GYANA

AN INTERDISCIPLINARY RESEARCH JOURNAL

Diocesan Society of Education's

Rosary College of Commerce & Arts

Re-Accredited by **NAAC** with Grade A
(CGPA Score 3.21 on a 4 point scale)
Navelim, Salcete, Goa

From the Executive Editor's Desk...

Teaching is said to be a noble vocation. A teacher is not just a role model, but also a catalyst in the development of educational institutions. Research is an integral component of teaching and an important element to success and development. Institutions the world over, including those from the educational sector, invariably look towards research in their quest for excellence.

At Rosary College, research has been given its due importance, with GYANA being one of the examples of how research is promoted. We are extremely happy to release this year the Xth volume of the multi-disciplinary journal. The articles presented herein provide insights and information on a wide range of topics, with the content being relevant, scientific and socially beneficial.

My congratulations and thanks to the entire Editorial Board and to Associate Editor Dr. Savio Falleiro for taking the responsibility of bringing up the issue. I also congratulate all the authors for their well researched papers.

I hope and wish that GYANA will help ignite many minds.

Rev. Dr. Simão R. Diniz
Principal

Foreword

It is often said that there can be no academic growth and excellence if there is no research. Notwithstanding the same, while the world over there is much research and research writing perennially going on, there is a dearth of the same in India. Rosary College has always been making an attempt to promote quality research activity among its staff and students. *GYANA*, the Inter-disciplinary Research Journal of Rosary College of Commerce and Arts, has over the years been one such initiative – one that provides the platform, support and opportunity to faculty as well as students to publish research oriented papers.

The present Volume X of *GYANA* assumes great symbolic significance. Not only does it commemorate a decade of internal research writing within the College, but it comes in an auspicious year where the College is celebrating its Silver Jubilee. The present volume of *GYANA* contains an array of research papers spanning various disciplines and themes, including Economics, Tourism, Mathematics, Development, Engineering, Finance, Psychology, Commerce and Education.

This volume would not have been a reality had it not been for the assistance and cooperation of the entire editorial team. My sincere thanks to the Executive Editor Rev. Dr. Simão R. Diniz and to the other members for all the painstaking work put in. On behalf of the entire Editorial Board my thanks and appreciation to all the contributors for their efforts in preparing and submitting their research papers.

Dr. Savio P. Falleiro
Associate Editor
Convenor - Editorial Board (*GYANA*)

GYANA

CONTENTS

iii

ECONOMIC IMPACT OF TOURISM: A CASE STUDY

Associate Professor **Savio P. Falleiro**
Vice Principal Head - Department of Economics

ABSTRACT

Tourism, with its numerous forward and backward linkages, offers many benefits to tourists as well as to the economies and residents of the places visited. It however has its share of limitations and adverse fallouts as well. This paper explores the perceptions of the local residents of a popular coastal village of Goa towards the economic benefits and adverse consequences of tourism. The study involved a sample of 232 households. While interview method was used to obtain data, *Chi-square* was used to analyse the same. The study findings reveal the major perceived economic benefits of tourism were employment and increased income, with the major adverse effect being rise in food and land prices. It was also found that due to tourism traditional occupations were given up for other more lucrative jobs.

Keywords: Cavelossim, tourism, economic impact, perceptions

INTRODUCTION

Travel has been an integral part of human activity since antiquity (Seth and Gupta 2005, 11). Tourism is often claimed to be a smokeless industry (Seth and Bhat 1998, 4) – an industry made up of various other industries taken together. There is no unanimity on the definition of the term tourism because it has been in the process of evolution (Sharma 1991, 27). According to Prof. Hunziker and Krapf, 'Tourism is the sum of the phenomenon and relationships arising from travel and stay of non-residents, in so far as they do not lead to permanent residence and are not connected with any earning activity' (cited in Negi 1990, 23). Though all tourism involves travel, all travel may not be tourism. In the context of tourism while the reasons for travel may not always be rest, recreation, relation or leisure as one may mistake it for; it does also include travel for reasons like health, sports, conferences, business etc. Tourism is one of the largest, evolving and dynamically developing sectors that actively contributes to the social, cultural and economic development of a region as well of its population. It involves inbound, outgoing, domestic and international tourists. Though the visits of tourists to a destination is transient, tourism can bring

1

short and long term economic, environmental and socio-cultural effects on a destination (Meadows n.d.). There is no other international trading activity which involves such critical inter-play among economic, political, environmental and social elements as tourism (Kumar 1992, xi).

There are numerous studies on the economic impact of tourism, including studies of Falleiro (2015), Harcombe (n.d.), Marzuki (2012), Mensah (2005), Perez and Var (1994), Wang et al (2006) etc. There are various types of economic impact analysis (Stynes n.d., 2). An economic impact analysis estimates the changes that take place in an economy due to some existing or proposed project, action or policy (Dwyer and Spurr n.d., 7). As with other impacts, the massive economic development of tourism brings along both positive and negative consequences (UNEP, n.d.). Some of the economic benefits of tourism include increased employment (Kakkar and Sapna 2012, 71), multiplier effect[1] (Harcombe n.d., Selvam 1989, 24–25; Seth and Bhat 1998, 15; Stynes n.d., 7), tax revenue (Selvam 1989, 36; Negi 1990, 79), increase in national income (Kumar 1992, 87–88), redistribution of national income (Negi 1990, 66; Kumar 1992, 91), exports, foreign exchange earnings (Negi 1990, 80–83; Kakkar and Sapna 2012, 71; Kumar 1992, 89), increase in number of household and cottage industries, improved infrastructure (Negi 1990, 86), increase in retail businesses and small trade (ibid, 87), productive use of latent resources, increased income (ibid, 63–66), improved standard of living, dispersion of development to non-industrial regions (ibid, 90–91) etc. According to Bhatia (2002), on account of tourism locals get to benefit from better public facilities and improved infrastructure like airports, hotels, water, roads, sidewalks, transportation, lighting, landscaping, parking, etc. Income from tourism is an important source of expansion and modernization of the infrastructure in a country (ibid, 71). The food and the crafts industry that caters to the maintenance of the tourist constitute an excellent source of revenue for most businesses in a community (Makan 2006, 56–57). In terms of employment, though occasionally it could be seasonal in nature only, tourism is a labour-intensive industry (Selvam 1989, 38; Negi 1990, 74; Kumar 1992, 88; Seth and Bhat 1998, 4) which provides direct and indirect jobs, skilled as well as unskilled jobs, besides providing jobs which are gender-neutral in nature — thus suitable for women to be gainfully employed. Incidentally, tourism has also been found to provide self sustaining employment to the elderly, the housewives and even the handicapped in the form of small stalls, shops or kiosks or through renting of two wheelers and small rooms.

Leaving aside its beneficial side, tourism has its own share of adverse economic fallouts. Seasonal nature of jobs, rise in imports, high opportunity costs, displacement effect are often cited as adverse economic fallouts of tourism (Harcombe n.d.). Tourism has been found undermining the livelihood of residents besides contributing to the increase in prices of essential items, land and housing (Harcombe n.d.; Kumar 1992, 92; Marzuki 2012). When tourism services are outsourced, as often happens in a small destination like Goa, earnings from tourism activities often move outside the locality. Hence, instead of being beneficiaries of tourism locals often become cost-bearers paying higher prices and taxes. While the working of the multiplier is claimed to be an advantage of tourism, improper handling of tourism has often led to the existence of a number of income leakages (Falleiro 2015; Harcombe n.d.). Leakages contribute to taking income out of the system thereby reducing the earnings of the local economy and its residents. In the context of increased job opportunities created by tourism, in places like Goa the same have often gone to non-locals, with locals often getting low-rung jobs only (Falleiro 2015).

Goa is one state in India that is substantially tourism-centric in nature. Located on the south-west coast of India, Goa is renowned nationally and internationally for its culture, cuisine, architecture and pristine beaches. As per the provisional figures available in *Economic Survey* (2013–14) a total of 3.1 million tourists visited Goa in the year 2013, of which 2.63 million were domestic tourists and 0.49 million were foreign tourists. Over the years, the increasing numbers of tourists visiting Goa has greatly impacted the lives of the local residents.

ABOUT THE STUDY

The paper explores the perceptions of the local residents of Cavelossim, a popular tourist destination in Goa, to the economic impacts of tourism (see also Diniz et al 2014a; 2014b). The place is known for its proximity to the Arabian Sea and for its white sandy coastline, scenic beauty, river Sal, paddy fields, coconut trees and fishing boats. The place which is well connected to the airport and railway station is a hub for a number of luxury hotels, resorts, budget hotels and restaurants and offers attractive shopping opportunities for Goan and Indian handicrafts.

Objectives
1. To study the perceptions of the local residents to the economic impact of tourism.

2. To study association between the perceptions of the locals with the gender, age, household income and duration of residence of the households/household heads (in the locality).

3. To study the impact of tourism on the types of occupations.

Sample, data collection and data analysis

A total of 232 households participated in the study conducted during the year 2013–14. The sample comprised of 151 male-headed and 81 female-headed households (ibid). While information was elicited with the help of a schedule/questionnaire, *chi-square* was used for data analysis. The profile of the sample is shown in **Table 1**.

Table 1 Profile of sample households

Category	Sub-category	Total*
Gender of the household heads	Males	151
	Females	81
Income levels of households	Rs. <2 lakhs	204
	Rs. 2–5 lakhs	21
	Rs. 5–10 lakhs	2
Educational qualifications of household heads	Illiterate	45
	Up to Std. IV	19
	Std. V–X	128
	HSSC	21
	Graduate	8
	Postgraduate	1
	Diploma	1
	Professional	2
	Others	1
Age group of household heads	Up to 54 years	80
	55–64 years	72
	65–90 years	80
Religion of the household heads	Catholic	217
	Hindu	14
	Others	1
Period of residence in area	Since birth	180
	More than 15 years	40
	Less than 15 years	12

Source: Fieldwork
*For each category/sub-category figures of only those who provided information have been shown.

STUDY FINDINGS

A] Economic impact of tourism on the basis of gender, household income[2] and duration of stay[3]

Majority of the sample respondents at 60.3 percent perceived tourism to be beneficial. However, there was no significant association between the perception and gender of the household heads ($\chi^2=0.631$; p=0.427). Likewise, there was no

significant association found between the perception and household income levels ($\chi^2=0.900; p=0.638$) and duration of stay of the residents ($\chi^2=2.139; p=0.343$).

In the context of the nature of economic benefits arising from tourism, namely, earning of income, generation of employment, tax revenue earned, development of infrastructure and others, there was no association between the same and gender of the household head ($\chi^2=0.495; p=0.974$). Likewise, there was no significant association found between duration of residence and economic benefits of tourism ($\chi^2=9.054; p=0.338$). Details of the economic benefits of tourism in relation to gender-based perceptions and duration of stay in the locality are provided in **Table 2** (see also Diniz et al 2014a, 166; 2014b, 6).

Table 2 Responses to the nature of economic benefits of tourism *(figures in percentage terms)*

	Income	Employment	Tax Revenue	Infrastructure	Others
Total	46.9	39.8	4.7	6.3	2.3

Source: Fieldwork

In terms of who benefits from the income generated from tourism, as **Table 3** highlights, the highest number of respondents at 45.9 percent perceived that the major beneficiaries were the locals along with the government. Of the remaining, close to 32 percent felt that it was only the government who benefited, with 13.2 percent indicating that it was the locals. Incidentally, over 9 percent indicated that it was the outsiders who benefited from tourism. Chi square analysis found no significant association between the said perceptions and gender of the household heads ($\chi^2=0.424; p=0.935$) (see also Diniz et al 2014a, 165). Likewise, there was no significant association between household income and the beneficiaries of tourism ($\chi^2=6.437; p=0.385$) and between duration of stay in locality and the perceived beneficiaries ($\chi^2=3.474; p=0.747$).

Table 3 Responses to the categories of beneficiaries of tourism *(figures in percentage terms)*

	Locals	Government	Locals and Government	Outsiders
Total	13.2	31.8	45.9	9.1

Source: Fieldwork

With reference to increase in prices as an adverse impact of tourism, though the overwhelming majority of the overall sample at 85.9 percent indicated their perception to the same in the affirmative,[4] there was no gender based association found with regards to the said response ($\chi^2=5.806; p=0.121$). Thus by and large the adverse effect of tourism on rise in prices was gender-neutral in nature cutting

across men and women. Likewise, no significant association was found between the perception and income levels of the households (χ^2=14.207; p=0.27). However, unlike the absence of significant association as seen above, there was a significant association found at the 0.1 level between duration of residence and the perception of rise in prices on account of tourism (χ^2=11.588; p=0.072), with those who have been in the locality since birth perceiving the impact more.

Contrary to the findings in terms of the adverse effect of tourism on price rise was the perception whether the price rise could act as a stimulant to the economy. While there was no gender based association to the perception (χ^2=3.301; p=0.347), only 10.3 percent of the sample indicated that there was economic stimulation, with the majority (67.8 percent) indicating absence of stimulation, with 21.9 percent indicating the undecided nature of their perception. Likewise, no significant association was found between economic stimulation and duration of stay in the locality (χ^2=9.611; p=0.142). However, unlike the same, in terms of household income level there was a significant association found at the 0.1 level (χ^2=10.675; p=0.099).

Almost three-fourths of the sample at 73.7 percent perceived that tourism has adverse economic fallouts. Though majority of the males and females perceived the same, there was no significant association found based on gender of the household heads (χ^2=1.942; p=0.379). Likewise, there was no significant association found between adverse effects of tourism and level of household income (χ^2=1.610; p=0.807) and between duration of stay (χ^2=2.054; p=0.726).

With regards to the nature of adverse effects arising from tourism almost two-thirds of the total sample felt that the most important adverse fallout was rise in food prices (see Table 4). Rise in land prices was the perception of 22.8 percent of the respondents. Significant association was found between gender of the household heads and the economic fallouts of tourism at the 0.5 level of significance (χ^2=10.028; p=0.040) (see also Diniz et al 2014a, 168). Significant association was also found at the 0.1 level between the adverse effects and household income (χ^2=15.135; p=0.057). Contrary to the same above, there was no significant association found between the perception and duration of residence (χ^2=19.273; p=0.13).

Table 4 Responses to the nature of adverse economic effects of tourism *(figures in percentage terms)*

	Rise in food prices	Rise in land prices	Scarcity of goods	Extinction of traditional occupations	Others
Total	62.6	22.8	3.3	6.5	4.9

Source: Fieldwork

With regards to whether tourism brought in newer facilities, 46.9 percent of the respondents averred in the affirmative, though a big number at 43.4 percent revealed that tourism did not do so.[5] Notwithstanding the same, there was no significant association with regards to gender of the household head and whether tourism had brought in better facilities (χ^2=8.550; p=0.73). Likewise, in terms of improvement in facilities and levels of household income there was no significant association (χ^2=2.325; p=0.969). Contrary to the above, there was a significant association found between duration of residence and better facilities at the 0.1 level of significance (χ^2=13.736; p=0.089).

B] Economic impact of tourism on the basis of age of the household head

As already indicated earlier in **Table 2** the more prominently perceived economic benefits of tourism were income and employment. There was no significant association found between age and the economic benefits of tourism (χ^2=10.059; p=0.261) (see also Diniz et al 2014b, 4). Incidentally, while Perez and Var (1994) found that age was an important determinant of attitudes toward tourism with middle-aged residents more inclined to accept the positive economic impacts of tourism development, Husbands (1989) found that older residents are less positive about the impacts of tourism (in Wang et al 2006; see also Diniz et al 2014b, 4). The absence of significant difference in the economic benefits of tourism with regards to the present study indicates that the economic benefits of tourism reach every person of the household; since there is no upper-age barrier for people to get involved in tourism, there are young, middle-aged and even elderly people gaining their livelihood through tourism.

As indicated earlier as well in another context (see **Table 4**), rise in food prices was the most serious adverse impact of tourism felt by the local residents at 62.6 percent households. The other adverse economic effects of tourism were rise in price of land (22.8 percent), extinction of traditional occupations (6.6 percent) and scarcity of goods (3.2 percent). Marzuki (2012) found increase in cost of land and housing, and increased prices of goods and services to be among the more adverse effects of tourism. Pertaining to the present study, there was no significant association between age and the adverse economic effects of tourism (χ^2=8.227; p=0.412); irrespective of age, household heads perceived that rise in food prices was the most serious adverse impact of tourism (see also Diniz et al 2014b, 5).

An important finding of the study was related to the changes in the nature of

occupations of the local residents in terms of their original (over 15 years ago) and present occupations (see **Table 5**). Considering the occupation of household heads 15 years ago, 32.5 percent were engaged in traditional occupations like coconut plucking/toddy tapping (10.5 percent), fishing (10.1 percent) and farming (11.9 percent); with 4.3 percent being engaged in tourism related businesses like running restaurants and 1.2 percent in transportation. There was no significant association between age and the occupation of household heads as existing over 15 years earlier (χ^2=10.233; p=0.745) see also Diniz et al 2014b, 5). In terms of the present/recent occupations, the percentage of household heads engaged in traditional occupations has come down; it presently comprises only 10.1 percent of the households. These include coconut plucking/toddy tapping (1 percent), fishing (7.3 percent) and farming (1.8 percent). Unlike the same, it was found that the percentage of household heads engaged in tourism related businesses increased; while presently 8.4 percent were running restaurants, 6.5 percent were engaged in transportation business. Incidentally, the number of household heads employed in the service sector also increased (32.3 percent). There was a significant association found at the 0.5 level of significance (χ^2=26.298; p=0.024) between the age and the recent/present occupation of household heads. Through the study it was apparent that by and large it was the respondents from the 30–54 years age-group which were relatively less in traditional occupations and more in tourism related employment/activities (see also Diniz et al 2014b, 5). While toddy-tapping, fishing and farming have been the primary occupations of the local residents since earlier times, urban/office and overseas jobs (particularly on ships) have significantly reduced the numbers of youth choosing to enter into the occupations of their fathers (see also Larsen n.d.).

Table 5 Nature of earlier and recent occupations of household heads *(figures in percentage terms)*

Nature /Type of Occupation	Over 15 years back	Recent / Present Occupation
Coconut plucking/toddy tapping	10.5	1
Fishing	10.1	7.3
Farming	11.9	1.8
Restaurant	4.3	8.4
Transportation	1.2	6.5
Service	25	32.3
Professional	2.7	3.3
Others	34.3	39.3

Source: Fieldwork

CONCLUSION

Tourism, with its numerous forward and backward linkages, is a major driver of growth across the world (Kakkar and Sapna 2012, 75). However, as documented extensively, besides its numerous benefits, it has its own share of fallouts including those of economic nature. Being a multi-dimensional activity, tourism affects not only the physical place visited, but the local residents as well. Pertaining to the present study, though there was by and large absence of any significant association found between the various economic oriented perceptions and gender, age, household income levels and duration of stay in the locality of the sample respondents,[6] the study nevertheless found that the local residents in general viewed that tourism had impacted their locality. While the residents considered tourism as having a good potential for generating employment and income to the locals, increased tax revenue for the government besides improved infrastructure, the adverse effects perceived were scarcity of goods, increase in food and land prices, besides extinction of traditional occupations.[7]

The study has revealed,[8] that though the tourism industry has a tremendous potential in overall terms, it can nevertheless disturb the well-being of the locals. To maintain the success of tourism therefore there is an unambiguous need for all stakeholders, including the government and the corporate sector, to take sincere initiatives through democratically conducted open and transparent consultative processes to develop tourism in a more responsible manner and to decrease the negative effects on local societies as much as possible (see also Mirbabayev and Shagazatova n.d.). For tourism-centric economies (like Goa and Cavelossim) to sustain in local communities, the residents must be willing partners in the process (Allen 1988, in Kreag n.d.; see also Diniz et al 2014b, 6–7).

* * * * *

Notes

1. A simple example of multiplier effect is the multiple exchanges of money that takes place; same money spent originally once by a person, contributes to increased earnings of different people. There are various types of multipliers related to tourism, examples being employment multiplier, income multiplier, output multiplier, sales multiplier etc.

2. For the purpose of this analysis though households were originally classified into four groups namely: (i) less than Rs 2 lakhs, (ii) Rs. 2–5 lakhs, (iii) Rs. 5–10 lakhs and (iv) Above Rs. 10 lakhs per annum, since there were no respondents in the last segment, the study focuses on analysing the first three groups only.

3. Duration of stay has been classified on the basis of three groups: (i) Since Birth; (ii) More than 15 years; and (iii) Less than 15 years.

4. While 6.6 percent were undecided of the impact of tourism on rising prices, 7.5 percent stated 'no'.

5. 9.7 percent revealed that they were undecided on the matter.

6. And even where significant association was found it was generally at the 0.1 level only.

7. Agriculture is gradually becoming a part-time activity even for traditional farmers.

8. As likewise done by many other studies as well.

*   *   *   *   *

References

Allen, L.R., P.T. Long, R.R. Perdue, and S. Dieselbach. 1988. The impact of tourism development on resident's perception of community life. *Journal of Travel Research,* 27(1): 16–21.

Bhatia, A.K. 2002. *Tourism development: Principles and practices.* New Delhi: Sterling Publishers.

Diniz, S., Savio P. Falleiro and M.M. Barros.2014a. A study of the gendered perception of tourism in coastal Goa(India). *Researchers World – Journal of Arts, Science and Commerce.* Vol. V(4):160–171.

------.2014b. Local residents' perception of the psycho-social and economic impact of tourism in Goa. *International Journal of Scientific and Research Publications,* Vol. 4(11). Retrieved from: http://www.ijsrp.org/research-paper-1114.php?rp=P353334

Dwyer, Larry and Ray Spurr (no date). *Tourism economics summary.* Australia: STCRC Centre for Economics and Policy. Retrieved from: http://www.crctourism.com.au/wms/upload/resources/Tourism%20Economics%20Summary%20WEB.pdf

Economic Survey 2013–14. Directorate of Planning, Statistics and Evaluation. Government of Goa. Retrieved from: http://goadpse.gov.in/eco-survey13-14.pdf

Falleiro, Savio P. 2015. The economic and socio-cultural balance sheet of tourism in Goa: Future options. *International Journal of Scientific and Research Publications,* Vol. 5(2).

Harcombe, David P.T. (no date). The economic impacts of tourism. *ABAC Journal.* Retrieved from: http://www.journal.au.edu/abac_journal/may99/article3_f.html

Husbands, W. 1989. Social status and perception of tourism in Zambia. *Annals of Tourism Research,* 16: 237–253.

Kakkar, L.A. and Sapna. 2012. Impact of tourism on Indian economy. *International Journal of Marketing, Financial Services & Management Research*, Vol. 1(4): 70–75. Retrieved from: http://indianresearchjournals.com/pdf/IJMFSMR/2012/April/9.pdf

Kreag, G. (no date). *The impacts of tourism*. Retrieved from: http://www.seagrant.umn.edu/tourism/pdfs/ImpactsTourism.pdf

Kumar, M. 1992. *Tourism today: An Indian perspective*. Delhi: Kanishka Publishing house.

Larsen, K. (no date). *Glimpses of Goa*, Full Bright Research Student Excerpt. Retrieved from: http://www.goacom.com/more-about-goa/707-traditional-toddy-tapping

Makan, D. 2006. *Conceptualization of tourism*. New Delhi: Adhyayan Publishers and Distributors.

Marzuki, A. 2012. Local residents' perceptions towards economic impacts of tourism development in Phuket. *Tourism*. Vol. 60 (2), 199 – 212. Retrieved from: hrcak.srce.hr/file/125947

Meadows, G. (no date). *Involving stakeholders in tourism planning*. Retrieved from: http://www.academia.edu/896052/Involving_Stakeholders_in_Tourism_Planning

Mensah, C. 2005. Residents' perception of socio-economic impacts of tourism in Tafi Atome, Ghana, *Asian Social Science*, 8(15). Retrieved from: ccsenet.org/journal/index.php/ass/article/download/22671/14650

Mirbabayev, Batir and Malika Shagazatova. (no date). *The economic and social impact of tourism*. Retrieved from: http://www.grips.ac.jp/alumni/UzbekistanTourism%282%29.pdf

Negi, J. 1990. *Tourism and travel: Concepts and principles*. New Delhi: Gitanjali Publishing House.

Perez, P.B. and Var T. 1994. *Perceived impacts of tourism by residents*. Retrieved from: http://www.climateaudit.info/data/mask/TREN/tourism%20cd/Annals_Tour _Res_1995_208.pdf

Selvam, M. 1989. *Tourism industry in India*. Bombay: Himalaya Publishing House.

Seth, P.N and Bhat S.S. 1998. *An introduction to travel and tourism*. New Delhi: Sterling Publishers Pvt. Ltd.

Seth, R. and Gupta Om. 2005. *Tourism in India: An overview* (Vol. I). Delhi: Kalpaz Publications.

Sharma, K.K. 1991. *Tourism in India: Centre-state administration*. Jaipur: Classic Publishing House.

Stynes, Daniel J. (no date). *Economic impacts of tourism*. Retrieved from: https://www.msu.edu/course/prr/840/econimpact/pdf/ecimpvol1.pdf

UNEP. (no date). *Economic impacts of tourism*. United Nations Environment Programme: Environment for Development. Retrieved from: http://www.unep.org/resourceefficiency/Business/SectoralActivities/Tourism/FactsandFiguresaboutTourism/ImpactsofTourism/EconomicImpactsofTourism

/tabid/78783/Default.aspx

Waitt, G. 2003. Social impacts of the Sydney olympics, *Annals of Tourism Research*, 30(1): 194–215.
http://genc6003.unsw.wikispaces.net/file/view/Social+Impact+Sydney+Olypics.pdf

Wang, Y., Pfister R.E. and Morais D.B. 2006. Residents' attitudes toward tourism development: A case study of Washington, NC. Retrieved from: http://www.nrs.fs.fed.us/pubs/gtr/gtr_nrs-p-14/54-wang-p-14.pdf

NUMERICAL SIMULATION OF FORCED CONVECTION IN A DRIVEN FLUID FLOW THROUGH A SQUARE CAVITY

Assistant Professor **Ignatius Fernandes**
Department of Mathematics

ABSTRACT

Lattice Boltzmann method is used to study forced convection in a square cavity for low Reynolds number. The square geometry is constructed with a moving lid and other sides stationary with the moving lid heated to a normalized temperature of 1.0, while the other sides are either kept at cold temperature or thermally isolated. Simulation is performed for values of Reynolds number ranging 100 to 3200. Variation in temperature profiles along the height of the cavity at different cross sections for different values of Re are presented. Boundary conditions are defines as per non-equilibrium second order bounce back rule. The results obtained showed fine agreement with the results available in literature.

Keywords: Lattice Boltzmann method, forced convection, lid driven cavity

1. INTRODUCTION

Application of elevated temperatures to influence fluid flow in cavities are well known in fluid dynamics considering its wide applications in many engineering applications and natural phenomena, such as lakes and large reservoirs, petroleum engineering and filtration processes. These problems are also considered as one of the benchmark problem for the evaluation of numerical solution procedures for the Navier-Stokes equations. With the advances in computer technology, the lattice Boltzmann method (LBM) has developed into a promising numerical scheme for simulating fluid flows. An important advantage of this method is its applications in simulating fluid flow in complex geometries. The LBM is based on the microscopic models and mesoscopic kinetic equations which studies the behavior of a group of microscopic particles, using which the macroscopic behavior of fluid is derived. This is unlike the conventional numerical schemes which are based on discretizations of macroscopic continuum equations.

A number of researchers have investigated fluid flow in a lid driven cavity. Mohamad & Viskanta (1994) carried out experimental and numerical study to simulate natural and mixed convection in a shallow rectangular cavity filled with liquid gallium. The cavity was heated from below and cooled from above. Pop et al (2010) investigated laminar mixed convection flow in the presence of magnetic field in a top sided lid-driven cavity heated by a corner heater. In another study, Pop et al (2011) analyzed effects of moving lid-direction on MHD mixed convection in a cavity with the bottom wall being linearly heated. They found that direction of lid is more effective on heat transfer and fluid flow in the case of mixed convection than it is the case in forced convection. Finite element method was used to simulate the fluid flow. Kefayati (2013) presented the effect of a magnetic field on natural convection flow in a nanofluid-filled cavity with sinusoidal temperature distribution on one side wall using lattice Boltzmann method. In another paper Kefayati et al (2012) presented simulation of MHD mixed convection flow in a lid-driven cavity by a linearly heated wall. Ahmed et al. (2010) studied mixed convection in a square lid-driven cavity partially heated from below and filled with water-base nanofluid containing various volume fractions of Cu, Ag, Al_2O_3 and TiO_2. Finite difference method was employed to solve the dimensionless governing equations of the problem. The effects of governing Reynolds number, solid volume fraction, different values of the heat source length and different locations of the heat source on the streamlines and isotherms contours was presented. Guo et al. (2012) used lattice Boltzmann method to simulate the thermal field and flow field of nanofluid natural convection in a square cavity. This paper presents simulation of forced convection fluid flow in a heated lid driven cavity, keeping the moving lid at higher temperature compared to other sides of the cavity using lattice Boltzmann method for values of Re from 100 to 3200.

2. PROBLEM FORMULATION AND NUMERICAL METHOD

2.1. Problem Formulation

The two-dimensional lid driven square cavity with the top wall moving from left to right with a uniform velocity is considered, as shown in **Fig.1**. The lid is kept at a higher temperature compared to other boundaries. The enclosure is filled with fluid of viscosity v. The lid is heated to a normalized temperature, of 1.0 and east and west walls are kept at cold temperature at 0, while the bottom of the cavity is thermally insulated.

2.2. Numerical Method

The lattice Boltzmann (LB) method has been demonstrated to be an effective hydrodynamic numerical tool (Succi 2001). In the present study, we cover incompressible fluid flows and a nine-velocity model on a two-dimensional lattice (D2Q9). For forced convection, the body force is not a function of temperature and the momentum equation is not coupled with the energy equation (Chen & Doolen 1994). Two different distribution functions, f for momentum and g for scalar, are solved separately. First the flow is obtained, and subsequently, the energy equation is solved using the velocity profiles obtained by solving momentum equations.

Fig.1. Geometry of the problem under consideration
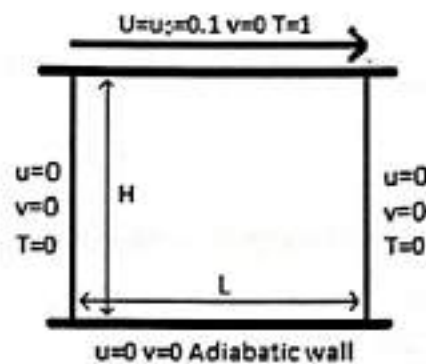
Using BKG-LBM, the distribution functions for momentum can be defined as (Chen & Doolen 1994; D'Orazio et al 2004)

$$f_k(x+c_k dt, t+dt) = f_k(x,t)[1-\omega_m]+\omega_m f_k^{eq}(x,t) \quad (2a)$$

For scalar function, the equation is defined as

$$g_k(x+c_k dt, t+dt) = g_k(x,t)[1-\omega_s]+\omega_s g_k^{eq}(x,t) \quad (2b)$$

The distribution function $f_k(x,t)$ represents the probability that a fluid particle with velocity c_k enters the lattice site x at a time t. $f_k^{eq}(x,t)$ is the corresponding equilibrium distribution function for D2Q9 given by (Mohamad 2011)

$$f_k^{eq}(x,t) = w_k \rho(x,t)\left[1+\frac{c_k.u}{c_s^2}+\frac{1}{2}\frac{(c_k.u)^2}{c_s^4}-\frac{1}{2}\frac{u^2}{c_s^2}\right] \quad (3)$$

where c_s is the sound speed expressed by $c_s = dx/(\sqrt{3})dt = c/\sqrt{3}$ (c is the particle speed and dx is the lattice spacing). $u(x,t)$ is the velocity and w_k is the weight coefficient with values

$$w_k = \begin{cases} 4/9 & k = 0 \\ 1/9 & k = 1,2,3,4 \\ 1/36 & k = 5,6,7,8 \end{cases} \qquad (4)$$

Fig.2. Velocity profiles at different values of Re   (a) u-velocity (b) v-velocity

(a)

(b)
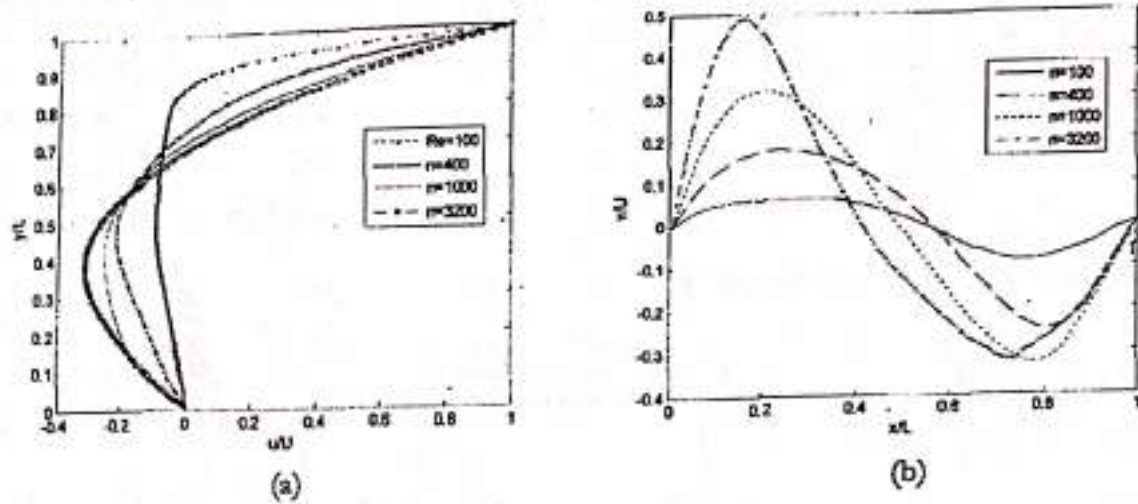
Local particle density $\rho(x,t)$ and local particle momentum ρu are given by (Pop et al. 2010)

$$\rho(x,t) = \sum_{k=0}^{8} f_k(x,t) \text{ and } \rho u(x,t) = \sum_{k=0}^{8} c_k f_k(x,t) \qquad (5)$$

The equilibrium distribution function $g_k^{eq}(x,t)$ is defined as [4]

$$g_k^{eq}(x,t) = w_k \phi(x,t) \left[1 + \frac{e_k . u(x,t)}{c^2} \right] \qquad (6)$$

Fig 3. Isotherms for the heated lid driven cavity of different Re values. (a) Re=100 (b) Re=400 (c) Re=1000 (d) Re=3200.

(a)

(b)
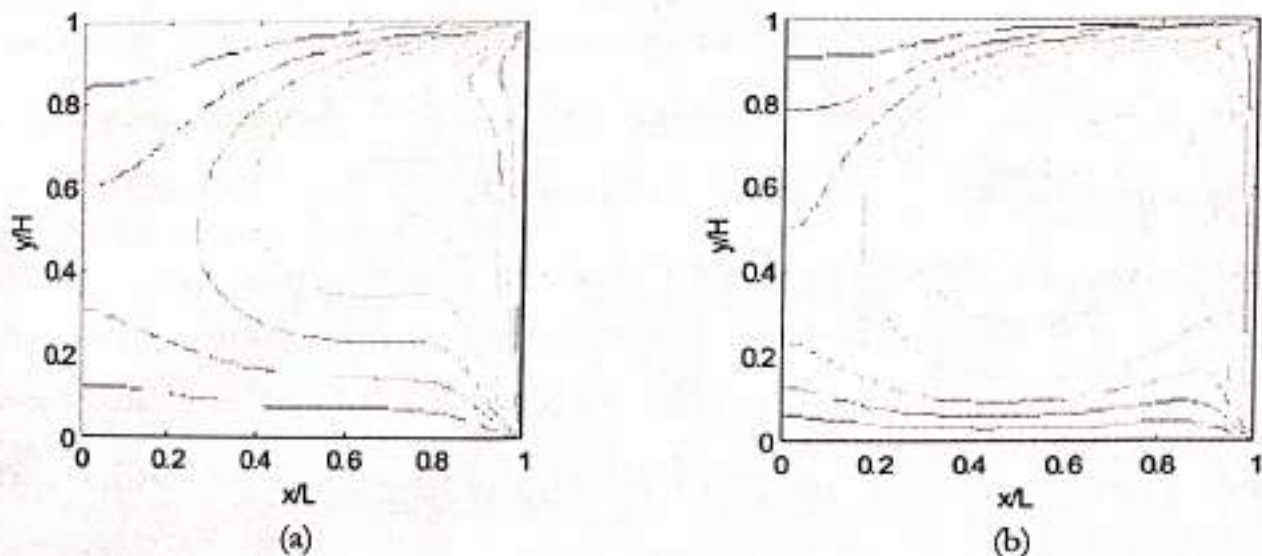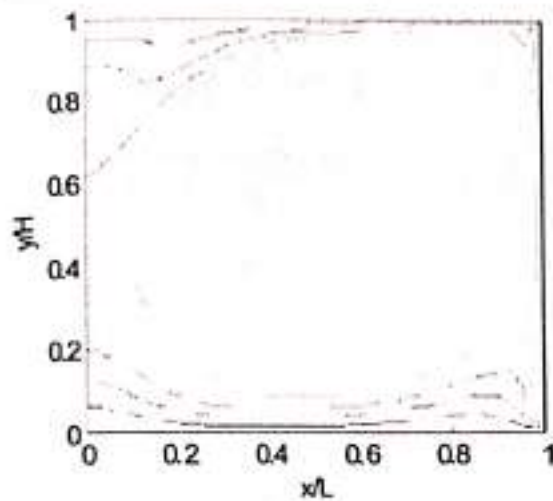
(c)
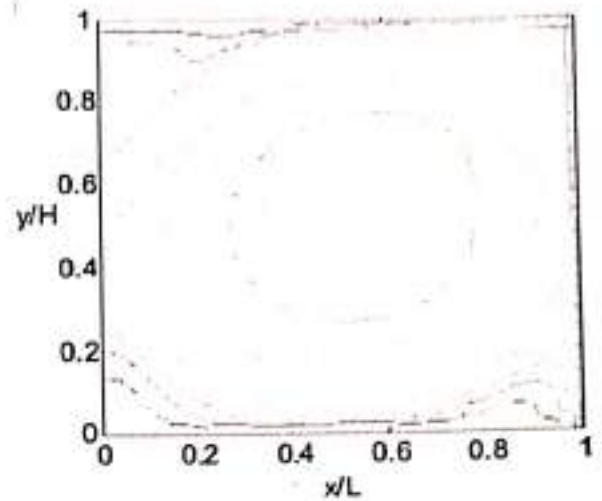
(d)

For momentum equation, ω_m is given by $\omega_m = \dfrac{1}{3v + 0.5}$, where v is the kinematic viscosity and for scalar equation, ω_s is given by $\omega_s = \dfrac{1}{3\alpha + 0.5}$, where α is the diffusion coefficient. Reynolds number, $Re = UL/\alpha$, where U and L are the characteristic velocity and characteristic length in macro-scale, respectively. Prandtl number, $Pr = v/\alpha$.

2.3. Numerical Implementation

The main governing parameters for forced convection are Reynolds number(Re), Prandtl number (Pr) and geometrical aspect ratio. The characteristic length, viscosity and diffusion coefficient were varied to get appropriate values of Re and Pr. The velocity of the moving lid was set to 0.1 (lattice units per time step) and the velocity at all other nodes was set to zero. A uniform density of $\rho = 5.0$ is initially assumed for the entire flow field. The distribution function was initialized with suitable values (here we assume that the fluid is initially stationary). The numerical implementation of the LBM at each time step consists of collision, application of boundary conditions, streaming, calculation of distribution functions and calculation of macroscopic flow variables. A MATLAB code was developed for a 80×80 square cavity lattice grid and the results were validated against the results published earlier.

2.4. Boundary Conditions

Second order bounce back rule for non-equilibrium distribution function f_i is used to determine velocity on the four walls. The distribution functions are given by Zou et al (1997)

$$f_a^{neq} = f_b^{neq}$$

where b is the opposite direction of a.

For energy distribution function g_i, second order extrapolation rule is used on the left wall and the boundary conditions for all other walls were defined as per method introduced by D'Orazio et al (2004). The distribution functions on right wall were defined as

$$g_1 = \frac{6}{9}\left(1 - T_p\right), g_5 = \frac{1}{36} T^{eq}\left(1 + 3(u + v)\right),$$

$$g_8 = \frac{1}{36} T^{eq}\left(1 + 3(u - v)\right)$$

where $T_p = g_0 + g_2 + g_3 + g_4 + g_6 + g_7$ and $T^{eq} = \dfrac{6\left(1 - T_p\right)}{1 + 3u}$.

The distribution functions on the top wall were defined as

$$g_4 = \frac{1}{9} T^{eq}\left(1 + 3u\right), g_7 = \frac{1}{36} T^{eq}\left(1 + 3(u + v)\right),$$

$$g_8 = \frac{1}{36} T^{eq}\left(1 + 3(u - v)\right)$$

where $T_p = g_0 + g_1 + g_2 + g_3 + g_5 + g_6$

and $T^{eq} = \dfrac{-6T_p}{1 + 3u}$.

The distribution functions on the bottom wall were defined as

$$g_2 = \frac{1}{9} T^{eq}\left(1 + 3u\right), g_5 = \frac{1}{36} T^{eq}\left(1 + 3(u + v)\right),$$

$$g_6 = \frac{1}{36} T^{eq}\left(1 + 3(u - v)\right)$$

where $T_p = g_0 + g_1 + g_3 + g_4 + g_7 + g_9$

and $T^{eq} = \dfrac{-6T_p}{1 + 3u}$.

3. Results and Discussion

A numerical analysis has been performed to investigate the effects of Reynolds number on isotherms, temperature profiles and velocity profiles in a lid driven cavity with the top side heated. Investigation is carries out for four values 100, 400, 1000 and 3200 of Re. Prandtl number is kept fixed at 3.8 for all the simulation. Since the cavity is square, aspect ratio is unity. Fig. 2 presents the variation in velocity profiles along the geometric center of the cavity at Re=100, 400, 1000 and 3200. Fig. 2a shows u-velocity profile along y-axis though the geometric center of the cavity for different Reynolds numbers. It can be seen that for all values of Re, the u-velocity starts increasing from zero at the bottom, continuously decreasing to the minimum negative value and then increases to become zero at the center. The u-velocity then increases to attain the maximum positive value at the top lid. The minimum u-velocity value is observed to decrease with an increase in Re. Fig. 2b presents the v-velocity profile along x-axis through geometric center of the cavity corresponding to the conditions considered in Fig.2a. It is observed that the v-velocity starts from zero at the left side wall, attains the maximum positive value, and then decreases to zero at the center of the cavity. The v-velocity continuously decreases from the center and reaches the minimum negative value before it again becomes zero at the right side wall of the cavity. Though the basic trend of the u-velocity and v-velocity profiles remains the same, a significant variation in the values is observed, as indicated by Fig. 2. The u-velocity profiles tend to become steeper and the value increases in magnitude towards the top of the cavity with an increase in Re.

Fig.3a-d presents the temperature profiles for various Reynolds numbers. A significant change in the temperature profiles as Re increases from 100 to 3200, as maximum value moves towards top with an increase in Re. Increase in temperature values is observed in the lower part of the cavity due to primary circulation. The temperature at the center of the cavity shifts to almost constant due to dominance of natural convection at the center of the cavity as Re increases from 100 to 1000. At higher Re (3200), the influence of forced convection is clearly observed at the center of the cavity, as there is a variation in the temperature at the four cross sections, unlike the case of Re=1000. Overall, the temperature profiles shift towards the right of the cavity, indicating increase in temperature due to a forced convection with an increase in Re.

4. Conclusion

Investigation was carried out to study the influence of elevated temperature and geometrical parameters on fluid flow in a heated lid-driven square cavity. The study investigated the influence of Reynolds number on temperature profiles and velocity profiles at different cross sections of the cavity. Investigation was performed for four values of Re (100, 400, 1000 and 3200). A significant impact of Re on forced convection was observed, as suggested by the variation in temperature profiles and isotherms. The lattice Boltzmann method is demonstrated to be a promising numerical technique to simulate fluid flows.

*   *   *   *   *

References

Ahmed Sameh E. M.A. Mansour, R.A. Mohamed, M.M. Abd-Elaziz. 2010. Numerical simulation of mixed convection flows in a square lid-driven cavity partially heated from below using nanofluid, *International Communications in Heat and Mass Transfer,* 37: 1504–1512.

Chen Shiyi, Gary D. Doolen.1998. Lattice Boltzmann method for fluid flows. *Ann. Rev Fluid Mech.* 30: 329–364.

D'Orazio A, M. Corcione, G.P. Celata. 2004. Application to natural convection enclosed flows of a lattice Boltzmann BGK model coupled with a general purpose thermal boundary condition. *Int. J. Therm. Sci.* 43(6): 575–586.

Guo Yali, Daoyang Qin, Shengqiang Shen, Rachid Bennacer. 2012. Nanofluid multi-phase convective heat transfer in closed domain: Simulation with lattice Boltzmann method. *International Communications in Heat and Mass Transfer* 39: 350–354.

Kefayati GH. R, M. Gorji-Bandpy, H. Sajjadi, D.D. Ganji. 2012. Lattice Boltzmann simulation of MHD mixed convection in a lid-driven square cavity with linearly heated wall. *Scientia Iranica* B 19(4): 1053–1065.

Kefayati GH.R. 2013. Lattice Boltzmann simulation of MHD natural convection in a nanofluid-filled cavity with sinusoidal temperature distribution. *Powder Technology,* 243: 171–183.

Mohamad A. A., R. Viskanta.1994. Flow structures and heat transfer in a lid-driven cavity filled with liquid gallium and heated from below. *Experimental Thermal and Fluid Science,* 9: 309–319.

Mohamad A. 2011. *Lattice Boltzmann Method.* London: Springer-Verlag Limited.

Succi S. 2001.*The lattice Boltzmann equation for fluid dynamics and beyond.* Oxford: Oxford University Press.

Pop I., Tanmay Basak, S. Roy, Sandeep Kumar Singh. 2010. Analysis of mixed convection in a lid-driven porous square cavity with linearly heated side wall(s). *International Journal of Heat and Mass Transfer*, 53: 1819–1840.

Pop Ioan, Hakan F. Oztop, Khaled Al-Salem. 2011. MHD mixed convection in a lid-driven cavity with corner heater. *International Journal of Heat and Mass Transfer*, 54: 3494–3504.

Zou Qisu, Xiaoyi He. 1997. On pressure and velocity boundary conditions for the lattice Boltzmann BGK model. *Phys. Fluids*, 9(6).

PRAGMATIC APPROACH FOR REDUCING NON-REVENUE WATER

Assistant Professor **Leonard Joanes**
Department of Computer Applications

ABSTRACT

Water is a precious and scarce commodity; and its use needs to be controlled and managed to avoid losses. The growth of population and housing further puts a burden on the demand for potable water. In order to meet this demand there is not only the need to produce more water, but to arrest losses in the water network; as well as manage the same. A good strategy to reduce losses needs to be followed and the one widely accepted is the IWA approach. It includes the reasons for losses and the factors that influence them. This paper reviews best practices adopted by Israel and Jordan in accordance with the recommendations of IWA. Water leakage losses are symptoms which have root causes. Many public utilities suffer from inefficiencies due to failure to reform from within which is at the root of the failure to reduce NRW. In such cases, contracting NRW activities to private authorities serve to achieve performance goals which are otherwise unattainable.

Keywords: non-revenue water, water balance, NRW survey, pressure management, water metering, water loss monitoring, water network audit, Best Practices, performance based contracts

1   Introduction

It is claimed that Non-Revenue Water (NRW) levels in developing countries is high. However, there is a dearth of figures to substantiate these claims as developing countries lack adequate monitoring systems for water losses. Even if these are available, they may not be reliable as it is common for the management of public utilities to exaggerate data to conceal the extent of their efficiency (Kingdom et al 2006).

According to Kingdom et al (2006), 'the total cost to water utilities caused by NRW worldwide can be conservatively estimated at $141 billion per year, with a

third of it occurring in the developing world. In developing countries, about 45 million cubic meters are lost daily through water leakage in the distribution networks—enough to serve nearly 200 million people. Similarly, close to 30 million cubic meters are delivered every day to customers, but are not invoiced because of pilferage, employees' corruption, and poor metering'.

A lot has been done to address the problem of water losses in various countries. In order to have a strategy in place, it is first necessary to have an understanding of the reasons for water losses before developing techniques and procedures to reduce them (Farley 2003). Water loss reduction strategies have been developed, refined and implemented in various countries. This paper reviews the strategy for NRW reduction according to the International Water Association (IWA) approach which is based on best practices from many countries. This approach looks at the components of the Water Table and answers a series of diagnostic questions. The best practices adopted by Israel and Jordan in compliance with the IWA approach are presented to demonstrate the efficacy of using this approach. Finally, the paper discusses why the challenge to reduce NRW has failed, which points to inadequacies inherent in public utilities and the need to contract NRW activities to the private sector in the form of Performance Based Contracts.

2   International Best Practice for Assessment, Monitoring and Control of Non-Revenue Water

According to Farley (2003), a water loss strategy first requires a good understanding of reasons and factors that influence water losses. Thereafter, techniques and procedures can be developed and implemented to suit the water network characteristics implemented for leakages detected, in an order of priority. In this section, salient features of the strategy for leakage management (ibid) are based on Farley and Trow (2003).

The first step in developing a strategy is to ask the following pertinent questions:

- How much water is being lost?
- Where is it being lost from?
- Why is it being lost?
- What strategies can be introduced to reduce losses and improve performance?
- How can we maintain the strategy and sustain the achievements gained?

2.1 Water Balance

In order to answer the question *'How much water is being lost?'* one needs to know the various allocations of water usage in the water distribution system. These allocations are standardized and depicted in a model developed by the International Water Association (IWA).

Figure 1: IWA Standard International Water Balance and Terminology

System Input Volume (corrected for known errors)	Authorised Consumption	Billed Authorised Consumption	Billed Metered Consumption (including water exported)	Revenue Water
			Billed Unmetered Consumption	
		Unbilled Authorised Consumption	Unbilled Metered Consumption	Non-Revenue Water (NRW)
			Unbilled Unmetered Consumption	
	Water Losses	Apparent Losses	Unauthorised Consumption	
			Customer Metering Inaccuracies	
		Real Losses	Leakage on Transmission and/or Distribution Mains	
			Leakage and Overflows at Utility's Storage Tanks	
			Leakage on Service Connections up to point of Customer metering	

Source: IWA Manual of Best Practice (McKenzie and Lambert 2004)

The Water Balance is depicted in **Figure 1** and shows all the components of water supply such inputs, consumptions and losses. From **Figure 1**, the following can be deduced:

- Non-Revenue Water (NRW) is the difference between System Input Volume and Billed Authorised Consumption. NRW consists of Unbilled Authorised Consumption and Water Losses. Unbilled Authorised Consumption constitutes a small percentage of NRW.
- Water Losses consist of Apparent Losses and Real Losses.
- Water Loss is the sum of Real losses and Apparent losses.
- Apparent Losses consists of Unauthorised Consumption and all types of metering inaccuracies.
- The Real Losses comprise transmission leakages in distribution mains and service connection lines from floors and walls of reservoirs.

Liemberger et al (2003) refer to the standard terminology of the IWA Water Balance and describe how utility managers can determine the NRW and its components.

2.2 Water Network Audit

Estimates of the System Input Volume and Billed Metered Consumption are easy to determine. However, to determine the real and apparent losses, a network audit needs to be done which answers the question '*Where is the water being lost?*' This can be done in several ways such as checking existing production meters, bulk meters, reservoir drop tests, metered consumption, checking operational use and unmeasured supplies. Leakage studies are needed to quantify leakages in each of the physical components of the network. These studies include reservoir overflows, leakage from reservoir walls, transmission mains and the distribution network.

2.3 Upgrading and Strategy

This section answers the question '*What strategies can be introduced to reduce losses and improve performance?*'. These include demarcating the network into District Metered Areas (DMAs), implementing leakage management policies and reviewing network operating characteristics.

2.3.1 District Metered Areas

The entire network is divided into manageable zones so that one can understand, monitor and control pressures and flows. Smaller zones called District Metered Areas (DMAs) each having a discrete boundary can service 500 to 3000 households. Also, each DMA has flow metering devices to measure flows. The night flows into these zones are measured against the customer night consumption to determine leakages. This is because water consumption is low during the night and leakage flows become very evident during this time. However, errors could occur where the DMAs service entertainment areas. DMA boundaries can be demarcated based on pressure, sources of water and geography. The zoning concept is illustrated in **Figure 2** which shows zones organized in hierarchy i.e. smaller zones are enclosed in bigger zones. A bulk meter monitors flows in the big zone, whereas district and sub district meter monitors flows in smaller zones.

Effective management of the water network also depends on the availability of flow meters to measure and monitor flows in and out of each DMA, at regular intervals throughout the day. This data is required periodically and in real time at the operational center. Such data is required for accurate Water Balance calculations.

Figure 2: Metering hierarchy and DMA design options
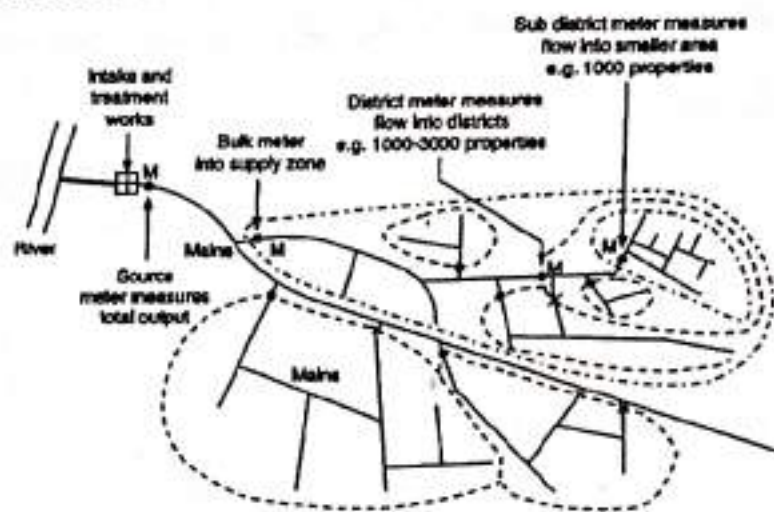
Source: UKWIR 'Managing Leakage' (2010)

2.3.2 Leakage Management Policies

Reduction of leakages is related to infrastructure management and repair policy, pressure management, active leakage control and speed and quality of repairs. Pressure management is one of the principal elements of leak management strategy. Pressures are the cause of pipe bursts and their frequency is related to pressure. Pressures need to be maintained in tune with the user demand, in each DMA. Excessive pressures will result in waste of water by users and increase in the number of unreported leakages. It is therefore important to locate valves strategically and to control them to optimize flows.

Active leakage control is the finding of unreported leaks by staff of the public utility. This is done by regular surveys and leakage monitoring. Regular surveys involve listening for leaks on pipes. Listening proceeds from one end of the pipe to another. Leakage monitoring, monitors flows into DMA zones to measure leakage and to prioritize leak detection activities. It is the most widely practiced method of leakage management. Continual flow monitoring comes at a cost and is justified in countries such as the Gulf States where the cost of production and supply is high. However, in developing countries where water is cheaper to produce and deliver, regular surveys with electronic apparatus will be the norm.

2.3.3 Review of Network Operating Practices

This exercise reveals problems resulting from poor infrastructure and bad management. It is the appraisal of the physical characteristics of the network and the operational practice. It assesses the methodologies for operating the network,

facilities for monitoring flows and pressures, technologies for monitoring and detecting leakage and staff skills. Discussions with senior staff will give information on management practices, financial and political constraints. Discussions with operational staff will give access to physical data, documents and technology related aspects. This will answer the question '*Why is water being lost?*'

3 Best Practices for reduction of NRW in Israel and Jordan

There are success stories of implementations of some of the measures mentioned in section 2 and these are highlighted in this section. This section also answers the question '*What strategies can be introduced to reduce losses and improve performance?*'

According to SWIM (2013), the following are a comprehensive set of measures adopted by Israel and Jordan to reduce NRW:

- Replacement of Water Meters
- Pressure Management System
- Advanced Wireless Metering System
- NRW survey

In the following sections, some of the above mentioned measures have been selected as Best Practices and are described, as detailed in SWIM (2013).

3.1 NRW Survey

An understanding of the existing water network distribution and its physical and operating parameters is a must in quantifying the components of the Water Balance for the region under study. It is necessary to review maps and design data of existing infrastructure, consumer database, demand supply data, etc. to assess current status of the network.

A NRW survey was done in 2011 for the city of Lod (population of 70,000) in the state of Israel and the following recommendations were made:

- Installation of meters on identified illegal connections and on unmetered water supplies.
- Divide the city into DMAs with a separate water meter for each DMA.
- Installation of online monitoring of flows and wireless transmission meters.

### 3.2 Replacement of Water Meters

This endeavor included the installation of water meters to private and public consumers, replacement of damaged and aging meters. The objective was to have an accurate account of all consumption billed to give a status of water consumption.

Figure 3 demonstrates the effect of installing water meters on the NRW percentage and amounts in the city of Ra'ananain Israel between 1998 and 2000. There is significant decrease of the NRW between the years of 1999-2001, with an average NRW rate of 7.4 percent. Prior to this it was more than 15 percent. It is to be noted that the change in NRW occurred between 1999 and 2001 was due to replacement of the old water meters.

Figure 3: NRW Change in Ra'anana, percent of NRW over the years of 1996-2007
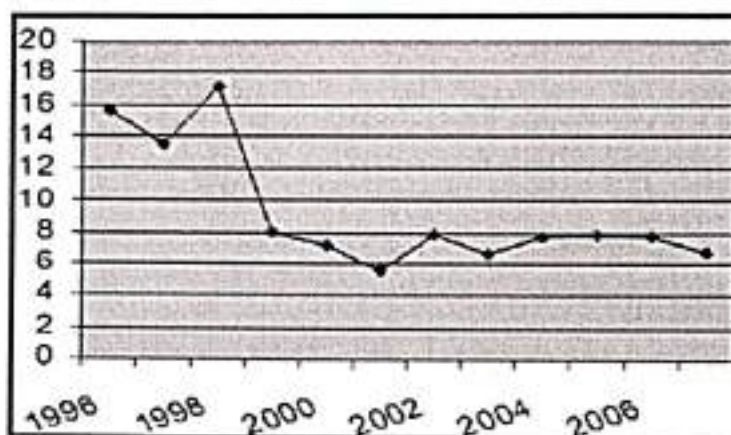
Source: SWIM (2013)

3.3 Pressure Management System

Typically, water networks are designed to provide water supply with higher pressure values than required. This is because the objective of designing the network is to meet future needs and peak demands. This results in high pressure demands in the network which have adverse consequences. These include water wastage at the user end, high energy cost to the Public Utility to deliver water to end users, greater physical NRW due to high pressure at leakage spots.

To deal with this kind of problem it is required to match the water demand at various times of the day with a corresponding supply obtained by changing of the pressure profiles in the network accordingly. This includes demarcating areas in the network into uniform pressure zones. Within each zone, pressure is maintained at an optimal level using Pressure Regulating Valves (PRVs) installed on all supply mains entering a pressure zone. This exercise is crucial in areas of high elevation where pressure needs are high. PRVs are devices that are able to maintain pressures based on demand. In the state of Israel, a case study was done in Haifa (population of 270,000) wherein the Haifa municipality through the use of PRVs succeeded in maintaining NRW between 7 to 8 percent, despite the mountainous terrain which characterizes the geography of Haifa.

Due to water scarcity, the common practice in Jordan is intermittent water supply. Pressure management in such cases for the purpose of reducing NRW, can have negative effects of unexpected low pressure. Low pressure could result in delay in filling of water tanks in households due to late arrival of water. Such problems are evident with networks in hilly terrain having an inadequate pipe distribution network. Two pilot areas were selected to address these issues. The first was Fuheis in Balqa governate and the other in Sanfahah & Arwayyemm in Tafilah governate. To control pressures, hydraulic models using EPANET software were made. These models were used to determine number, location and pressure ranges for PRVs. In addition, an innovative method was developed using GIS to model customers' roof tank to take into account the time required to fill them. **Figure 4** shows the results for the Fuhais pilot area where NRW was measured at different times in order to assess the combined effect of basic NRW reduction measures and pressure management at various stages. Basic NRW reduction measures include leak detection and repair and defective customer meter replacement. As a result of pressure management, NRW was reduced from the baseline value of 36 percent to 18 percent.

Figure 4: Impact of Pressure Control on NRW in Fuhais Pilot Area

Description	1st Survey	2nd (Baseline Survey)	3rd Survey	4th Survey	Final Survey
Supply start date and time	2009/06/27 9:00	2010/03/20 8:30	2010/06/12 9:00	2010/10/30 9:00	2011/02/11 9:00
Supply stop date and time	2009/06/29 9:00	2010/03/22 8:30	2010/06/14 9.00	2010/11/01 9.00	2011/02/13 9.00
Supply duration (hours)	48.0	48.0	48.0	48.0	48.0
System input (M3)	2,586	1795	3045	2,253	1,655
Customers consumption (M3)	1,800	1149	2102	1660	1358
NRW (M3/week)	786	647	943	593	297
NRW % of system input	30.4%	36.0%	31.0%	26.3%	17.9%

Source: SWIM (2013)

Figure 5 shows the NRW measurements for the Sanfahah & Arwayyemm area at different times in order to assess the combined effect of basic NRW reduction measures and pressure management at various stages. As a result of pressure management, NRW was reduced from the baseline value of 40 percent to about 15 percent.

Figure 5: Impact of Pressure Control on NRW in Sanfahah & Arwayyemm Pilot Areas

Description	1st Survey (Baseline)	2nd Survey	3rd Survey	Final Survey
Supply start date and time	2009/8/4	2009/12/13	2010/11/23	2011/3/23
	11:00	13:00	12:25	11:50
Supply stop date and time	2009/8/5	2009/12/14	2010/11/24	2011/3/24
	11:00	13:00	12:40	12:05
Supply duration (hours)	24	24	24.25	24.25
System Input (M3)	1,827	1,219	1,951	1,477
Customers consumption (M3)	1,090	928	1,561	1,253
NRW (M3/5 days)	737	291	390	224
NRW Percentage of system Input	40.3%	23.9%	20.0%	15.2%

Source: SWIM (2013)

3.4 Advanced Wireless Metering System

This method was not selected as a Best Practice but the goal is to widely implement it throughout Israel. This system facilitates the monitoring of water supply in real time and detects the source of leaks close to the discovery time in order to quickly fix them. When a leak occurs, the system sends alerts over long distance through wireless media. Water meters in the city of Ra'anana, Israel were replaced with those that could send data over wireless media. 25000 water meters were installed between 2000 and 2005 and this resulted in a drop of NRW from an average 13.8 percent to 7.7 percent in years following replacement. The drop was realized even before installing the wireless system. Subsequent to the installation of the wireless system, the NRW reduced to 5.75 percent on average. This system was also installed in the area of the Misgav Regional Council (21,000 population, 35 settlements, and covering an area of 200 km^2) and in the cities of Rishon Lezion, Modiin and NesZiona.

The benefits of the wireless metering system are notifications of the leakage in real time and the awareness of leakage locations in order to carry out timely repairs. This necessitates the installation of water meters with the capability of communicating pressure readings to a central source of decision making. The system achieved the dual objective of both reducing administrative NRW as well as reducing delays in fixing leakages.

4. Private Sector Participation

Looking at the issue of NRW from another perspective it is worthwhile to look beyond the symptoms such as "the pipes leak because they are not maintained", to

uncover root causes. These symptoms could include lack of revenue, knowledge, skill or simply the lack of will (WB 2006). This could in part answer the question '*Why is water being lost?*'

In order to have effective NRW reduction, public utilities require a range of skilled staff from managers and engineers to onsite staff such as plumbers, etc. NRW is not part of technical educational curriculum in engineering institutions and hence qualified and skilled staff is not available. NRW reduction is an unfamiliar concept and there is need to sensitize staff in public utilities to this important issue before it can translate into changed attitudes and be integrated into the work culture. Public utilities face challenges of lack of a proper environment to conduct NRW reduction activities. They lack the expertise, technology and practical experience. NRW reduction activities introduce new roles never performed in the normal work flow of employees in public utilities. There is therefore the need to restructure public utilities in the managerial and institutional environment to include NRW reduction activities in-house (Kingdom et al 2006). In lieu of this, the services of the private sector can be acquired to accomplish this task. The private sector brings in benefits that include qualified personnel, access to finance, innovative solutions, new technologies and know-how, practical experience and the will to perform (ibid).

According to WB (2006), there are success stories of governments which have reformed public utilities without private sector assistance, through restructuring and assistance provided in various forms such as technical, new appointments and so on. As an example, the water utility serving Phnom Penh, Cambodia has been successful in this regard. However, there are many cases in which the public sector has failed to deliver results (ibid).

According to Kingdom et al (2006), there are various arrangements under which NRW activities can be contracted to the private sector. An attractive option is the Performance Based Service Contract. This is a concept in which a private firm is contracted to implement an NRW reduction programme consisting of water reduction activities, as well as the achieving of performance goals which are suitably rewarded. In this type of contract, some risks are transferred from the public utility to the private contractor. On account of the risks involved, the private contractor is given the freedom and resources to make independent decisions.

Kingdom et al (2006) reviewed a number of cases where performance based contracts were successfully implemented to reduce NRW. Although benefits were derived from the adoption of such contracts, some useful lessons were learnt. They are listed below:

- The Performance Based Service contracts need to be written with care. The important part of the contract is the creation of a framework for incentives for actual loss reduction achieved, rather than having a fixed target or lump sum. In addition, the freedom to choose zones to implement NRW reduction is to be curtailed as this may not match the priorities of the public utility.

- It is required to ensure that the efforts to reduce NRW are sustained beyond contract period of the private contractor. Therefore, appropriate mechanisms for transfer of know-how to the staff of the public utility concerned should be embedded in the contracts. This answers the question '*How can we maintain the strategy and sustain the achievements gained?*'

- NRW reduction programs involve a considerable amount of civil works, which is usually performed by local construction firms. Reimbursement for civil works does not encourage the contractor to reduce NRW and work in the most cost-effective manner.

5.   Conclusion

It is evident that water losses are a global problem and NRW activities to mitigate losses are a necessity. A widely adopted strategy is the IWA approach. It enumerates the components of the Water Balance including authorized and unauthorized consumption. The Water Balance is a model that shows the relationship of various components of water (usage and losses) during transmission over the network. The Water Table gives a clear definition of NRW using standard terminology referred to globally. The values of NRW claimed in developing countries may be unreliable and difficult to justify since monitoring systems are not typically employed in water networks.

As a first step to reduce NRW losses an understanding of the reasons and factors that influence water losses is required. In this regard, the IWA methodology performs a diagnostic assessment of the infrastructure parameters and consumer data before arriving at recommendations to reduce NRW. The diagnostic approach answers a series of questions before taking a set of actions or recommendations. Actions include District Metering Areas (DMAs), Pressure Management, Network Audit and Leakage Control.

Countries such as Israel and Jordan have adopted measures in accordance with the IWA approach and their success is documented in this paper. Even a small adherence to the IWA approach can reap tangible benefits as can be seen from the Best Practices described in section 3.

IWA approach to reduction of NRW is easy but can be involved. However, implementation of a few actions in the right direction will do a lot to reduce NRW while other actions serve to fine tune NRW reduction. Basic measures include replacement of old meters to consumers to get accurate consumption billed and demarcating DMAs with separate water meter for each DMA. Fine tuning measures include pressure management and advanced wireless metering. The latter measures could be cost intensive and so a cost benefit analysis needs to be conducted before implementing them.

The exercise to diagnose and provide actions to implement NRW reduction measures will be futile unless the management and staff of the public utility is equipped and has the environment, incentives and the will to implement NRW reduction measures. Although success stories are reported in the public sector, there are many cases in which the public sector has failed to deliver results. In lieu of this, recourse can be sought from the private sector in the form of Performance Based Contracts and their accompanying benefits. NRW activities have to be sustained and upon completion of contract, sharing of know-how by the contractor with the staff of public utility needs to be enforced in the contract.

NRW reduction has benefits in the short term as well as in the long term. In the short term the increase in available water can be used to service more people and in the long term it can be used to meet water demands of the future. Therefore, all efforts need to be made to arrest the loss of this precious resource.

*   *   *   *   *

References

Farley. 2003. Non-revenue water - International best practice for assessment, monitoring and control. *12th Annual CWWA Water, Wastewater & Solid Waste Conference*, Atlantis, Paradise Island, Bahamas.

Farley, M. and Trow S. 2003. *Losses in water distribution networks - A practitioner's guide to assessment, monitoring and control.* London: IWA Publishing.
http://www.iwapublishing.com/template.cfm?name=isbn1900222116.

Kingdom B., Liemberger R. and Marin P. 2006. The challenge of reducing non-revenue water (NRW) in developing countries. How the private sector can help: A look at performance-based service contracting. *Water Supply And Sanitation Sector Board Discussion Paper Series, Paper No . 8.*

Liemberger, and R. Farley M. 2004. Developing a non-revenue water reduction strategy Part 1: Investigating and assessing water losses. *IWA 4th World Water Congress, Marrakech.*

McKenzie, R. and Lambert A. 2004. *Best Practice performance indicators : A practical Approach.* Water 21

SWIM. 2013. Documentation of best practices in non-revenue water management in selected Mediterranean countries - Algeria, Israel, Jordan & Morocco. *Sustainable Water Integrated Management (SWIM) - Support Mechanism,* Project funded by the European Union.

Trow, S. and Farley M. 2004. Developing a strategy for leakage management in water distribution systems. *Water Supply*, Vol. 4(3): 149–168.

UKWIR. 2010. *Managing leakage 2011.*

WB. 2006. *Approaches to private participation in water services: A toolkit.* Washington, DC: The International Bank for Reconstruction and Development / The World Bank.

EXCHANGE RATE FLUCTUATION AND AGRICULTURAL EXPORTS OF INDIA

Assistant Professor **John Xavier D'Souza**
Assistant Professor **Lizette Da Costa**
Department of Economics

ABSTRACT

India is a rapidly growing economy, and agriculture is the backbone of the economy. The agricultural sector contributes a significant proportion to its total exports. The exchange rate plays an important role in valuing farm production and equipment. Agricultural exports can be influenced by exchange rate fluctuations. Based on this background this study has been taken up to find out the impact of exchange rate fluctuation on India's total agricultural exports. The paper attempts to draw conclusion based on the analysis of time series data for exchange rate and total agricultural exports, from the year 1991-92 to 2009-10, which is conducted by using statistical tools. It has been found that exchange rate does not have greater impact on agricultural exports. Hence, other factors influencing agricultural exports have been highlighted in the paper.

Keywords: agricultural exports, exchange rate

1. INTRODUCTION

In today's world with a rapidly increasing global economy and constantly changing international trade laws and technology, the exchange rate plays an important role in valuing farm production and equipment. Over the last couple of years agricultural producers have been more sensitive and interested in the role of exchange rates in commodity prices. Exchange rate movements create a difference in foreign and domestic prices of a single good, and monetary shocks have non-neutral effects that explain some of the variability in agricultural prices (Kristinek and Anderson 2002). Macroeconomic conditions often play a large role in domestic agricultural policies and therefore a role in world market competitiveness and trade relations. These structural policy implications of exchange rate movements coupled with their direct effect on markets are why exchange rates are important to agriculture. The size of

the exchange rate impact depends on crop, year, country, governmental influence in markets, etc. Exchange rate changes can affect terms of trade and international competitiveness.

2. OBJECTIVES

The objectives of the paper are as follows:

(i) To find out the relationship between exchange rate and agricultural exports.

(ii) To highlight the factors influencing agricultural exports.

3. METHODOLOGY

The paper is based on secondary data collected from rbi.org, for the period of nineteen years, that is from 1991-92 to 2009-10. Correlation has been used to conduct the analysis.

4. REVIEW OF LITERATURE

Kafle (2011) found out that the trend of agricultural export and import flows between the United States and OECD (Organization for Economic Co-operation and Development) have increased. However, the export volume was greatly reduced from 1980 to 1986, which may be partly due to the increased production of non-agricultural products for example, manufacturing products and reduced protection of agricultural producers. The subsequent increase in agricultural exports after 1986 can be attributed to free trade agreements between the United States and some OECD countries such as Canada (CUSTA: Canada – US Trade Agreement), Canada and Mexico (NAFTA : North American Free Trade Agreement), Australia, Israel and Chile. Moreover, subsidization in agricultural products and prioritization of agriculture in global trade at and after the Uruguay Round of negotiations could be responsible for this boost in agricultural trade flows. Exchange rate volatility has a significant negative correlation with agricultural, non-agricultural and total export, import, and trade (export + import) flows between the United States and OECD countries. Similarly, the real exchange rate has a significantly positive impact on all but agricultural export flows from the United States to OECD countries. It is observed that exchange rate volatility has a significant negative impact in all three kinds of export flows, that is, agricultural, non-agricultural and total. The magnitude of impact is larger in agricultural as compared to non-agricultural exports. The reason behind the larger impact on agricultural exports resides in the relative sensitivity of agricultural sector to the exchange rate movements. Moreover, agricultural products have extremely limited storability as compared to non-

agricultural products, which forces agricultural traders to sell their products irrespective of the fluctuations in the exchange rate market (ibid).

Sharma (2000) has found out that, over the past few decades India's exports have grown much faster than GDP. Several factors appear to have contributed to this phenomenon including FDI. However, as yet there has not been any attempt to investigate the role of FDI in India's export performance. His findings suggest that demand for Indian exports increases when its export prices fall in relation to world prices. Also the real appreciation of the rupee adversely affects India's export demand. Hence, inflation should be kept lower than major trading partners and reliance on flexible exchange rate be increased to ensure that the real appreciation of rupee is maintained. Export supply is positively related to the domestic relative price of exports and a higher domestic demand reduces export supply. This suggests that tight monetary and fiscal policies are necessary especially at the time of high growth to check domestic prices and demand pressure. Foreign investment appears to have statistically no significant impact on India's export performance.

Chee-Wooi and Chee-Keong (2010), found out that the bilateral trade between Bangladesh with her neighbouring countries is very competitive, that is, a depreciation of Bangladesh's currency reduces the trade volume with her neighbouring countries. Similarly a rise in exchange rate volatility in the SAARC countries has negative implications on their export flows. Foreign income is a crucial factor in influencing bilateral trade with its trading partners. This suggests that as far as the Indian economy is concerned, the higher the income level of its trading partners will lead to higher purchasing power of the country thus encouraging more exports from India. One can conclude that the risks associated with exchange rate variability discourage economic agents from trading across borders.

Kandilov (2007) has found out that the impact of exchange rate volatility on agricultural exports from developed nations to developed, emerging, and developing countries, almost completely disappears. He has also found out that exchange rate volatility has a negative impact on developing country exporters' agricultural trade. This effect, however, is small and quite comparable to the effect on aggregate trade.

Alam (2010) explains for Bangladesh, that the impact of exchange rate depreciation might not be same for all sub-sectors of export. This is why the relation of exchange rate with various sub-sectors of export should be analyzed and considered separately. In addition, careful investigation of various incentive options

is required to select an effective and pragmatic policy to support export. One policy may not fit all. Moreover, the bad impacts of depreciation on other sectors of economy should also be considered seriously before taking any policy.

5. DATA

Table 1 shows year wise annual average exchange rates and total agricultural exports of India.

Table 1: Annual average exchange rates and total agricultural exports of India[1]

Sr. No	Year	Exchange Rate Annual Average	Total Agricultural Exports- US Million $
1	1991-92	24.47	3202.5
2	1992-93	30.64	3135.8
3	1993-94	31.36	4027.5
4	1994-95	31.39	4226.1
5	1995-96	33.44	6081.9
6	1996-97	35.49	6862.7
7	1997-98	37.16	6626.2
8	1998-99	42.07	6034.5
9	1999-00	43.33	5608
10	2000-01	45.68	5973.2
11	2001-02	47.69	5901.2
12	2002-03	48.39	6710
13	2003-04	45.95	7533.1
14	2004-05	44.93	8474.7
15	2005-06	44.27	10213.8
16	2006-07	45.28	12683.5
17	2007-08	40.24	19398.8
18	2008-09	45.91	17774.5
19	2009-10	47.41	19572.4

6. ANALYSIS RESULT

The correlation value for exchange rate and agricultural exports is found to be +0.50. It means that they are relatively significant. Exchange rates are not having much impact on agricultural exports as expected. It could be that, some other factors are also influencing agricultural exports.

7. OTHER FACTORS INFLUENCING AGRICULTURAL EXPORTS

Kumar (2010) has found out that, the extent of internationalization of livestock sector, could be partly attributed to trade policy reforms. The performance of livestock exports has been noteworthy, while the reverse has been observed in

imports of livestock products. There has been a consistent improvement in the exports of livestock products during the post-reform period. The *liberalization policy* initiated in 1991 seems to have improved the performance of livestock exports. In the case of mutton, India does not enjoy much competitiveness to emerge as a significant exporter in the world market. Domestic demand for mutton also has been increasing consistently, which may further preclude it to expand mutton export. On the other hand, the geographical distance characterizes the obstacles to trade; its higher value leads to decrease in bilateral international trade, indicating an inverse relationship with the export.

According to Kandil (2004) anticipated depreciation increases the cost of imported goods, thereby decreasing output growth. Anticipated currency depreciation increases the cost of imported raw materials and, hence, it leads to price inflation. Unanticipated depreciation of the domestic currency affects the demand and supply sides of the economy. Specifically, depreciation decreases the output supplied with an indeterminate effect on aggregate demand. Overall, exchange rate depreciation appears to induce contractionary effects that slow down output growth and raise price inflation in the majority of developing countries. Hence exchange rate policies should aim at minimizing unanticipated currency fluctuations to insulate economic performance from the adverse effects of this variability in developing countries.

Kristinek and Anderson (2002) pointed out that the international financial crisis that began in July 1997 struck Thailand, Indonesia, South Korea, Russia, Brazil and other South American Countries. This crisis led to depreciated currencies, decreased economic growth and higher interest rates, depressing global commodity prices, which decreased U.S. agricultural exports. The financial crises could be one of the reasons for reducing Indian agricultural exports too.

8.   CONCLUSION

Somasekhar (2013) says that Indian agriculture has been hit during past WTO period. While the share of agro foods in India's global export has decreased during the post WTO period, *agricultural subsidies* of developed countries have increased. Therefore it is very difficult for India to face global agricultural competitiveness. In this scenario, the global agricultural trade would likely become oligopolistic. The returns of various crops have decreased due to increase in cost of production, slow growth rate of agricultural productivity and weak marketing mechanism. Realizing the present situation and problem, the Indian government should take effective

steps to protect and strengthen our agriculture sector which has the potential to contribute more effectively towards the GDP of the nation, and also more importantly to satisfy the domestic needs for food of our economy. For this purpose efforts should be directed towards increasing the land under cultivation. Also, while agricultural land should not be utilised for non agricultural purposes, at the same time sale of agricultural land for non agricultural purpose should be prohibited, as it reduces agricultural production. The regional trade agreements of India should work in the direction of promoting agricultural exports, so that it boosts India's agricultural sector.

* * * * *

Note

1. Retrieved from: http://www.abhinavjournal.com/images/commerce & Management /Jun12/11.pdf and http://www.rbi.org.in/scripts/Publications

* * * * *

References

Alam, Rafayet. 2010. The link between real exchange rate and export earning: A cointegration and granger causality analysis on Bangladesh. *International Review of Business Research Papers*, Vol. 6(1):205-214.

Chee-Wooi Hooya & Chee-Keong. 2010 Choong export demand within SAARC members: Does exchange rate volatility matter?. *Int.Journal of Economics and Management* 4(2): 373–390.

Kafle, Kashi Ram. 2011. *Exchange rate volatility and bilateral agricultural trade flows: The case of the United States and OECD countries*. B.S. Tribhuvan University: Department of Agricultural Economics and Agribusiness.

Kandil, Magda. 2004. Exchange rate fluctuations and economic activity in developing countries: Theory and evidence. *Journal of Economic Development*, Vol. 29(1).

Kandilov, Ivan T. 2007. *The effects of exchange rate volatility on agricultural trade*. Agricultural and Resource Economics NC State, Raleigh.

Kristinek Jennifer and David P. Anderson. 2002. Exchange rates and agriculture: A literature review. *AFPC Working Paper 02-2*, Agricultural and Food Policy Center, Department of Agricultural Economics, Texas.

Kumar, Anjani. 2010. Exports of livestock products from India: Performance, competitiveness and determinants. *Agricultural Economics Research Review*, Vol. 23:

57-67, New Delhi: National Centre for Agricultural Economics and Policy Research.

Sharma, Kishor. 2000. Export growth in India: Has FDI played a role? *Center Discussion Paper No. 816*, Charles Sturt University, Australia.

Somasekhar, K. 2013. Impact of globalization on Indian agriculture & challenges – A critical review. *International Journal of Arts Commerce and Literature*, Vol. 1(2).

A STUDY OF THE PSYCHO-SOCIAL IMPACT OF TOURISM IN CAVELOSSIM

Assistant Professor **Maria Muriel de Barros**
Department of Psychology

ABSTRACT

This paper examines the impact of tourism on the stress levels, crime levels, social relationships and the attitude of the locals towards tourism in the coastal village of Cavelossim, Goa. The study involved a sample of 232 households. A Chi-square analysis showed significant age differences in the perceived levels of crime in the community, the perceived family relations and the perceived changes in the social relationships of the locals. However, there was no significant difference in the perceived stress levels of the locals and the overall attitude of the locals towards tourism.

Keywords: crime, individualism, psycho-social, stress, tourism

INTRODUCTION

Since the beginning of time humans have travelled. The early motivations to travel were mainly the acquisition of resources like food, water, safety. But the idea of travel for pleasure or exploration soon emerged. The United Nations in 1994 identified three forms of tourism. The first was domestic tourism, involving residents traveling only within their country. The second was inbound tourism, involving non-residents traveling in the given country and the third was outbound tourism, involving residents traveling in another country (United Nations 1994).

A tourist, (whether domestic, inbound or outbound) spends only a limited time in a destination area, but their activities during that time considerably influence the psychological, social and cultural lives of the people therein. Tourists leave their imprint either inadvertently or intentionally, and to differing degrees, not only on the physical and cultural landscape, but also on the social and cultural life of the inhabitants of many of the world's communities they visit (Kariel & Kariel 1982). According to Woods (1980), international tourism is one of the most rapidly expanding links between the advanced nations and the underdeveloped world. Over the years tourism researchers have been interested in understanding the many facets of the tourism industry world-wide. Some of the research documented on the positive as well as negative outcomes of tourism on a host community is provided below.

A] Positive Impact of Tourism

Tourism has brought about many desirable social, cultural and psychological changes, particularly in developing countries. Tourism activity prompts the conservation of the cultural heritage of a place, either as a result of increased awareness and pride, or because it can be justified on economic grounds as a tourist attraction. According to Driver et al (1991) some positive socio-cultural impacts of tourism include the development of stronger family bonds, the appreciation for ones cultural identity, a firmer sense of ethnic identity and an increased understanding and tolerance of others. Hall (1992) also acknowledges an improved regional identity and increased community participation as positive social impacts of tourism. Tourism helps expand community facilities and infrastructure initiatives, such as the improvement of retail, restaurant and entertainment options, transport services, education and sporting facilities. These increase the quality of life for the community. Tourism also provides an opportunity for locals to meet people with different lifestyles and cultures, exposing them to new views of the world. These experiences help the locals to widen their outlook, to embrace new ideas and have an increased appreciation for different approaches to living.

B] Negative Impact of Tourism

In spite of the immense benefits of tourism to a community, the flourishing industry also has a dark side. According to Kariel & Kariel (1982) some adverse psychosocial effects of tourism included a decreased emphasis on religion, decrease in family size, increased competition among individuals, more time spent with guests and less with family, and increased rigidity of working hours. Even though the tourists come to a region for a short time, they do influence the values and lifestyle of the local families. One such effect can be seen when locals marry non-local tourists or when younger family members take up the roles of decision making and financial planning that were traditionally the functions of the head of the family.

Another serious negative impact of tourism can be seen in the emergence of many illegal activities (underage drinking and drug abuse, gambling, sexual permissiveness, prostitution, smuggling and crime) due to the presence of tourists in a region. According to Sebastian & Rajagopalan (2009), the residents of a village in Kerala, India, perceived that tourism led to increase alcoholism and immoral activities and brought undesired changes in the value orientation of children in

their community. Also, tourists who come to a region only for a limited period may cause permanent changes in the social structure of a region by getting involved in the local issues unfavorably.

The state of Goa in India is one such destination area that has seen the impacts of tourism on the culture and lives of the people. Goa has been a much loved holiday destination world-wide, ever since the arrival of the hippies in the sixties. The present study/paper explores the perceived impact of tourism on the psychological, social and cultural life of the people in the small coastal village of Cavelossim in Goa.

RESEARCH BACKGROUND

Objectives:

1. To study differences in the perceived impact of tourism on the psycho-social life of the locals in Cavelossim.
2. To study differences in the overall attitude of the locals in Cavelossim towards tourism.

Operational Definition of Variables:

Independent Variable: Age

Dependent Variables: Perceived impact of tourism on the psycho-social life of the locals.

Sample:

For the purpose of the present study an individual survey procedure was used. A total of 232 household heads participated in this study, which included 151 male household heads and 81 female household heads. The sampled household heads comprise the total population of households residing in Cavelossim during November 2013. The age and gender distribution of the sample is been provided in **Table 1**.

Table 1 Distribution of the sample

Age	Gender		Total
	Males	Females	
Upto 54 yrs	66	14	80
55–64 yrs	43	29	72
65–90 yrs	42	38	80
Total	151	81	232

Source : Field Work

Data collection tools

The sample was administered a questionnaire of 47 items. The questions were designed in a forced choice format (dichotomous) and in a 5 point *Likert scale* (including reverse scoring). The questions aimed at understanding the impact of tourism on the psycho-social life (moral values, culture, family life, stress levels, social relationships and crime) of the locals residing in Cavelossim.

RESULTS AND DISCUSSION

Problem I: To study differences in the perceived impact of tourism on the moral values, culture and family life of the people of Cavelossim.

Table 2: Age differences in the perceived adverse impact of tourism on the psycho-social life of the locals[#]

Age Group	Psycho-Social Life		
	Moral Values	Culture	Family Life
30-54 yrs	27.6%	24.8%	30.2%
55-64 yrs	20.7%	18.0%	25.8%
65-90 yrs	21.2%	20.7%	28.0%
Total Percentage^	69.5%	63.5%	84%
χ^2	3.538	1.489	5.530
Significance	.170	.475	.063***

Source: Fieldwork (Diniz et al 2014)   *Significant at 0.01   **Significant at 0.05   ***Significant at 0.1
[#]*Kruskal Wallis Test.*

^ *The total percentage of household heads considering that tourism had impacted their psycho-social life.*

Table 2 illustrates the percentage of household heads who consider that tourism has negatively impacted their psycho-social lives. It has been found that across age groups tourism has played a considerable role in the degradation of the psycho-social lives of the locals. Analyzing the impact of tourism on the moral values of the locals, it is observed that 69.5 percent household heads considered that tourism has lowered the moral standards of the locals. The lowered moral values included, increased dishonesty, sexual permissiveness (even engaging in prostitution) and teenage pregnancies and abortions in the locality. With the influx of tourists the locals are exposed to different beliefs and ideologies. As the bonds between the locals and tourist grow stronger, the locals tend to lose touch with their moral values and treat people and relationships as mere commodities leading to a lowered

standard of moral values. However, there was no significant difference between the age groups in the perceived impact of tourism on the moral values ($\chi^2=3.538$, p>0.1)

A large section of the local household heads (63.5 percent) were found to be of the view that the Goan culture was destroyed due to tourism activities, though there was no significant age difference ($\chi^2=1.489$, p>0.1) in the same. As tourists increase in a locality, the locals adapt their behaviors to the comforts of the tourists. The host communities often alter their customs, beliefs, language, food habits and dressing sense to cater to the fancies of the tourists. Locals even use their culture as a business or a financial resource. Due to tourism many customs and festivals have also become commercialized. The Carnival, a supposedly spontaneous affair introduced by the Portuguese in Goa, has become an artificial show with sponsored floats, live bands, scantily clad women and cardboard cut-outs of sponsored products. Besides, in some localities the traditional culture is superficially lifted from the villages and presented to tourists in their luxury hotels in a compressed environmental bubble (Menon1993). These practices only destroy the essence of the pure Goan culture.

On analyzing the age differences, a significant difference was found in the perception that tourism had disrupted the family life of the locals ($\chi^2=5.530$, p<0.1), such that 84 percent household heads felt that tourism had disrupted their family life. The nature of the tourism industry being based on seasonality and odd timing, the locals have to spend long hours at work, returning home late from parties and recreational events, thus reducing the quality time spent with family members. Due to tourism activities in many families meal time, prayer time and recreation time have all become solitary activities thus disrupting the family life. Also, the increased financial independence may cause youth to break away from their families. Diagne (2004) reveals a disruption in societal structure due to tourism in Petite Côte, Senegal where there has been a replacement of male elders, as occupants of dominant position and as chief decision makers in the traditional villages, by young entrepreneurs with independent sources of income from tourism.

The highest percentage of household heads, who considered that tourism had negatively affected their family life were from the age group of 30-54 years. The reason for this difference could be the increased exposure individuals of this age group have to the changes in their community due to tourism. Being young, energetic and dynamic youngsters are more involved in the tourism sector and so experience the change in their personal lives and their community more harshly.

Problem 2: To study the impact of tourism on the perceived stress levels of the locals of different ages.

Table 3: Age difference in the perceived stress levels in the community due to tourism

Age	Increased stress in the community			χ^2	Level of significance
	Agree	Undecided	Disagree		
Upto 54	11.4%	7.0%	15.8%		
55-64 yrs	15.8%	3.5%	12.2%	11.534	.173
65-90 yrs	15.8%	3.9%	14.5%		
Total	42.9%	14.5%	42.6%		

Source: Fieldwork

As seen in **Table 3** there was no significant age difference in the perception that tourism had led to an increase in the stress levels of the locals (χ^2=11.534, p>0.1). Tourism as a social element has a consistent impact on a community as a whole. The general population has different experiences with the tourism industry. Some sections of the society may receive more of the benefits of tourism like improved quality of life, meeting people from varied backgrounds, improved investment and infrastructure development and new means of generating income. Whereas other sections may have to deal primarily with the costs of tourism like a sense of exclusion, loss of regional identity, pollution, shortage of public facilities, over-crowding, crime and smuggling. Therefore whether an individual is more exposed to the benefits or costs of the venture, there is always a sense of stress in the community. Those sections enjoying the benefits may experience the stress in order to maintain and increase their gains from tourism. Whereas, those bearing the costs of tourism may be under strain to reduce the burdens brought on them by tourism.

Problem 3: To study age differences in the perceived increase in crime and conflict due to tourism in the community.

Table 4: Age difference in the perceived rise in crime in the community due to tourism

Age	Crime and conflict in the community			χ^2	Level of Significance
	Agree	Undecided	Disagree		
Upto 54 yrs	12.1%	6.3%	16.5%		
55-64 yrs	4.4%	9.4%	17%	16.866	.032**
65-90 yrs	7.1%	5.4%	21.9%		
Total	23.6%	21.0%	55.3%		

Source: Fieldwork   *Significant at 0.01   **Significant at 0.05   ***Significant at 0.1

As seen in **Table 4**, there was a significant age difference in the locals perception that tourism has led to an increase in crime in the community (χ^2=16.866, p<0.05). It is

observed that on considering the entire population, 55.3 percent household heads disagree that tourism has led to an increase in conflicts in the community and the highest number of household heads disagreeing were from the age group of 65-90yrs. Similar conclusions were drawn by Fredline & Faulkner (2000), that tourism activities did not influence the crime levels in the community. Crime is an undesired part of most communities today and a large section of the society does not have an accurate estimate of the amount of crime in their community (Ainsworth & Moss, 2000). There are several factors like our direct knowledge about crime, personal or family victimization, being a witness to another's victimization and our personality characteristics that can influence our perception of crime. Also the mass media pays a vital role in the knowledge of crime of the community (Howitt 2009). Therefore since the victims of crime (robbery, accidents and violence) are mostly the foreigners, the locals may not perceive a change in their experience of crimes in their community. Huttasin (2008) also found that tourism did not lead to an increase in prostitution, vandalism, burglary, or drug abuse in a village in Thailand.

Research evidence provided by Pizam (1982) proposed a debatable suggestion on the relationship between tourism and crime levels in the community. He states that over the tourism season there may be an increase in petty thefts stimulated by the higher population in the community, in comparison to the level of policing which remains fairly constant. Therefore the presence of more people of varied background makes the law and order situation a little difficult in the community, thus causing an increase in the levels of crime in the community. However, the contradictory view that tourism was a potential determinant of crime was stated in the studies of Brunt & Courtney (1999), Haralambopoulos & Pizam (1996) and Tosun (2002).

Problem 4: To study age differences in the perceived change in the social relationships of the locals.

Table 5: Age differences in the perceived change in social relationships due to tourism

Age	A change from collectivism to individualism			x^2	Level of Significance
	Agree	Undecided	Disagree		
Upto 54yrs	19.4%	3.5%	11.5%		
55-64yrs	13.2%	4.9%	13.3%	12.766	.1***
65-90yrs	20.4%	1.8%	11.9%		
Total	53.1%	10.2%	36.7%		

Source: Fieldwork   *Significant at 0.01   **Significant at 0.05   ***Significant at 0.1

As seen in **Table 5**, there was a significant age difference in the perceived change in the social relationships due to tourism (x^2=12.766, p=0.1). A major percentage of the population, 53.1 percent household heads agree that the society has become more individualistic due to the flourishing tourism industry. The Goan society is usually characterized as a collectivistic culture, wherein people work co-operatively as a whole, supporting one another. However the locals in Cavelossim perceive this trend of social relationships has changed due to tourism. The locals are now observed to be more oriented to personal profits, rather than benefits for the entire community. Due to tourism the locals experience a sense of competition and rivalry among themselves. Locals are found to stand opposed to one-another to amass the benefits of tourism. They set up businesses like bars, restaurants, pubs, discotheques and cultural events that do not have any benefit for the local community (the events may be detrimental to the community as a whole and cause social turmoil), but have huge personal gains for organizer.

Problem 5: To study age differences in the overall attitude of the locals towards tourism.

Table 6: Age differences in the overall attitude towards tourism in the community

Age	Should Tourism be Encouraged	
	Yes	No
Upto 54yrs	25.4%	9.4%
55-64yrs	22.3%	8.9%
65-90yrs	21.4%	12.5%
Total	69.2%	30.8%

Source: Fieldwork

As seen in **Table 6**, in the overall the population 69.2 percent of household heads agree that tourism should be encouraged in their community. According to Glasson (1994), when locals perceive that the benefits of a venture exceed the costs they bear, the venture tends to be encouraged. It is observed that in Cavelossim the locals perceive a lot of benefits of tourism (especially economic) and so feel the need to encourage tourism development activities in the community. Some of the benefits enjoyed by the locals include added income, employment, improved infrastructure, and opportunities to meet people from different cultures. Some costs borne by the locals include a disruption of their culture, family life and social relationships. Therefore though the locals have to bear some costs of tourism activities, the same is far lesser than the benefits they enjoy.

CONCLUSION

Tourism being a multi-dimensional activity, it affects all aspects of the life of a host community. This study was undertaken to explore the impact of tourism on the psycho-social life of the locals in the coastal village of Cavelossim, Goa. Through the study it was found that the population as a whole felt that tourism had led to an increase in their stress levels. The household heads felt that tourism had caused an increase in crime and conflict in the community and also caused changes in their family life and social relationships. Nevertheless, it was found that in Cavelossim the locals were in favor of encouraging tourism activity in their community.

Therefore, though tourism did not have a favorable psycho-social impact on the lives of the locals in Cavelossim, the household heads still felt a need to encourage tourism development in their village.

*   *   *   *   *

References

Ainsworth, P.P. & Moss, K. 2000. Perception and misinterpretation of crime amongst a sample of British students. *Paper presentation at the Conference of the European Association of Psychology and Law*, Limassol, Cyprus.

Brunt, P & & Paul, C. 1999. Host perceptions of sociocultural impacts. Annals of Tourism Research, Vol. 26(3): 493-515, Retrieved from: http://dx.doi.org/10.1016/S0160-7383(99)00003-1

Diagne, A. 2004. Tourism development and its impacts in the Senegalese Petite Cote: A geographical case study in centre-periphery relations, *Tourism Geographies*, 6(4): 472–492. Retrieved from: http://dx.doi.org/10.1080/1461668042000280246

Diniz, S., Savio P. Falleiro and M.M. Barros. 2014. Local residents' perception of the psycho-social and economic impact of tourism in Goa. *International Journal of Scientific and Research Publications*, Vol. 4(11). Retrieved from: http://www.ijsrp.org/research-paper-1114.php?rp=P353334

Driver, Beverly L., Perry J. Brown & George L. Peterson. 1991. *Benefits of leisure*. State College PA: Venture Publishing.

Fredline, Elizabeth & Bill Faulkner. 2000. Host community reactions: A cluster analysis. Annals of Tourism Research. 27(3): 763–784. Retrieved from: http://dx.doi.org/10.1016/S0160-7383(99)00103-6

Glasson, J. 1994. Oxford: A heritage city under pressure. *Tourism Management*, 15(2): 137–144.

Hall, C. M. 1992. *Hallmark tourist events: Impacts, management and planning*. Chichester: John Wiley.

Haralambopoulous, N. & Pizam, A. 1996. Perceived impacts of tourism: The case of Samos. *Annals of Tourism Research*. 23(3): 503-526. Retrieved from: http://dx.doi.org/10.1016/0160-7383(95)00075-5

Howitt, D. 2009. *An introduction to forensic and criminal psychology* (3rd Ed). England: Pearson Education Publications.

Huttasin, N. 2008. Perceived social impacts of tourism by residents in the OTOP tourism village, Thailand. *Asia Pacific Journal of Tourism Research*, 13(2): 175–191.

Kariel, Herbert G. & Patricia E. Kariel. 1982. Socio-cultural impacts of tourism: An example from the Austrian Alps. *Geografiska Annaler. Series B, Human Geography*. 64(1): 1–16. Retrieved from: http://www.jstor.org/stable/490903.

Menon, A.G. K. 1993. *Case study on the effects of tourism on the culture and environment*. Bangkok: UNESCO Principal Regional Office for Asia and the Pacific.

Pizam, A. 1982. Tourism and crime: Is there a relationship? *Journal of Travel Research*. 20(3):7–10.

Sebastian, L. M. & Rajagopalan, P. 2009. Socio-cultural transformations through tourism: A comparison of residents' perspectives at two destinations in Kerala, India. *Journal of Tourism and Cultural Change*. 7(1): 5–21. Retrieved from: http://dx.doi.org/10.1080/14766820902812037

Tosun, C. 2002. Host perceptions of impacts: A comparative tourism study. *Annals of Tourism Research*. 29(1): 231–253.

Wood, R. E. 1980. International tourism and cultural change in Southeast Asia. *Economic Development and Cultural Change*. 28(3): 561-581. Retrieved from: http://www.jstor.org/stable/1153688.

United Nations. 1994. Recommendations on tourism statistics. New York: United Nations. Retrieved from: unstats.un.org/unsd/publication/Seriesm/SeriesM_83e.pdf

World Tourism Organization. 1995. Retrieved from: http://en.wikipedia.org/wiki/Tourism

POST BANK OF INDIA – THE WAY FORWARD

Assistant Professor **Surabhi Gore**
Department of Business Administration (Travel and Tourism)

ABSTRACT

The case pertains to the idea of converting the government's postal arm into a postal bank in order to make it more viable. It looks at the plea that the Department of Post has made to the Reserve Bank of India regarding financial inclusion and turning all post offices into banking branches. It presents information about the Department of Post, its functioning and services it provides. It then evaluates the benefits and impediments of the postal system. It concludes that the Postal Bank of India is definitely the way forward for the Department of Post, provided it can integrate the various aspects of banking along with its present resources. The case uses secondary data for analysis. The Postal Bank of India has a great potential for taking banking to the masses, it can even play a role in financial literacy in villages.

Keywords: Department of Posts, Reserve Bank of India, financial inclusion, post offices, banking branches, financial literacy

INTRODUCTION

The Post Bank of India (PBI) was an idea mooted in the late 1980s by the then Finance Secretary S. Venkitaramanan, who then subsequently followed it up after he became Reserve Bank of India (RBI) Governor in December 1990. But the proposal was shot down by the Ministry of Finance (Tarapore 2014). Another proposal was later developed by Global Financial Services Ernst & Young, on the basis of report by Administrative Staff College of India that also proposed to turn all existing post offices to bank branches (Narayanan 2013). Though the proposal is waiting for its final approval from the Prime Minister's office, the post offices from all over India have already begun work on ground, for instance changing their software to Infosys Finacle, a core banking software.

As per an article in *The Economic Times*, The Department of Posts, which trades as 'India Post', commonly known as 'post office' had approached the Reserve Bank for a new bank licence. The RBI has indicated that its application would need to be put through a different process in consultation with the government. It is

proposed that the PBI would be a new entity with no legacies of a government department and very little to do with its parent, except using some of its network. It will have an independent board, new governance structure and operations with just few members from the government, one from the finance ministry, one from Ministry of communication and IT and another from the department of post.

At present, there are 26 public sector banks and 22 private sector banks. Before the "Jandhan Scheme" of the government was launched, only 35 per cent of India's adult population had accounts with banks and other financial institutions as compared to a global average of 50 per cent. It is 41 per cent in case of developing economies[2]. As per jagran.com[3], there are around 90,000 bank branches in the country and provision of real-time banking services through postal network is estimated to triple the current banking network.

PBI, is expected to start with just 50 branches in the first year and scale it to a total of 150 branches in 5 years. In the beginning, it is only looking at a small, Rs. 5,000 crore bank. The amount would include Rs. 500 crore paid-up capital required under new banking licence guidelines. The bank will need to bring in new shareholders and also sell equity to the public for a stock market listing, as per RBI norms (Narayanan 2013). *"The government is likely to earmark Rs. 1,300 crore for the India Post to enable it to make foray into the banking space."The expenditure finance commission will meet this month and finalise the fund to be provided to India Post for the proposed Post Bank of India," a finance ministry official told PTI.[4]* India post is expected to become PBI's banking correspondent, which has over 1.55 lakh post offices across the country, would be using its existing network to provide banking services and bring in financial inclusion. Of the 1.55 lakh branches, over 1.39 lakh branches are in rural areas and 15,736 are in urban regions.

OBJECTIVES

i.   To study the plea that the Department of Post has made to the RBI regarding financial inclusion and proposal of turning all post offices into banking branches.

ii. To study the functioning of the Department of Post and the range of services it provides.

iii. To evaluate the benefits and impediments of the postal system and to access the feasibility of the postal bank.

METHODOLOGY

The case uses secondary data obtained from newspapers, magazines and the internet to analyse the objectives of the study.

INDIA POST – HISTORY

As per the Department of Posts' website, The Postal system in India was started by the British Raj in 1858, there were 889 post offices handling nearly 43 million letters. British India was also among the members of General Postal Union. To expand and regulate posts a number of acts were passed such as Government Savings Bank Act 1873 enacted in 1881 throughout India, Postal Life Insurance began on Feb. 1884, Telegraph Act 1885, Indian Post Office Act 1898 regulating postal service and Indian Wireless Telegraphy Act 1933. The first all India stamps were issued in 1854 under the Post Office Act XIV as the postal system kept increasing significantly.

India was the first country to adopt the expedient of overprinting "service" on postage stamps and "service postage" on revenue stamps. This was an innovative step that was later adopted by other countries. Since Independence the postal service has continued to function and had grown seven fold providing a variety of services. Today, The Department of Posts comes under the Ministry of Communication & Information Technology. The Postal Service Board is an apex management body having a chairman and its six members overlooking all operations and making strategic decisions in Personnel, Operations, Technology, Postal Life Insurance, Human Resources Development and Planning.

BACKGROUND

Services offered by India Post (as per the Department of Posts website)

India Post delivers 1,575 crore mails every year through a network of nearly 1.5 lakh post offices and 5.64 lakh letter boxes. It handles 3000 million pieces of unregistered mail every year. For providing postal services, the whole country has been divided into twenty two postal circles. Each Circle is further divided into Regions comprising field units, called Divisions (Postal / RMS Divisions).In the Circles and Regions there are other functional units like Circle Stamp Depots, Postal Stores Depots and Mail Motor Service etc. There is another Circle, called Base Circle, to cater to the postal communication needs of the Armed Forces. The post office on an average serves an area of 21.21 sq km and a population of 7175 people. The Postal Index Number or PIN code is a unique six digit code of post office

numbering introduced in 1972. The PINCODE divides the country into 8 geographical regions. The 9th region is reserved for the army. India post is the most widely distributed postal system in the world, it reaches the remotest of the villages in far flung areas. Apart from offering postal services like delivering mails, India Post also provides a number of financial services. It accepts deposits under Small Saving Schemes like PPF, National Saving Certificates, Kisan Vikas Patra, Saving Bank Accounts, Monthly Income Plans, Senior Citizens Savings Plans and Time Deposits Accounts. Additionally it provides life insurance plans under Postal life Insurance and Rural Postal Life Insurance, for all government employees and for people living in rural areas respectively. India Posts also provides retail services like bill collection, sale of form, sale of telephone cards, passport application forms etc. The Department of Posts acts as an agent for Government of India in discharging services for the citizens like Mahatma Gandhi National Rural Employment Guarantee Scheme, Wage Disbursement and Old Age Pension Payments.

The revolution in the world of communication by internet and email, made the Department of Post introduce e-POST service. Through e-POST the customer can send messages to any address in India with a combination of email and physical delivery through a network of post offices. It sends messages as soft copy through internet at the required post office where it is printed and delivered through postman. The customer can also log on to the website pay online and can himself send the mail via e-POST.

India Post has partnered with World Gold Council and Reliance Money Infrastructure for selling 24 Carat gold coins produced by Switzerland based Valcambi in 2008 and have sold to more than 40,000 customers through 700 post offices.

Some of the distinguished services provided by India Post are

a) SAL MAIL: SAL (Surface Air Lifted) mail is one of the premium mailing service of India Post apart from normal surface and airmail. It is a combination of mail delivered through air and surface transport, wherein mail is airlifted between destinations but within the destination it is delivered through surface transport. The service is available in 39 countries.

b) Media Post: Media Post is again a unique concept to help Indian corporate and the government organizations to reach potential customers. It helps in providing innovative and effective vehicle for brand building and marketing. The organizations are encouraged to advertise on postcards, letters, aerogramme and other postal stationary. Space Sponsorship on letter boxes is also solicited.

c) Logistics Post: Logistics Post for B2B distribution provides cost effective and efficient distribution across the country. It manages the entire distribution side of logistics from collection to distribution, from storage to carriage and from order preparation to order fulfilment. India Post is also starting a pilot project with amazon.com where it will work on cash on delivery model for the recipients. Amazon is already using India Post to deliver packages (Mandaviya 2013).

d) Inward Remittance: India Post provides international money remittance service on the International Financial system platform of Universal Post Union. The service is available for France and UAE but will also be available for Ukraine, Mauritius, Sri Lanka etc. Amount upto Rs 50,000 can be paid by cash from a post office counter to the remitter.

e) Project Arrow: Aims at improving branding, information technology, human resource and infrastructure at post offices across India. The Department of Post has received Prime Ministers Award for Excellence in Public Administration for the year 2008-2009. It aims to make all post offices computerised in rural areas.

f) Philatelic Bureau: Established at all head post offices by 2011. The domestic philatelic account system was introduced as early as 1965. For the year 2008-2009 the total philatelic accounts were 183202. Customers are given priority in purchasing commemorative or special issue stamps. The department of post has also developed a software for philatelic inventory management called "Philsim". A quarterly philatelic magazine, Philapost, was launched in 2008. The Department of Posts inaugurated the National Philatelic Museum on 11th July 2011. It exhibits rare Postage stamps from around the world and also provides philatelists to exhibit their collection.

The telegram service started through the telegraph act in 1885 and subsequently merged with post offices in the year 1914 was stopped on July 14, 2014 due to non usage, by the people at large.

BANKING

India Post is the oldest and largest banking system in the country. It has traditionally served as a financial institution for millions of people especially in rural India. There are over 31 crore savings bank accounts at post offices across India. 63% of revenue for India Posts comes from savings, insurance and remittance services and remaining from mail and allied services. These services are offered as an agency

service for the Ministry of Finance, Government of India.

At present the role of post office in the financial inclusion is being contemplated. The Department of Posts have applied for a banking licence through RBI in order to make the post offices financially more viable. The bank would have two clearly earmarked areas with well-defined functions — 'services area' for post office savings banks schemes, postal life insurance, electronic fund transfer, warrant payments and international money transfer and a 'products area' with an 'investment desk' through a public private partnership for retailing of products like mutual funds, bonds, government securities and pensions (Nayak 2006). The 'investment desk' would be manned by the Association of Mutual Funds of India certified staff who will be qualified and authorised to provide financial counselling to customers on the products and services available in the bank. The postal staff will be trained by the product or service partners (ibid).

The Prime Minister has set up a task force to deliberate on the post offices network in the country to enhance the role of India Post in the financial inclusion. The Terms of Reference (TOR) for the task force include providing an efficient postal network and points of presence (particularly in rural areas and small towns) for both the government and private sector to deliver various citizen centric services, schemes etc[1].

In an annual meeting of the Postal Saving banks forum, held at New Delhi recently, the role played by various postal departments in their respective countries in retail banking was discussed. Postal financial institutions from Africa, Asia and Europe participated in the forum and shared experiences towards becoming efficient retail banks. One of the points of the agenda was to see how post offices can help in increasing financial inclusion. Post offices worldwide hold 1.6 billion saving and deposits accounts second only to commercial banks.[6]

Britain's Royal Mail too offers financial and banking services including personal loans, car and home insurance, savings and investment products and travel services. Like India Post, Royal Mail also is supported by the government and incurs a loss of $2m a week on operations. Both are gearing up to face the threat of having the fiscal subsidy provided by the government being stopped (Nayak 2006).

ANALYSIS

The case is analyzed by looking at the various rationales to establish, why it would be feasible to have a Postal Bank. The factors that work in favor of the postal bank are as follows:

i. The "Jan Dhan" scheme[1] of the government, based on financial inclusions suggests that the government is supportive of the coming up of such banks in future that are primarily meant for the people living in smaller towns and rural areas. The scheme is aimed at improving the lives of millions of India's poor by bringing them into the financial mainstream and freeing them from the clutches of usurious moneylenders, while giving them a modicum of insurance cover. The inclusion will also act as an important tool in the fight against corruption[1]. The establishment of the postal bank could carry forward the same sentiments.

ii. The snail mail has been taken over by email - With the technological development taking place all over India and with the penetration of internet to every part of the country, people today no longer rely on the post office for sending and receiving mails. The snail mail has become unattractive and obsolete. Hence the Post Office too has to go through a transition and look for ways to make itself financially viable.

iii. Infrastructure- India Post boasts of a network of nearly 1.5 lakh post offices and 5.64 lakh letter boxes. Over 1.39 lakh branches are in rural areas and 15,736 are in urban regions. Thus it has the largest and widest reach in the country. Technologically only rural branches of post office are remaining to be automated for which the government has approved IT modernization project that includes supplying ICT hardware and peripherals with networking to all rural post offices[5].

iv. India Post is the oldest and largest banking system in the country. It has conventionally served as a financial institution for millions of people especially in rural India. The number of savings bank accounts in post offices across India are over 31 crores. It manages over 6 lakh crores in savings deposits and offers a number of financial services such as insurance, pension schemes, remittance etc[5].

v. According to one of RBI's regulations any new bank has to set up at least three branches in villages with a population of less than 10,000 for each branch they establish in other areas. India Post with about 89.7 percent of its branches located in rural areas is at a great advantage. It is also formulating an agreement with the Indian banks Association to process rural loans. (Narayanan 2013; Nayak 2006).

vi. Technology: The post office bank has already allocated a huge share of its

funds to improving technology in terms of banking requirements. Many post offices all over India have already adopted or are on the verge of adopting new banking software i.e. Infosys' Finacle[5] (Narayanan 2013).

vii. ATMs: The blue print of the Department of Posts also includes setting up of ATM machines for withdrawing money for postal saving bank accounts (Nayak 2006).

viii. Revenue: If the revenues for the period of 3 years i.e. 2010-2011, 2011-2012, 2012-2013 are to be analyzed for India Post, we see that there is definite growth in the earning for the post office from the various new schemes and products it has introduced but there is also an increase in the expenditures. Thus it is clearly not a profitable entity. Hence there is a need to revamp India Post and make it better suited for the market[5].

Table 1: Revenue Generated by the Postal Department

Year	Expenditure (in Rs. Crores)	Revenue (in Rs. Crores)
2010-2011	13308.00	6962.30
2011-2012	13705.30	7899.40
2012-2013	14792.40	9366.50

Source: Department of Posts (www.indiapost.gov.in)

SUGGESTIONS

For the post office to be converted into postal bank it would need to have the following

a) Principal: It is estimated that about Rs. 1,800 crore would be required to set up a Postal Bank. The Department of Posts has approached the government for Rs. 623 crore and the rest will be raised by the Postal Bank from the market. The main focus for the bank would be rural areas and small towns. As per the norms of RBI on the reserve required to start a new bank, the Department of Posts would require Rs. 62,000 crores in capital and Rs. 2 lakh crore in private sector lending if it wants to convert all post offices to banks (Narayanan 2013).

b) Branches: It is alleged that the Postal Bank will not be able to handle the large network of branches. This problem could be tackled by initially setting up only few post offices to be bank branches and select post offices could be designated as extension counters. All other post-offices could operate as an agency network. In time, the extension counters can be converted into full-fledged branches and new extension counters can be set up. Over the years, a large network of Postal Bank branches could be set up (Tarapore 2014).

c) Investment Skills: The RBI and the Finance Ministry has raised concerns about the credit capabilities of the Department of Posts. The Postal Bank will need a team of specialists like economists, planners, chartered accountants etc to invest in government securities and money market instruments. The Postal Bank should be able to earn on its portfolio of investments a margin well above the cost of funds, which would make it viable (Narayanan 2013).

d) Limited Lending: Lending or credit is an extremely crucial area that is said to provide bread and butter to the banks. But it is the only real problem area for the Department of Post because of the lack of experience. Initially the Postal Bank should initiate lending operations very cautiously till the time it builds up lending skills. Loans should initially only be given by a few select branches with skilled personnel and restricted to small amounts. It would be extremely necessary to ensure that lending operations are based on transparent criteria with strict observance of lending norms (Tarapore 2014).

e) As per RBI norms[7], the bank would need to bring in new shareholders and sell equity to public for stock market listing (Narayanan 2013).

f) Human Resource: Training of human resource would be a challenge for PBI. To compete with private sector banks, it has to not only match up to the standards of the private sector banks but also have to perform better than them. Though the Department of Post through Project Arrow have already started the initiative it still lacks behind private sectors and there is a lot of scope for improvement[5].

g) India Post was embroiled in a controversy and was highly criticised when it was revealed that majority of post offices were inaccessible to persons with disability. The PBI has to make sure that all its branches are located at the ground floor and are easily accessible to persons with disability[5].

CONCLUSION

The following conclusions can be drawn from the analysis:

i. With regards to the request of the Department of Post to RBI regarding financial inclusion and proposal of turning all post offices into banking branches, the government should undertake an intensive drive to remove the conceptual cobwebs preventing the setting up of a Postal Bank. The Postal Bank has a great potential as a bank for taking banking to the masses.

ii. The Department of Post is trying to make itself viable by providing services such as e-post, media post, SAL. These services are provided as per the

changing market conditions but still the department is unable to make profits and has to depend on the governments subsidies. With the establishment of Postal Banks, especially in smaller towns where the banking network is thinly spread, the post office can step in to bridge the gap of providing banking, investment and financial services to the people and in turn making The Department of Post, a profitable entity.

iii.   Postal Bank of India can become a game changer in rural areas. The post office already is very popular in villages and has a great brand recall. Eventually it can even play a role in financial literacy in villages.

<p style="text-align:center">*   *   *   *   *</p>

Notes

1.   See: Task Force on India Post to submit report by year-end: Government http://articles.economictimes.indiatimes.com/2014-10-9/news/55559013_1_india-post-financial-inclusion-post-office

2.   See: India Post to enter banking space http://articles.economictimes.indiatimes.com/2013-02-22/news/37242224_1_post-bank-post-bank-bank-branches

3.   See:www.jagran.com/news/national-modi-to-decide-convert-post-offices-into-banks Thu, 30 Oct 2014

4.   See: Government likely to earmark Rs 1,300 crore for Post Bank of India. Economic Times 4ᵗʰ Aug http://articles.economictimes.indiatimes.com/2013-08-04/news/41059277_1_india-post-new-bank-licence-post-bank

5.   See: Department of Posts www.indiapost.gov.in

6.   See: Press Information Bureau http://pib.nic.in/newsite/PrintRelease.aspx?relid=110904

7.   See: RBI guidelines for the Guidelines for "Licensing of New Banks in the Private Sector" http://rbi.org.in/scripts/bs_pressreleasedisplay.aspx?prid=28191

<p style="text-align:center">*   *   *   *   *</p>

References

Mandaviya, M. 2013 Amazon starts pilot project with India post to test cash on delivery model. 4/12
http://articles.economictimes.indiatimes.com/2013-12-04/news/44757439_1_india-post-amazon-india-banking-licence

Narayanan, D. 2013. Why you can bank on India post. *Forbes India* 26/7
http://forbesindia.com/article/special/why-you-can-bank-on-india-post/35671/1

Nayak, G. 2006. India post to widen roof. *The Economic Times*
http://articles.economictimes.indiatimes.com/2006-08-04/news/27425487_1_postal-life-insurance-india-post-post-office

Tarapore, S. 2014. Why not a 'Post Bank of India?'. *The Hindu Business Line* 17/4.

IMPACT OF IFRS CONVERGENCE ON INDIAN FINANCIAL REPORTING: A CASE STUDY

Assistant Professor **Lorraine R. Gomes**
Department of Commerce

ABSTRACT

International Financial Reporting Standards (IFRS) have become the new dominant set of accounting standards worldwide. However, the transition to this new system may be fairly disruptive and difficult for users of financial statements. Its convergence can significantly impact comparability and trend analysis as the differences between IFRS and local generally accepted accounting principles (GAAP) may impact figures presented in financial statements and lead to variances in financial ratios computed under the two regimes. The objective of this study is to analyse the impact of IFRS adoption in India on financial statement figures and key financial ratios of Infosys Limited.

Keywords: IFRS, convergence, financial statements, financial ratios, Infosys

INTRODUCTION

The financial health of a company is presented and communicated to its stakeholders through the medium of financial reports and statements. This communication is done using a distinct language known as 'Reporting Standards'. These accounting standards form part of a common set of principles and procedures known as Generally Accepted Accounting Principles (GAAP). GAAP are imposed on companies so that investors and other interested parties have a minimum level of consistency in the financial statements they use when analysing companies for investment purposes. However, companies in different countries across the world follow their own domestic GAAP for preparing and presenting their financial statements which makes the accounting language difficult to be translated by their users. The globalisation of capital markets is a crucial driving force for establishing uniformity in and convergence of accounting standards across the globe. The evolution of International Financial Reporting Standards (IFRS) marks the biggest revolution in financial reporting. (Swain, 2009).

IFRS: BACKGROUND

The International Accounting Standards Committee, formed in 1973, was the first international standards-setting body which was reorganised in 2001 and became an independent international standard setter known as the International Accounting Standards Board (IASB).[1] IFRS are developed by the IASB. The support for convergence to IFRS has grown steadily across the world. The US Securities and Exchange Commission (SEC) announced its acceptability of International Accounting Standards in February 2000. The European Commission adopted a regulation endorsing International Accounting Standards (IAS) in September 2003, thereby confirming the requirement for their compulsory use from 2005.[2] Almost 7,000 companies in 25 countries of Europe simultaneously switched from national GAAP to IFRS by 2005. Since 2001, almost 120 countries have required or permitted the use of IFRSs.[3]

IFRS: INDIAN CONTEXT

In India, the Accounting Standards Board (ASB), constituted by the Institute of Chartered Accountants of India (ICAI), formulates and issues accounting standards. ICAI announced in May 2006 that the ASB considered and supported adoption of IFRS in India. It set up a task force to draft a road map for converging Indian Accounting Standards with IFRS from the accounting period commencing on or after 1 April 2011. However, several Indian companies followed a pro-active approach and adopted IFRS since 2008. These include firms like Wipro, Infosys Technologies, NIIT, Mahindra & Mahindra, Tata Motors, Bombay Dyeing and Dr Reddy's Laboratories. The Ministry of Corporate Affairs (MCA) of the Government of India carried out the process of convergence after a wide range of consultative processes with all the stakeholders and as a result, 35 Indian Accounting Standards converged with International Financial Reporting Standards (henceforth called Ind AS). In July 2014, the Finance Minister in his Budget speech proposed the adoption of the new Ind AS by Indian companies voluntarily from Financial Year (FY) 2015-16 and mandatorily from FY 2016-17.

OBJECTIVE OF THE STUDY

This study makes an attempt to examine the impact of voluntary convergence of IFRS on key accounting variables and financial ratios through a case study on Infosys Limited.

LITERATURE REVIEW

Various studies have been carried out to study the impact of IFRS adoption across the globe. These studies have identified significant differences between financial ratios calculated from IFRS based financial statements and domestic GAAP based financial statements. Bhargava & Shikha (2013) observed that IFRS is a fair value principles based accounting which will improve quality of disclosures and enhance international comparability and understanding of financial statements. Terzi et al (2013) identified the statistical comparability of differences of local GAAP-based and IFRS-based financial statements of manufacturing companies listed on the Istanbul Stock Exchange (ISE) and observed significant differences in current ratios, receivables turnover, assets turnover, total liabilities/tangible assets ratios, fixed assets turnover, equity turnover, short-term liabilities/total liabilities ratios, short-term liabilities/total assets ratios. Ahmed & Alam (2012) examined how the adoption of the IFRS had an impact on equities, surpluses, assets and liabilities of local government entities in Australia and observed that while the average surplus (loss) of local councils has decreased, their equities, assets and liabilities have increased, with no major significant changes in their overall financial position, except for liabilities. Kamath & Desai (2014) observed improvement in investment and operating activities of Indian companies due to IFRS adoption but no improvement or increase in financial risks and debt covenants.

RESEARCH METHODOLOGY

The study attempts to calculate the impact of IFRS adoption on the financial statements and financial ratios of the sample company. The scope of the study is restricted to the financials of Infosys Limited which voluntarily adopted IFRS in FY 2008-09 and has ever since published its financial statements under both, Indian GAAP as well as IFRS.

The focus of this analysis is directed at the impact of IFRS on key financial ratios of the company. Financial ratios that are based on accounting information are widely used in practice. Investors, bankers, brokers and other stakeholders use them to analyse the financial condition and performance of a company. The approach involved selecting a number of ratios commonly used in practice and referring to the general formulas in the following main categories: liquidity, leverage and profitability. Table 1 provides the list of ratios selected along with their formulas.

Table 1: Key financial ratios and their operational definitions

RATIO	FORMULA
	LIQUIDITY
Current Ratio	Current Assets/Current liabilities
	LEVERAGE
Debt Ratio	Total Liabilities/ Total Assets
Debt-Equity Ratio	Total Liabilities/ Owners Equity
	PROFITABILITY
Return on Assets	Net Income for the Year Before Tax/ Total Assets
Assets Turnover	Net Sales / Total Assets
Net Profit Margin	Net Income for the Year Before Tax/ Net Sales
Return on Equity	Net Income for the Year Before Tax/ Owners Equity

Source: Secondary Data[4]

All of the components of the liquidity and leverage ratios are based on accounting figures taken from the balance sheet. The liquidity ratios are based on current assets and current liabilities while the leverage ratios show the importance of liabilities relative to assets or equity. The profitability ratios are composed of items from the income statement and measure the return on assets and equity.

Data was collected from the audited annual reports of Infosys Limited for the FY ending on 31" March 2014 and official websites of various regulatory authorities. All the financial variables were measured using financial statements of the company prepared under Indian GAAP and IFRS for the FY 2013-14.

DATA ANALYSIS

Relevant financial variables were measured for the purpose of calculating financial ratios. **Table 2** shows the list of the variables used in the study. **Table 3** gives the financial ratios as calculated from the variables.

Table 2: Key financial variables of Infosys Limited as on 31" March 2014

Financial Variables	Indian GAAP (in ₹ crore)	IFRS (in ₹ crore)	Difference (in ₹crore)	Difference (in percent)
Current Assets	43078	43019	59	0.137
Current Liabilities	12031	9138	2893	31.659
Total Assets	56966	57055	-89	-0.156
Total Liabilities	12436	9525	2911	30.562
Equity/ Shareholders' Funds	44530	47530	-3000	-6.312
Net Sales	50133	50133	0	0.000
Profit before Tax	14728	14710	18	0.122
Net Profits	10656	10648	8	0.075

Source: Secondary Data[5]

Table 3: Key financial ratios of Infosys Limited as on 31st March 2014

Ratios	Indian GAAP (in ₹ crore)	IFRS (in ₹ crore)	Difference (in ₹ crore)	Difference (in percent)
LIQUIDITY				
Current Ratio	3.581	4.708	-1.127	-23.938
LEVERAGE				
Debt Ratio	0.218	0.167	0.051	30.539
Debt-Equity Ratio	0.279	0.200	0.079	39.500
PROFITABILITY				
Return on Assets	0.187	0.187	0	0.000
Assets Turnover	0.880	0.879	0.001	0.114
Net Profit Margin	0.212	0.212	0	0.000
Return on Equity	0.239	0.224	0.015	7.120

Source: Secondary Data[*]

The currents assets of the company comprise of cash and cash equivalents, trade receivables, prepayments and advances and investments in short term financial assets. The difference of 0.137 percent in current assets is due to the value of the investments in fixed maturity plan securities, liquid mutual funds and certificates of deposits. Under IFRS such investments are reported at their fair value. IFRS 13-Fair Value Measurement, defines fair value on the basis of an 'exit price' notion and uses a 'fair value hierarchy', which results in a market-based, rather than entity-specific, measurement.[7] The accrued interest on these investments also differs. The current liabilities under IFRS are also less by 31.66 percent. This change may be attributed to the fact that under Indian accounting standards the liability is recognised in respect of proposed dividend on company's equity shares even though the dividend is expected to be approved by the shareholders subsequent to the reporting date. This change reflects on the current ratio which is higher in case of IFRS.

Equity as per IFRS is higher by 6 percent. This is because shares issued to controlled trust form a part of the share capital and the premium on these shares is also treated differently. The net profit does not show any significant difference under both the standards. Most differences were observed in liquidity and leverage ratios as compared to profitability ratios which had little or no difference.

CONCLUSION

India Inc. needs a strong financial platform to compete with its international counterparts. As it strives towards financial and economic progress, its financial reporting systems need to be of global standards. This paper discussed the impact of IFRS on various important financial variables and ratios. The variations observed are on account of difference in revenue recognition and valuation and depreciation

of assets. All the above observations imply that IFRS is an accounting system based on fair value principles as compared to Indian GAAP which is more conservative. Adoption of this system will improve the quality of disclosures and enhance comparability of financial statements across the globe.

* * * * *

Notes

1. Retrieved from:
   http://www.fasb.org/jsp/FASB/Page/SectionPage&cid=1176156304264.
2. Retrieved from: http://www.icaew.com/en/library/subject-gateways/accounting-standards/knowledge-guide-to-international-accounting-standards.
3. Retrieved from: http://www.ifrs.org/The-organisation/Documents/WhoWeAre_JAN-2014_ENG.PDF
4. Retrieved from :
   http://www.agmrc.org/FNL_Lesson_8_VM_2_8A5FBFC9762F8.pdf
5. Retrieved from: http://www.infosys.com/investors/reports-filings/quarterly-results/2013-2014/Q4/Documents/Consol-FY14-Year-Finstatement.pdf
6. Retrieved from: http://www.infosys.com/investors/reports-filings/quarterly-results/2013-2014/Q4/Documents/consolidated/Consol-FY14-Annual-Finstatement.pdf
7. Retrieved from: http://www.iasplus.com/en/standards/ifrs/ifrs13

* * * * *

References

Ahmed, K., & Alam, M. 2012. The effect of IFRS adoption on the financial reports of local government entities. *Australasian Accounting, Business and Finance Journal,* 6(3): 109-120. Retrieved from:
http://ro.uow.edu.au/cgi/viewcontent.cgi?article=1370&context=aabfj

Bhargava, V., & Shikha, D. 2013. The impact of international financial reporting standards on financial statements and ratios. *The International Journal of Management,* 2(2): 1-15. Retrieved from:
http://www.theijm.com/vol2issue2/192.pdf

Kamath, R., & Desai, R. 2014. The impact of IFRS adoption on the financial activities of companies in india: An empirical study. *The IUP Journal of Accounting Research & Audit Practices,* 13(3): 25-36.

Swain, K. R. 2009. Convergence of accounting standards in emerging economies. *The Accounting World* , pp. 9-12.

Terzi, S., Oktem, R., & Sen, I. 2013. Impact of adopting international financial reporting standards: empirical evidence from turkey. *International Business Research,* 6(4): 55-66. Retrieved from:
http://ccsenet.org/journal/index.php/ibr/article/view/25622/15831.

FDI IN EDUCATION SECTOR IN INDIA

Assistant Professor **Ancy Gonsalves**
Department of Commerce

ABSTRACT

In the last few years, the education sector of India has witnessed a number of dramatic changes which resulted in substantial increase in the market share of the education industry. With availability of enhanced technology, it was extremely essential to expand the Indian education sector in order to maintain stable economic growth in the country. However, funds were one of the important aspects to achieve growth in education sector of India. Considering this, the Government of India took several initiatives to attract investment from foreign investors for the expansion of education sector. This paper examines the need for Foreign Direct Investment in the educational sector and finds a positive correlation between Foreign Direct Investment inflow and number of educational institutes and Gross Enrollment Ratio.

Keywords: correlation, education, FDI, gross enrollment ratio

INTRODUCTION

One of the most well-known and salient features of today's globalised world is the rapid growth of Foreign Direct Investment (FDI) in both developed and developing countries. In the last two decades the pace of FDI flows are rising faster than almost all other indicators of economic activity worldwide. Developing countries, in particular, considered FDI as the safest type of external finance as it not only supplement domestic savings, foreign reserves but promotes growth even more through spillovers of technology, skills, increased innovative capacity, and domestic competition. FDI has become an instrument of international economic integration (Sagar and Lalitha 2013).

With increasing population in India, the demand for educational institutes has also augmented. Today, the Indian education sector is one of the biggest education systems in the world. The education sector in India is evolving and has emerged as a strong potential market for investments in training and education sector, due to its favorable demographics and being a services driven economy.

Further, India's expanding role in sectors such as software development, generic pharmaceuticals and healthcare, would require the country to invest into learning and training segment as well. The education sector in India is also considered as one of the major areas for investments as the entire education system is going through a process of overhaul. (Narang and Jain 2014)

This paper examines the need for FDI in education sector in India and to analyze and correlate the relationship between the inflows of FDI in educational sector with the growth of colleges and General Enrollment Ratio.

Sagar and Lalitha (2013) studied the sectoral trend of FDI in India. The study confirmed FDI as an integral part of the economic development strategies for India. According to the study the service sector has occupied the top spot and education sector attracted a whopping 308.28 million of FDI inflows during 2004-2008, registering a steep rise from 2005.

FDI has always been a matter of concern for India, when it comes to education sector 100 percent FDI is allowed by the Government. Suhag and Rani (2013) highlighted the good and bad effects of FDI in Education Sector. Narang and Jain (2014) studied the issues, prospects and future implications of FDI in educational sector and confirmed that with the increase in the demand for education there exists an opportunity to attract investments but however the need to regulate the investments in higher education sector exists as it impacts the society and economy as a whole. Bahmaid (2013) analyzed the advantages of FDI in Education. The study concluded that FDI is a strategic component of investment needed by India for its sustained economic growth and development.

NEED FOR FDI IN EDUCATIONAL SECTOR

Indian education sector is considered one of the prime areas of investments as the education system of India has been going through a strong phase of revolution. The entry of foreign universities not only boosts the competition but also creates an international platform for Indian students to achieve world class education. Considering this fact, the Indian government has allowed 100 percent FDI in the education sector through automatic route.

Traditionally education was considered to be non-tradable; the government used to fund education through domestic resource mobilization and channelization. In the higher education the period of 1990 to 2000 was the decade of deficiency of funds in secondary, higher and technical institutions. This resource crunch adversely affected both, public and promoted private sector in all levels of education (Suhag

and Rani 2013), this crunch highlights the need for foreign funds.

The task of training 500 million people by 2022, with skills demands FDI in the economy. While government budgetary allocation increased by 12.3 percent for 2014-2015 to Rs. 83,771 crore for technical and higher education, it is still not enough to support the entire investment required. In addition to the need for skilled faculty, huge demand for infrastructure development, in terms of both improving the quality of existing institutes and developing new institutes is required (Sharma 2013), hence FDI is essential.

Huge demand and supply gap in this sector in addition with the growth of services sector particularly the Information Technology sector, demanding skilled workers is increasing; Indian corporate looking to outsource skill training activities to specialized institutions abroad, necessitate for foreign investment in educational sector in the country.

With an increase in awareness and importance of education among Indian people and with more than 35 percent of Indian population under the age of fifteen demanding quality education focuses the need for foreign investments in education sector (Overseas Indian Facilitation Centre 2014).

DATA ANALYSIS

FDI of up to 100 percent is allowed under the automatic route in the Education Sector since 2002. This means a foreign company can directly invest in an Indian firm without prior approval from the government or the Reserve Bank of India (RBI). However, within 30 days of the receipt of the FDI, the Indian company is required to report to the RBI's regional office.

Foreign investment in the form of tie-ups with Indian Educational Institutions for twinning programs, distance education programs, e-learning, student exchange programs, faculty exchange programs, joint research programs etc has led to a substantial inflow of Rs. 498.71 million over the last one and a half decade.

Table1: Education Sector Inflows from April 2000 to March 2014[1]

Sector	Amount of FDI Inflow		Percentage with total FDI Inflow
	In Rs Crores	In USD million	
Education	4987.17	964.98	0.41
Grand Total of all the 64 sectors	1,48,991.82	2,35,049.31	

Table 1 shows the cumulative inflow of FDI in the educational sector of India since the government approved FDI in April 2000. The flow has increased from nil to 4987.17 crores during the last 14 years. However when compared to the total inflow in the 64 sectors it accounts to 0.41per cent of the total FDI inflow during the period.

FDI and Number of Educational Institutions

Government has taken steps for the free entry to A-grade global universities into India without any restriction. The Foreign Educational Institutions Regulation of Entry and Operations, (Maintenance of Quality and Prevention of Commercialization) Bill 2010 allows foreign providers to set up Independent colleges in the country.

Table 2: Number of Universities, University level institutions and Colleges and FDI in Educational Sector[2]

Year	Number of Colleges	Number of Universities	Total Institutions	Amount of FDI Inflow
2000-01	10152	254	10406	Nil
2005-06	16982	350	17332	13.75
2006-07	19812	371	20183	187.73
2007-08	23099	406	23505	177.56
2008-09	27882	440	28322	1033.36
2009-10	25938	436	26374	300.50
2010-11	32974	621	33595	173.24
2011-12	34852	642	35494	274.53
2012-13	35829	665*	36494	926.25
2013-14	36671	712*	37383	1542.57

The number of instutions has increased from 10,406 to 37,383 during the last fourteen years (see **Table 2**). The majority of these universities and colleges in India are private and do not receive financial support from the Indian government. The correlation between the inflow of FDI and total institutions is 0.62 indicating a relatively significant positive correlation.

FDI and Gross Enrollment Ratio (GER)

The United Nations Educational, Scientific and Cultural Organization (UNESCO), define the 'Gross Enrollment Ratio' as the total enrollment within a country "in a specific level of education, regardless of age, expressed as a percentage of the population in the official age group corresponding to this level of education" (Haldar 2014). The GER signifies the health of higher education in the country and indicator of the level of participation in higher education.

Table3: FDI Inflows and Gross Enrolment Ratio from April 2001 to March 2014[3]

Year	Inflow of FDI	Gross Enrolment Ratio (GER)
2001-02	NIL.	8.1
2002-03	NIL.	9.0
2003-04	0.88	9.2
2004-05	8.76	10.0
2005-06	13.75	11.6
2006-07	187.73	12.4
2007-08	177.56	13.1
2008-09	1033.36	13.7
2009-10	300.50	15.0
2010-11	173.24	19.4
2011-12	274.53	20.8
2012-13	926.25	21.1
2013-14	1542.57	NA

As **Table 3** indicates, the GER has increase from 8.1 percent from the year 2001-02 to 21.1 percent in 2012-13. The correlation between FDI and GER is 0.56 for the period of 2001 to 2013 indicating that there exists a positive relation between the same. The enrollment ratio may have increased as there has been a rapid growth in the percentage of students enrolled in unaided private higher education institutions over the years (Goswami 2013).

CONCLUSION

In the absence of sufficient government resources to meet education sector growth targets, huge need for investment from foreign players exists. Educational sector has enormously benefited from foreign direct investment. As already mentioned earlier, a remarkable inflow of FDI of Rs 498.72 million during the last one and half decade in various educational institutes in India has boosted the economic life of the country. The positive correlation between FDI inflow and the increase in number of educational institutions and the Gross Enrollment Ratio further confirms the pay off of FDI in this sector. Besides due to these ever increasing foreign investments in the sector, students of the country get acquaint with globally valued skills. FDI has also ensured a number of employment opportunities by aiding the setting up of educational institutions in various corners of India. The Education Bill regulating the entry of Foreign Universities aims to allow entry of Foreign Universities to set up their campuses in India and seeks to expand options for the students seeking higher education in India's top destinations.

*   *   *   *   *

Notes

1. See:
   http://dipp.nic.in/English/Publications/FDI_Statistics/2014/india_FDI_October2014.pdf
2. See:
   http://dipp.nic.in/English/Publications/SIA_Newsletter/2010/apr2010/index.htm
3. See:http://www.data.gov.in/catalog/growth-different-universities-and-colleges#web_catalog_tabs_block_10

*   *   *   *   *

References

Bahmaid, S.2013. *Study on foreign direct investment in education.* Retrieved from:
www.warse.org/pdfs/2013/icacsesp94.pdf

Goswami, R. 2012. *Economic growth and higher education in India and China.* Retrieved from:
www.eastasiaforum.org/2012/07/13/economic-growth-and-higher-education-in-india-and-china/

Haldar, Debalina. 2014. *Higher education sector — Growth unlimited, opportunities aplenty!* Retrieved from: insiderim.com/Indian-higher-education-sector-growth-unlimited-opportunities-aplenty/

Lalitha, and Sagar, R. 2013. *Sectoral trends and patterns of FDI in India.* Retrieved from:
www.indianresearchjournals.com/pdf/IJMFSMR/2013/July/12.pdf

Narang, V. and Jain, A. 2014. *FDI in education sector: Issues, prospects and future implications.* Retrieved from: www.ijird.com/index.php/ijird/article/view/45858/37232

Rani, K. and Suhag,V. 2013. *FDI and higher education in India.* Retrieved from:
www.indianresearchjournals.com/pdf/IJSSIR/2013/August/13.pdf

Sharma, B.2012. *India — a lucrative destination for FDI in higher education.* Retrieved from:
www.indianresearchjournals.com/pdf/IJMFSMR/2012/August/4.pdf