when plants are subjected to stress produce more chlorophyll pigment and since hydroponics has a controlled medium, the chlorophyll content in hydroponic plants was less, probably due to this reason.The lower the value of free fatty acids, the better is the quality of the oils. The saponification value of the soil sample was less compared to the hydroponics sample. This reveals that the mean molecular weight of the oil sample is less. The lower ranged oils are of better quality hence it can be used as edible oil, topically and other industrial purposes. The iodine value obtained for hydroponic sample was lesser than the soil sample. Lower the iodine value lesser is the risk of rancidity, more the stability of oil and hence the oil can be consumed orally or applied topically and can be used for various other industrial purposes. High Saponification values and low Iodine values in these plants indicate a good quality of oil in the hydroponically grown plants. The TLC studies confirmed that the lipid quality and quantity was better in plants grown hydroponically. From our study we can conclude that medicinal plants can be grown hydroponically for obtaining better quality of lipids.*

Abstracts of Research Projects of Post Graduate Students

Department of Botany
M.Sc Plant Science and Herbal Wealth
Project Guide: Shalini B.U

EVALUATION OF OILS AND MEDICINAL PLANTS FOR THEIR ANTI-ACNE POTENTIAL AND ANTI-OXIDANT ACTIVITY AGAINST *Propionibacterium acnes*

Sushmitha, R., Harshita, R. and Jyoti Thakuri Malla

Abstract*: Acne is a skin disease which causes painful social and psychological effects on sufferers. The primary factors involved in the formation of acne lesions are increased sebum production, sloughing of keratinocytes, bacterial growth and inflammation. Propionibacterium acnes (P. acnes), an anaerobic pathogen, plays an important role in the pathogenesis of acne. It is implicated in the development of inflammatory acne by its capability to activate complements and by its ability to metabolize sebaceous triglycerides into fatty acids, which chemotactically attract neutrophils. The excessive use of antibiotics for long periods has lead to increased resistance in acne causing bacteria i.e. P. acne. Allopathic medicines are associated with side effects such as contact allergy, local irritation, scaling, photosensitivity, itching and redness and skin peeling. To overcome the problem of antibiotic resistance, essentials oils and medicinal plant extracts have been extensively studied as an alternative. Herbs are safe, efficacious and multifunctional. The ingredients in topical acne treatments, particularly herbs and naturally derived compounds have received considerable interest as they have fewer adverse effects than synthetic agents.Oils and medicinal plants were investigated for their anti-acne potential against Propionibacterium acnes by well diffusion method using different solvent system. Lemongrass oil showed the maximum zone of inhibition and least antibacterial activity was exhibited by Calamus oil. Among the myrtaceae plants studied, the methanolic extracts of Pimenta dioica berries showed highest while Syzigium jambos bark showed least zone of inhibition in all the extracts. Zanthoxylum armatum showed maximum zone of inhibition in acetone extract, Houtuyynia cordata in aqueous extract, Cananga odorata in ethanolic extract and Acrorus calamus in the methanolic extract among medicinal plants investigated. The free radical scavenging activity was estimated by 1,1-Diphenyl-2-picryl-hydraxyl (DPPH) assay. There was a good correlation between the oils and medicinal plants*

showing antioxidant activity and anti-acne activity. Those showing high antioxidant property showed highest inhibitory zone against P. acnes.From the study it can be concluded that oils and medicinal plants which exhibited highest inhibitory effect against Propionibacterium acnes can be incorporated into the cosmetic formulation and can be used to treat acne.

Abstracts of Research Projects of Post Graduate Students

Department of Biochemistry
M.Sc Biochemistry
Project Guide: Kavitha G. Singh

In vitro and *ex vivo* studies on the antioxidant, antiinflammatory and antiarthritic properties of *Camellia sinensis, Hibiscus rosa sinensis, Matricaria chamomilla, Rosa sp., Zingiber officinale* tea extracts

Sarala Sonia and Nandini Konsoor

Abstract*: The adverse effects of oxidative stress have been discussed widely in the present day. It is the main cause of protein denaturation, cardiovascular diseases and ageing. Thus, the daily requirement of anti-oxidants has to be fulfilled through dietary sources. Inflammation is yet again another form of stress on the body. It is the major cause of multiple chronic disorders. This research was based on the anti-oxidant, anti-inflammatory and anti-arthritic properties of tea extracts of Camellia sinensis, Hibiscus rosa sinensis, Rosa, Zingiber officinale and Matricaria chamomilla. Ex-vivo studies for evaluating antioxidant property of samples using liver tissue by LPO assaywas performed. In addition, tests such as Inhibition of protein denaturation and RBC membrane stabilization were performed to determine anti-inflammatory effect of the sample. Collagen denaturation assay using chicken collagen to check antiarthritic properties of samples were performed. All the tests showed positive results with the samples, which implied that the samples were potent in their anti-oxidant, antiinflammatory and anti-arthritic activities. Thus, the use of natural sources to prevent disorders has become a more feasible option as there are no adverse effects. Although, there is further scope for research in this area and contribute to the ethnopharmacological field of medicine.*

Abstracts of Research Projects of Post Graduate Students

Department of Biochemistry
M.Sc Biochemistry
Project Guide: Shlini P.

ISOLATION AND PURIFICATION OF HYALURONIC ACID LIKE COMPONENTS FROM *Ipomoea batatas (SWEET POTATO)*

Sana, Fathima Mahmood and Shambhavi Ullavi

Abstract*: Hyaluronic acid an acidic mucopolysaccharide has been advanced as a "wellspring of youth." In the present investigation, Ipomoea batatas (sweet potato) was chosen for extraction of this mucopolysaccharide for the study. The samples were extracted with methanol and chloroform. Goat brain and visceral fluid as standard was chosen for the study. Estimation was carried out to check the presence of total carbohydrates, proteins and reducing sugars. Qualitative and quantitative studies were carried out which indicated the presence of hyaluronic acid like components in sweet potato and brain. Further ion exchange chromatography was carried out using DEAE-Sepharose. The elution obtained from ion exchange showed a peak at 230nm which indicates the presence of hyaluronic acid like components. The peak eluents were further purified by gel permeation chromatography using Sephadex G-100. The result confirmed the presence of hyaluronic acid like components. The results of the present work suggested that hyaluronic acid like components could be present in plant tissue apart from animal tissue.*

Abstracts of Research Projects of Post Graduate Students

Department of Commerce and Management
M.Sc. Commerce and Management
Project Guide: Raghavendra K. S

STUDY ON THE STRATEGIES FOR WOMEN EMPOWERMENT AND GENDER EQUALITY IN WORKPLACE

Nischitha H R

Abstract: *The gender equality is considered as a critical element in achieving social and institutional change that leads to sustainable development with equality and growth. Inequalities between men and women manifest themselves in all areas of development. Globalization has provided Opportunities for a more diverse workforce and recognition of diversity as an essential, integral part of empowerment. This report discusses on how empowerment and gender equality can be used from a strategic perspective to hire, promote, and retain women in the workforce and in doing so, contributes to education institutional success. The objective of this study is to know the competitive need for women in workplace, empowerment and gender equality strategy in workplace. The primary and secondary data are collected for the study. Samples of 50 respondents are collected from two educational institutions in Bangalore. The collected data were consolidated and analyzed by using statistical techniques. The interpretation of the study is done by using graphical methods of columnar bar charts and line charts in order to compute the responses of the respondents in the questionnaire. Result shows that More than 90% of the women employees are very happy with work environment in their respective institutions in regards to their safety at workplace; there is growth opportunity in career development, compensation, rewards and recognition.*

Abstracts of Research Projects of Post Graduate Students

Department of Commerce and Management
M. Sc Commerce and Management
Project Guide: Raghavendra K. S

FINANCIAL DERIVATIVES AND ITS GROWTH RATE IN INDIA: AN EMPIRICAL STUDY OF BSE AND NSE

Sandhya Dominic and Nischitha H R

Abstract*: Risk is a characteristic feature of most of the commodity and capital markets. Variations in the price of agriculture and non-agricultural commodities are induced. The last two decades have witnessed many-fold increase in the volume of international trade and business due to the wave of globalization and liberalization sweeping across the world. This has led to rapid and unpredictable variations in financial assets prices, interest rates and exchange rates and subsequently, to exposing the corporate world to an unwieldy financial risk. In the present highly uncertain business scenario, the importance of risk management is much greater than ever before. India's experience with the equity derivatives market has been extremely positive over the years. The study has been an attempt to understand and analyze the structure and size of financial derivative market over the last ten years in NSE and BSE.*

Abstracts of Research Projects of Post Graduate Students

Department of Economics
M.A. Economics
Project Guide: Yogeshwari .S

A STUDY ON THE CONSUMPTION PATTERN OF FROZEN FOOD IN BENGALURU CITY

Rameshwari N

Abstract: *Frozen food is gaining popularity in the recent years among Indian households. The paper attempts to identify the trends and patterns of consumption of frozen food in the Indian context with special reference to Bengaluru city. The paper provides insights on the drivers and restraint factors affecting the consumer preferences, challenges and future scope of frozen foods. The present study is based on the use of secondary and primary data. The data thus collected was subjected to statistical analysis. The paper came up with general finding like with increase in income expenditure on frozen food shows a rise. When looked at the consumption of frozen food items among the vegetarians and non-vegetarians, frozen foods are found to be more popular among the non-vegetarians against vegetarians across all income groups. The demand for high value food items like meat, fish etc., are considerably high among high income group non-vegetarians. Lack of frozen food outlets nearby, use of preservatives, high price etc., are some of the major concerns shared by the respondents which adversely affect their frequency of purchase of such items.*

Key Words: *Frozen food, drivers of frozen food, restraint factors, High Value food items.*

Abstracts of Research Projects of Post Graduate Students

Department of Economics
M.A. Economics
Project Guide: Vijaya Priya S

TRACING THE GROWTH OF RETAIL SECTOR IN INDIA - WITH SPECIAL REFERENCE TO SHOPPERS STOP AND TRENT WESTSIDE (2005- 2016)

Amy Ho

Abstract: *Retail industry occupies a key role in the world economy and it involves those entire activities incidental to selling to the ultimate consumers for their personal, family, and household use. Retail marketing encompasses the activities linked to selling merchandises to the customers through channels such as stores, malls, vending machines, or other fixed locations. Retailing in India is one of the pillars of the economy and it accounts for about 10 percent of the GDP. Retailing has a tremendous impact on the economy in terms of increasing sales, employment, revenue, profits,- especially in post globalisation period. The same also ensures consumer sovereignty by facilitating them to make wider choices. Present study is based on secondary and primary data sources. The secondary data was collected from the main websites of the companies- Shoppers Stop and Trent- Westside. The primary data was collected from the customers who visited these retail stores. A structured questionnaire was administered to collect the required information. The samples were administered across two cities- Hyderabad and Bangalore and study units were selected on a random basis. The data has been analysed with the help of various appropriate statistical tools, and tried to focus on the growth of the retail industry with respect to the performance of two companies, Shoppers Stop and Trent- Westside. Findings of the present study shows a positive upward trend with regard to Net Profits and in the coming four years it predicts higher growth of the same for both the companies. And Current Ratio of both the retail companies show fluctuations during the years 2005 to 2016 due to reasons like entry of new retail companies, increasing competition, opening of new outlets and intense rivalry. Tracking most common reasons for preference with respect to customer's favourite brand was analysed in which customers of both Shoppers Stop and Trent- Westside preferred availability of multiple brands as the major source of attraction followed by product range and customers have accorded highest preference to product quality followed by price component.*

Key Words: *Retail industry, globalization, merchandises and Shopper's Stop and Trent - Westside*

Abstracts of Research Projects of Post Graduate Students

Department of Nano Science and Technology
M. Sc Nano Science and Technology
Project Guide: Pradeep N., Chaitra V. and Uma V.

SYNTHESIS OF CELLULOSE NANOFIBERS FROM SUGARCANE BAGASSE AND IRON OXIDE NANOCUBES, AND ITS COMPOSITE FOR OIL SPILL REMEDIATION

Sruja Dave

Abstract*: Cellulose nanofibers and carbon coated cellulose nanofibers were prepared from the sugarcane bagasse using acid hydrolysis technique. Iron oxide nanocubes (α-Fe_2O_3) were synthesized by hydrothermal method. The nanocomposites were prepared by stirring and mixing of cellulose nanofiber and iron oxide nanocubes. Carbon coated cellulose nanofiber and iron oxide nanocubes composites were also prepared in the same manner. The structure and morphology of the samples were studied using XRD and SEM, respectively. SEM images confirmed the growth of cellulose nanofibers and carbon coated cellulose nanofibers with iron oxide nanocubes. The oil absorptivity of the cellulose nanofibers was studied. The carbon coated cellulose nanofibers were used for the water filtration of the dye water.*

Abstracts of Research Projects of Post Graduate Students

Department of Nano Science and Technology
M. Sc Nano Science and Technology
Project Guide: Chaitra.V, Pradeep.N, Uma.V

SYNTHESIS OF ALUMINIUM OXIDE NANOPOWDER AND NANOPARTICLES TO STUDY ITS ANTIBACTERIAL EFFECTS IN AN AIR FILTER

Aneetta Davis

Abstract: *Al_2O_3 nanopowder and nanowire was synthesized by Sol-Gel technique. The synthesized aluminium oxide nanostructured was characterized using UV-Vis spectroscopy, X-Ray Diffraction, Scanning Electron Microscope, Energy Dispersive X-Ray Spectroscopy and Fourier Transform Infrared Spectroscopy. The antibacterial studies of the synthesized nanopowder and nanowire was conducted. An air filter system was setup to conduct the experiment. The synthesized Al_2O_3 nanopowder and nanowire was coated on Whatmann Filter paper which was used as a membrane. The control membrane and the test membrane were taken from the air filter system after the air purge for antibacterial studies. The antibacterial activity was compared using two Al_2O_3 coated membrane (test membrane) against a control membrane(uncoated membrane) for nanowire and nanopowder. Thus compared to nanopowder, Al_2O_3 nanowire is more effective than the Al_2O_3 nanopowder killing more bacteria due to high surface area.*

Abstracts of Research Projects of Post Graduate Students

Department of Life Science
M.Sc Life Science
Project Guide: Suba G. A. Manuel

ISOLATION AND CHARACTERIZATION OF PECTIN FROM FRUIT WASTE

Jaisy Johnson, Jyoti Verma and Suba Manuel
Department of Life Science, Mount Carmel College, Bengaluru

Abstract*: A valuable by product that can be obtained from fruit peel wastes is pectin. Pectin has also been investigated for its usefulness in the pharmaceutical industry. Among other uses it has been considered in the class of dietary fibers known to have a positive effect on digestive processes and to help lower cholesterol. Pectin extracted from various materials can be different in molecular structure (i.e., molecular weight, degree of esterification and acetyl content) and therefore, possesses different functional properties. This study investigated the effect of extraction time, temperature and pH on the yield and physicochemical characteristics of pectin extracted from Citrus maxima and mixed fruit waste. Pectin was extracted using acid extraction method. Optimum condition to extract pectin were at pH= 2, 60 minutes using HCl as solvent. The yields of pectin under these optimum conditions were found to be 1.29g and 1.65g for C. maxima and mixed fruit waste respectively. The equivalent weight, methoxyl content, acetyl content, anhydrouronic acid content, degree of esterification, moisture content and ash content of the C. maxima and mixed fruit waste pectin was obtained under the optimum conditions. It was found that C. maxima had higher methoxyl content, anhydrouronic acid content (AUA) and greater degree of esterification and lower total sugar content when compared to mixed fruit waste. In general, the finding of the study shows that pectin, being used as food and pharmaceutical additives. It can be concluded that the extraction of pectin would not only solve the problem of waste disposal but also pave a way to save valuable foreign exchange by reducing the pectin imports.*

Abstracts of Research Projects of Post Graduate Students

Department of Life Science
M.Sc. Life Science
Project Guide: Padmashree Kulkarni

INFLUENCE OF DIFFERENT SUBSTRATES ON THE PROPERTIES OF COELOMIC FLUID OF THE EARTHWORM, *EUDRILUS EUGENIAE*

Aishwarya Unnikrishnan, Rakhi Yadav and Padmashree Kulkarni
Department of Life Science, Mount Carmel College, Bengaluru

Abstract*: In the present study the influence of four different leaves feed substrates of the earthworm Eudrilus eugeniae on the composition of coelomic fluid (CF) was investigated. The leaf substrates selected were Adathoda vasica, Azadirachta indica, Ocimum tenuiflorum and mixed garden leaves. Around 20-25 hatchlings were introduced into the partially decomposed substrates. After 8 weeks, CF was extracted from the adult clitellate worms by cold shock method. Total proteins, total carbohydrates, antioxidant properties, antimicrobial properties, protease and phenol oxidase activities in the CF of E. eugeniae grown in different substrates were investigated. Qualitative observations revealed that E. eugeniae from vermibeds of A. indica were abundant and longer when compared to the ones grown in O. tenuiflorum and mixed garden leaf substrates. Adathoda vasica did not support the growth of E. eugeniae. The concentration of total proteins and total carbohydrates in the crude CF extract was highest in the extract from E. eugeniae grown in O. tenuiflorum substrate. The highest phenol oxidase and antioxidant activity was shown by the samples of CF from the earthworm grown in mixed garden leaf substrate. The protease activity was found to be more in the acetone precipitated samples of the CF. The maximum inhibitory activity of 14 mm observed was against B. cereus (NCIM 2106), and C. albicans (NCIM No. 3471) followed by a zone of 13 mm against wild isolate P. putida for crude CF of from E. eugeniae from tulsi vermibeds. In the protein profiles studied for crude CF a single band corresponding to ~ 32 kDa, ~ 36 kDa and ~ 25 kDa were seen in CF from E. eugeniae grown in mixed garden leaf substrate, tulsi leaves and neem leaves respectively. In acetone 11 precipitates of CF from E. eugeniae grown in neem substrate, two bands corresponding to ~ 25kDa and ~ 17 kDa were seen. In precipitates of CF from E. eugeniae grown in mixed garden leaf substrate one band corresponding ~ 18 kDa and in O. tenuiflorum substrate two bands corresponding to ~ 19 kDa and ~ 27 kDa were observed. The results indicate that the properties of CF are inducible, dependent on phytoconstituents and could be modified by the selection of different feed substrate.*

Abstracts of Research Projects of Post Graduate Students

Department of Nutrition and Dietetics
M. Sc Food Science and Nutrition
Project Guide: Padma V.

FORMULATION, EVALUATION OF NUTRIENT CONTENT OF JAMUN SEED POWDER INCORPORATED BISCUITS

Sanjana Vajani

Abstract: *Diet has become one of the top risk factors of poor health and poor diets constitute the number one driver of the global burden of diseases. Different herbal principles of foods are traditionally used to treat diseases. One such is jamboline present in Jamun (Syzygium cumini) seed. Jamun seed powder is a detoxifying herb which has properties that helps to balance the healthy blood glucose levels. Recent studies state that jamun has been used to treat diabetes for centuries and scientific studies carried out in the past few decades have confirmed that the seed is most effective. The present study was aimed to develop and standardize jamun seed incorporated biscuits in varying proportions of 3%,6%,9% and 12 % respectively. Nutritive value of the product was calculated using IFCT and proximate analysis were carried out using AOAC method. The physical parameters such as weight, bake time and bake loss percent of the biscuits were also calculated. Biscuits with 3% jamun seed powder was found to be most accepted variation with mean overall acceptability of 6.9±1.1. Proximate analysis showed 50 per cent increase in the total phenols and flavonoid content. Hence the formulated product can be a good snack choice and be recommended for type II diabetics.*

Abstracts of Research Projects of Post Graduate Students

Department of Psychology
M. Sc Psychology
Project Guide: Hamsa N

RELATIONSHIP BETWEEN CAREGIVER STRAIN, JUST WORLD BELIEFS AND COPING STYLES OF MOTHERS OF CHILDREN WITH AUTISM

Lidia Fernandez

Abstract*: The number of children diagnosed with Autism has increased considerably in India over the years owing to both increased awareness and early diagnosis. Much of the research in India has pertained to the characteristic behaviours displayed by children with autism and treatment for them, and not much focus on the caregivers. Therefore, this study looked into the caregiver strain experienced by mothers of children with autism living in the urban set-up of Bangalore. Two cognitive constructs, namely, just world beliefs and coping styles were examined to understand their influence on caregiver strain. The study had a sample of 60 mothers (30 mothers of children with autism and 30 mothers of normal children). It was hypothesized that there would be a significant difference between the two groups of mothers on the caregiver strain experienced. Furthermore, the study also predicted a relationship between caregiver strain, just world beliefs and coping styles. The findings of the study showed that there is no significant difference between the two groups of mothers on caregiver strain index. Additionally, an inverse association was found between caregiver strain and just world beliefs which further influenced the coping styles adopted by mothers in both the groups.*

Abstracts of Research Projects of Post Graduate Students

Department of Psychology
M. Sc Psychology
Project Guide: Bhargavi R

THE EFFECT OF GLASS CEILING ON WOMEN'S CAREER DEVELOPMENT AND WORK ENGAGEMENT BETWEEN PRIVATE AND PUBLIC SECTOR INDUSTRIES

Arushi J Makhija

Abstract*: This study examines the relationship between Glass ceiling and Career Development and also between Glass ceiling and Work Engagement and also to see the Effect of Glass Ceiling between Private and Public Sector. This study involved a total of 78 employees that is 39 women employees are from private sector and 39 women employees are from public sector, Glass Ceiling Scale, Utrecht Work Engagement and Career Development Scale was used to measure glass ceiling, work engagement and career development between private and public sector. Then the data was scored and statistically analyzed by using a t-test and Pearson product movement correlation coefficient. The result of the study revealed that is no difference between glass ceiling and career development, and also that there is a difference between glass ceiling and work engagement. There is also a difference between private and public sector in terms of the effect of glass ceiling.*