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- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.
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# A STUDY ON THE IMPACT OF CELEBRITY ENDORSED ADVERTISEMENTS ON THE BUYING BEHAVIOUR OF CONSUMERS IN SALEM DISTRICT WITH REFERENCE TO FMCG PRODUCTS

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**ABSTRACT**

*The ever increasing brand multiplicity and competition on the market of goods and services have dictated the pace of growth in the usage of celebrity endorsement across the globe. The use of celebrity endorsement has become a prime brand communication strategy in organisational management that aids the sale and promotion of brands across the globe. Advertisers use celebrities in their advertisement to increase the effectiveness and heighten the believability of commercials. This study examines the attitude of the respondents towards the celebrity endorsed advertisements and their influence on purchase decision of the consumers. Overall, phenomenon of the celebrity endorsement was found to be influencing. The results maintain that customers are motivated to purchase by celebrities that appear in advertisements but also look for celebrity-product association*

**KEYWORDS**
celebrity endorsed advertisements, buying behaviour.

## INTRODUCTION

Marketing is a system of interrelated activities designed to develop, price, promote and distribute goods and services to a group of customers. With liberalisation and globalisation the availability of products and services has increased. The customer has a wide choice and the competition is increasing in the market place. Many companies are following customer-oriented marketing philosophy to ensure growth in sales, profits and market share. Now-a-days, all businessmen are trying their best to ascertain the consumers' reaction, their preference, their attitudes and variations in their taste etc. In order to persuade the consumers, marketers need to understand consumer behaviour. By studying consumer behaviour, the advertiser can take decision about the media of advertisement, appeal to be made, market segment to be targeted, where to advertise and the type of advertisement. Companies frequently use celebrities as spokespersons to deliver their advertising messages and convince their consumers. Celebrity endorsed advertisement has been recognized as a ubiquitous feature of modern day marketing. Today, the use of celebrity advertising for companies has become a trend and a perceived winning formula of corporate image building and product marketing especially in case of FMCG products. FMCG products are the items that people need to use in everyday life. The Fast Moving Consumer Goods (FMCGs) are products for mass consumption and are sold through marketing channels.

## REVIEW OF LITERATURE

Carolyn, Thomas and Les (1994) analyzed the effects of number of products endorsed by celebrity and number of exposures to the celebrity on consumer's attitude and purchase intentions. The results revealed that as the number of products endorsed increases consumer's perception of celebrity credibility, celebrity likability and attitude towards the ad becomes less favourable. The study concluded that if celebrity is overexposed i.e endorsing too many products, his or her perceived credibility may suffer.[1]

Zabid, Jainthy and Samsinar (2002) examined the overall perceptions of Malaysian consumers towards advertising of branded products by celebrities. It was found that, celebrity endorsement enhanced the company as well as product's image. The Malaysian consumers felt that advertising by celebrity provides some valuable information on the endorsed brand. It helps the consumers in selecting a product with various brands. The study concluded that selection of appropriate celebrity is important to enhance the credibility of the advertisement.[2]

Nathan and Ainsworth (2008) tried to assess the impact of the gender celebrity and the gender of the consumer who is exposed to an ad featuring a celebrity on consumer response to celebrity endorsement. The results indicated differential response by women to ads featuring celebrity endorsers, differential response to ads featuring female celebrity endorsers. Partial support was found for an interaction effect of gender in response to the gender of celebrity endorsers. The study concluded that there is a need for advertisers to look more closely at the use of female celebrity endorsers in their ad campaigns.[3]

## STATEMENT OF THE PROBLEM

Marketing through valuable strategies and tools can develop the brands of any FMCG products. This change could be done only with the help of celebrities. Celebrities such as film stars, sport stars, TV stars etc are being given an important role to endorse brands of FMCG products. They because of their larger than life existence creates an impact on the buying behaviour and also influence the total lifestyle of the consumers.

Most of the consumers intend to buy the products that are being endorsed by their favourite celebrities. Celebrity endorsers have enhanced their involvement in product selection and change in the buying behaviour of consumers. Celebrity endorsements induce people to try out the new brands of FMCG products. Hence an attempt has been made to find out how celebrity endorsed advertisements have influenced the attitude and thinking of the consumers. Further the study also analyzed the influence of celebrity endorsed advertisements on the buying behaviour of consumers with reference to FMCG products.

## OBJECTIVES OF THE STUDY

- To study the demographic profile of the respondents.
- To analyse the attitude towards celebrity endorsed advertisements for FMCG products.
- To find out the level of influence of celebrity endorsement of the product during purchase decision.
- To summarise the key findings and conclusion.

## RESEARCH METHODOLOGY

### DATA COLLECTION

The data was collected from both primary and secondary source. Primary data was collected through questionnaire and the secondary data was collected from books, magazines, and websites, etc.

**SAMPLING SIZE**

75 respondents were selected after considering time and cost

**SAMPLING METHOD**

Convenience method of sampling was used to collect the data from the respondents.

**TOOLS OF ANALYSIS**

Simple Percentage Analysis has been used for the study.

## RESULTS AND DISCUSSION

**PROFILE OF THE RESPONDENTS**

The profile of the respondents includes age, gender, marital status, educational qualification, income level, occupation, family size and residential area of the respondents.

**TABLE 1: PROFILE OF THE RESPONDENTS**

| S.No | Demographic Variables | | No. of. Respondents | Percentage (%) |
|---|---|---|---|---|
| 1. | Age (yrs) | Below 20 | 9 | 12 |
| | | **21-30** | **39** | **52** |
| | | 31-40 | 17 | 22 |
| | | 41-50 | 5 | 7 |
| | | Above 50 | 5 | 7 |
| 2. | Gender | Male | 36 | 48 |
| | | **Female** | **39** | **52** |
| 3. | Educational Qualification | No Formal Education | 7 | 9 |
| | | Up to H.Sc | 9 | 12 |
| | | **Graduate** | **23** | **31** |
| | | Post Graduate | 21 | 28 |
| | | Diploma | 6 | 8 |
| | | Professional | 9 | 12 |
| 4. | Occupation | Agriculture | 6 | 8 |
| | | **Studying** | **26** | **35** |
| | | Business | 10 | 13 |
| | | Home-Maker | 7 | 9 |
| | | Employees | 18 | 24 |
| | | Professionals | 6 | 8 |
| | | Retired | 2 | 3 |
| 5. | Family Monthly Income | **Below 20,000** | **30** | **40** |
| | | 20,001 - 40,000 | 24 | 32 |
| | | 40,001 - 60,000 | 10 | 13 |
| | | 60,001 - 80,000 | 6 | 8 |
| | | Above 80,000 | 5 | 7 |
| 6. | Marital Status | Married | 37 | 49 |
| | | **Unmarried** | **38** | **51** |
| 7. | Family Size | Two | 7 | 9 |
| | | Three | 17 | 23 |
| | | **Four** | **32** | **43** |
| | | 5 & Above | 19 | 25 |
| 8. | Residential Area | **Rural** | **39** | **52** |
| | | Semi-Urban | 9 | 12 |
| | | Urban | 27 | 36 |

Source: Primary Data

Table 1 reveals that 52 percent of the respondents belong to the age group of 21-30, 52 percent of the respondents were female, 31 percent of the respondents were graduates, 35 percent of the respondents are studying, 40 percent of the respondent's family monthly income is below Rs. 20,000, 51 percent of the respondents are unmarried, 43 percent of the respondents have four members in their family and 52 percent of the respondents belong to rural areas.

**AWARENESS ABOUT CELEBRITY ENDORSEMENTS REGARDING FMCG PRODUCTS**

Celebrity endorsement in advertising is a frequently used approach in marketing for building brand awareness and it is built much more quickly than traditional types of advertising. Using a celebrity can shorten the time needed for consumers to become familiar with a new brand. Celebrity endorsements can do much to enhance consumer's awareness and understanding of what kind of FMCG products are being offered by the marketers to the consumers in the society.

**TABLE 2: AWARENESS ABOUT CELEBRITY ENDORSEMENTS REGARDING FMCG PRODUCTS**

| Awareness | No. of. Respondents | Percentage |
|---|---|---|
| Yes | 61 | 81 |
| No | 14 | 19 |
| **Total** | **75** | **100** |

Source: Primary Data

Table 2 reveals that, 81 percent of the respondents are aware of celebrity endorsements regarding FMCG products and the remaining 19 percent of the respondents are unaware about celebrity endorsements regarding FMCG products.

**FREQUENCY OF CELEBRITY ADVERTISEMENTS WATCHED**

New products or brands need a very high level of reach since the objective of celebrity advertisements is to make all potential consumers aware of the new entry of FMCG products in the market. The frequency of celebrity advertisements always differs for different set of consumers. Hence the marketer repeats the celebrity advertisement through different media vehicle for increasing the awareness and purchase intention of the consumers.

**TABLE 3: FREQUENCY OF CELEBRITY ADVERTISEMENTS WATCHED**

| Frequency | No. of. Respondents | Percentage |
|---|---|---|
| Regular | 20 | 27 |
| Often | 19 | 25 |
| Occasionally | 10 | 13 |
| Rarely | 15 | 20 |
| Never | 11 | 15 |
| **Total** | **75** | **100** |

Source: Primary Data

Table 3 shows that 27 percent of the respondents regularly come across advertisements that feature celebrities, 25 percent of the respondents often view celebrity advertisements, 20 percent of the respondents rarely view celebrity advertisements, 15 percent of the respondents never come across advertisements that feature celebrities and the remaining 13 percent of the respondents occasionally view celebrity advertisements.

**MEDIA THROUGH WHICH ATTRACTED TOWARDS CELEBRITY ENDORSED ADVERTISEMENTS**

Advertisement is the most important source to promote the brands of FMCG. Advertisers use different kinds of strategies to persuade consumption. Advertisers often select endorsers as a promotional strategy to communicate the attributes of their products or brands. Today this advertising approach is on the increase across all media types.

**TABLE 4: MEDIA THROUGH WHICH ATTRACTED TOWARDS CELEBRITY ENDORSED ADVERTISEMENTS**

| Media | No. of. Respondents | Percentage |
|---|---|---|
| Television | 40 | 53 |
| Internet | 13 | 17 |
| Radio | 2 | 3 |
| Print | 14 | 19 |
| Hoardings | 6 | 8 |
| **Total** | **75** | **100** |

Source: Primary Data

Table 4 reveals that 53 percent of the respondents are attracted towards celebrity advertisements through the medium of television. Hence the majority of the respondents are attracted to watch celebrity endorsed advertisements through the medium of television.

**TYPE OF CELEBRITY WHOSE ENDORSEMENT PERSUADES TO BUY FMCG PRODUCTS**

Famous celebrities are utilised by marketers for their communication messages. The endorsers can be from different fields such as film stars, sports stars, famous personalities and others such as TV stars, models, costume designers, hair designers, makeup artists, etc. as their popularity extends to relatively wider segments of the population.

**TABLE 5: TYPE OF CELEBRITY WHOSE ENDORSEMENT PERSUADES TO BUY FMCG PRODUCTS**

| Type of Celebrities | No. of. Respondents | Percentage |
|---|---|---|
| Film Stars | 33 | 44 |
| Sports Stars | 16 | 21 |
| Famous Personalities | 17 | 23 |
| Others | 9 | 12 |
| **Total** | **75** | **100** |

Source: Primary Data

Table 5 indicates that 44 percent of the respondents are persuaded to buy FMCG products endorsed by the film stars.

**ATTRACTION TOWARDS CELEBRITY GENDER**

Consumer's reaction in response to the advertisements featuring male and female celebrities will differ. An attempt has been made to find out the extent of attractiveness of the celebrity based on gender of the celebrity.

**TABLE 6: ATTRACTION TOWARDS CELEBRITY GENDER**

| Celebrity Gender | No. of. Respondents | Percentage |
|---|---|---|
| Male | 15 | 20 |
| Female | 33 | 44 |
| Both | 27 | 36 |
| **Total** | **75** | **100** |

Source: Primary Data

Table 6 shows that 44 percent of the respondents are mostly attracted by female celebrities, 36 percent of the respondents are attracted both male and female celebrities and the remaining 20 percent of the respondents are attracted only by the male celebrities.

**ATTITUDE TOWARDS CELEBRITY ENDORSED ADVERTISEMENTS FOR FMCG PRODUCTS**

The goal of celebrity advertising is to present the product information to the potential customers. This information will result in customers adopting more favourable attitude towards the advertised product or service.

**TABLE 7: ATTITUDE TOWARDS CELEBRITY ENDORSED ADVERTISEMENTS FOR FMCG PRODUCTS**

| Statements | SDA | | DA | | N | | A | | SA | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | N | % | |
| Celebrity can communicate the benefit of the product clearly | 20 | 26.67 | 10 | 13.33 | 19 | 25.33 | 18 | 24 | 8 | 10.67 | **75** |
| Celebrity endorsed ads are more attractive than others | 4 | 5.33 | 11 | 14.67 | 19 | 25.33 | 29 | 38.67 | 12 | 16 | **75** |
| Celebrity endorsed ads reflect the status of the brand | 8 | 10.67 | 10 | 13.33 | 18 | 24 | 25 | 33.33 | 14 | 18.67 | **75** |
| Celebrities also use the endorsed products | 10 | 13.33 | 15 | 20 | 18 | 24 | 22 | 29.33 | 10 | 13.33 | **75** |
| Presence of celebrities in ads helps to pay attention to the brand of the product | 6 | 8. | 9 | 12 | 20 | 26.67 | 24 | 32 | 16 | 21.33 | **75** |
| Celebrities positively convey their own opinion about the product | 9 | 12 | 15 | 20 | 19 | 25.33 | 21 | 28 | 11 | 14.67 | **75** |
| I am not tired of celebrity endorsed ads | 12 | 16 | 14 | 18.67 | 19 | 25.33 | 17 | 22.67 | 13 | 17.33 | **75** |
| Celebrity advertisements gives a true picture of FMCG products | 6 | 8 | 7 | 9.33 | 20 | 26.67 | 33 | 44 | 9 | 12 | **75** |

Source: Primary Data

Table 7 reveals that 26.27 percent of the respondents have strongly disagreed that celebrity can communicate the benefit of the product clearly, 38.67 percent of the respondents have agreed that celebrity endorsed ads are more attractive than others, 33.33 percent of the respondents have agreed that celebrity endorsed ads reflect the status of the brand, 29.33 percent of the respondents have agreed that celebrities also use the endorsed products, 32 percent of the respondents

have agreed that presence of celebrities in ads helps to pay attention to the brand of the product, 28 percent of the respondents have agreed that celebrities positively convey their own opinion about the product, 25.33 percent of the respondents have given neutral opinion that I am not tired of celebrity endorsed ads and 44 percent of the respondents have agreed that celebrity advertisements gives a true picture of FMCG products.

**OPINION ON THE LEVEL OF INFLUENCE OF CELEBRITY ENDORSEMENT OF THE PRODUCT WHEN MAKING A PURCHASE DECISION**

The respondents were asked to express their opinion about the level of influence the celebrity exerts in making a purchase decision through their endorsement.

**TABLE 8: OPINION ON THE LEVEL OF INFLUENCE OF CELEBRITY ENDORSEMENT**

| Level of Influence | No. of. Respondents | Percentage |
|---|---|---|
| Highly Influential | 20 | 26.67 |
| Influential | 30 | 40.00 |
| Slightly Influential | 18 | 24.00 |
| Not Influential | 7 | 9.33 |
| **Total** | **75** | **100** |

Source: Primary Data

Table 8 shows that, 40 percent of the respondents have stated that product endorsement by the celebrity is influential while taking purchase decision, 26.67 percent of the respondents have stated that product endorsement by the celebrity is highly influential while taking purchase decision, 24 percent of the respondents have stated that product endorsement by the celebrity is slightly influential while taking purchase decision and the remaining 9.33 percent of the respondents have stated that product endorsement by the celebrity is not influential while taking purchase decision.

**CREDIBILITY OF CELEBRITY ENDORSEMENT**

Celebrities are seen as credible sources of information and the credibility of a celebrity is described as the total amount of positive features that create interest and increase the acceptance of the message.

**TABLE 9: CREDIBILITY OF CELEBRITY ENDORSEMENT**

| Credible Source | No. of. Respondents | Percentage |
|---|---|---|
| Trustworthiness | 19 | 25.33 |
| Expertise | 20 | 26.67 |
| Attractiveness | 21 | 28.00 |
| Good-Looking | 15 | 20.00 |
| **Total** | **75** | **100** |

Source: Primary Data

Table 9 shows that, 28 percent of the respondents have stated that attractiveness are the most credible source of celebrity endorsement, 26.67 of the respondents have stated that expertise are the most credible source of celebrity endorsement, 25.33 percent of the respondents have stated that trustworthiness is the most credible source of celebrity endorsement, and the remaining 20 percent of them have stated that good-looking is the most credible source of celebrity endorsement.

## FINDINGS OF THE STUDY

- A majority of 27 percent of the respondents regularly come across advertisements that feature celebrities.
- A majority of 53 percent of the respondents are attracted towards celebrity advertisements through the medium of television.
- Out of 75 respondents, 44 percent of the respondents are persuaded to buy FMCG products endorsed by the film stars.
- Out of 75 respondents, 44 percent of the respondents are mostly attracted by female celebrities.
- A majority of 40 percent of the respondents have stated that product endorsement by the celebrity is influential while taking purchase decision.
- Out of 75 respondents, 28 percent of the respondents have stated that attractiveness is the most credible source of celebrity endorsement.

## CONCLUSION

Advertisements are always designed to attract greater attention of the audience. For this marketers come up with different techniques. Celebrity endorsement is one of these. Celebrity endorser is a panacea for all marketing woes and it has direct impact on the demographic variables of the consumers and their buying behaviour. Celebrity endorsements can reap huge rewards for the brands of FMCG products among the consumers. Thus celebrity endorsements enhance awareness of a company's advertisement, create positive feelings towards the brands and are perceived by consumers as more amusing.

## LIMITATIONS OF THE STUDY

- The study has been limited to Salem District only.
- Due to time and cost constraints the study has taken a sample of 75.

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# HOUSEHOLD ENERGY CHOICE AND DEMAND IN URBAN ETHIOPIA: CASE OF WOLAITA ZONE

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**ABSTRACT**

*In the context of developing economies, urban centers have long been dependent on rural areas for their fuel. This dependence of urban centers on surrounding rural areas has aggravated forest devastation and degradation. Besides, use of biomass fuels has a significant impact on health. This study looks into household energy choice and demand in selected urban areas using a survey data of 251 urban households in Wolaita zone. The survey indicated use of traditional fuels dominate households' energy consumption. Probit analysis of decision to consume fuel revealed probability of consuming modern fuels in general increases with increase in price of traditional fuels, income and household education whereas probability of consuming traditional fuels in general increases with increase in price of modern fuels, household size and house head age. Moreover, probit regression showed kerosene is substitute for both fuel wood and charcoal; and fuel wood is substitutes for saw dust. The result that kerosene is a substitute for charcoal and fuel wood indicate an effort to ensure energy transition to modern energy fuels is needed. We applied an almost-ideal demand system to analyze demand for fuels and seemingly unrelated regression is used to estimate this. This seemingly unrelated regression estimation indicated demand for charcoal and kerosene are price inelastic whereas demand for fuel wood and saw dust are price elastic. Demand for electricity was somewhat unitary elastic. Moreover, seemingly unrelated regression estimation showed income elasticities of each fuel except electricity is expected to be 1 indicating these fuels are normal goods whereas income elasticity of electricity is 3.9 implying electricity is found to be luxury good. This study recommends local governments to emphasize energy transition from the traditional to the modern ones taking income, education and household size in to consideration.*

**KEYWORDS**

almost-ideal demand system, elasticity, probit regression, seemingly unrelated regression.

## INTRODUCTION

In developing countries 2.5 billion people rely on biomass to meet their energy needs for cooking. For many of these countries, biomass fuels account for over 90% of household energy consumption. Also in Ethiopia, energy consumption per capita is estimated to be very low. This implies that only 5 percent of the modern energy source is supplied from petroleum and electricity (OECD, 2006).

Heavy reliance of urban households in sub-Saharan Africa on biomass fuels contribute to deforestation, forest degradation, and land degradation. This is partly because use of these fuels in urban areas is an important source of cash income for people in both urban and rural areas. While use of woody biomass as fuel and as construction material contributes to deforestation and forest degradation, use of dung as fuel contributes to land degradation and reduction in agricultural productivity (Mokonnen & Kohlin, 2008).

Use of biomass fuels is a major cause for health problems in developing countries due to indoor air pollution. According to World Health Organization (WHO), it is estimated that 1.5 million premature deaths per year are directly related to indoor air pollution from the use of solid fuels. More than 85% of these deaths (about 1.3 million people) are due to biomass use, the rest due to coal (OECD/IEA, 2010).

Therefore, an important way of reducing the harmful effects of biomass fuel is improving the way biomass is supplied and used for cooking. This can be achieved either through transformation of biomass into less polluting forms or through improved stoves and better ventilation (OECD, 2006).

The United Nations Millennium Project set an international target which halves the number of households using traditional biomass for cooking in the year 2015 by switching to alternative fuels and technologies (OECD, 2006). Besides, the Ethiopian government indicated its targets in the first Growth and Transformation Plan (GTP) to develop energy resources by adopting alternative energy sources to ensure environmental protection and conservation. This paper attempts to examine the choice of energy and to assess the determinants of household fuel demand in the urban areas of Wolaita zone by using cross-sectional data.

## REVIEW OF LITERATURE

Consider a consumer who derives utility from consumption of a vector of n commodities denoted by q. Furthermore, assume that vector q includes broader categories of consumption goods, such as food, fuel, and other goods or services. Let u denote the utility a consumer derives from consuming these goods. Following the standard formulation of utility function of (Deaton & Muellbauer, 1980) and (Sadoulet & de Janvry, 1995), the household's utility function can be written as:

$u(q;h)$ ..... (1)

where: h stands for the vector of individual characteristics of the household.

The budget constraint is given as:

$p'q = y$ ..... (2)

where: p' is an n-dimensional row vector of prices; y is the amount of income that can be spent on different commodities.

The objective of the household is to maximize utility by choosing q, subject to the budget constraint given in Equation 2. Therefore, the Lagrangian of the consumer's maximization problem can be rewritten as:

$L = u(q;h) + \lambda (y - p'q)$ ..... (3)

where: λ is a Lagrange multiplier.

Solving for the Lagrangian function in Equation 3, we get a set of observed demand equations:

$q_i = q_i(p, y: h)$ ..... (4)

where: there are n commodities, i = 1… n

Upon partially differentiating Equation 4 with respect to income y and prices $p_i$, we get n income and $n^2$ price slopes. Then, multiplying the income slopes and price slopes by their respective income/quantity and price/quantity ratios, we get n income elasticities and $n^2$ price elasticities that are useful for comparative statics:

$\frac{\partial q_i}{\partial y}\frac{y}{q_i} = \eta_i$ ..... (5)

$\frac{\partial q_i}{\partial p_j}\frac{p_j}{q_i} = \varepsilon_{ij}$ ..... (6)

In comparative-static analysis, the objective is to determine how an economic variable of interest, quantity demand in our case, responds to changes in the value of some exogenous variables.

Deaton assumed that "geographically clustered households," face the same prices (Deaton, 1990). For Wolaita zone, we do not make this assumption and allow households to face different prices. This makes sense because the markets for fuels in the study area are fragmented and far apart. Note that, if preferences are separable, the n vector of commodities q in Equation 1 can be partitioned into groups and that the utility function can be represented as:

$u = v(q_i) = f(v_i(q_i))$ ..... (7)

where $f(\ )$ is an increasing function and $v$ is sub utility function associated with food, fuel goods, and other goods or services. The idea is that, due to complexity of consumers in making choices among a large array of alternatives, first income is allocated to broad groups of goods, such as food, fuel, and other goods. In the second stage, the budget for fuel is then allocated to specific items, such as electricity, kerosene, wood and charcoal. The implication of this step-by-step budgeting process is that decisions made at each stage can be regarded as corresponding to a utility maximization problem of their own (Deaton & Muellbauer, 1980) and (Sadoulet & de Janvry, 1995).

## IMPORTANCE OF THE STUDY

This research lend evidence to:

- Forecast energy fuel demand projection for the household levels
- Help decision makers how to formulate policy based on the research findings
- Recommend how to implement adoption of different energy sources

## STATEMENT OF THE PROBLEM

Urbanization and economic development are bringing about changes in consumption patterns and increases in household income in developing countries, which in turn are leading to major changes in the household energy sector (Girard, 2002).

It is obvious that urban centers have long been dependent on rural areas for their fuel. This dependence of urban centers on surrounding rural has aggravated forest devastation and degradation (Gebreegziabher, et al., 2010). Besides, the use of these biomass fuels has a significant impact on health (OECD/IEA, 2010). Considering these fuel related problems government of Ethiopia has been working to switch from traditional fuel use to transitional (biogas, solar and traditional wood saving stoves) and modern fuels (FDRE, November 2010).

In line with this plan, Wolaita zone, a heavily dependent on the biomass fuel for more than 94% of traditional energy consumption, is doing alternative energy development activities like biogas (WoEM, 2012).

Studies on energy demand by Gebreegziabher revealed that household's decision to consume a particular fuel is determined not only on household income but also other household characteristics, such as family size, and age and education of household head (Gebreegziabher, et al., 2010). Other study analyzed by Samuel indicates that the use of traditional fuels dominates households' consumption pattern. The probability of consuming traditional fuels in general declines with increase in income and prices of the traditional fuels where as it increases with the increase in the prices of the modern fuels and vice versa (Samuel, 2002). Studies by Mokonnen and Kohlin suggested that as households' total expenditures rise, they increase the number of fuels used and they also spend more on the fuels they consume (Mokonnen & Kohlin, 2008).

Despite these studies at the national and regional levels, there are no studies undertaken in Wolaita zone related to energy. However, there are some studies conducted by zonal energy and mineral office focused on the household willingness of different alternative energy sources for the purpose of awareness creation on different energy sources. Therefore, this study will focus on the choice and demand for energy by using quantitative analysis techniques to help policy formulation and implementation in Wolaita zone particularly in the urban areas.

## OBJECTIVES

The overall objective of the study is to assess the determinants of household energy consumption in urban areas of Wolaita zone. Specifically, the study aims at:

1. To assess the energy choice of urban Wolaita zone
2. To analyze the determinants of household energy demand in the zone

## HYPOTHESIS

There is no possibility of energy transition from traditional to the modern energy sources.

## RESEARCH METHODOLOGY

### MODEL SPECIFICATION FOR HOUSEHOLD ENERGY DEMAND AND CHOICE

To sufficiently address its objectives, this study used an almost-ideal demand system and probit analysis. For the empirical demand analysis, an almost-ideal demand system derived from a utility function specified as a second-order approximation to any utility function is applied (Sadoulet & de Janvry, 1995). The demand functions are specified in the budget share as follows:

$w_{Fi} = a_F + \sum_J b_{FJ} \ln p_J + c_{Fi} \ln \frac{y_i}{P}$ ..... (8)

where $w_{Fi} \equiv \frac{y_{Fi}}{y_i}$ is fuel $F$'s budget share in household $i$'s budget; $y_{Fi}$ is household $i$'s expenditure on the fuel $F$ (wood, charcoal, kerosene, and electricity) consumed by the household i; $p_J$ is price of $J^{th}$ good; $y_i$ is household $i$'s total expenditure on all goods; and P is the consumer price index. This share, as specified in equation 8, is assumed to be a linear approximation of the logarithm of the price of $J^{th}$ good, $p_J$ and the logarithm of the ratio of total expenditure to price index, $\frac{y_i}{P}$.

However, some of the households may not consume some of the fuel goods implying zero values for corresponding observations of budget shares in Equation 8. The dependent variable is thus censored; rendering ordinary least squares estimates to be biased. With censoring or zero observations, it fails to comply with the standard assumptions with respect to the disturbance term. This problem is solved by using a two-step estimation procedure that combines a probit analysis with standard seemingly unrelated regression (SUR). Therefore, we can rewrite the system of fuel demand equations to be estimated as (Sadoulet & de Janvry, 1995):

$w_{Fi} = a_F + \sum_J b_{Fj} \ln p_J + c_{Fi} \ln \frac{y_i}{P} + \mu_F \xi_{Fi} + \upsilon_{Fi}$ ..... (9)

Where the additional terms $\xi_{Fi}$ and $\upsilon_{Fi}$ on the right hand side of Equation *9* respectively, stand for the inverse Mill's ratio and the residual term of fuel $F$ for household i; and $\mu_F$ is the coefficient corresponding to the inverse Mill's ratio. Once we estimated the coefficients with the restrictions imposed, then the price and income elasticities will be calculated from the coefficient estimates (Sadoulet & de Janvry, 1995):

$\varepsilon_{FF} = -1 + \frac{b_{FF}}{w_F} - c_F, \varepsilon_{FJ} = \frac{b_{FJ}}{w_F} - \frac{c_F}{w_F} w_J, \eta_F = 1 + \frac{c_F}{w_F}$ ..... (10)

where $\varepsilon_{FF}$ and $\varepsilon_{FJ}$, respectively, stand for own-price and cross-price elasticity; and $\eta_F$ is income elasticity of demand for fuel $F$. The income elasticity enables us to characterize whether a specific fuel good is normal, inferior, or a luxury good, depending on the value and sign of the coefficient.

Note that the inverse Mill's ratio $\xi_{Fi}$ comes from the first-step estimation of household $i$'s decision to consume a specific fuel good $F$. For simplicity, consider a decision involving a choice between consuming and not consuming. Such dichotomous choices are best modelled as probit. Hence, we can specify the probit model as:

$Prob(q^*_{F_i} = 1) = Prob(f(F_i, p_F, y_i, h_i) + e_{F_i} > 0)$ ..... (11)

where $q^*_{Fi}$ is equal to 1 if household i consumes fuel good F, and zero otherwise; $p_F$, $y_i$, and $h_i$, respectively, are the prices of related fuel goods, income, and characteristics that apply to the household; and $e_{Fi}$ is a residual term. Then, the inverse Mill's ratio is generated from the probit estimation as:

$$\xi_{F_i} = \frac{\varphi(f_{F_i})}{\psi(f_{F_i})} \quad \text{..... (12)}$$

where, $\varphi$ is the probability density function and ψ the cumulative density function of the standard normal distribution of the residual term, $e_{Fi}$.

## STUDY AREA, SAMPLING AND DATA DESCRIPTION

The data were obtained from a survey conducted from the residents of urban households in Wolaita zone. Wolaita zone was found in southern nations, nationalities and peoples regional (SNNPR) state of Ethiopia. The total population of the zone is estimated to be 1,796,436 (374,258 households).

Data were collected from a sample of urban households using stratified random sampling. First, all Woredas in the zone were stratified based on their urban nature (Sodo, Areka and Boditi). Then, a simple random sampling was used, based on proportional allocation, to select 251 respondents as a sample. Based on this, the sample households were 148 in Sodo, 58 in Areka and 45 in Boditi.

As showed in Table 1 mean age of the house heads is 43.1 and about 71% of these house heads are literate. Out of the total house heads about 82% are employed. Moreover, a separate house head lives for an average of 4.7 family members expending an average of ETB 4,737.45 per annum out of which ETB 2,911.81 accounts for fuel expenditure. Out of the surveyed households, 70.5% were male-headed and 29.5% female headed and 65.7% were married.

**TABLE 1: DESCRIPTIVE STATISTICS OF HOUSEHOLD SOCIOECONOMIC CHARACTERISTICS**

| Variables | Mean | Std. Dev. | Min. | Max. |
|---|---|---|---|---|
| Sex of household head (%) | | | | |
| Female | 29.48 | N/A | N/A | N/A |
| Male | 70.52 | N/A | N/A | N/A |
| Marital status of the household (%) | | | | |
| Married | 65.74 | N/A | N/A | N/A |
| Unmarried | 34.26 | N/A | N/A | N/A |
| Education of household head (%) | | | | |
| Illiterate | 29.08 | N/A | N/A | N/A |
| Literate | 70.92 | N/A | N/A | N/A |
| Occupation of household head (%) | | | | |
| Unemployed | 18.33 | N/A | N/A | N/A |
| Employed | 81.67 | N/A | N/A | N/A |
| Age of household head | 43.13 | 12.57 | 80.00 | 20.00 |
| Household size in number | 4.74 | 2.33 | 14.00 | 0.00 |
| Household Expenditure in Birr | 4737.45 | 2750.27 | 20178.00 | 611.00 |
| Fuel Expenditure in Birr | 2911.81 | 2356.59 | 19200 | 165 |
| Price of Wood per *Chinet* in Birr | 31.09 | 12.21 | 100.00 | 10.00 |
| Price of Charcoal per *Kesha* in Birr | 59.36 | 26.12 | 120.00 | 8.00 |
| Price of Kerosene per Litter in Birr | 12.33 | 7.30 | 118.00 | 5.00 |
| Price Saw Dust per *Kesha* in Birr | 10.40 | 3.01 | 20.00 | 5.00 |
| Price Electricity | 0.35 | 0.00 | 0.35 | 0.35 |

Source: Own Survey, 2013

In SNNPR context in general and Wolaita zone in particular traditional biomass fuels are the most important sources of households cooking energy (MEGEN Power Plc, 2011). Likewise, firewood and charcoal were most frequently used types of cooking fuels in the study area with 96.0% and 95.2% users respectively. However, the crop residue (less than 2%), dung cake (less than 6%) and saw dust (about 26%) were rarely used for cooking purposes. When we come to modern fuel energy consumption, only 15% and 14% sample households were used kerosene and electricity, respectively (Table 2). This indicates that households are still depending on the traditional biomass fuels. This preference of households to particular fuel energy may be affected by accessibility of the energy source, familiarity with the energy source, and the price of that fuel and its effectiveness. Price for a particular fuel is different across towns except for electricity for which uniform price is set throughout the country. The average price for fuel wood, charcoal, kerosene and saw dust were 31.085 per *'Chinet'*, 59.361 per '*Kesha*', 12.333 per litter and 10.403 per '*Kesha*' respectively (Table 1). Accessibility, familiarity and household's perception regarding effectiveness also vary across the towns in Wolaita zone.

**TABLE 2: PERCENTAGE DISTRIBUTION OF SURVEY HOUSEHOLDS BY FUEL TYPE**

| Type of Fuel | Sodo | Areka | Boditi | All |
|---|---|---|---|---|
| Firewood | 94.6 | 100 | 95.55 | 96.0 |
| Charcoal | 96.6 | 93.1 | 93.33 | 95.2 |
| Kerosene | 11.5 | 34.48 | 4.44 | 15.5 |
| Electricity | 14.2 | 17.24 | 11.11 | 14.3 |
| Crop residue | 2.02 | 1.72 | 2.22 | 1.98 |
| Dung cake | 6 | 1.72 | 10.1 | 5.94 |
| Saw dust | 23.7 | 39.66 | 17.78 | 26.3 |

Source: Own Survey, 2013

## RESULTS AND DISCUSSIONS

Although the study considered all possible fuel types and categories, fuel use in the study area is mainly inclined to firewood, charcoal, kerosene, saw dust and electricity. Therefore, the empirical analysis focused only on five fuel goods: firewood, charcoal, kerosene, saw dust and electricity.

### HOUSEHOLD FUEL CHOICE

Injera baking and general cooking are the two most common end uses of urban domestic energy consumption in Ethiopia (Gebreegziabher, et al., 2010). In most cases urban households use firewood and electricity for baking (Samuel, 2002). Likewise, households in the study area were mainly used fuel wood, saw dust and electricity for Injera baking and electricity, charcoal and kerosene for cooking purpose. Moreover, kerosene is also used for igniting wood and charcoal in both baking and cooking. Thus, we expect interdependencies among fuel choices as the types of stoves used by households are differentiated. Therefore, fuel energy choice dependencies between combinations of fuel wood, saw dust and electricity and between kerosene, charcoal and electricity are handled by the use of bivariate probit models.

We first run bivariate probit regression between combinations of fuel wood, saw dust and electricity and then between combinations of kerosene, charcoal and electricity. However, we could not reject the null hypothesis that the error correlation was zero (rho=0) for all cases except for bivariate regression of fuel wood and electricity. This suggests that only choices between fuel wood and electricity were dependent. As a result individual probit model is adopted to analyze fuel choice of charcoal, kerosene and saw dust.

According to Table 3 no price parameter significantly influenced decision to consume electricity. However, decision to consume charcoal was significantly and positively influenced by house head education but negatively affected by its own price and price of wood. Moreover, residents of Sodo town were found to incline to charcoal more as compared to residents of Areka and Boditi.

**TABLE 3: BIPROBIT AND PROBIT ESTIMATES OF CHOICE TO CONSUME FUEL ENERGY**

| Explanatory Variables | Dependent Variable (Consume Fuel=1,0 otherwise) | | | | |
|---|---|---|---|---|---|
| | Electricity[a] | Fuel wood[a] | Charcoal | Kerosene | Saw Dust |
| Constant | -2.81256 (0.9338471) | -0.60159 (1.486566) | 1.974951 (01.264502) | -0.15056 (0.6788958) | -1.113656* (0.4825371) |
| Price of wood in Birr | | | -0.02285** (0.0127371) | -0.00628 (0.0086961) | 0.0146835* (0.0074551) |
| Price of charcoal in Birr | 0.008446 (0.0057031) | 0.009674 (0.0132022) | -0.01628* (0.0072563) | 0.009147** (0.0052177) | |
| Price kerosene in Birr | -0.01056 (0.033796) | 0.177526* (0.0727607) | | | |
| Price saw dust in Birr | 0.000261 (0.0366703) | -0.07956 (0.0748071) | | -0.0227 (0.0348239) | |
| Household Expenditure in Birr | 0.000125* (0.0000363) | 0.000115 (0 .0001129) | 0.000050 (0.00005) | 0.00011* (0.0000355) | 0.0001009 (0.0000737) |
| Charcoal Expenditure in Birr | | | | | -0.0003932* (0.0001523) |
| Wood Expenditure in Birr | | | | | -0.0001561 (0.0000996) |
| Dummy single | -0.06302 (0.1495755) | -0.39124** (0.2037641) | -0.21528 (0.2219207) | | |
| Sex of house head | -0.20706 (0.2830576) | 0.161792 (0.4032545) | -0.5453 (0.4754755) | -0.65343* (0.2509402) | |
| Education of house head | 0.124177** (0.0699733) | -0.37301* (0.1772712) | 0.254687* (0.1125494) | -0.00504 (0.0610653) | -0.0651651 (0.0490156) |
| Dummy Sodo | -0.2343 (0.3173097) | -0.82977 (0.794431) | 0.735898** (0.38386) | -0.72149* (0.307398) | |
| Dummy Salaried | -0.03025 (0.3579195) | 0.6575 (0.5859886) | -0.25037 (0.5337835) | 0.5734** (0.3376147) | 0.4058714 (0.2795627) |
| Age | 0.009012 (0 .0097942) | 0.074079* (0.0271895) | 0.019573 (0.0152161) | -0.02268 (0.0102241) | 0.0030828 (0.00771) |
| Household Size | 0.017873 (0.0497299) | 0.348883** (0.2023932) | | 0.010216 (0.0498223) | 0.0479235 (0.0404515) |
| Sample size | 251 | 251 | 251 | 251 | 251 |
| Share of Zero (%) | 85.66 | 3.98 | 4.78 | 84.46 | 73.71 |
| Predicted Probability | 0.1432382 | 0.9634162 | 0.9521677 | 0.1545762 | 0.2629827 |
| Pseudo-$R^2$ | | | 0.1875 | 0.1525 | 0.0471 |
| LR $\chi^2$ | | | 18.07 | 33.08 | 15.68 |
| Wald $\chi^2$ | 40.78 | | | | |
| Prob > $\chi^2$ | 0.0088 | | 0.0344 | 0.0003 | 0.0542 |

Source: Own Computation

[a] Results based on Biprobit Regression with Likelihood-ratio test of rho=0: $chi^2$ (1) = 11.5241 Prob > $chi^2$ = 0.0007

*Significant at 5% and **Significant at 10%

When we look in to determinants of decision to consume kerosene, price of charcoal and household expenditure, though small in magnitude, were found to have a significant positive effect. Whereas being household headed by salaried house head, being residence of towns other than Sodo and being headed by female head made households to incline to kerosene as compared to households headed by unsalaried head, residences of Sodo and male headed households respectively. Lastly, price of wood was found to have significant positive influence on decision to consume saw dust. However, household expenditure on charcoal influenced decision to consume saw dust was negatively and significantly.

**HOUSEHOLD FUEL DEMAND SYSTEM**

The main philosophy behind adoption of SUR estimation procedure in our AIDS specification is that error terms in different demand equations are related. To check this setting we construct correlation matrix of error terms of system of demand equations obtained from SUR and found considerable degree of correlation (Table 4). This is also approved by the rejection of Breusch - Pagan test of independence.

**TABLE 4: CORRELATION MATRIX OF RESIDUALS FROM SUR ESTIMATION**

| *Demand* | *Wood* | *Charcoal* | *Kerosene* | *Saw dust* |
|---|---|---|---|---|
| *Wood* | 1 | | | |
| *Charcoal* | - 0.5030 | 1 | | |
| *Kerosene* | - 0.9777 | 0.5449 | 1 | |
| *Saw dust* | 0.4977 | - 0.7031 | - 0.4413 | 1 |
| *Breusch – Pagan test of independence: $chi^2$ = 29.314 P-value = 0.0001* | | | | |

Source: Own Computation

According to results of SUR estimation in Table 5 price of fuel wood and inverse mills ratio influenced demand for fuel wood positively and significantly. Whereas, price of kerosene has negative significant influence on fuel wood demand. With regard to the charcoal demand, price of kerosene found to influence it negatively and significantly. The inverse mills ratio has also significant positive influenced on charcoal.

TABLE 5: SUR RESULTS OF AIDS

| Explanatory Variables | Dependent Variable – Share of Fuel in total Expenditure | | | | |
|---|---|---|---|---|---|
| | Fuel Wood | Charcoal | Kerosene | Saw Dust | Electricity [a] |
| Constant | 1.2260 (1.36) | -0.1157 (0.44) | -0.67494 (0.55) | -0.21455 (0.64) | -0.2208679 |
| Ln (Price of Wood) | 0.19202** (0.10) | -0.0092 (0.03) | -0.164978* (0.05) | -0.01788 (0.06) | -0.0000001 |
| Ln (Price of Charcoal) | -0.0092 (0.03) | 0.02521 (0.02) | -0.03082** (0.02) | 0.01476 (0.02) | -0.0000001 |
| Ln (Price Kerosene) | -0.16498* (0.06) | -0.03082** (0.02) | 0.11671* (0.03) | 0.07908* (0.03) | -0.0000001 |
| Ln (Price Saw Dust) | -0.01788 (0.06) | 0.01476 (0.02) | 0.07909* (0.03) | -0.075967** (0.04) | -0.0000001 |
| Ln (Price Electricity) | -0.0000001 | -0.0000001 | -0.0000001 | -0.0000001 | 0.00000040 |
| Ln (Real Expenditure) | -0.26242 (0.17) | 0.01244 (0.05) | 0.10297 (0.07) | -0.00105 (0.08) | 0.1480659 |
| Inverse Mills Ratio | 1.5029* (0.15) | 0.17859* (0.09) | 1.2198* (0.09) | 1.7996* (0.34) | |
| $R^2$ | -0.3838 | -0.1249 | -0.1865 | 0.093 | |
| $\chi^2$ | 142.48 | 63.53 | 261.42 | 97.8 | |
| P-Value | 0.0000 | 0.0000 | 0.0000 | 0.0000 | |

Source: Own Computation

[a] Results recalculated form the SUR results based on adding up restrictions

*Significant at 5% and **Significant at 10%

Table 5 also signifies both price of wood and price charcoal impacted kerosene demand negatively and significantly whereas price of kerosene, price of saw dust and inverse mills ration turned out to influence demand for kerosene positively and significantly. Moreover, saw dust demand is positively and significantly influenced by price of kerosene and inverse mills ratio but negatively and significantly influenced by its own price.

Estimation results in Table 6 also revealed that all own price elasticities were found to have the expected negative sign. Specifically, charcoal and kerosene were price inelastic whereas fuel wood and saw dust were price elastic. Demand for electricity was somewhat unitary elastic. The fact that demand for charcoal and kerosene found to be price inelastic was consistent with the finding of Gebreegziabher for urban areas of Tigray region (Gebreegziabher, et al., 2010).

TABLE 6: PRICE AND INCOME ELASTICITIES OF DEMAND FOR FUEL.

| Variables | Elasticity | | | | |
|---|---|---|---|---|---|
| | Wood | Charcoal | Kerosene | Saw Dust | Electricity |
| **Price of Wood** | -1.83483932 | -0.039309723 | -1.635800733 | -0.456942232 | -1.422317188 |
| **Price of Charcoal** | 0.188959853 | -0.947511796 | -0.537384743 | 0.399181511 | -1.125309141 |
| **Price of Kerosene** | -0.265683645 | -0.083574632 | -0.21713175 | 2.08475365 | -0.381785106 |
| **Price of Saw Dust** | -0.016113439 | 0.036793547 | 0.570575137 | -2.997936912 | -0.110123591 |
| **Price of Electricity** | 0.027318105 | -0.001637169 | -0.039933273 | 0.00141266 | -1.148058072 |
| **Income** | 0.465350769* | 1.032036158* | 1.781523056* | 0.972301203* | 3.897811907 |

Source: Own computation

*Calculated based on insignificant coefficients log of inflation adjusted income

## FINDINGS

House head education has positive significant effect on decision to consume electricity and negative significant effect on decision to consume fuel wood may imply possible transition of energy consumption from fuel wood to electricity as house heads become more educated. Similarly, the positive significant effect of household expenditure on the decision to consume electricity and kerosene shows the tendency of households to shift to modern energy fuels as income (proxied by expenditure) rises.

The insignificancy of price of related fuel goods in determining decision to consume electricity shows less substitutability of other fuel goods by electricity but the significant positive effect of price of kerosene on decision to consume fuel wood implies kerosene and fuel wood are substitutes. The significant positive effect of price of fuel wood on decision to consume saw dust and significant positive effect of price of charcoal on decision to consume kerosene respectively shows fuel wood and saw dust; and charcoal and kerosene are substitutes. However, the fact that price of fuel wood has significant negative effect on decision to consume charcoal literally shows that both are complements but such relationship may be due to the fact that charcoal is the byproduct of fuel wood.

Demand for fuel wood and saw dust are negatively and significantly elastic. This may indicate possible transition of energy consumption from traditional energy fuels (fuel wood and saw dust) to modern energy fuels (kerosene and electricity) as price for traditional energy fuels rises. The fact that demand for kerosene is negatively price inelastic with respect to its price indicate the potential tolerance of consumers to the rise in the global kerosene price even where government subsidies are not available. Moreover, the fact that the elasticity of saw dust with respect to kerosene price was positively elastic and significant (2.085) implies saw dust and kerosene are substitutes (may be in terms of igniting).

The fact that income (proxied by expenditure) has no significant impact on demand of each fuel but electricity shows income elasticity of each fuel goods except electricity is 1 indicating these fuel goods are normal goods. On the other hand, coefficient of electricity obtained by adding up restrictions considering the insignificancy of impact of income on the rest of fuel goods may imply the income of electricity is higher than unity. This can be intensified by the case where the income elasticity of electricity is 3.9. Hence, electricity is found to be luxury fuel good.

## RECOMMENDATIONS

- The long-run objective of the local government should be to emphasize the energy transition from the traditional to the modern ones taking household income, household education and household size in to consideration.
- Local government should follow substitutability patters i.e. substitutability between fuel wood and kerosene; charcoal and kerosene; and saw dust and fuel wood when they think of the fuel energy use transition.
- The study also recommends local governments to look in to household income raising mechanisms to help the transition to electricity.

## CONCLUSIONS

- Besides price and income, household Characteristics plays important role in the energy consumption decisions.
- The positive significant effect of house head education on decision to consume electricity and its negative significant effect on decision to consume fuel wood shows possible transition of energy consumption from fuel wood to electricity house head become more educated.
- Similarly, positive significant effect of household expenditure on the decision to consume electricity and kerosene shows the tendency of households to shift to modern energy fuels as income rises.
- Kerosene and fuel wood, fuel wood and saw dust; and charcoal and kerosene are substitutes. Nonetheless, decision to consume electricity do not significantly depend on price of related fuel goods implies less substitutability of electricity.
- All own price elasticities were found to have the expected negative sign. Charcoal and kerosene were price inelastic whereas fuel wood and saw dust were price elastic.

- The income elasticities of each fuel goods except electricity is expected to be 1 indicating these fuel goods are normal goods but electricity is found to be luxury fuel good.

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# CUSTOMERS' PERCEPTION OF ATM USAGE, QUALITY OF SERVICE AND SATISFACTION: REFLECTIONS ON INDIAN BANKING

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**ABSTRACT**

*Improved customer service has become very important for banks to survive and grow, in the emerging deregulated banking sector, under reforms. The three thrust areas for the banking industry are size, speed and service. Central to the acceleration of speed of delivery of service in banking system is technology. The banks have recognized that they need to offer the conveniences of newer technologies merely to retain their existing customers. The ATM is the most visible and perhaps the most revolutionary element of virtual banking. The focus of this study has been on the awareness and satisfaction of the respondents availing ATM services provided by the banks. The present study depended both on primary and secondary sources. Among the respondents in the age group of 18-45 years a high of more than 90 per cent is availing themselves of ATM services. The quality of the ATM services of the new private sector banks was the most superior followed by the old private sector banks and then the public sector banks. The level of satisfaction of ATM services by the respondents is 4.37± 0.63, which shows the customers are highly satisfied.*

**KEYWORDS**

ATM, customer satisfaction, quality of service.

## INTRODUCTION

The three thrust areas for the Indian banking industry at this state of its development are size, speed and service. Size includes mergers and amalgamations. Central to the acceleration of speed of delivery of service in banking system is technology. But it is important to remember that technology is only an enabler. Banks have to develop innovative measures to address their present customers, acquire new ones, retain existing ones and at the same time initiate procedures to win back lost customers. Improved customer service has become very important for banks to survive and grow, in the emerging deregulated banking sector, under reforms. The banks have recognized that they need to offer the conveniences of newer technologies merely to retain their existing customers.

## FOCUS OF THE STUDY

The focus of this study has been on the satisfaction of the respondents availing ATM services provided by the banks from which the customers benefit as the services enable them to avail themselves of banking facilities with or without the assistance of the bank employees.

## OBJECTIVES OF THE STUDY

The major objective of this study has been an analysis of the satisfaction of the customers availing ATMs in Dakshina Kannada (DK) district of Karnataka state in India.

However, the specific objectives of the study have been-

1. To analyse the Growth of ATMs in Indian Banking Sector.
2. To make a comparative analysis of the growth of ATMs of different bank groups.
3. To analyse the regional spread of ATMs in India.

## HYPOTHESES

In order to achieve the objectives this study has set the following hypotheses for testing/ verification.

1. The preference for ATMs is more with young customers.
2. The customers are satisfied from the ATM services provided by the banks.

## SOURCES OF DATA

The present study depended both on primary and secondary sources. The primary data were gathered through a field survey, using structured interview schedules, from bank customers drawn from public sector, old private sector and new private sector banks residing in DK district of Karnataka State in India.

## REVIEW OF LITERATURE

A review of the existing literature on the subject has been useful in getting an insight into the topic of study. However, the review made cannot be claimed to be an exhaustive one.

Abdul Wahab, L. (2010) in his research found that the respondents use the ATMs frequently due to advantages of accessibility and convenience of the services offered by it. Despite a few challenges, majority of the respondents are comfortable with the usage of the ATMs and transaction charges. The study also revealed that the middle aged use the ATMs more frequently than the aged which implies that age is considered the most important factor that influence the ATM adoption. The researchers argue that providing concrete policy guidelines concerning the design of the ATM by the service providers might increase the use of the ATMs by older people.

Hanuddin Amin (2010) investigates the factors affecting the decisions of Tabung Haji[1] customers in Malaysia to use the ATM banking. The study extends the applicability of the Technology Acceptance Model (TAM) to Tabung Haji ATM banking and includes perceived credibility and religiosity in addition to perceived usefulness and ease of use. The outcome of the study is that perceived ease of use, perceived credibility, and perceived religiosity are significantly related to usage intensions. Further, perceived ease of use is significantly related to perceived usefulness, which, in turn affects usage intensions.

The study of Thamaraiselvan Natarajan, Senthil Arasu Bala Subramanian and Shivagnana Sundaram Manickvasagam (2010) on customers' choice amongst self service technology channels in retail banking, explores the factors influencing customer choice of self service technologies in Tiruchirapalli. The result analysis revealed that on the whole ATM is found to be the most preferred channel followed by internet banking and mobile banking with more or less equal weights. When it comes to the various purposes for which Self Service Technologies (SST) are used, the internet banking is widely used, followed by mobile banking and ATMs. For avoiding risk associated with SST, ATM is the most preferred channel. The study opines that the benefits perceived equal, amongst the SST channels, the patronage for internet banking and mobile banking can be improved if the risk perception is reduced.

In a joint study Kulwanth Singh Pathania and Mamatha Sharma (2010) examined the adoption rate of the banking technologies and found that the awareness of ATM is quite higher, as compared to the other banking channels. The study was made on different services from different banks operating in public and private

sectors of Shimla and Solan districts of Himachal Pradesh. The results of the study showed that the SBI leads in almost all the attributes of the quality of banking services, followed by the ICICI bank and the PNB. According to the study 56 per cent of the respondents are somewhat satisfied; where as 26 per cent are extremely satisfied from the banking services. ATM was the only channel that was extensively used followed by personal visit to banks and the use of other channels was very low.

In a study Joshua A.J. and Moli P. Koshy (2009) found that ATM was the most frequently used electronic banking channel followed by internet banking. The study found that the highest level of satisfaction with overall banking services was for the public sector banks, whereas the satisfaction with automated banking services was the highest for the foreign banks. The study also found that the overall banking satisfaction varies significantly with the bank groups. Further, there was a significant difference between the customer satisfaction of the public sector banks and the private sector banks, but the satisfaction levels of the private sector banks and the foreign banks were similar.

## ANALYSIS AND DISCUSSION

The banking sector reforms that were initiated in the early 1990s and the globalisation and liberalisation measures brought in a completely new operating environment to banks. The emergence of the foreign and the new private sector banks with superior state-of-the-art technology based services created competitive environment and pulled the banking industry to rise to meet the challenge of adoption of new technology, new paradigms, and new ways of doing business. The banks now compete with one another to offer value added services to customers, to expand their customer bases. The Government of India enacted the IT Act 2000 to provide legal recognition to electronic transactions. The Vision Document for 2011-2017 released by the RBI envisages banks to work towards utilising technology for cost reduction of small value transactions and improved customer services.

With the introduction of ICT in the banking sector, the customers are fast moving away from traditional branch banking system to the convenience and comfort of remote electronic banking services. The ATM is the most visible and perhaps the most revolutionary element of virtual banking. The ATM is an electronic self service vendor machine, which is operated by the customer himself, which allows customers who have an ATM card to perform routine banking transactions at convenient places without interacting with human teller on 24X7X365 basis. The advent of the ATM has made the concept of round the clock banking a reality. To avail the ATM services, the customer is provided with an ATM card which is small magnetic strip plastic card containing information about the bank name, customer name, card number and signature panel. The magnetic strip contains information about the customer which enables the bank servers to verify the identity, when the card is inserted/ swiped at the slot provided in the ATM kiosks.

The comparative growth of the ATMs and that of the number of branches in India is shown in Table 1.

**TABLE 1: NUMBER OF BRANCHES AND ATMS OF SCHEDULED COMMERCIAL BANKS IN INDIA**

| Particulars → / Year ↓ | Total number of Branches | Total number of ATMs | Percentage of ATMS to Branches (%) |
|---|---|---|---|
| **(01)** | **(02)** | **(03)** | **(04)** |
| 2005 | 53726 | 17642 | 32.84 |
| 2008 | 61129 (6.69) | 34789 (22.13) | 56.91 |
| 2011 | 74130 (6.70) | 74505 (19.26) | 100.51 |
| 2014 | 117280 (24.49) | 160055 (28.77) | 136.47 |

**Note:** Figures in parenthesis show the net growth rates over the previous year.

**Source**: Compiled from Report on Trend and Progress of Banking for various years.

The number of branches of commercial banks in India increased from 53726 in 2005 to 1,17,280 in 2014 and the number of ATMs increased from 17624 to 1,60,055 in the same period. The growth in the number of ATMs was faster than the growth of the number of branches between 2005 and 2013 as indicated by the net growth rates. The percentage of ATMs to total number of branches increased continuously.

The primary data were collected from a sample consisting of 405 respondents who are the customers of the three categories of banks (public sector, old private sector and new private sector banks) in the study area which are taken for analysis. Of the total respondents 154 (38%) are of the Public Sector Banks, 149 (36.8%) are of the Old Private Sector Banks and 102 (25.2%) are of the New Private Sector Banks. As the New Private Sector Banks under study have only urban and semi-urban presence, the sample of 102 has considered being adequate.

The awareness of the bank providing ATM banking services is one of the most important factors determining the actual use of such services by the respondents. The bank group-wise awareness of ATM services has been presented in Table 2

**TABLE 2: AWARENESS OF ICT BASED BANKING SERVICES**

| Service | TYPE OF BANK | | | |
|---|---|---|---|---|
| | Public Sector Bank | Old Pvt. Sector Bank | New Private Sector Bank | Total |
| | No. of Respondents | No. of Respondents | No. of Respondents | No. of Respondents |
| **(01)** | **(02)** | **(03)** | **(04)** | **(05)** |
| ATM | 154 (100) | 149 (100) | 102 (100) | 405 (100) |

***Source**: Data gathered through primary investigation, June-September 2013.*

All the 405 respondents under survey are aware of the ATM service delivery channel. Regarding the enquiry whether the frequently transacting bank provides ATM banking services or not, 399 (98.5%) respondents of all bank groups said that the frequently transacting bank provides ATM banking services. The bank group-wise respondents availing ATM services are provided in Table 3

**TABLE 3: NUMBER OF RESPONDENTS AVAILING ATM SERVICES**

| Service | Type of Bank | No. of Respondents |
|---|---|---|
| **(01)** | **(02)** | **(03)** |
| ATM | Public Sector Bank | 140 (90.91%) |
| | Old Pvt. Sector Bank | 124 (83.22%) |
| | New Private Sector Bank | 100 (98.03%) |
| | Total | 364 (89.88%) |

***Source**: Data gathered through primary investigation, June-September 2013.*

***Note**: Figures in parenthesis are in percentages which are computed.*

In the total sample of 405, a high of 364 (89.98%) respondents are availing themselves of ATM service of which 140 are of the public sector banks, 124 are of the old private sector banks and 100 are of the new private sector banks which shows that ATM is one of the E-banking facilities widely used by the respondents as the largest number of respondents i.e., 89.9 per cent, is availing themselves of the same. Table 4 shows the proportion of the respondents of different age groups availing themselves of ATM services.

**TABLE 4: PROPORTION OF RESPONDENTS OF DIFFERENT AGE-GROUPS AVAILING ATM BANKING**

| Particulars | Age-category (years) | | | | |
|---|---|---|---|---|---|
| | 18-25 | 26-35 | 36-45 | 46-55 | Above 55 |
| (01) | (02) | (03) | (04) | (05) | (06) |
| Availing ATMs | 93 (93.9) | 129 (97.0) | 64 (90.1) | 53 (77.9) | 25 (73.5) |

***Source**: Data gathered through primary investigation, June-September 2013*

***Note**: Figures in parenthesis are in percentages which are computed.*

Among the respondents in the age group of 18-45 years a high of more than 90 per cent is availing themselves of ATM services as against the proportion in 46 years and above. This shows that the preference for ATM services is more with younger people than with elderly people. **The hypothesis that the preference for ATM services is more with younger people is proved and accepted.**

The customer satisfaction depends on the service quality of the ICT products of the bank with which they are frequently transacting. The opinions of the respondents regarding the quality of service are summarised in Table 5.

**TABLE 5: DESCRIPTIVE STATISTICS ON RATINGS FOR QUALITY OF SERVICE OF E-BANKING PRODUCTS**

| Service | Type of bank | N | Minimum | Maximum | Mean | Std. Deviation | Median |
|---|---|---|---|---|---|---|---|
| (01) | (02) | (03) | (04) | (05) | (06) | (07) | (08) |
| ATM | Public Sector Bank | 140 | 3.00 | 5.00 | 4.09 | .69 | 4.00 |
| | Old Pvt. Sector Bank | 124 | 3.00 | 5.00 | 4.34 | .65 | 4.00 |
| | New Private Sector Bank | 100 | 3.00 | 5.00 | 4.55 | .52 | 5.00 |
| | Total | 364 | 3.00 | 5.00 | 4.30 | .66 | 4.00 |
| | Kruskal-Wallis' test Value =27.416, p= 0.000, d. f=2, HS | | | | | | |

The assessment of the quality of the ATM services is done on the basis of the mean score, where if the mean score is equal to 3 the customers are assumed neutral, if mean is less than 3 the quality of service is poor and if mean score is greater than 3 it is assumed that the quality of service is good. Further if the mean score is greater than 4 it is assumed that the quality of service is excellent.

The rating of the quality of the ATM services by the respondents was 4.30±0.66 which shows that the quality of such services has been excellent. In public sector banks the rating of the ATM services was 4.09±0.69, and in the old private sector banks it was 4.34±0.65, and in the new private sector banks it was 4.55±0.52. Kruskal-Wallis test shows that there is a highly significant difference in the quality of the ATM services among the banks as P= 0.000 < 0.01. The quality of the ATM services of the new private sector banks was the most superior followed by the old private sector banks and then the public sector banks.

The level of satisfaction of the respondents availing themselves of ATM services is done with the help of mean score. The details of the analysis have been presented in Table 6.

**TABLE 6: DESCRIPTIVE STATISTICS OF CUSTOMER SATISFACTION FROM E-BANKING FACILITIES**

| Service | Type of bank | N | Min. | Max. | Mean | Std. Deviation | Median |
|---|---|---|---|---|---|---|---|
| (01) | (02) | (03) | (04) | (05) | (06) | (07) | (08) |
| ATM | Public Sector Bank | 140 | 3.00 | 5.00 | 4.31 | .66 | 4.00 |
| | Old Pvt. Sector Bank | 124 | 3.00 | 5.00 | 4.38 | .65 | 4.00 |
| | New Private Sector Bank | 100 | 3.00 | 5.00 | 4.43 | .57 | 4.00 |
| | Total | 364 | 3.00 | 5.00 | 4.37 | .63 | 4.00 |
| | Kruskal-Wallis' test Value =1.520, p= 0.468, d. f=2, NS | | | | | | |

According to Table 6, assessment of satisfaction is done on the basis of the mean score, where if the mean score is equal to 3, the respondents are assumed to be neutral, if the mean score is less than 3, they are not satisfied and if mean score is greater than 3, they are assumed to be satisfied. Further, if the mean score is greater than 4, they are assumed to be highly satisfied and if mean score is less than 2, they are highly dissatisfied. The level of satisfaction of ATM services by the respondents is 4.37± 0.63, which shows the customers are highly satisfied. In the public sector banks the level of satisfaction has been 4.31± 0.66, and in the old private sector banks it has been found to be 4.38± 0.62 and in the new private sector banks it has been 4.43± 0.57. Kruskal-Wallis test shows that there is no significant difference in the customer satisfaction of the respondents availing themselves of the ATM services of the different bank groups. **The hypothesis that the customers are satisfied from the ATM services provided by the banks is proved and accepted**.

## PROBLEMS ENCOUNTERED

The major problem encountered by 62.2 per cent of the respondents is non availability of E-banking services especially in the rural and semi-urban areas. The other major problem as opined by 26.2 per cent of the respondents is insecurity, 20 per cent of the respondents consider it as complicated and 16.8 per cent of the respondents consider it as inconvenient. A few others have complained non receipt of cash, out of service problem with ATMs and connectivity problem as some other problems that they have encountered.

## SUGGESTIONS FOR IMPROVEMENT OF ATM SERVICES

Few suggestions have been given for the betterment of ATM services-

1. **Widening the Geographical Spread:** Many respondents complained regarding the non-availability of ATMs especially in the small towns and rural areas. Therefore, there is a need to expand the network of ATMs especially in rural areas and mobile ATMs may be pressed into service to overcome the problem of minimum hits required in such areas.
2. **Prompt Services:** The problems such as non-operational ATMs, non- availability of cash especially during continued holidays, power failure, network failure and others need to be addressed as well ensuring promptness in providing services always.
3. **Uniformity of ATMs:** The Indian Banks' Association may take up the responsibility of standardization of ATMs to remove the problems of diversity in the ATM machines of different banks, standardized messaging and other technology solutions.

## CONCLUSION

In the case of ATMs many studies, including the present one, found that the awareness, adoption and satisfaction rates are very high.

1. The hypothesis that the preference for ATM services is more with younger people is proved and accepted.
2. The hypothesis that the customers are satisfied from the ATM services provided by the banks is proved and accepted.

Therefore, the efforts should be in the direction of wider geographical spread of ATMs.

## NOTE

Tabung Haji is the financial institution setup to take care of the welfare of Malaysian Muslims with regard to Hajj in 1969 and Tabung Haji ATM Banking (TAB) was introduced on 15th April 2008.

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# MAKE IN INDIA: AN INITIATIVE OF REVIVING INDIAN ECONOMY: A CASE STUDY

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**ABSTRACT**

*It is important for the purchasing power of the common man to increase, as this would further boost demand, and hence spur development, in addition to benefiting investors. The faster people are pulled out of poverty and brought into the middle class, the more opportunity will there be for global business. Therefore, investors from abroad need to create jobs. Cost effective manufacturing and a handsome buyer (one who has purchasing power) are both required. More employment means more purchasing power." Mr. Narinder Modi, The Prime Minister (India) (1), (2). The case study explores the MAKE-IN-INDIA concept and its challenges and opportunities. It also looks into the critical success factors of the 'dream concept.*

**KEYWORDS**

Indian economy, Make-In-India, SWOT analysis, sector growth, manufacturing, policy changes.

## 1. INTRODUCTION

In 1983 Illustrated Weekly ran an article criticizing Operation Flood (White Revolution). The piece went to say how National Dairy Development Board (NDDB) and the IDC had totally lost the plot and India would never become self-sufficient in dairy products. The article created a storm in India and the noise reached the parliament. It was a high and a low for Indian industry. At one end the news and media industry prided itself on uncovering the truth and reporting it to the common man. On the other end it was a low for the dairy industry. By 1987 Jha Committee report found that the NDDB had taken the right steps and we were well on our way to success. India has since then become the largest producer of milk in the world. (3)

In 2014 Prime Minister Shri Narendra Modi launched what would be another revolution in the making. 'Make in India' is the new mantra and the objective was to encourage the production of goods within the country. (4). The Make-in-India (MII) defined the concept as "A MAJOR NEW NATIONAL PROGRAM DESIGNED TO FACILITATE INVESTMENT. FOSTER INNOVATION. ENHANCE SKILL DEVELOPMENT. PROTECT INTELLECTUAL PROPERTY. AND BUILD BEST-IN-CLASS MANUFACTURING INFRASTRUCTURE. THERE'S NEVER BEEN A BETTER TIME TO MAKE IN INDIA". (5)

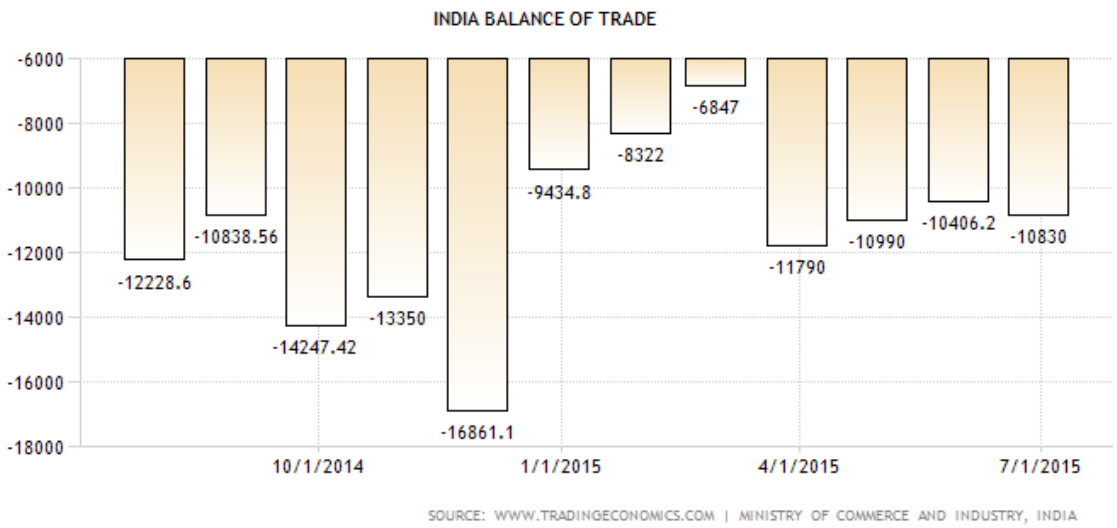
The initiative has been taken to boost the economy of the country by inviting global companies to invest in the Indian market. As the NDA government has eased the foreign direct investment cap in several areas like construction, defense and the railways, the program gives international companies easy access to the Indian market. If the foreign companies will invest in Indian market, it will automatically create job opportunities and improve the financial condition of India. Narendra Modi's innovative Make in India campaign signals his commitment to transforming India into the manufacturing hub of the world. (6)

## 2. INDIAN ECONOMY AT A GLANCE

The Indian Economy which is the third largest in Asia is not showing the signs of recovery on year to year basis. The following factors are discussed, are the point of worry for the same.

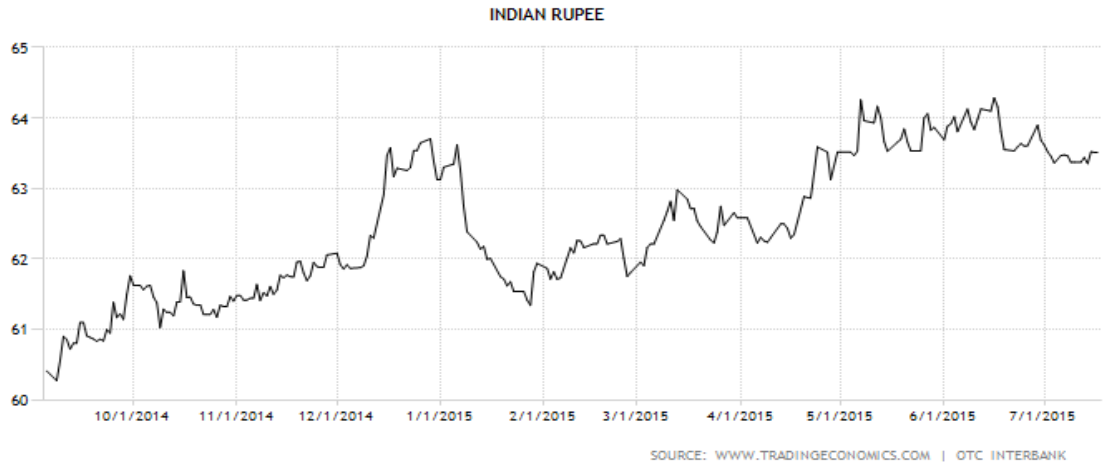
(1). India Balance of Trade: The Indian balance of trade (figure-1) is negative as our imports are more than the exports. In 2014, third-richest country India bought US$462.9 billion worth of imported products up by 32.3% since 2010. (7), (8).

**FIGURE - 1**



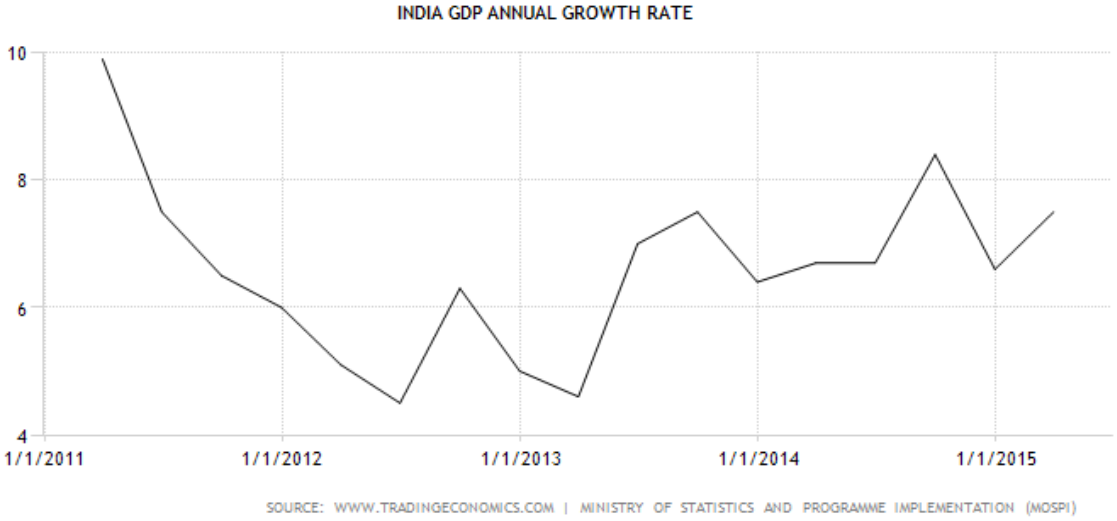
(2) Indian Rupee: Currency Fluctuation (figure-2): Indian Rupee fluctuation in terms of US$ has made the currency week thus increasing the cost of Raw material. More funds are required to settle the balance in terms of Imports/exports. (9), (10).

**FIGURE - 2**




(3) India GDP Annual Growth Rate (figure-3): Annual Growth Rate in India averaged 6 percent from 1951 until 2015, reaching an all time high of 11.40 percent in the first quarter of 2010 and a record low of -5.20 percent in the fourth quarter of 1979. GDP Annual Growth Rate in India is reported by the Ministry of Statistics and Programme Implementation (MOSPI). (11),(12).

**FIGURE - 3**




(4) India Business Confidence (figure-4): Business Confidence in India increased to 56.40 in the first quarter of 2015 from 56.20 in the fourth quarter of 2014. Business Confidence in India averaged 58.53 from 2005 until 2015, reaching an all time high of 71.80 in the first quarter of 2007 and a record low of 45.70 in the third quarter of 2013. (13), (14).

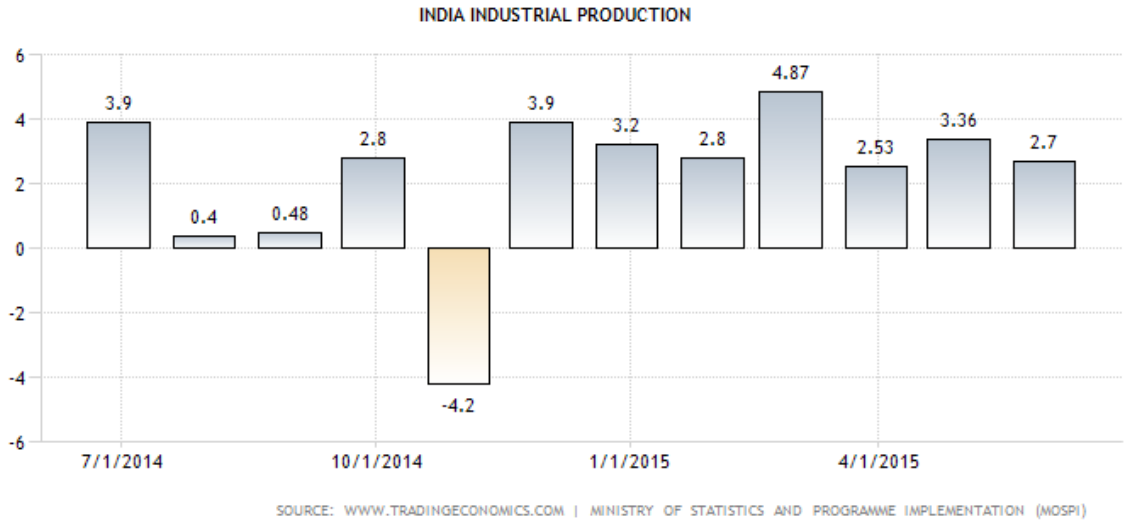
**FIGURE - 4**

(5) India GDP from Manufacturing (Figure-5): GDP from manufacturing in India increased to 4796.95 IND Billion in the first quarter of 2015 from 4058.73 IND Billion in the fourth quarter of 2014. GDP from manufacturing in India averaged 4045.58 IND Billion from 2011 until 2015, reaching an all time high of 4796.95 IND Billion in the first quarter of 2015 and a record low of 3455.83 IND Billion in the fourth quarter of 2011. (15) (16).

**FIGURE-5**


(6) India Industrial Production (figure-6): Industrial Production in India increased 2.70 percent in May of 2015 over the same month in the previous year, slowing from a downwardly revised 3.36 percent rise in April. Electricity production went up 6 percent while growth in manufacturing and mining slowed to 2.2 percent and 2.8 percent respectively. Industrial Production in India averaged 6.50 percent from 1994 until 2015, reaching an all time high of 20 percent in November of 2006 and a record low of -7.20 percent in February of 2009. (17), (18).

**FIGURE-6**




## 3. BUSINESS ENVIRONMENT IN INDIA

Doing Business sheds light on how easy or difficult it is for a local entrepreneur to open and run a small to medium-size business when complying with relevant regulations. It measures and tracks changes in regulations affecting 11 areas in the life cycle of a business: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, resolving insolvency and labour market regulation.

India dropped two places to rank 142nd in the World Bank's latest Ease of Doing Business report, illustrating the magnitude of the task the new government at the Centre, confronts in lifting the nation to the top 50 to attract investors. (19), (20).

India's ranking slipped in the 2015 report that ranked 189 nations even though its score improved on various parameters. The reason: other nations performed even better. The ranking in the various parameters (Table-1) are as follows which is not very encouraging and needs emergency measure to uplift the economy (21). The reforms would make investor friendly business environment in the country.

**TABLE - 1**

| Topics | Doing Business 2015 Rank | Doing Business 2014 Rank | Change in Rank |
|---|---|---|---|
| Starting a Business | 158 | 156 | -2 |
| Dealing with construction Permits | 184 | 183 | -1 |
| Getting Electricity | 137 | 134 | -3 |
| Registering Property | 121 | 115 | -6 |
| Getting Credit | 36 | 30 | -6 |
| Protecting Minority Investors | 7 | 21 | 14 |
| Paying Taxes | 156 | 154 | -2 |
| Trading Across Borders | 126 | 122 | -4 |
| Enforcing Contracts | 186 | 186 | No Change |
| Resolving Insolvency | 137 | 135 | -2 |

Source: http://www.doingbusiness.org/data/exploreeconomies/india

Shockingly, India is still the lowest ranked country in South Asia with Sri Lanka (99), Nepal (108), the Maldives (116), Bhutan (125), and Pakistan (128) ranked higher. Singapore topped the list for a ninth straight year followed by New Zealand and Hong Kong (22).

## 4. THE ROAD MAP 'MAKE-IN-INDIA'

"Make in India" campaign to revive manufacturing will become a success only if the government manages to convince companies to manufacture in India. The key decision factors for manufacturers are (23):

(a) Size of market and access to market
(b) Good infrastructure
(c) Availability of skills
(d) Stable and competitive fiscal regime
(e) Ease of doing business.

The economic impact of manufacturing in India will go beyond direct employment. It will create jobs in the services sector and allied services like logistics, transportation, retail etc. Needless to say, since manufacturing would require free flow of raw materials and finished goods, improving logistics infrastructure such as port-to-inland connectivity, cargo airports, etc. would be imperative and these developments promise to transform India into a global manufacturing hub. The government's "Make in India" initiative aims to increase the share of manufacturing to 25 percent of GDP by 2022 from the current 12 percent. This is expected to result in the creation of 100 million jobs (24).

KPMG and CII recently completed a report which identified nine key action items to make India conducive for large-scale manufacturing (25). These include

(a) Streamlining investment approval,
(b) Facilitating land acquisition processes,
(c) Creating an appropriate labour development ecosystem,
(d) Efficient and effective enforcement of laws,
(e) Facilitating greater cross-border transactions,
(f) Creating clear exit guidelines,
(g) Rationalising taxation regimes and
(h) Technology enablement of the government

## 5. MAJOR SECTORS IDENTIFIED THAT DRIVE INDIAN ECONOMY (26) (Table-2)

**TABLE - 2**

| | | | | |
|---|---|---|---|---|
| Automobile | Constructions | IT and BPM | Pharmaceuticals | Space |
| Automobile Components | Defence Manufacturing | Leather | Ports | Textiles and Garments |
| Aviation | Electrical Machinery | Media And Entertainment | Railways | Thermal Power |
| Biotechnology | Electronic System | Mining | Renewable Energy | Tourism And Hospitality |
| Chemicals | Food Processing | Oil And Gas | Roads And Highways | Wellness |

Source: http://www.makeinindia.com/sectors/

'Make in India' program represents an attitudinal shift in how India relates to investors; not as a permit-issuing authority, but as a true business partner. An Investor Facilitation Cell has been created in 'Invest India'. A dedicated team of the Investor Facilitation Cell is there to guide and assist first-time investors (27).

## 6. SWOT ANALYSIS OF 'MAKE-IN-INDIA'

The need to raise the global competitiveness of the Indian manufacturing sector is imperative for the country's long term-growth. The National Manufacturing Policy is by far the most comprehensive and significant policy initiative taken by the Government. The policy is the first of its kind for the manufacturing sector as it addresses areas of regulation, infrastructure, skill development, technology, availability of finance, exit mechanism and other pertinent factors related to the growth of the sector (28).

**STRENGTHS**

- India is one of the fastest growing economies of the world and it is bound to the third largest economies in manufacturing Sector by 2020
- India is the second biggest market after China and is going to be at No.1 by 2050
- Indian labour force is considered to be most skilful around the world. Demographically the labour force lie in the age group of 25-60 years in next two decades
- Cost of the manpower is very competitive in India as compared to other countries of the world.
- Responsible business houses operating with credibility and professionalism.
- Strong consumerism in the domestic market.
- Strong technical and engineering capabilities backed by top-notch scientific and technical institutes.
- Well-regulated and stable financial markets open to foreign investors.
- FDI and FII have very strongly taken note of the Program and many countries like Germany, Israel, Japan, United kingdom, Russia etc have come forwarded to invest in India.
- Urbanization: About 32% of the country's population currently lives in urban areas. It is estimated that urban population will contribute over 75% of GDP in the next 15 years. 'Economic Corridors' and 'Smart Cities' need to encourage transparency, planned efficiently; and developed with stronger co-ordination between public and private, as well as national and international collaborations to be drivers of growth and inclusion that is sustainable and enhances quality of life.
- Public and private sector investments in development of infrastructure and industry – Special Economic Zones, roads and other constructions have been providing alternative non-farm occupations and additional sources of income. About 61% of the rural population (500 million) belongs to the working age group of 15 – 59 years (Census 2011). This population will increasingly access services and facilities in urban and semi-urban areas through migration or daily commuting for work, business or education. Public and private services and Infrastructure requirements should be projected, planned and developed in a responsible and transparent manner to be inclusive and meet the growing demands to benefit rural and urban populations.

**WEAKNESSES**

- Make in India campaign is at loggerheads with the Made-in-China (Made in China 2025 is a 10-year campaign to push the country beyond labour-intensive work into more sophisticated sectors, from robotics to aerospace) (29) ideal that has gained momentum over the past decade. China is a major rival to India when it comes to the outsourcing, manufacturing, and services business. India's ailing infrastructure scenario and defunct logistics facilities make it difficult for the country to achieve an elite status as a manufacturing hub.
- The bureaucratic approach of former governments, lack of robust transport networks, and widespread corruption makes it difficult for manufacturers to achieve timely and adequate production.
- The topmost of these criticisms is levelled against the incumbent government. It has been felt that the government does not walk its talk - labour reforms and policy reforms which are fundamental for the success of the Make-in-India campaign have not yet been implemented.
- The policies for the development of favourable business environment are very difficult to implement because of lack of political will.
- The procedures for the starting and operating the business are very cumbersome in Indian conditions and need extensive change in the same.

- The exit policies and procedure are not clear in certain sectors and this makes the investment very slow and risky.
- Sustainable growth and development**:** India requires growth rates of at least 7% to cater to the needs of its large, young and aspiring population. The country's growth rate is projected to 6.4% for 2015. Stronger economic reforms and greater investments and better resource management in multiple sectors and across the country are necessary to invigorate growth to required levels. Inclusion of all people from all economic and social backgrounds to attain their full potential is crucial for India's sustainable development. India's growth path should align with the Sustainable Development Goals (SDGs) for ending poverty and reducing inequality; ensuring food and water security; improving health, nutrition and sanitation; providing quality education; enabling gender equality and safety; making cities clean and green; addressing climate change; and promoting peaceful societies.
- Green growth: Green growth optimizes the potential of sustainable economic growth that is efficient, clean and resilient. It thereby enables reduction in pollution, greenhouse gas emissions and environmental degradation. Green growth enables energy security through efficient use of natural resources and reduces dependence on imported fossil fuels. It enhances climate resilience through considered environmental management, maintaining biodiversity, improving health prospects, minimizing waste and reduction in climate vulnerability to extreme weather hazards. It has the potential to offer India tremendous opportunity for sustainable development. Improvements could be made to energy efficiency in industry, transportation, infrastructure and assets. India has already been undertaking significant initiatives to limit expected increase in emissions and greater investment is essential to mitigate risks due to climate change and safeguard her people.
- The working age population is estimated to become over 64% in 2021 with the average age expected to be 29 years. India's middle class is expected to be 200 million by 2020. These demographic factors provide opportunities as well as challenges. Higher investment is crucial to educate skill and provide employment and entrepreneurial opportunities to keep pace and stay ahead of the growing demands and attain the potential of her people wealth. Improving the quality of education is essential. Major gaps exist in quality and availability of teachers, particularly in rural government schools.
- Enhancing employability and employment through enabling opportunities in multiple sectors (including India's expanding space programme) is essential to fulfill the aspirations of the country's youth. Technical and vocational training programmes; creating jobs; innovation and entrepreneurship opportunities have to be expanded for working age population.
- Land Reforms: Developing transparent land reforms for Centre and States are crucial for sustainable growth and development. The ordinance passed on 29th December to amend the Land Acquisition Act is a step forward and should reform and promptly secure approval from Parliament. The government should seek to develop feasible reforms that are fair and provide justice and equity to urban and rural landowners, together with meeting development objectives.

**OPPORTUNITIES**

- Automobiles: 100% FDI is allowed under the automatic route in the auto sector, subject to all the applicable regulations and laws. For Foreign equity investment up to 100% with no minimum investment criteria. Manufacturing and imports in this sector are exempt from licensing and approvals. The encouragement of R&D by offering rebates on R&D expenditure. With a growing and richer middle class, there is a strong demand for 2-wheelers and cars. In rural India, 2-wheelers ownership is set to grow. India's manufacturing hubs can supply to international demand. This includes electric vehicles.
- Automobile Components: Automatic approval for 100% foreign equity investment in auto components manufacturing facilities. Manufacturing and imports in this sector are exempt from licensing and approvals. Setting up a technology modernization fund focusing on small and medium enterprises. Establishment of automotive training institutes and auto design centers, special auto parks and virtual SEZs for auto components.
- Aviation: There is an increased adoption of air travel by the middle class. Fleets are going to be increased and upgraded. More airports across the country are planned. 100% FDI is permitted for Greenfield airport projects under the automatic route. Up to 74% FDI is permitted for existing airport projects under the automatic route, above 74% and up to 100% permitted under government approval route. Up to 49% FDI is permitted in domestic scheduled passenger airlines under the automatic route. 100% permitted for NRIs. Up to The Airports Authority of India is responsible for developing, financing, operating, and maintaining all public sector airports. New airports are permitted under the Greenfield Airport Policy 2008. Investment in airports is encouraged under the Public Private Partnership Policy of the Government of India. Regional Air Connectivity Policy offers attractive incentives in the form of exemption of landing, parking and navigation fees to airlines operating at designated airports in non-metro areas.
- Biotechnology: There exists a strong pool of scientists and engineers in India. The country has potential to get into genetically modified agricultural produce. India can be a destination for clinical trials, contract research and manufacturing. Foreign Direct Investment (FDI) up to 100% is permitted through the automatic route for Greenfield and through the government route for brownfield, for pharmaceuticals. The guidelines have been laid down to ensure that research with human stem cells is conducted in a responsible and ethical manner and complies with all regulatory requirements pertaining to biomedical research in general and of stem cell research in particular.
- Chemicals: India accounts for 16% of world dye production. India has immense growth potential in polymers and agro-chemicals. Growth drivers are the construction industry, agriculture and automotives. 100% FDI is allowed under the automatic route in the chemicals sector, subject to all the applicable regulations and laws. Certain products such as wax candles, laundry soaps, safety matches, fireworks and incense sticks fall under items reserved for the MSME sector in which FDI beyond 24% is permitted under the government route. Industrial licensing has been abolished for most sub-sectors except for certain hazardous chemicals. The government is continuously reducing the list of reserved chemical items for production in the small-scale sector, thereby facilitating greater investment in technology up gradation and modernization. Policies have been initiated to set up integrated Petroleum, Chemicals and Petrochemicals Investment Regions (PCPIR). PCPIR will be an investment region spread across 250 square kilometres for the manufacture of domestic and export-related products of petroleum, chemicals and petrochemicals.
- Construction: This accounts for 10% of India's GDP. Housing shortage in both urban and rural India points to an investment opportunity. Urban infrastructure requires additions and upgrades. Smart sustainable cities require use of latest technologies. 100% FDI through the automatic route is permitted in townships, housing, built-up infrastructure and construction-development projects (including, but not restricted to housing, commercial premises, hotels, resorts, hospitals, educational institutions, recreational facilities, city and regional level infrastructure). 100% FDI is allowed under the automatic route for urban infrastructure areas like urban transport, water supply, sewerage and sewage treatment subject to relevant rules and regulations. REITs and IITs (Real Estate Investment Trusts & Infrastructure Investment Trusts) will provide the necessary support to the sector in terms of required large scale investments.
- Defence Manufacturing: 60% of requirements are met by imports. Joint ventures can lead the way towards indigenization as well as global exports. Supply chain outsourcing can be done in India. Up to 49% investment is allowed under the government route, above 49% on a case-to-case basis on approval by the Cabinet Committee on Security, wherever it is likely to result in access to modern and state-of-the-art technology. The initial validity period of industrial licenses has been increased to three years from the present two years. Guidelines for the extension of validity of industrial licenses have been issued. Partial commencement of production is treated as commencement of production of all the items included in the license.
- Electrical Machinery: Growth and capacity generation in many sectors means a growing demand for electrical machinery. National Electricity Policy (NEP) is targeting 1000 kWh per capita capacity. Opportunities exist in R&D, production and testing. 100% FDI is allowed under the automatic route in the electrical machinery sector, subject to all applicable regulations and laws. The electrical machinery industry has been de-licensed. This has facilitated the entry of global majors into the electrical machinery industry in India. The customs duty on power generation equipment is 5% at present whereas transmission and distribution equipment attracts 7.5% customs duty.
- Electronic Systems: India has strong design and R&D capability. Government schemes such as National Knowledge Network and National Optical Fibre Network have created demand. Electronics Manufacturing Clusters (EMC) and semiconductor labs are being setup. Strong local demand and rising manufacturing costs in other countries make India an attractive place. 100% FDI is allowed under the automatic route in the Electronics Systems Design & Manufacturing sector and is subject to all applicable regulations and laws. In case of electronics items for defense, FDI up to 49% is allowed under the government approval route, whereas anything above 49% is allowed through the approval of the cabinet committee on security. The ultimate aim of the policy is to develop core competencies in strategic and core infrastructure sectors like telecommunications, automobile, avionics, industrial, medical, solar, information and broadcasting, railways, intelligent transport systems, etc.

- Food Processing: India has proximity to raw materials as well as markets. We have cost-effective skilled manpower. Consumers are moving towards packaged and processed foods. Supply chain infrastructure and food parks are to be setup. Food processing equipment needs investment. 100% FDI is permitted in the automatic route for most food products except for items reserved for micro and small enterprises. 100% FDI is permitted for alcoholic beverages, with the requirement of an industrial license. National Food Processing Policy aims to increase the level of food processing from 10% in 2010 to 25% in 2025. Food Processing is recognized as a priority sector in the new manufacturing policy of 2011. The basic objective of the National Mission on Food Processing is decentralization of the implementation of food processing related schemes for ensuring substantial participation of state and union territory governments.
- IT & BPM: Testing services are typically outsourced to India. Emerging verticals are retail, healthcare and utilities. Social, Mobility, Analytics and Cloud (SMAC) are key drivers for growth. Telecom and semiconductors are among the fastest growing areas for R&D and engineering. Up to 100% FDI is permitted under the automatic route in data processing, software development and computer consultancy services, software supply services, business and management consultancy services, market research services, technical testing and analysis services. National Policy on Information Technology 2012 aims to increase revenues of IT and BPM industry to USD 300 Billion by 2020 and expand exports to USD 200 Billion by 2020.
- Leather: This is a sector with huge domestic market and potential for export. India has the youngest and most productive workforce. There is opportunity in capacity modernization and skill development. 100% Foreign Direct Investment is permitted through the automatic route. The Integrated Development of Leather Sector (IDLS) sub-scheme implemented as part of the ILDP has significantly contributed to capacity modernization and technological up gradation of the leather sector. Capital goods (machinery) required by the industry can be imported without import duty under the Export Promotion Capital Goods (EPCG) Scheme of Foreign Trade Policy, subject to meeting the export obligation of six times the duty saved in six years. As a measure to boost manufacturing in the leather footwear segment, excise duty has been reduced from 12% to 6% for footwear costing between INR 500 and INR 1000.
- Media & Entertainment: There are opportunities in television, radio, films, print, music, gaming and animation. India is emerging as a teleport hub for the region. India can be destination for foreign production houses. FDI in Teleports, direct-to-home (DTH), cable networks, mobile TV, Head end-in-the-Sky Broadcasting Services are allowed up to 74% with FDI, up to 49% under the Automatic route. FDI beyond 49% (up to 74%) is permitted under the government route.FDI in cable networks is allowed up to 49% under the Automatic route.
- Mining: India produces 88 minerals and is set to become second largest steel producer by 2015. Power, automobile and construction sectors are likely to drive growth. Opportunities exist in iron and steel, coal, aluminium, base metals and precious metals. FDI up to 100% is allowed in exploration, mining, minerals processing and metallurgy under the automatic route for all non-fuel and non-atomic minerals including diamonds and precious stones. Mining and mineral separation of titanium-bearing minerals and ores, its value addition and integrated activities fall under the government route of foreign direct investment up to 100%.
- Oil & Gas: India is the 2nd largest refiner in Asia, with some refineries designed specifically for the export of petroleum products. Investment in refineries is an opportunity. Shale gas resources need to be recovered. Other opportunities exist in exploration, pipeline transportation and underground coal gasification. FDI upto 100% is permitted under automatic route in exploration activities of oil and natural gas fields, infrastructure related to the marketing of petroleum products and natural gas, marketing of natural gas and petroleum products, petroleum product pipelines, natural gas/pipelines, LNG re-gasification, market study and formulation and petroleum refining in the private sector.
- Pharmaceuticals: Lower cost and skilled workforce mean that India already accounts for 20% of global exports of generic drugs. Opportunity exists in contract research and manufacturing services. With product patents in place, patented drugs can be launched in India. 100% FDI is allowed under the automatic route for Greenfield projects. For brownfield project investments, up to 100% FDI is permitted under the government route.
- Ports: India has seen 40% increases in cargo handling capacity in the last 5 years. Ports are close to upcoming Special Economic Zones. Investment opportunities exist in port development, port services and ship maintenance. 100% FDI is allowed under the automatic route for projects related to the construction and maintenance of ports and harbours, subject to applicable regulations and laws. Plans to create port capacity of around 3200 MMT to handle the expected traffic of about 2500 MMT by 2020. Plans to implement full mechanization of cargo handling and movement at ports. The development of two major ports as well as two port hubs.
- Railways: Indian Railways is the world's largest passenger carrier and 4th largest freight carrier. Modernization of the sector includes high-speed trains, high-speed tracks, and electrification and suburban corridors. Better passenger facilities and redevelopment of railway stations call for Public Private Partnership (PPP) model. 100% FDI under automatic route is permitted for Construction, operation and maintenance of sub-urban corridor projects through PPP, High speed train projects, Dedicated freight lines, Rolling stock including train sets and locomotive/coaches manufacturing and maintenance facilities, Railway electrification, Signaling systems, Freight terminals, Passenger terminals, Infrastructure in industrial parks pertaining to railway line/siding including electrified railway lines and connectivity's to main railway line, Mass Rapid Transport Systems.
- Renewable Energy: There is potential for growth in solar photovoltaic industry and solar power plants. The need is now to reduce India's dependence on imported fossil fuels. Solar, wind, bio-power and small hydro are areas of investment. Foreign Direct Investment (FDI) up to 100% is permitted under the automatic route for renewable energy generation and distribution projects subject to provisions of The Electricity Act, 2003. These guidelines cover various fiscal and promotional policies for the development of wind energy, which accounts for 69% of installed capacity. The package of incentives (except wind) includes fiscal concessions such as 80% accelerated depreciation, concessional custom duty for specific critical components, excise duty exemption, income tax exemption on profits for power generation etc. in wind power projects.
- Roads & Highways: Highways and expressways need upgrades. PPP model has been proved and standardized. 100% FDI is allowed under the automatic route in the road and highways sector, subject to applicable laws and regulation. Road infrastructure is a key government priority. Standardised processes for PPP projects - a clear policy framework relating to bidding and tolling. A regulatory authority is being constituted for the road sector. Environmental clearance is de-linked from forest clearance.
- Space: India has proven its capability with cost-effective space programmes under the leadership of ISRO that has strong industrial ties. Co-operative agreements with other nations facilitate for technology transfer in many areas: remote sensing, launch services, satellite communications, telemetry and others. FDI up to 74% is allowed in satellites- establishment and operation, subject to the sectoral guidelines of the Department of Space/ISRO, under the government route.
- Textiles & Garments: India is an important producer of textiles, jute, cotton and silk. India's advantages are a skilled workforce, close access to raw materials, production capacity and lower cost. Investment is needed in value chain of synthetics, fabric processing equipment, retailing, and more. 100% FDI is allowed under the automatic route in the textile sector; investment is subject to all applicable regulations and laws. Support has been provided for modernization and up gradation by providing credit at reduced rates and capital subsidies. Scheme for Integrated Textile Parks provides world class infrastructure to new textile units. To date, 57 Textile Parks have been sanctioned with an investment of INR 60 Billion. By 2017, 25 more Textile Parks are to be sanctioned.
- Thermal Power: India's is world's 5th largest producer as well as consumer of electricity. Investment opportunities exist in generation, transmission, distribution, power trading and exchanges. 100% FDI is allowed under the automatic route in the power sector (except atomic energy), subject to all the applicable regulations and laws. FDI is permitted in Generation and transmission of electric energy produced in hydro-electric, coal, lignite, oil and gas-based thermal power plants; Non-conventional Energy Generation and Distribution; The distribution of electric energy to households, industrial, commercial and others; Power Trading. FDI in power exchanges up to 49% (26% FDI+23% FII/FPI) is under the automatic route.
- Tourism & Hospitality: India has a few niche tourism products -- cruises, adventure, medical, wellness, sports, eco-tourism, film, rural and religious tourism. Domestic tourism is on the rise. Training, infrastructure development, world-class hospitals, hotel management institutes are some areas for investment and growth. 100% FDI is allowed under the automatic route in tourism and hospitality, subject to applicable regulations and laws. 100% FDI allowed in tourism construction projects, including the development of hotels, resorts and recreational facilities. Guidelines for assistance to central agencies in tourism infrastructure development, scheme for assistance for large revenue generating projects, scheme for public-private partnership in infrastructure development, guidelines for approval of convention centres, motel projects, timeshare resorts, guesthouses, etc.

- Wellness: With a rich heritage, India is the 2nd largest exporter of Ayurveda, Yoga, Naturopathy, Unani, Siddha and Homoeopathy (AYUSH) products. Manufacturing facilities for AYUSH are to be increased in number. Centres for therapeutic treatments and rejuvenation programmes are going to be in demand. 100% FDI is permitted in the AYUSH sector.

**THREATS**

- The biggest threat to 'make-in-India' is by 'Made-in-China' which is launched by Chine few days after the launch of 'Make-in-India'. Made-in-China 2025 is a 10-year campaign to push the country beyond labour-intensive work into more sophisticated sectors, from robotics to aerospace.
- India may be ripe to take China's place. Manufacturing's share of the economy typically starts surging when a country's average income in terms of purchasing power parity crosses $5,000 and will continue to soar until $10,000. India's per-capita income is at $5,850 and China's at $11,850, according to the World Bank estimates. Yet, challenges abound. India's notorious bureaucracy contributed to the country ranking 142 of 189, that's lower than Ethiopia and Sierra Leone, while China ranks 90th on the World Bank's latest Ease of Doing Business Index. And while it's still early days for the campaigns, history points to China being more successful at getting things done. (30)
- The Indian Government vision under the 'Make in India' campaign is to bring in FDI and business to India to develop the country into a world-class manufacturing hub. The government has promised a more flexible environment for businesses and investments, and has also dedicated a separate forum to address the needs of investors, but these should not only be promises but should deliver on ground.
- One of the biggest threats to 'Make in India' efforts comes from a key factor of production - labour. Labour disputes needled the private sector throughout 2014. The workers strike around wage disputes, equity shares at concessional rates, in coal sector strike was more about political muscle flexing from the unions who wanted to be consulted, in the private sector, many industrial relations disputes are about treatment of workers on the factory floor, "hygiene" factors - ensuring contract workers get safety training, personal protection equipment, canteen facilities and uniforms, internal complaints about the harassment of women employees, etc. Disciplining the workforce has become too challenging an effort for the industry, impacting India's manufacturing competitiveness. Clearly, both the government and industry need to do more. The industry has been slow to learn its lessons. (31)
- Tricky Diplomacy Challenge: India has an important position in Asia and in the world as a whole. But still the china in Asia is very strong as far as its market capability is concerned. At the heart of Asia's security dilemma is the fact that China is too powerful to contain but may be self-interested enough to be tamed. No one believes Beijing can be put in a place where it doesn't want to be. Everyone makes a lot of money from trading and investing with China. Many countries like Japan, Australia etc have aligned towards India in its make-in-India campaign but they cannot afford to lose china in the Diplomacy, hence this tricky Diplomacy challenge is very disturbing for the new Government. (32)

## 7. CONCLUSION

Seeking to make the country a global manufacturing hub, Prime Minister Narendra Modi launched the ambitious 'Make in India' campaign in the presence of global and domestic CEOs. The 'Make in India' campaign is aimed at making India a manufacturing hub, and the government is pulling out all the stops for ensuring a smooth sailing for investors, by setting up a dedicated cell to answer queries of business entities within 72 hours. It will also closely monitor all regulatory processes to make them simple and reduce the burden of compliance.

Creating healthy business environment will be possible only when the administrative machinery is efficient. India has been very stringent when it comes to procedural and regulatory clearances. A business-friendly environment will only be created if India can signal easier approval of projects and set up hassle-free clearance mechanism.

India should also be ready to tackle elements that adversely affect competitiveness of manufacturing. To make the country a manufacturing hub the unfavourable factors must be removed. India should also be ready to give tax concessions to companies who come and set up unit in the country.

Although the Make-in-India is launched by great enthusiasm but there are big challenges in front of NDA at the centre. Certain challenges which need to be addressed are Goods and Services Tax (GST) rationalization, Central Bank Policies, Policy of Privatisation, curtailing Subsidies, Labour Reforms, Defence Sector, Insurance and Banking reforms, Power, Gas pricing etc.

## 8. QUESTIONS OF FUTURE DISCUSSION

- Can India achieve 'Make-in India'?
- Is 'Make-in-India' going be dream or reality?
- Is 'Make-in-India' inspired by the development model of China?
- Do Indians have to change the 'Mindset' to make 'Make-in-India' successful?
- Is 'Make-in-India' different from "Five-Year Plans"?
- Is FDI (first develop India) helps in reducing "brain drain"?
- What are the components of 'Make-in-India?
- Can we compare 'make-in-India' and 'made-in-China'?

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# AN ANALYSIS OF LEVEL OF SATISFACTION TOWARDS EXPORT OF PRINTING PRODUCTS

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**ABSTRACT**

*The present study depicts that in Sivakasi, out of 800 printing units only 124 printing units are entered in the export business. The Sivakasi printers are having strong foot in their education and technical education. They are very much helpful to solve the problems in export trade. At the time of commencement of business, most of the Sivakasi printers are run the business as sole proprietorship. Now, it is reduced. Because, sole proprietorship converts into partnership or limited company. So, the Export Oriented Units have high financial back up to run the export business in a successful manner. After gaining more experience in printing only they are engaged in export business. So, they are able to produce a variety of quality rich of printing products at cheaper rates. Even though they have to face the problems like heavy export formalities, shortage of imported raw material, more restrictions on import, heavy investment in plant and machinery, absence of labour and cut throat competitions. Even though, they face as much as problem, the Sivakasi printers are satisfied with the export business due to profitability, economics in scale of production, support of printer's association and skilled labour.*

## KEYWORDS
Sivakasi, export of printing products.

## INTRODUCTION
In the age of globalization, there exists cutthroat competition due to adaptation of advance technology, day-to-day changing pattern of fashion and increase the level of artificial products and the like. Printing industries are of utmost necessity in the everyday life of human beings. The origin of the printing industry dates back to new stone-age. Printing industry has mass production and provides employment opportunities to the society. It plays a vital role in building up the economic structure of the society. Printing industry is also helpful for the economic development of the country. In India, the printing industry is exporting more printing products all over the world. It is much helpful for the development of Indian economy.

## OBJECTIVES OF THE STUDY
The objectives of this study are as per following:
1. To highlight the importance of printing industry in Sivakasi.
2. To analyses the level of satisfaction towards the export business by the printing owners in Sivakasi.
3. To findout the measures to develop the export business in Sivakasi.

## SCOPE OF THE STUDY
The present study is geographically limited to Sivakasi town of virudhunagar district in Tamilnadu. It was undertaken to analyse the level of satisfaction towards the printing owners in Sivakasi towards export business.

## RESEARCH METHODOLOGY
### SOURCES OF DATA
The present study has made an attempt to collect primary data to this study. Primary data have been collected through questionnaire. The questionnaire was designed to gather the data keeping in view of objectives. Secondary data were collected from various books, journals and websites and so on.
### SAMPLING DESIGN
More than 800 printing units are functioning in Sivakasi. The Sivakasi Master Printers' Association is registered association of 282 printing units. From these registered units only the export oriented printing units will be taken for conducting this study. In which only 124 printing units are doing export business. So, all export oriented printing units are taken for this study.
### STATISTICAL TOOLS
- To identify the problems faced by the export oriented printing units in Sivakasi, Garrett ranking analysis is used.
- Rotated Component Matrix Factor Analysis is adopted for the purpose of findout the level of satisfaction towards export business by the printing owners in Sivakasi.

## PRINTING IN SIVAKASI
It is with good reason that Sivakasi is known as India's 'mini japan'. This relatively small town is crammed with hundreds of match factories, firework industries and, of course, printing presses. The rise of the printing industry in Sivakasi has been a rapid one, dating back to 1922, when a combination of a new demand for printing and the enterprise of a few individuals formed its beginning. Demand was apparent among Nadar students who, since no printing presses in Madurai or Srivilliputtur were prepared to supply them with notebooks, began to print material themselves. Each donated Rs.10 of their own money, and with this The Nadar Press was started in 1922, the first of hundreds of printing presses in Sivakasi. [32]Arunagiri Nadar, the father of printing in Sivakasi, the first manager of Nadar Press, and the man commonly held as the pioneer of printing in the area traveled to Mumbai, learning how the printing process worked and also returned with technicians, who helped train those in the town. Sivakasi salutes to the founder respected Sri. S. Kaliappa Nadar, who is the founder of Offset Printing in Sivakasi. In 1937, he established "Sivakasi Industrial Printing Works", thus paved way for the offset printing technology in Sivakasi. Nearly, 60% of the national needs of the printing products are produced by the Virudhunagar district.
Though Sivakasi entered into the printing field at the earliest period of 1922, they entered into export market only after 50 years of their printing experience. In 1974-75, Sivakasi entered into the export market for printing products. Indian Government is providing various subsidies and incentives for the development of export oriented printing industries to compete in the global market. Inspite of these incentives, the exporters face many problems like finance, competition, fluctuation in price of rawmaterial, shortage of skilled labour, exchange rate fluctuations, adoption of new technology, infrastructure facilities and inadequate

government assistance. Sivakasi which is dominated by medium and small scale printing industry have many opportunities like cheap labour, low cost of production, hi-tech machines, abundance of rawmaterial and well developed ancillary units also face many problems in competing with global export market.

**SOCIO ECONOMIC PROFILE OF THE EXPORT ORIENTED PRINTING UNITS IN SIVAKASI**

Socio economic profile of the respondents includes Educational Qualification, Global experience in printing and export, type of organisation, size of business, type of product, ISO 9001 certificate and impact of certification.

**TABLE 1: SOCIO ECONOMIC PROFILE**

| Variables | Category | Frequency | Percentage |
|---|---|---|---|
| **Educational Qualification** | School level | 32 | 25.80 |
| | Under graduate | 38 | 30.60 |
| | Post graduate | 31 | 25.00 |
| | Professional | 23 | 18.50 |
| | Total | 124 | 100.00 |
| **Type of organisation - Commencement** | Sole proprietorship | 79 | 63.70 |
| | Partnership | 24 | 19.40 |
| | Private limited | 21 | 16.90 |
| | Total | 124 | 100.00 |
| **Type of organisation – at Present** | Sole proprietorship | 46 | 37.10 |
| | Partnership | 45 | 36.30 |
| | Private limited | 33 | 26.60 |
| | Total | 124 | 100.00 |
| **Size of business** | Small scale | 46 | 37.10 |
| | Medium scale | 45 | 36.30 |
| | Large scale | 33 | 26.60 |
| | Total | 124 | 100.00 |
| **Type of products** | Labels and boxes | 27 | 21.80 |
| | Greeting cards | 11 | 8.90 |
| | Calendar and diary | 23 | 18.50 |
| | Stationery items | 29 | 23.40 |
| | Notebooks | 22 | 17.70 |
| | Books | 12 | 9.70 |
| | Total | 124 | 100.00 |
| **Experience in printing** | Below 10 years | 35 | 28.20 |
| | 10 - 20 years | 39 | 31.50 |
| | 20 - 30 years | 28 | 22.60 |
| | Above 30 years | 22 | 17.70 |
| | Total | 124 | 100.00 |
| **Experience in export** | Below 5 years | 33 | 26.60 |
| | 5 - 10 years | 36 | 29.00 |
| | 10 - 15 years | 32 | 25.80 |
| | 15 - 20 years | 23 | 18.50 |
| | Total | 124 | 100.00 |
| **Nature of export** | Direct | 67 | 54.00 |
| | Indirect | 46 | 37.10 |
| | Both | 11 | 8.90 |
| | Total | 124 | 100.00 |

**EDUCATIONAL QUALIFICATION**

From the above table it is found that most of the respondents (30.60 %) have studied up to under graduate level of education in the study area. It is evident that the Sivakasi printers having a strong foot in their education are able to unleash the impossibilities set before them in the export trade.

**TYPE OF ORGANISATION – AT THE TIME OF COMMENCEMENT OF BUSINESS**

The researcher has classified the export oriented printing units of the respondents at the time of commencement of their business into three categories and it is found that out of 124 respondents 63.70 per cent of the respondents were running their business as sole proprietorship type of organisation in the study area.

**TYPE OF ORGANISATION – AT PRESENT**

The researcher has analysed the present position of the same export oriented printing unit's respondents and it is found that out of 124 respondents 37.10 per cent of the respondents are running their business as sole proprietorship type of organisation. It can be noted that the percentage of sole proprietorship is reduced. Because, sole proprietor converts themself into partnership or limited company to have financial backup and enhanced the export.

**SIZE OF BUSINESS**

To know the size of the business of the respondent's study has been made and it is found that out of 124 respondents 37.10 per cent of the respondents have felt that their business units is small, 36.30 per cent of the respondents have opined that their business size is medium and the remaining 26.60 per cent of the respondents have opined that their business size is large level in the study area. It is found that most of the respondents (37.10 %) have opined that their business size is small.

**TYPE OF PRODUCTS PRODUCED BY THE PRINTING UNITS**

The researcher has collected the details from the respondents about the type of printing products produced in their export oriented printing units. From the above table it is found that out of 124 respondents, it is found that most of the respondents (23.40 %) are producing stationery items in their printing units in the study area.

**EXPERIENCE IN PRINTING BUSINESS**

From the table, it is found that out of 124 respondents 31.50 per cent of the respondents have 10-20 years of experience and only 17.70 per cent of the respondents have above 30 years of experience in printing business. It is found that most of the respondents (31.50 %) have 10-20 years of experience in printing business in the study area.

**EXPERIENCE IN EXPORT**

From the table, it is found that out of 124 respondents, it is found that most of the respondents 29.00 per cent have 5-10 years of experience in export business of printing products in the study area. Hence, it is evident that, the export oriented printing units are having more experience in printing and then only they entered into the export business.

**NATURE OF EXPORT**

To know the nature of export of the printing units' study has been made and it is found that out of 124 respondents, it is found that most of the respondents (54.00 %) are directly exporting their printing products to their abroad customers.

## MEASURES TO BOOST EXPORT OF PRINTING PRODUCT - GARRETT RANKING ANALYSIS

In Sivakasi, the trend of printing products exports is decreasing or fluctuating. So, the export oriented printing units should take necessary steps to normalize the export. The respondents are asked to rank the measures to boost export of printing products in the study area. The Table 2 shows the details of ranks given by the respondents.

**TABLE 2: MEASURES TO BOOST EXPORT OF PRINTING – RANK DETAILS**

| Factors | I | II | III | IV | V | Total |
|---|---|---|---|---|---|---|
| Technology upgradation | 28 | 19 | 40 | 11 | 26 | **124** |
| Provision of Financial assistance by bank | 31 | 27 | 29 | 32 | 5 | **124** |
| Incentives and subsidies | 11 | 34 | 38 | 31 | 10 | **124** |
| Lifting of anti-dumping duties | 21 | 11 | 8 | 27 | 57 | **124** |
| Reduction in the duties on import of raw material | 33 | 33 | 9 | 23 | 26 | **124** |
| **Total** | **124** | **124** | **124** | **124** | **124** | **620** |

*Source: Primary Data*

From table 6, Garett Mean Score is calculated and presented in Table 3

**TABLE 3: GARRETT RANKING RESULTS**

| S.No | Factors | Total Score | Rank | Average Score |
|---|---|---|---|---|
| 1. | Provision of Financial assistance by bank | 6800 | I | 54.84 |
| 2. | Reduction in the duties on import of raw material | 6475 | II | 52.22 |
| 3. | Technology upgradation | 6330 | III | 51.05 |
| 4. | Incentives and subsidies | 6255 | IV | 50.44 |
| 5. | Lifting of anti-dumping duties | 5140 | V | 41.45 |

*Source: Computed Data*

The above Table 4.21 shows the Garret scores and the average scores for each customer. The average scores are ranked according to their values. The first rank is given to "Provision of Financial assistance by bank", second rank goes to "Reduction in the duties on import of raw material", third rank is for the "Technology upgradation", fourth rank is taken by "Incentives and subsidies" and fifth rank goes to "Lifting of anti-dumping duties". From the above analysis, it is evident that provision of financial assistance by bank is the measures to boost export of printing products.

## FACTORS DETERMINING THE SATISFACTION TOWARDS EXPORT OF PRINTING PRODUCTS – FACTOR ANALYSIS

To analyse the opinion of the respondents about the various factors determining the satisfaction towards Export of printing products in the study area Factor analysis has been made. For this purpose, 25 variables are used for analysis. Before applying factor analysis Kaiser – Meyer - Ohlin measure of sample adequacy and Bartlett's test of sphericity has been conducted to test the validity of data for factor analysis. It is found that the Initial Eigenvalues for six components are more than one i.e., 6.265, 4.350, 3.361, 2.731 and 2.516 respectively and it produces five factor solutions. The second part of the above result shows the Sums of Squared Loadings values for six components after the factor extraction. The third part namely rotated sums of squared loadings shows the cumulative values of the five components after the rotation. The cumulative percentage indicates that the three extracted factors explain 76.90 per cent of the variance. The Rotated Component Matrix (RCM) for 25 variables measuring the factors determining the satisfaction towards Export of printing products under five components. The result of Kaiser-Meyer-Olkin Measure of Sampling Adequacy shows the measure value of 0.769 indicates that the distribution of values is meritorious and it is adequate for conducting factor analysis. Bartlett's Test of Sphericity measures the multivariate normality of the distribution of these 25 variables. The significance value of 0.000 for the chi – square value of 1260.408 indicates that these data do not produce an identity matrix and are thus approximately multivariate normal and acceptable for factor analysis. The result of factor analysis for factors determining the satisfaction towards Export of printing products of printing units in the study area is presented in the following Table 4.

**TABLE 4: FACTORS DETERMINING THE SATISFACTION TOWARDS EXPORT OF PRINTING PRODUCTS - ROTATED COMPONENT MATRIX**

| | Component | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Existing in export oriented business is prestigious | **.922** | -.191 | -.055 | -.072 | .002 |
| Profitability of overseas market is more | **.842** | .022 | .125 | .172 | -.219 |
| High tech printing technology is available | **.765** | -.101 | .285 | -.282 | .005 |
| Adequate labour are available | **.753** | .521 | -.140 | -.131 | .065 |
| Tariff and Non tariff barriers are reduced | **.675** | .319 | -.308 | .202 | .290 |
| Getting Customs clearance is easy | -.126 | **.884** | .234 | -.199 | -.055 |
| Total market share overseas is more | .358 | **.792** | .294 | .171 | .065 |
| Government trade fairs are helpful for foreign markets | -.050 | **.766** | .093 | .329 | .288 |
| Stability in price of raw material | -.134 | **.681** | -.081 | .413 | -.215 |
| Overall export performance is good | -.295 | **.653** | -.164 | -.163 | -.384 |
| Government financial services helpful to the firms | .377 | **.521** | -.002 | .129 | .144 |
| There is economics in scale of production | .039 | .328 | **.809** | .206 | -.126 |
| Quality raw materials are available | -.168 | .114 | **.760** | .035 | .074 |
| Government export training programs helped in export | .174 | .288 | **.639** | .259 | .076 |
| Duty drawback claim is received without any delay | .333 | -.023 | **.638** | -.161 | .605 |
| Fully aware of existing documentation | .146 | .420 | **.602** | .319 | .315 |
| Support of Printers association | .562 | -.107 | **.573** | .304 | .052 |
| Infrastructure facilities for production and marketing | -.250 | .048 | .036 | **.916** | -.150 |
| Price of the printing products is low than other countries | .151 | .316 | -.109 | **.838** | .182 |
| Availability of multiple channels of distribution | .112 | -.123 | .328 | **.788** | .141 |
| Exploring new market is easy | .038 | .237 | .453 | **.671** | .340 |
| Quality of printing products is high among other countries | -.158 | .112 | .390 | **.225** | -.849 |
| Transportation to port is not a difficult task | -.251 | .244 | -.135 | .252 | **.692** |
| There is no frequent changes in EXIM policy | .013 | -.006 | .233 | .246 | **.633** |
| Exchange rate policy of the government is not a hurdle | .494 | -.022 | -.329 | -.007 | **.550** |

*Source: Computed Data*

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

According to the above result of factor analysis the narrated five factors explain the factors determining the satisfaction towards Export of printing products influencing the export business of the printing units in the study area. Each factor is named and analysis has been made. The first factor is named as **Labour and technology,** second factor is named as **Government support,** the third factor is named as **Export promotion,** the fourth factor is named as **Marketing factors**, and the fifth factor is named as **EXIM policy.**

**FACTOR 1: LABOUR AND TECHNOLOGY**

The first factor namely Labour and technology covers 5 variables namely Existing in export oriented business is prestigious, **.922,** Profitability of overseas market is more, **.842,** High tech printing technology is available, **.765,** Adequate labour are available, **.753,** Tariff and Non tariff barriers are reduced, **.675.** Existing in export oriented business is prestigious is the highest loading variable in the first factor.

**FACTOR 2: GOVERNMENT SUPPORT**

The second factor namely Government support covers 6 variables namely Getting Customs clearance is easy, **.884,** Total market share overseas is more, **.792,** Government trade fairs are helpful in developing foreign markets, **.766,** Stability in price of raw material, **.681,** Overall export performance is good, **.653,** Government financial services have been helpful to firms involved in exporting, **.521.** Getting Customs clearance is easy is the highest loading variable in the second factor.

**FACTOR 3: EXPORT PROMOTION**

The third factor namely Export promotion covers 6 variables namely, there is economics in scale of production, **.809,** Quality raw materials are available, **.760,** Government export training programs helped in export, **.639,** Duty drawback claim is received without any delay, **.638,** Fully aware of existing documentation required by government, **.602,** Support of Printers association, **.573.** There is economics in scale of production is the highest loading variable in the third factor.

**FACTOR 4: MARKETING FACTORS**

The fourth factor namely Marketing factors covers 5 variables namely Adequate infrastructure facilities for production and marketing, **.916,** Price of the printing products is low compared to other countries, **.838,** Availability of multiple channels of distribution, **.788,** Exploring new market is easy, **.671,** Quality of printing products is highest among other countries, **.225.** Adequate infrastructure facilities for production and marketing are the highest loading variable in the fourth factor.

**FACTOR 5: EXIM POLICY**

The fifth factor namely EXIM policy covers 3 variables namely Transportation to port is not a difficult task, **.692,** there is no frequent changes in EXIM policy, **.633,** and Exchange rate policy of the government is not a hurdle, **.550.** Transportation to port is not a difficult task is the highest loading variable in the fifth factor.

**CORRELATION BETWEEN THE FACTORS DETERMINING THE SATISFACTION TOWARDS EXPORT OF PRINTING PRODUCTS**

The researcher has made an attempt to know the correlation between the various factors determining the satisfaction towards Export of printing products with the following hypothesis.

**HYPOTHESIS**

**"There is no correlation between the various factors determining the satisfaction towards Export of printing products".** To test this hypothesis Karl Pearson coefficient of correlation is applied and the results are presented in the following table 5:

**TABLE 5: CORRELATION BETWEEN THE VARIOUS FACTORS DETERMINING THE SATISFACTION TOWARDS EXPORT OF PRINTING PRODUCTS**

| | | Labour and technology | Government support | Export promotion | Marketing factors | EXIM policy |
|---|---|---|---|---|---|---|
| Labour and technology | Pearson Correlation | 1 | -.239** | .297** | -.258** | .209* |
| | Sig. (2-tailed) | | .008 | .001 | .004 | .020 |
| | N | 124 | 124 | 124 | 124 | 124 |
| Government support | Pearson Correlation | -.239** | 1 | .437** | .426** | .409** |
| | Sig. (2-tailed) | .008 | | .000 | .000 | .000 |
| | N | 124 | 124 | 124 | 124 | 124 |
| Export promotion | Pearson Correlation | .297** | .437** | 1 | .330** | .302** |
| | Sig. (2-tailed) | .001 | .000 | | .000 | .001 |
| | N | 124 | 124 | 124 | 124 | 124 |
| Marketing factors | Pearson Correlation | -.258** | .426** | .330** | 1 | .305** |
| | Sig. (2-tailed) | .004 | .000 | .000 | | .001 |
| | N | 124 | 124 | 124 | 124 | 124 |
| EXIM policy | Pearson Correlation | .209* | .409** | .302** | .305** | 1 |
| | Sig. (2-tailed) | .020 | .000 | .001 | .001 | |
| | N | 124 | 124 | 124 | 124 | 124 |

*Source: Computed Data*

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

From the above table 4.30 shows that, there is a high positive correlation between the government support and export promotion (p = 0.000, r = 0.437) followed by Government support and marketing factors (p = 0.000, r =0.426) and Government support and EXIM policy factors (p=0.000, r=0.409), export promotion and marketing factors (p=0.000, r=0.330), export promotion and EXIM policy (p=0.000, r=0.302). Further it is found that there is a negative correlation between the Labour and technology factor and marketing factors (p=0.004, r= - 0.258) and Labour and technology and government support (p=0.008, r= - 0.239). Hence it is concluded that there is a significant correlation between the various factors determining the satisfaction towards Export of printing products. Further It is inferred that to increase the satisfaction of the respondents of printing business in the study area the government may extend their helping hands to increase the satisfaction on the factors like export promotion, marketing factors and EXIM policy.

## CONCLUSION

In Sivakasi, out of 800 printing units only 124 printing units are entered in the export business. The Sivakasi printers are having strong foot in their education and technical education. They are very much helpful to solve the problems in export trade. At the time of commencement of business, most of the Sivakasi printers are run the business as sole proprietorship. Now, it is reduced. Because, sole proprietorship converts into partnership or limited company. So, the Export Oriented Units have high financial back up to run the export business in a successful manner. After gaining more experience in printing only they are engaged in export business. So, they are able to produce a variety of quality rich of printing products at cheaper rates. Even though they have to face the problems like heavy export formalities, shortage of imported raw material, more restrictions on import, heavy investment in plant and machinery, absence of labour and cut throat

competitions. Even though, they face as much as problem, the Sivakasi printers are satisfied with the export business due to profitability, economics in scale of production, support of printer's association and skilled labour.

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# DETERMINANTS OF FARMERS WILLINGNESS TO PAY ON WATER HARVESTING TECHNOLOGIES: A CASE STUDY IN EAST GOJJAM ZONE, ETHIOPIA

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**ABSTRACT**

*As agriculture has a vital role in the overall economy of the country, increasing its productivity is paramount important. But, its productivity affected by many factors among which moisture stress is to be cited. To cope up the moisture stress problem the government promotes some forms of small scale irrigation schemes through water harvesting technologies at a household level, but success to date is limited. Therefore, this study is conducted to analyze the socio-economic, physical and other related factors, which determines farmer's willingness to pay on water harvesting technology in East Gojjam Zone; Ethiopia. To address these objectives, both quantitative and qualitative data were collected from primary and secondary sources. The primary data were collected from 200 selected sample household. Binary Logit-model was used to analyze determinants of willingness to pay on Water Harvesting Technologies. The unit analysis was a house hold level analysis for binary logit. A total of 15 explanatory variables were included in the analysis. The result of the analysis indicated that among the hypothesized explanatory variables included in the model, seven variables namely, age of the household head, labour availability, distance of market from residence, distance of development center, Frequency of extension contact; Training on water harvesting matters and Perception of a house hold water harvesting technology were found to be significantly affecting the farmer's willingness to pay on water harvesting technologies. The findings of this study recommends that any effort in promotion of water harvesting technology should recognize the socio-economic, household and technological characteristics, strategies which focus on enhancing the willingness and /or ability farmers should be adopted, strengthen learning opportunities through established farmers training center to enhance their perception, knowledge and skill, strengthen extension contact frequencies, recognizing the distance of development and market center and the need to providing farmers with information on the benefit of water harvesting technology, particularly for aged.*

**KEYWORDS**
East Gojjam Zone (Ethiopia), logit model, water harvesting technology, willingness to pay.

## 1. INTRODUCTION

Water harvesting (WH) has been defined and classified in a number of ways by various authors. According to Reij et al. (1993), water harvesting is usually employed as an umbrella term describing a whole range of methods of collecting and concentrating various forms of runoff (roof top runoff, overland flow, stream flow, etc.) from various sources (precipitation, dew, etc.) and for various purposes (agricultural, livestock, domestic and other purposes). Mekdaschi Studer, R. and Liniger, H., 2013 defined Water harvesting is the collection and management of floodwater or rainwater runoff to increase water availability for domestic and agricultural use as well as ecosystem sustenance. The aim of water harvesting is to collect runoff or groundwater from areas of surplus or where it is not used, store it and make it available, where and when there is water shortage. This results in an increase in water availability by either (a) impeding and trapping surface runoff, and (b) maximizing water runoff storage or (c) trapping and harvesting sub-surface water (groundwater harvesting, also see Box 6). Water harvesting makes more water available for domestic, livestock and agricultural use by buffering and bridging drought spells and dry seasons through storage. Rain water harvesting techniques can be applicable in all agro climatic zones. However, it is more suitable in arid and semiarid areas where the average annual rainfall is between 200 and 800 mm. In such condition, rain-fed crop production is challenging without using rainwater harvesting techniques. This implies that water harvesting and storage would be vital to ensure water availability especially during prolonged dry season and drought (Mugerwa 2007, and Enfors 2009).

The Ethiopian economy has largely remained dependent on agriculture, which accounts 40-50 percent of GDP, 85 percent of total labour employment and 90 percent of exports (NBE, 2006). Because of the economy being dominated by agriculture, the weak performance of this sector has an adverse effect on other sectors of the economy. Hence, increasing productivity of Ethiopian agriculture is paramount important. But increasing productivity is challenged by many factors of which moisture stress is to be cited. To cope up the moisture stress problem and hence to improve increasing productivity of Ethiopian agriculture practicing some forms of small scale irrigation schemes through practicing water harvesting technologies at a household level is promoting. Moreover, Ethiopia currently depends on rain fed agriculture. The inconsistency in the amount and seasonal pattern of rainfall and its inter annual variation constitute a major cause for frequent failures of crops and scarcity of livestock feed. Nowadays, as observed due to the effect of climate change The annual rainfall distribution in most parts of Ethiopia, including the highlands, is not only uneven but also highly unpredictable in its inter annual variations. Therefore, supporting this rain feed agriculture with water harvesting technology is unquestionable. Therefore, the government of Ethiopia has made an effort to promote water harvesting technologies in past years, success to date is limited.

Empirical studies give general information on physical, socio-economic and institutional factors determining the use water harvesting technologies. However, the factors, magnitude and direction of influence of each variable on farmers' decision on different studies at different place and time are different. This is due to variations in agro ecology, socio-economic and institutional factors among countries, regions, villages and farms. It implies that, the importance of area specific studies on factors determining the willingness to pay on water harvesting technologies.

The factors that determine the willingness of farmers to pay on water harvesting technologies in the study area however not been fully evaluated and accordingly appropriate recommendations made. Given this state of facts, analysis of the issue of what specifically determines the willingness of farmers to pay on water harvesting technologies is very important and relevant to formulate policy options and support system that could be accelerate the use of water harvesting technologies. Therefore; this study was conducted in East Gojjam Zone, Amhara National Regional state, Ethiopia with the objective of) identify the determinants of willingness to pay on Water Harvesting Technologies in the study area.

## 2. EMPIRICAL STUDIES

Many researchers and experts in the field of natural resources conservation and water harvesting forwarded their reasons about different factors that affect the willingness of farmers to pay and efficiently use of technologies.

A study conducted by Job Kibiwot L., et.al, (2003) On Determinants of the Adoption of Water Harvesting Technologies in the Marginal Areas of Nakuru District, Kenya: The Case of Trench and Water Pan Technologies using probit model showed that farm income, farm size, labour requirement, and education of spouses significantly influenced adoption of water harvesting technologies.

A study conducted by Molla,T. (2005) on farmers' response and willingness to participate in water harvesting practices found out that education level of head of the household , labor availability, total tropical livestock unit owned , training and visit of the head of the household in different water harvesting matters , financial constraints of the household , general attitude towards the importance of water harvesting technology and Distance to extension center significantly affects the willingness of farmers to participate on water harvesting technologies.

A study conducted by Xue-Feng H. et.al (2005) on Econometric analysis of the determinants of adoption of rainwater harvesting and supplementary irrigation technology (RHSIT) in the semiarid Loess Plateau of China showed that Farmers' educational background, active labor force size, contact with extension, participation in the Grain-for-Green project, and positive attitudes towards RHSIT are some of the variables that have significantly positive effects on adoption of RHSIT, while farmer's age and distance from water storage tanks to farmers' dwellings have significantly negative correlation with adoption.

A study conducted by Abadi, T., (2006) on Analysis of Social Economic and Institutional Issues Affecting Utilization of Rainwater Harvesting Technology, Eastern Tigray, Ehiopia. Using binary logit model found out that Extension contacts, training, animal product income, market distance, location, cash availability, farmland size and input were found to be highly important variables influencing utilization of rain water harvesting technology.

Liniger et. al., (2011) also stated that in Sub-Saharan Africa, the most important adoption drivers of water harvesting were found to be yield increase and accessibility to information, followed by secure land tenure. Furthermore, it is important to ensure genuine participation of resource users alongside professionals during all stages of implementation to integrate all viewpoints and ensure commitment (Mekdaschi Studer, R. and Liniger, H., 2013). Often weak approaches and extension have led to poor adoption rates. Water harvesting technologies need to be adapted and fine-tuned to the local natural, socio-economic and cultural environment. Adaptation of standard designs to actual site conditions requires skill and experience, which often will determine the success of the water harvesting practices.

Mekdaschi Studer, R. and Liniger, H., 2013 also stated that Adoption rates of WH generally remain low. However, some practices such as rooftop WH or certain micro catchment technologies such as planting pits and contour bunds and macro catchment technologies such as earth dams have spread and continue to do so. Water harvesting technologies recommended for up scaling must be profitable for users and local communities, and technologies must be as simple and inexpensive as possible: and easily manageable also. Without security of land tenure, water rights and access to markets, land users remain reluctant to invest labour and finances in WH. Cost efficiency, including short and long-term benefits, is another key issue in the adoption of WH practices. Resource users are naturally more willing to adopt practices that provide rapid and sustained pay-back in terms of water, food or income.

## 3. HYPOTHESIS

Many researchers and experts in the field of water harvesting and adoption of technologies forwarded their reasons about different factors that affect the willingness of farmers to participate and efficiently use technologies. Based on literature reviewed and authors experience the expected sign, code, type and unit of measurements of independent variables included in the binary logit model were summarized in the following table 1.

**TABLE 1: DEFINITIONS AND UNITS OF MEASUREMENT OF VARIABLES INCLUDED IN THE LOGIT MODEL**

| Variable | Variable code | Type of variable | Unit of measurement | expe. sign |
|---|---|---|---|---|
| **Willingness to participate** | WTP | Dummy | 1 if a household willing to participate/pay, 0 Otherwise | |
| **Age of the household head** | **AGE** | Continuous | Measured in years | - |
| **Responsibility** | **RESP** | Dummy | 1 if the household head has social position in the PA, 0 other wise | + |
| **Education level** | **EDUC** | Dummy | 1, if the house hold head is literate ( read and write) and 0, other wise | + |
| **Total tropical livestock unit** | **TLU** | Continuous | Measured in tropical livestock unit (TLU) | + |
| **Total size of cultivated land** | **AREACUL** | Continuous | Measured in hectare | + |
| **Labour availability** | **LABORAV** | Continuous | Measured in adult man equivalent | + |
| **Shortage of food** | **FDSHOR** | Dummy | 1 if a household has faced food shortage in 5 years time ; 0 , otherwise | + |
| **Distance to nearest development center** | **DISTEXTC** | Continuous | Measured in minutes | - |
| **Distance to market** | **DISTMARK** | Continuous | Measured in minutes | - |
| **Access to credit** | **ACCR** | Dummy | 1 if the farmer responded as he has access to credit and 0 otherwise | + |
| **Training and visiting** | **TRAIN** | Dummy | 1, if a household had got Training and visit in different water harvesting practices (workshops, seminars, etc) w and 0 ; other wise | + |
| **Irrigation** | **IRRUSE** | Dummy | 1; If a household has owned irrigated plot and practice and 0; otherwise | |
| **Perception of a house hold water harvesting technology** | **PERCEPT** | Dummy | 1; if a household considered WHT important and 0 = otherwise | + |
| **Extension contact of a household head** | **EXTNCON** | continuous | Measured in number | + |
| **Annual off farm income of a household head** | **OFFFAIN** | Dummy | 1; if a house hold participate on off farm activities; and 0 otherwise | -/+ |

## 4. METHODOLOGY

### 4.1.1. THE STUDY AREA

East Gojjam zone is one of the eleven zones of the Amhara regional state which is located in the northern part of Ethiopia. The administration zone is bounded by west Gojjam to the west; by Oromia region (wellega) to the south; wello zone to the east and South Gonder zone to the north.The area has a total area of 14705.36 sq. km, with an altitude ranging from 800 to 4070 m.a.s.l. Its topography is estimated to be 48% mountainous, 12% rugged and 40% gentle slope. It has also four agro climatic zones namely kola, Woinadega, Dega and Wirch covering 16%, 37%, 45% and 2% of the total area, respectively. It receives a mean annual rain fall of 900 to 1800 mm and annual temperature of 8 to 27co The Zone is divided in to 16 districts and 2 urban administrative with a total of 382 kebeles of which 36 are urban kebeles. The estimated land use pattern of the zone shows that 33.67% is used for cultiviation,11.7% for grazing, 20.6% for forest bushes and shrubs and The rest 34.03% is used for other purposes & including unused land (ZODA,2012)

Agriculture, like in the other parts of Ethiopia is the main source of income for the community in the study area. The zone is characterized by mixed farming where the rural population of the zone is dependent on both crop and livestock production for their livelihood. Due to the increasing population pressure, the amount of land a household uses decreases from time to time. Due to this reason many farmers are forced to make deforestation and use of grazing land in search of additional arable land. This has led to plough undulating areas and ended up with sever soil erosion.

The agriculture extension service in the zone mainly focuses on providing basic agricultural trainings, teaching and demonstration about the use of agricultural inputs, forest development, soil conservation and livestock production aspects. The major source of agricultural credit to the farmer is the regional government that receives loan from commercial banks by providing its annual development budget as collateral. The actual credit provision is undertaken through cooperatives and Amhara Credit and Saving Institution (ACSI). Yet, availability of fertilizer, improved seeds and credit at the required time and place particularly for remote and

inaccessible areas are the major problems encountered to boost agricultural production and productivity. In addition; nowadays uneven distribution of rain fall/erratic rain affects the production system of farmers.

According to the discussion with soil and water conservation experts, water harvesting technologies are introduced and implemented by farmers in the study area. However, the management and utilization of the technology by the used famers needs very much follow up to make it effective. The supply of type technologies with the interest of users would also needs consideration.

#### 4.1.2. SAMPLING DESIGN AND DATA COLLECTION

Both primary and secondary data were collected. The primary data were collected from 200 sample household heads through conducting formal survey based on structured questionnaire that was prepared. Personal observation and group discussions were also made. Secondary data were collected from the different records, strategic plans, seasonal and annual reports, and previous studies. Three stage sampling technique was used to draw the sample respondents of the study. In the first stage, 3 districts which have good experience in implementing water harvesting technologies were purposely selected. This has been done based on the discussion with the zone agricultural and rural development department. Secondly, from each district 2 Kebeles and a total of 6 Kebeles were selected using simple random sampling technique. Finally, Probability proportional to size random sampling technique was used to draw individual sample households from each kebeles.

#### 4.1.3. ANALYTICAL METHODS

Both descriptive statistics and econometric models were employed to study the relationship between the dependent and explanatory variables. Descriptive statistics such as mean, standard deviation and percentage were used. The result obtained was used as an indicator of the difference between the two groups (willing and non-willing). Besides, binary logit model was used to identify the determinants farmers' willingness to pay on water harvesting technologies.

In participation decision studies, responses to a question such as whether farmers are willing to participate in a given technology could be 'yes' or 'no', a typical case of dichotomous variable. A variety of statistical models can be used to establish a relationship between the household characteristics and the willingness for participation. Conventionally, linear regression analysis is widely used in most economic and social investigations. This is, because, it has some desirable properties for specific type of enquiry and data and is widely available in computer packages (Green, 1991). Moreover, it is easy to interpret and it is a reasonable procedure even if some of the assumptions underlying it are not met in the data (ibid). However, the same source further stated that while estimates derived from linear regression analysis may be robust in the face of errors in some assumptions, other assumptions are critical and their failure will lead to quite unreasonable estimates. To mention some weakness, the linear probability Model (LPM) may generate predicted values outside the 0-1 intervals, which violates the basic tenets of probability. The other problem with LPM is that the variance of the disturbance term is heteroscedastic. Furthermore, the assumption of normality in the disturbance term is no longer tenable.

The inadequacy of the linear probability model suggests that a non-linear specification may be more appropriate and the candidate for this will be an S-shaped curve bounded in the interval of 0 and 1 (Amemiya, 1981; Maddala, 1983). These authors suggested the S-shaped curves satisfying the probability model as those represented by the cumulative logistic function (logit) and cumulative normal distribution function (probit).

The choice between these two models revolves around practical concerns such as the availability and flexibility of computer program, personal preference, experience and other facilities. In fact it represents a close approximation to the cumulative normal distribution. Hosmer and Lemshew (1989), pointed out that a logistic regression has got advantage over others in the analysis of dichotomous outcome variables. There are two primary reasons for choosing the logistic distribution. These are 1) from a mechanical point of view, it is an extremely flexible and easily used function, and 2) it lends itself to a meaningful interpretation. The logit model is simpler in estimation than the probit model. Therefore, a binary logistic regression model will be used to study the decision behavior of sampled households (Pindyck and Rubinfeld, 1981).

Following Hosmer and Lemshew (1989), the logistic distribution function for identification of the willing and non-willing farmers can be defined as:

$P_i = \frac{1}{1+e^{-z_i}}$ .....1

Where:

$P_i$ is the probability of being willing to choose or decide for the $i^{th}$ farmer and $Z_i$ is a function of n explanatory variables ($X_i$), and expressed as:

$Z_i = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \text{-----+ } \beta_m X_m$ .....2

Where $\beta_o$ is the intercept and $\beta_i$ are the slope parameters in the model. The slope tells how the log-odds in favor of being willing to participate in water harvesting practices change as independent variables change.

Since the conditional distribution of the outcome variable follows a binomial distribution with a probability given by the conditional mean Pi, interpretation of the coefficient will be understandable if the logistic model can be rewritten in terms of the odds and log of the odds, (Gujarati, 1995). The odds to be used can be defined as the ratio of the probability that a farmer will practice ($P_i$) to the probability that he/she will not ($1-P_i$).

But

$1-P_i = \frac{1}{1+e^{z_i}}$ .....3

Therefore,

$\frac{P_i}{1-P_i} = \frac{1+e^{z_i}}{1+e^{-z_i}} = e^{z_i}$.....4

And

$\frac{P_i}{1-P_i} = \frac{1+e^{z_i}}{1+e^{-z_i}} = e^{\beta_0+(\sum_{i=1}^{n}\beta_i X_i)}$ .....5

Taking the natural logarithm of the odds ratio of equation (5) will result in what is known as the logit model as indicated below:

$\ln\left[\frac{P_i}{1-P_i}\right] = \ln\left[e^{\beta_0+(\sum_{i=1}^{n}\beta_i X_i)}\right] = Z_i$ .....6

If the disturbance term $U_i$ is taken into account, the logit model becomes

$Z_i = \beta_o + \sum_{i=1}^{n}\beta_i X_i + U_i$ .....7

Hence, the above econometric model will be used in this part of the study to identify variables that affect the farmers' willingness to pay on water harvesting technologies.

## 5. RESULT AND DISCUSSION

#### 5.1.1 DESCRIPTIVE ANALYSIS

In this study the meaning of willingness to participate considers commitment. Hence, the questionnaire was prepared in three different types. The first type of question focuses on the costs of the technology totally covered by the respondent. It means that no financial supports are to be expected from the government or other donor agencies and the farmer himself should cover all types of costs. As a result, 16.5 % (33) of the respondents were reported that they are willing to have some structures. The second type of question stresses that the respondents to cover half of the costs to construct and run the water harvesting structures. Based on this, 78 farmers or 39 percent of the total sample respondents were willing to have some water harvesting structures. The third question focused how they are willing to participate, if the total costs were to be covered by government or other NGOs. Accordingly, 109 in number or 54.5 percent of the sample farmers showed their desire to have some type of structure.

Therefore, in this study, a respondent is said to be willing if a respondent falls in categories one or two, because he/she is considered as real demanders of the technology as he/she was committed to pay for the technology. Adding the number of farmers who fall under these two groups excluding redundancy was give up the total number of willing respondents. Hence, 78 farmers or 39% of the total respondents were considered to be the willing farmers. On the other hand, 122 farmers or 61 % of the respondents were considered to be non-willing farmers.

In order to investigate the presence of group mean difference with respect to the hypothesized social, economic, institutional and physical factors uni-variate tests were used. Student's t-test and Chi-square statistics were used to identify the potential continuous and dummy variables differentiating willing from nonwilling respectively. Willing and nonwilling households significantly different in four of the seven hypothesized continuous variables (Table 2).

**TABLE 2: CONTINUOUS VARIABLES DIFFERENTIATING WILLING FROM NON WILLING HOUSEHOLDS TO PAY FOR WATER HARVESTING TECHNOLOGIES AMONG 200 SAMPLE HOUSEHOLDS**

| Variable | willing | non-willing | total | t-value |
|---|---|---|---|---|
| **AGE** | 44.38 | 46.14 | 45.09 | 1.009 |
| **LABORAV** | 3.57 | 3.3 | 3.4 | 1.406 |
| **AREACUL** | 1.61 | 1.45 | 1.51 | 1.192 |
| **TLU** | 5.85 | 5.08 | 5.38 | 1.716* |
| **EXTECON** | 1.728 | 1.295 | 1.464 | 2.35** |
| **DISTEXTC** | 24.44 | 31.11 | 28.51 | -2.453** |
| **DISTMARK** | 37.15 | 48.2 | 43.89 | -3.519*** |

*,**,*** indicates Significant at 10%,5% and 1% probability level respectively

Source: Survey result

The average age of the sample household heads was found to be 45.69 years ranging from 22 to 82 years with standard deviation of 12.10. Of the total sample household heads 47 percent of them have an age of greater than 45 years. The mean age of willing and non willing respondents of water harvesting technologies are 44.38 and 46.14 years with standard deviation of 11.21 and 12.49, respectively. The mean age of willing was found to be less than that of non willing. The result of t-test showed that the mean difference of two groups was insignificance.

The survey result indicated that among the total sample household heads, 94% were male and 6% of them were female. Likewise, 93.6% of willing and 94.3% of non-willing were male. About 95% of willing and 93% of non-willing were married. The chi-square test for sex and marital status distribution between the two groups was found to be insignificant.

The size of labour force in the household is assumed to bring about differences in decision of farmers to pay on water harvesting technologies. Farmers with large household members will be able to supply the additional labour that might be required for construction water harvesting structure. However, the result of t-test showed that there was no significance difference in the mean size of labour force between willing and non-willing. The available family labour was calculated in terms of man equivalent following Storck *et al.* (1991). The average available labour was estimated to be 3.4 man-days for total sample households, 3.57 man-days for willing and 3.3 man-days for non-willing respondents, with a standard deviation of 1.35, 1.4, and 1.33, respectively. About 67% of total respondents reported that they face labour shortage during peak agricultural production periods and used hired casual (temporary) labour to solve the problem of labour shortage.

The area of cultivated land was assumed to influence the participation on water harvesting technologies. The survey results showed that landholding size of total sample households ranges from 0.25 to 4 ha with a mean of 1.51 and standard deviation of 0.93 ha. The average landholding size of willing and non-willing was 1.61 and 1.45 ha with a standard deviation of 0.75 and 1.03, respectively. Farm size of most farmers (82%) falls between 0.25 and 2 ha. It was found that only about 18% of the sample households have a farmland of above two hectares. There was a slight difference in the mean size of landholding between the two groups. However, the result of t-test showed that the mean landholding size difference between the two groups was insignificance.

The average size of livestock in TLU was found to be 5.38, 5.85 and 5.08 for total sample households, willing and non-willing with a standard deviation of 3.08, 3.26 and 2.94 respectively. The difference between mean livestock holdings of willing and non-willing households was statistically significant. About 51% of total sample household heads has more than 5 TLU sizes of livestock.

Access to extension service is very important element of institutional support needed by farmers to enhance the use of agricultural technologies in general and water harvesting technologies in particular. Development agents were assigned in all sample PAs. It was expected that sample farmers in the study area have an access to extension services through the DAs, attending field days and training. However, about 7.7% of users, 9% of non user's have reported that they did not get extension services (visits) in the study year. About 69% of sample households had been visited by development agents from one to three times per month..

The average monthly frequency of extension services/visits/ was found to be 1.728 and 1.295 for willing and non- willing with a standard deviation of 0.80 and 0.83, respectively. The mean monthly extension visit difference of the two groups was found to be statistically significance.

The average walking time required to reach a development center in minutes was found to be 28.51, 24.44, and 31.11 for total sample households, willing and non-willing with a standard deviation of 18.96, 17.71 and 19.35 respectively. The difference between mean average walking time for willing and non-willing households was statistically significant.

The average walking time required to reach in nearby market center in minutes was found to be 43.89, 37.15 and 48.2 for total sample households, willing and non-willing with a standard deviation of 22.27, 17.65 and 23.86 respectively. The difference between mean average walking time for willing and non-willing households was statistically significant.

Different empirical studies also showed that willing and non-willing households not only differ in quantitative variables but also in terms of qualitative variables. It was, therefore, desirable to use a method of testing the differences between willing and non-willing with respect to qualitative variables. Hence, the chi-square test was used to test the presence and absence of difference between the two categories of households (Table 3).

The education level of household heads is expected to increase the ability to obtain, process and use of information relevant to the use of improved agricultural technologies in general and Water harvesting technologies in particular. Concerning the educational level of sample household heads, the survey results indicated that about 31% of the total respondents are illiterates, while the rest 69% of the respondents had various educational levels ranging from the ability to read and write up to 12th grade. As shown in Table 9, about 23% of willing and 30% non-willing were illiterate farmers. The result of $\chi 2$-test showed significant difference for distribution of illiterate and literate household heads of the two groups.

**TABLE 3: DUMMY VARIABLES DIFFERENTIATING WILLING AND NON-WILLING HOUSEHOLDS TO PAY ON WATER HARVESTING TECHNOLOGIES**

| variable | score | willing | non-willing | total | χ2 |
|---|---|---|---|---|---|
| **EDUC** | 0 | 25 | 37 | 62 | 28.8*** |
| | 1 | 53 | 85 | 138 | |
| **PERCEPT** | 0 | 0 | 29 | 29 | 95.22*** |
| | 1 | 78 | 93 | 171 | |
| **TRAIN** | 0 | 34 | 101 | 135 | 24.5*** |
| | 1 | 44 | 21 | 65 | |
| **ACCR** | 0 | 8 | 6 | 14 | 0.780 |
| | 1 | 70 | 116 | 186 | |
| **IRRUSE** | 0 | 15 | 88 | 103 | 0.18 |
| | 1 | 63 | 34 | 97 | |
| **FDSHOR** | 0 | 69 | 95 | 164 | 81.92*** |
| | 1 | 9 | 27 | 36 | |
| **OFFFAIN** | 0 | 55 | 76 | 131 | 19.22*** |
| | 1 | 23 | 46 | 69 | |
| **RESP** | 0 | 33 | 68 | 101 | 0.02 |
| | 1 | 45 | 54 | 99 | |

Source: Survey result

Farmer's perception about the importance of use of water harvesting technologies as well as its consequences might make farmers to use water harvesting technologies. The majority of the sample household heads (85.5%) have perceived the importance of water harvesting technologies. From this, only 39% households were willing to use water harvesting technologies. This shows that perceiving the importance is not always a guarantee to the use of the technologies. The difference between the two groups with respect to perceiving the importance was statistically significant between the two groups.

Training is expected to be an important variable to create awareness about the technologies for households and helps them to decide to use technologies based on knowledge. The results of the study showed that 65 sample household heads or 32.5% of respondents have participated in training of water harvesting related matters. Likewise, 56.4% and 17.21% of willing and non-willing farming households respectively had taken training. The difference between the two groups is too large which implies that training is an important factor in the decision of households to use water harvesting technologies. The result of χ2-test also showed that significant difference between household heads of the two groups.

Shortage of money may discourage farmers from participating in newly released agricultural technologies. Therefore, the presence of credit institution and availability of adequate loan is an important factor for the use of water harvesting technologies, as the technologies are money demanding. Regarding to availability of adequate credit; the study found out that about 7% of the respondents have faced problems in getting adequate loan facilities. Of which 10.3% of the willing and 4.92% of the non-willing farmers suffered the same problem. The result of χ2-test also showed that insignificant difference between household heads of the two groups.

Of the total respondents, 48.5% have reported that they have of their irrigation plots and had also practiced small scale irrigation; of which 80.8% and 27.86% willing and non willing farmers respectively. The figure is larger for the willing compared to the non-willing farm households indicating that those farmers who have an experience in use of irrigation are more willing in use of water harvesting technologies. Concerning food shortage 18% of total respondents reported that they had faced food shortages in the past 5 years; of which 11.5% and 51.9% were for the willing and non-willing farming households respectively. The result of χ2-test also showed that significant difference between household heads of the two groups.

Participation on off farm activities of sample household heads, the survey results indicated that about 34.5% of the total respondents were participated on off farm activities, while the rest 65.5% of the respondents were not. About 70.5% of willing and 62.3% non-willing households were not participated in off farm activities. The result of χ2-test showed significant difference for distribution of participated and non participated household heads of the two groups.

Of the total sample household heads, 49.5% were reported that they responsibility at their village or peasant association level. The figure was 57.7% and 44.3% for the willing and non-willing farmers respectively. The higher figure for the willing respondents when compared with the non- willing may indicate that as the head of the household has a responsibility, the chance of getting information and hence understanding about the technology increases. This contributes to decide to construct some form of water harvesting technologies.

**5.2 ECONOMETRICS ANALYSIS**

**5.2.1 DETERMINANTS OF FARMERS WILLINGNESS TO PAY ON WATER HARVESTING TECHNOLOGIES**

Under this section the important socio-economic, physical and institutional factors, which were hypothesized to influence farmers' decision to pay on water harvesting technology were analyzed. Logit-model was used to analyze determinants of farmers' willingness to pay on Water Harvesting Technologies. The unit analysis was a house hold level analysis. Before estimating the model using hypothesized variables, it is crucial to check the problem of multicollinearity or association among potential explanatory variables. Towards this, multicollinearity problem for continuous explanatory variables was assessed using a technique of variance inflation factor (VIF) and the degree of association between each dummy/discrete variable was also assessed using contingency coefficient. Finally, the variables were considered for further analysis after verifying that multicollinearity is not a problem.

Generally, fifteen (15) explanatory variables were included in the model to identify the determinants farmers' willingness to pay on Water Harvesting Technologies. The various goodness of fit of measures was checked and validate that the model fits the data. The chi-square value of a likelihood ratio is significant at less than one percent level of significance. This confirms the joint significance of the explanatory variables included in the model and shows existence of useful information in the estimated model. The maximum likelihood econometric estimation method was used to estimate the coefficients of the explanatory variables in the Binary logit model. The results of Binary logit model regression analysis are presented in Table 4.

The results indicated that, among the 15 hypothesized explanatory variables included in the model, seven variables were found to be significantly affecting the farmers' willingness to pay on water harvesting technologies in the study area. These are age of the household head (AGE), labour availability (LABORAV), distance of market from residence (DISTMAR), distance of development center (DISTEXTC), Frequency of extension contact (EXTCON); Training on water harvesting matters (TRAIN) and Perception of a house hold on water harvesting technology (PERCEPT). The coefficients of other eight variables were not statistically significant at the conventional probability levels implying that they were less important in effecting the farmer's willingness to pay on water harvesting technologies.

Among the statistically significant explanatory variables age of the household head (AGE), distance of market from residence (DISTMAR), and distance of development center (DISTEXTC) were found to affect the farmer's willingness to pay on water harvesting technologies negatively. other variables such as labour availability (LABORAV), Frequency of extension contact (EXTCON); Training on water harvesting matters (TRAIN) and Perception of a house hold water harvesting technology (PERCEPT) were also affect the farmer's willingness to pay on water harvesting technology positively. The effects of the significant variables on the farmer's willingness to pay on water harvesting technologies are discussed below.

Age of the household head is significant at 10% probability level and related negatively with the farmer's willingness to pay on water harvesting technology. Bekele and Holden (1998) also reported similar negative relationship between age and adoption of land conservation practices in the Ethiopian highlands. The odds ratio (0.968) indicates that under constant assumption means keeping the influences of other factors constant the farmer's willingness to pay on water harvesting technology decrease by a factor of (0.968) as the age of house hold head increase by one year.

**TABLE 4: MAXIMUM LIKELIHOOD ESTIMATES OF A BINARY LOGIT MODEL**

| variables | B | S.E. | Wald | Sig. | Exp(B)/odds ratio |
|---|---|---|---|---|---|
| **AGE** | -0.033 | 0.017 | 3.701 | 0.054* | 0.968 |
| **RESP** | 0.148 | 0.419 | 0.125 | 0.724 | 1.160 |
| **EDCU** | 0.596 | 0.439 | 1.836 | 0.175 | 0.551 |
| **LABORAV** | 0.265 | 0.159 | 2.787 | 0.095* | 1.304 |
| **DISTMKT** | -0.017 | 0.010 | 2.914 | 0.088* | 1.017 |
| **DISTEXTC** | -0.020 | 0.011 | 3.337 | 0.068* | 0.981 |
| **ACCR** | 0.798 | 0.726 | 1.209 | 0.272 | 0.450 |
| **EXTNCON** | 2.053 | 0.348 | 34.789 | .000*** | 7.791 |
| **TRAIN** | 1.592 | 0.407 | 15.278 | .000*** | 0.203 |
| **AREACUL** | -0.170 | 0.188 | 0.818 | 0.366 | 1.185 |
| **IRRUSE** | -0.369 | 0.390 | 0.895 | 0.344 | 0.691 |
| **FDSHRO** | 0.732 | 0.508 | 2.073 | 0.150 | 2.079 |
| **TLU** | -0.043 | 0.074 | 0.337 | 0.562 | 0.958 |
| **PERCEPT** | 2.109 | 0.857 | 6.050 | .014** | 0.121 |
| **OFFFAIN** | 0.491 | 0.384 | 1.642 | 0.200 | 1.635 |
| **Constant** | 4.729 | 1.924 | 6.044 | 0.014 | 113.206 |
| **Chi-square ……. 66.956*** | | | | | |
| **-2 log likelihood…….. 200.543** | | | | | |
| **Count $R^2$ ……..78.4** | | | | | |
| **Sensitivity…….. 61.5** | | | | | |
| **Specificity…….. 80.3** | | | | | |
| **Number of cases…… 200** | | | | | |

Source: Survey result

***'**&* Significant at 1%, 5%, and 10% probability level respectively.

Labour availability is significant at 10% probability level and related positively with the farmer's willingness to pay on water harvesting technology. FAO (1994) and Ngiggi (2003) have reported availability of labour as first criterion to participate in water harvesting works. The odds ratio (1.304) indicates that under constant assumption means keeping the influences of other factors constant the willingness to pay on water harvesting technology increase by a factor of (1.304) as the labour availability increased by one unit.

Distance of market from residence variable is significant at 10% probability level and related negatively with the farmer's willingness to pay on water harvesting technology. Lapar and Pandey (1999) came up with a negative relationship between adoption decision of farmers and distance to market center. The odds ratio (1.017) indicates that under constant assumption means keeping the influences of other factors constant the willingness to pay for water harvesting technology decrease by a factor of (1.017) as the distance of market from the residence far away by one additional minute.

Distance of development center from residence variable is significant at 10% probability level and related negatively with the farmer's willingness to pay on water harvesting technology. Chilot (1994) has found significant negative relationships between distance to an extension office from homestead and adoption of wheat technologies. The odds ratio (0.981) indicates that under constant assumption means keeping the influences of other factors constant the willingness to pay on water harvesting technology decrease by a factor of (0.981) as the distance of development center from the residence far away by one additional minute.

Frequency of extension contact is significant at 1% probability level and related positively with the farmer's willingness to pay on water harvesting technology. Many studies have shown the positive relationship between extension contacts and use technologies (Baidu-Forson, 1999; Semgalawe, 1998; Wagayehu, 2003). Therefore, it is found that a household head that has greater contact with a development agent is more likely to pay on water harvesting technologies. The odds ratio (7.791) indicates that under constant assumption means keeping the influences of other factors constant the willingness to pay on water harvesting technology increase by a factor of (7.791) as the monthly frequency of extension contact increased by one unit.

The model result indicates that Training on water harvesting matters affects the farmer's willingness to pay on water harvesting technology positively and significantly at ($P<0.01$). Sambrook and Akhter (2001) have found similar result that a strong positive relationship between training in different water harvesting matters and willingness to participate in water harvesting activities. Tesfaye et al. (2001) has also arrived at similar results in wheat adoption study in Amhara region. The odds ratio of the willingness to pay on water harvesting technology by a farmer increases by a factor of 0.203 as a household is trained in the given water harvesting technology.

Perception of a house holds water harvesting technology (PERCEPT) affects the farmer's willingness to pay on water harvesting technology positively and significantly at ($P<0.05$). FAO (1994) considered technological appropriateness as a key determinant factor for the adoption and promotion of water harvesting practices across potential willing. Bekele and Holden (1998) also found positive relationship between attitude towards new land conservation technologies and adoption. The odds ratio of the willingness to pay on water harvesting technology by a farmer increases by a factor of 0.1.21 as a household perceived water harvesting technology is important.

## 6. CONCLUSION AND RECOMMENDATIONS

Ethiopia is highly depending on rain fed agriculture with limited use of irrigation and small size of land per house hold. The inconsistency in the amount and seasonal pattern of rainfall and it's inter annual variation constitute a major cause for frequent failures of crops and scarcity of livestock feed. Due to the effect of climate change the annual rainfall distribution in most parts of Ethiopia, including the highlands, is not only uneven but also highly unpredictable in it's inter annual variations. Hence, the effect of agriculture in the overall economy of the country is high; increasing productivity of Ethiopian agriculture is paramount important. To do this; among other factors, this requires overcoming the moisture stress problem is believed to play a pivotal role in the agricultural development of the country.

Currently, the government of Ethiopia has tried to adopt the household level water harvesting ponds, shallow and deep well development as one strategy of the country's irrigation development in order to alleviate the problem of food security and enhance the overall growth of the rural economy. This is clearly stated in the policy document of Agricultural Development Led Industrialization (ADLI). Therefore, the government of Ethiopia has made an effort to promote water harvesting technologies in past years, success to date is limited. The factors that determine the farmers' willingness to pay on water harvesting technologies in the study area however not been fully evaluated and accordingly appropriate recommendations made. The finding of this study, therefore, would provide first hand information on the factors determining the farmers' willingness to pay on water harvesting technologies for different governmental, nongovernmental organizations, extension agents working in the study area and other similar areas. Researchers would also have used as a stand point for further detail investigation.

The results of logit model analysis based on a sample of 200 farmers selected from three districts namely, Motta, Enebsiesarmider and Enarjenawuga districts of East Gojjam zone; Amhara region; Ethiopia in 2013 showed that among the 15 hypothesized explanatory variables included in the model, seven variables were found to be significantly affecting the willingness to pay on water harvesting technologies in the study area. These are age of the household head (AGE), labour availability (LABORAV), distance of market from residence (DISTMAR), distance of development center (DISTEXTC), Frequency of extension contact (EXTCON); Training on water harvesting matters (TRAIN) and Perception of a house hold water harvesting technology (PERCEPT). The coefficients of other eight variables were not statistically significant at the conventional probability levels implying that they were less important in effecting the willingness to pay on water harvesting technologies.

Based on the findings of this study the following points need to be considered as possible policy recommendations in order to enhance the willingness of farmers to pay on water harvesting technologies.

The result of this study showed that the majority of the sample household heads (85.5%) have perceived the importance of water harvesting technologies. From this, only 39% households were willing to use water harvesting technologies. This shows that perceiving the importance is not always a guarantee to the use of the technologies. Besides, as observed in the field observation most of the constructed water harvesting structures were not used to for crop production, rather they largely used for drinking of animal's water. Therefore, to encourage the willingness of farmers to pay on water harvesting technologies in general and use of harvested water for crop production in particular, agricultural extension and projects which, promote water harvesting technologies should have to be strengthen and strategies which focuses on enhancing the willingness and /or ability of farm house hold heads should be designed.

The result also showed that the probability of farmers' willingness to pay on water harvesting technologies increases with an increase in labour availability, frequency of extension contact, participation on training and perception on importance of water harvesting technologies. This implying that expansion of credit system for alleviating labour shortage vital to increase farmer's willingness, as the technology is labour demanding in both construction and utilization. The positive effect of extension contact on farmers' willingness to pay emphasizes the need to improve extension system. Therefore, to sustain the positive contribution of the extension contact to farmers' willingness to pay on water harvesting technologies the concerned bodies should strengthen the extension contact between the farmers and development agents by strengthen and expanding agricultural technology outreaches services and strengthen capacity of development agents. In addition, enhancing the knowledge and skill of farmers about the technology in general and aged farmers in particular should also need emphasis. Distance of development center and distance of market from residence negatively and significantly affects the willingness of farmers to pay this implies that the need to consider establishment of extension service out reaches and nearby markets.

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# MEASUREMENT OF ENVIRONMENTAL VALUES

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**ABSTRACT**

*This paper deals with measurement of environmental values. It throws light the theory of environmental valuation including the total economic value. It also discusses different values like direct and indirect values that have the great relevance in economics of environment further the unit reveal various Environment valuation techniques to help readers have the clear understanding of these techniques. We will familiarize you with some elementary concepts of welfare economics and social sector. It also deals with measurement of environmental values using appropriate measures that are being used across the globe.*

**KEYWORDS**

concepts and theory of environment valuation and total economic values, total economic value (TEV), environmental valuation techniques, different techniques of environment valuation.

## 1.1 INTRODUCTION

Valuation is the heart of environmental economics; it is a very active and rapidly expanding field. The basic strategy for environmental valuation is the 'co - modification' of the services that the natural environment provides. It serves to assess individual and group priorities and tradeoffs in the case of unpriced scarce commodities. It has been used to assess the desirability of specific Government investments in environmental improvement and to assess the desirability of new regulations to protect certain aspects of the environment from further degradation. It has also been used to rank the seriousness of environmental problems in order to provide guidance to environmental agencies as they decide on how to focus their efforts.

In its simplest form economic valuation is the process of identifying the relevant changes in consumer demand and producer supply arising from a (project induced) change in environmental quality, or the change in the provision of an environmental resource. In brief Environmental Valuation is concerned with the analysis of methods for obtaining empirical estimates of environmental values, such as the benefits of improved river water quality, or the cost of losing an area of wilderness to development.

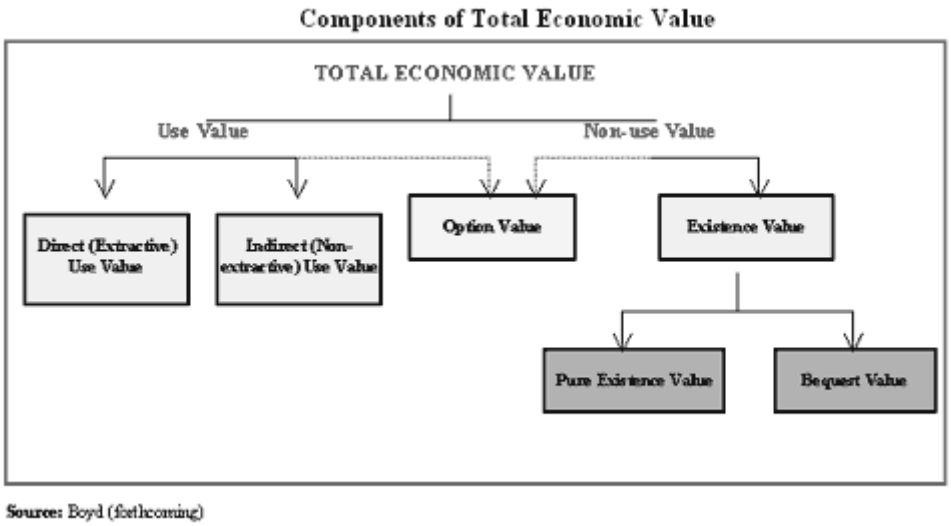
## 1.2 THE THEORY OF ENVIRONMENTAL VALUATION AND THE TOTAL ECONOMIC VALUE (TEV)

For some goods and services (e.g. a net or a boat purchased by a capture fishery operator), the market provides prices that reasonably reflect the value society places on that good or service. For other goods and services however, market prices either only partially reflect the value society places on them (e.g. electricity) or do not exist at all (e.g. the use of a Lake or the atmosphere as a discharge sink). To simplify the task of valuation, therefore, economists like to disaggregate project impacts on the environment into individual components of value. The most commonly used approach is based on the concept of Total Economic Value (TEV).

Under the Total Economic Value (TEV) approach an impact on an environmental resource, for example, a waterborne pollutant on a river, is broken down into a number of categories of value. The logic behind the approach is that a good or service comprises of various attributes, some of which are tangible and readily measured, while others are less tangible and thus more difficult to quantify. The total value of the good or service however, is given by the sum of all categories of value, and not simply those that are easy to measure.

The Total Economic Value is generally decomposed into three categories of value: (1) direct use value; (2) indirect use value; and (3) nonuse value. The former two categories are sometimes collectively referred to as "use value". Further subdivision of these categories is also possible as shown in the figure.

**FIGURE 1**




**Sources:** Boyd (forthcoming)

**DIRECT USE VALUE**

The Direct use value is derived from goods, which can be extracted, consumed or directly enjoyed. It is also therefore known as extractive or consumptive use value. In the context of a river, for example, Direct (extractive) use value is derived from the harvesting of fish.

**INDIRECT USE VALUE**

Indirect use value is referred to as non-extractive use value, derived from the services that an environmental resource provides. A wetland, for example, acts as a water filter, often improving water quality for downstream users. This service is valued by downstream users, but does not require any good to be extracted / consumed.

In terms of measurement, indirect use values differ from direct use values in two ways: (1) the 'quantity' of the service provided is often hard to define and (2) the types of services in question are often not traded in established markets, and therefore have no readily observable 'prices'. For these reasons, measuring indirect use value is relatively more difficult than measuring direct use value.

**NON-USE VALUES**

Non-use values are defined as those benefits or welfare gains/losses to individuals that arise from environmental changes independently of any direct or indirect use of the environment. This category can be further subdivided into (1) option value and (2) existence value.

The former is a benefit expressed through an option to use the environment - that is, the value of the environment as a potential benefit as opposed to an actual present use benefit. If you are unsure whether you will use an environmental service or not, you might be willing to pay a positive sum to guarantee that the service will still be available in case you desire to use it at a later date. Option values consequently arise when you are uncertain about whether you will demand a commodity in some future time period and are faced with uncertainty concerning the future supply or availability of that commodity. It is distinct from a use value in that it arises not from the use of the site itself but from uncertainty over the site's availability to meet future demands. In this way option value is akin to an insurance policy against future uncertainty.

As option value is the value derived from maintaining the option to use a good or service at some point in the future, it is sometimes treated as a special case of use value (hence the dashed line in (figure) Existence value can be defined in various ways. Most definitions however contain two main components: (1) pure existence values and (2) bequest values.

A pure existence value relates to the worth you associate with an environmental good or service, which is completely unrelated to current or future use of that commodity, by yourself, your descendants, or others. These values are intrinsic in nature, i.e. they represent a value that resides in something. Some possible motivations or rationales for the presence of such values include the preservation of, concern for, sympathy with, respect for the rights of, any other altruistic motives with respect to non-human beings. A number of pure existence values are related to ecological attributes. Support for the protection of endangered species and the protection of critical habitats for those species represents an intrinsic valuation process.

Bequest value derive from our desire to preserve the environment for relatives and friends, and also for all other people living today and future generations, so that they may benefit from conservation of the environment. Since in most cases non-use value is not, by definition, reflected in individual's behaviour and is thus not observable, it is the most difficult component of TEV to measure.

**TOTAL ECONOMIC VALUE = DIRECT AND INDIRECT USE VALUES + OPTION VALUES + EXISTENCE VALUES**

It is of crucial importance to assess the change in the TEV arising from a project-induced change in environmental quality, or a change in the provision of an environmental resource. It will often be the case that the 'true' benefits (change in TEV) of a proposed project or policy will be much greater than its direct use value, but the direct use value may be less than the cost of the resource inputs.

## 1.3 ENVIRONMENTAL VALUATION TECHNIQUES

Environmental valuation techniques can be broadly classified into two sets. The first set is based on technical (physical) linkages that formally describe cause and effect relationships. Included in this set of techniques are the change in the output (or input) of marketable goods, the cost of illness and the replacement cost methods. The second set of techniques is based on behavioural linkages between a change in the state of the environment and the actions of individuals, whereby values are either stated or revealed in actual or hypothetical market behaviour. Using revealed behaviour, we examine the trade-offs individuals make between the state of the environment and goods or service traded in actual markets. These so-called revealed preference approaches include the hedonic property, wage-risk, travel cost and averting expenditures approaches. When environmental goods or services cannot be valued, even indirectly using revealed preference approaches, we can ask individuals directly to express how much they are WTP for a certain level of that environmental good or service. Contingent valuation and constructed markets are the two main types of so-called stated preference techniques. Another approach to benefit valuation in CBA is benefit transfer, although strictly speaking not a valuation method.

### 1.3.1 HEDONIC PRICE METHOD

It is based on consumer theory, which postulates that every good provides a bundle of characteristics or attributes. Market goods are often regarded as intermediate inputs into production of more basic attributes that the individuals really demand. For example the demand for housing can be considered a derived demand. A house yields shelter but through its location it also yields access to different quantities and qualities of public services (example: schools, cultural activities etc.) and different quantities and qualities of environmental goods (open space, woodland etc.). Thus HPM relies on the proposition that an individual's utility for a good or service is based on the attributes, which it possesses. If the hedonic analysis is conducted on housing data, it is referred to as the property value approach. When applied to wage data – to measure the value of changes in morbidity/mortality risks – it is often referred to as the wage differential or wage-risk approach.

The hedonic property value approach measures the welfare effects of changes in environmental goods or services by estimating the influence of environmental attributes on the value (or price) of properties. In order to obtain a measure of how a specific environmental attribute of interest affects the welfare of individuals, the technique attempts to: (1) identify how much of a property price differential is due to a particular environmental difference between properties and (2) infer how much people are willing-to-pay for an improvement in the environmental quality and to estimate the social value of improvements.

In attempting to isolate the effects of specific environmental attributes on the price of houses we have to "explain" the price of a house as a function of its key characteristics. If we take house price to be a function of all the physical features of the house (e.g. number of rooms, central heating, garage space etc.), neighbourhood characteristics, and environmental attributes, then the following relationship can be identified:

$$P^h = f(S, N, E)$$

where

Ph= The market price of the property.

f = The function that relates the house characteristics to price.

S = The different structural characteristics of the property.

N = The different neighbourhood characteristics of the property.

E = The different environmental attributes of the property.

This function is called a hedonic price function. Fixing the level of all the structural characteristics of a property and the neighbourhood characteristics, we are able to focus on the relationship between the property price and the environmental attribute under investigation. By partially differentiating the hedonic price function with respect to E we obtain the implicit price (or implicit price curve) of the environmental attribute.

This partial derivative is interpreted as the price paid by the individuals for the last unit of the environmental attribute, purchased by choosing a given property instead of another one with a unit less of the environmental attribute, other things being equal. Estimated implicit prices for different properties refer to different individuals. Every estimated implicit price is only one observation of the true individual demand curve and corresponds to the individual WTP for a marginal unit of environmental good only for that specific level of environmental good purchased. Therefore, the implicit price (curve) cannot be viewed as an inverse demand

curve. Hence, it does not represent the maximum marginal WTP of the individual for one more unit of the environmental attribute, unless we assume that all the individuals have the same structure of preferences and the same income. If this assumption does not hold, the various individuals will have different inverse demand curves. Nevertheless, the implicit price can be regressed on the observed quantities of the environmental attribute and some socio-economic characteristics of individuals. This "second stage" regression could allow the identification of the inverse individual demand function. The area under the inverse demand curve between two levels of the environmental attribute represents the change in the consumer surplus caused by the change in this attribute. By aggregating all individuals' consumer surpluses, we obtain the overall value of the environmental change.

In practice, especially in developing countries, only the first stage of the process is usually carried out, and the results used to obtain only rough values for the impact of the attribute in question. A summary of the main steps followed in undertaking a hedonic property value study is outlined in Figure below.

**TABLE 1: STEP-BY-STEP PROCEDURE FOR THE CALCULATION OF THE CONSUMER SURPLUS WITH THE HEDONIC PROPERTY VALUE APPROACH**

| Steps | ⟵ | Assumptions-Notes |
|---|---|---|
| Collection of data on proces and houses features | ⟵ | Various methods exist to collect these data. For complex studies this data must be complemented with information on the socio-economic characteristics of households investigated |
| Estimation of the hedonic price function | ⟵ | This relates the price of houses to the characteristics explaining the house price. |
| Calculation of the implicit price of the environmental attribute in question | ⟵ | This is the first derivative of the house price function with respect to the environmental attribute |
| Estimation of the inverse demand curve of the environmental attribute | ⟵ | The price paid is explained by the quantity/quality of the environmental attribute but also by the socio-economic characteristics of households |
| Calculation of the consumer surplus | ⟵ | Integration of the implicit demand curve between the former level of environmental quality/quantity and the new one. |

**Source:** Markandya *et al* (forthcoming)

The hedonic wage-risk method is very similar, and is only briefly discussed here. Basically, to estimate the relationship between wages and risks we must control for other variables that influence earnings - as in the hedonic property value approach above - except this time we estimate a hedonic wage function:

$$W = f(Q, X, R)$$

where

W = Wage rate in each occupation.
Q = Qualifications of workers.
X = Job attributes such as unionisation, desirability, etc.
R = Workplace risk, e.g. risk of death.

The partial derivative of this function with respect to R is the wage premium for accepting, say, an additional risk of death of 1 in 10,000. To estimate a 'value of a statistical life' (VOSL) from this, the wage premium is factored by the additional risk (in this case 10,000). For example, if the 'average' wage premium is $45 in this case, then the VOSL is given by

$$\uparrow \frac{1}{100{,}000} \times 100{,}000 = 1 \Rightarrow \$45 \times 100{,}000 = \$4{,}500{,}000$$

The hedonic technique has several advantages. Firstly, hedonic analysis uses market, i.e. observed, data on property sales or wage rates. The method is versatile and can be adapted to consider several possible interactions between market goods and environmental quality. Moreover, estimated values obtained from one study can be used in other policy areas if the environments have similar demand and supply characteristics. On the negative side, the results of hedonic studies are sensitive to the econometric assumptions adopted. Furthermore, the assumptions necessary to interpret the results as measures of WTP are restrictive and, in many real world settings, unrealistic. From a practical perspective, full hedonic pricing studies require a considerable amount of data, which may be difficult and expensive to collect, such studies tend not to be done quickly.

**1.3.2 THE TRAVEL COST METHOD**

The Travel Cost (TC) method is an example of a technique, which attempts to deduce values from observed (i.e. revealed) behaviour. The TC model and its many variants is the most commonly used indirect approach to valuing site-specific levels of environmental resource provision. Basically, information on visitors' total expenditure to visit a site is used to derive their demand curve for the services provided by the site. Among other things, the TC model assumes that changes in total travel expenditures are equivalent to changes in an admission fee Given this, the model is used to predict changes in demand in response to changes in 'admission fees', thereby tracing out a demand curve for the site. This demand curve may then be used to measure the total benefits visitors accrue from the site. There are two main variants of the TC model: (1) the Zonal TC model (ZTCM) and (2) the Individual TC model (ITCM). The ZTCM divides the entire area from which visitors originate into a set of visitor zones and then defines the dependent variable as the visitor or visitation rate (i.e. the number of visits made from a particular zone in a period divided by the population of that zone). The ITCM defines the dependent variable as the number of site visits made by each visitor over a specified period.

The basic (zonal) travel cost model defines a trip demand curve for a given recreational site from zone as

$$\frac{V_j}{P_j} = f(TC_j, X_j)$$

$V_j$ = The total number of trips by individuals from zone $j$ to the recreational site per unit of time,

$f$ = The function that relates travel cost and socio-economic characteristics to visitation rates,

$P_j$ = The population of zone $j$,

$TC_j$ = The travel cost from zone $j$ to the recreational site and

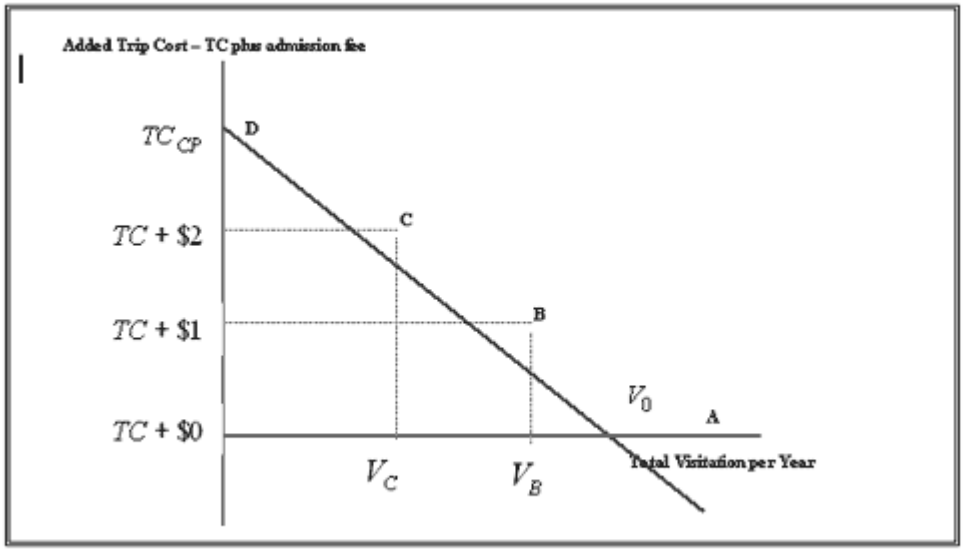
$X_j$ = The socio-economic characteristics of the population of zone $j$, which include, amongst others, factors such as income levels, spending on other goo the existence of substitute sites, entrance fees and quality indices of n substitute sites

The visitor or visitation rate $V_j/P_j$ is generally calculated as visits per unit of population, usually expressed in thousand persons, in zone.

Based on data obtained from a survey of site users, the above equation is estimated using regression analysis. This leads to the creation of a so-called 'whole experience' demand curve based on visitation rates and not the number of actual visits made. To estimate the consumer surplus accruing from the site, the 'whole experience' demand curve is used to estimate the actual number of visitors and how the numbers would change subject to increases in admissions 'prices' – in essence constructing a classic inverse demand curve.

The base data set, from which the 'whole experience' demand curve is created, defines one point on the inverse demand curve for the study site – that is, the intersection of the present zero price line and the inverse demand curve ($V_o$). In Fig this is given by point A, where admission fees or added trip cost is zero.

**FIGURE 2: ZONAL TRAVEL COST**




As mentioned above, the remainder of is derived by assuming that visitors will respond to increases in admission fees in the same way they would to equal increases in travel cost. For each incremental increase in admission fees, the expected visitation rate from each travel origin zone is calculated using the above equation. The 'new' zone-specific visitation rates are then converted to expected numbers of visitors using data on. These values are summed across all travel origin zones to find the predicted total number of visitors to the site at the added trip cost (i.e. original travel cost plus, say, $1). For example, a $1 increase in trip costs may lead to point B in Fig a $2 increase in trip costs may lead to point C, etc. This process is repeated until the added trip cost is sufficient to result in zero visitors to the site (the so-called choke price given by point D in Fig) – until the entire inverse demand curve ($V_0$) is traced.

The area under $V_0$ provides an estimate of the total consumer surplus enjoyed by present users of the study site.

The basic (individual) travel cost model relates individual's annual visits to the costs of those visits – that is (Markandya et al, forthcoming),

$$V_i = f(TC_i, X_i)$$

where Vi = The number of visits made in a time period, say a year, by individual i to the site. TCi= Travel cost faced by individual i to visit the site. Xi= All other factors determining individual i's visits (income, time, and other socio-economic characteristics).

This demand function can be extended to allow for the specification of a number of explanatory variables. These include the individual's estimate of the proportion of the enjoyment of the overall trip imputed to the specific site under investigation, the individual's view of the availability of substitute sites, size of individual's household and whether the individual is a member of an environmental organization, as well as other socio-economic data. Integrating the demand curve between the actual travel cost TCi and the choke price gives an estimate of the individual annual consumer surplus (ICS) for individuals.

The total annual consumer surplus for the site is obtained by multiplying the ICS by the number of individuals visiting the site annually. The modelling of individual socio-economic features enables the estimation of consumer surplus for different socio-economic groups of visitors. Alternatively, the average ICS per visit can be calculated and then multiplied by the total annual number of visits to the site to get the total annual consumer surplus of the site.

Like hedonic techniques, the TC method has the advantage that it is based on observed behaviour. Also, TC is a well-tried technique, which is generally accepted, yields plausible results. The individual TC model, the zonal TC model, or similar specifications, have been used to assess changes in site quality, which include the degradation of water quality, changes in fish catches, etc. However, they are more commonly used to value the total benefit of a resource, rather than changes in that resource. The TC method is not without its disadvantages however. To start, in complex situations, especially when changes in environmental quality are being assessed, the data requirements are considerable. Moreover, "a whole host of issues arises in the specification and estimation of the model and subsequent calculation of consumer surplus, all of which have enormous bearing on the final benefit estimates". These issues include the development of multi-site models, the valuation of travel time and the treatment of non-visitors. As a result, TC studies tend to be conducted as self-standing research studies, with sufficient resources to adequately address these complex issues.

The main application of TC in developing countries is to value tourist's WTP for national parks. For example, in Zimbabwe, a TC study of tourists found that they derived a benefit (consumer surplus) of about US$ 275 per person per trip to national parks. In Costa Rica, a TC valued trips to parks and reserves at US$ 1,150 per person.

**RANDOM UTILITY MODELS**

Random utility models (RUMs) are econometric models that, among other uses, permit the estimation of preferences among different recreational areas with varying characteristics. The RUM, with its ability to assess competing multiple sites with varying recreational characteristics, holds considerable appeal for economists. Consider three beaches with characteristics that vary based on location, water quality, landscape features, access, existence of lavatories, and other services. These characteristics can be transformed into discrete and continuous variables used to assess consumer preference by examining location preference and the total cost of trips taken (Table 4). Based on the data collected through surveys of various sites, the RUM estimates the probability that an individual will visit one site out of several sites based on site characteristics. Varying the quality of those characteristics (e.g., water quality, landscape features) permits the analyst to assess how recreational travelers value changes in environmental quality at particular sites. A RUM is not specific to surrogate market techniques. Rather, a RUM is an estimation procedure that can be combined with surrogate and non-market techniques used in valuing, for example, recreational areas and wetland area restoration. Travel cost studies often use RUMs; however, they may also be applied in stated preference studies that use choice experiments.

**TABLE 2: EXPENDITURES PER TRIP AND NUMBER OF TRIPS TAKEN (ADAPTED FROM LIPTON 1995)**

| Individual | Travel Costs /Number of Trips | Site I | Site II | Site III |
|---|---|---|---|---|
| 1 | Travel Costs | $20 | $40 | $50 |
| | Number of Trips | 4 | 3 | 2 |
| 2 | Travel Costs | $52 | $26 | $15 |
| | Number of Trips | 1 | 4 | 2 |
| 3 | Travel Costs | $30 | $30 | $45 |
| | Number of Trips | 3 | 6 | 1 |

**1.3.3 CONTINGENT VALUATION METHOD (CVM)**

This method uses interview techniques to ask individuals to place values on environmental goods and services. The most common approach in the CVM is to ask individuals the maximum amount of money they are willing to pay (WTP) to use or preserve a good or service. Alternatively, the respondents could be asked the maximum amount of money they are willing to accept in compensation (WTA) to forgo the given environmental good or service. The basic notion underpinning CV is that a realistic, yet hypothetical market for buying or selling use and/or preservation of an environmental good/service can be described in detail to an individual. Individuals are then asked to participate in this hypothetical market, by responding to a series of questions.

The main features of the hypothetical market are as per following:

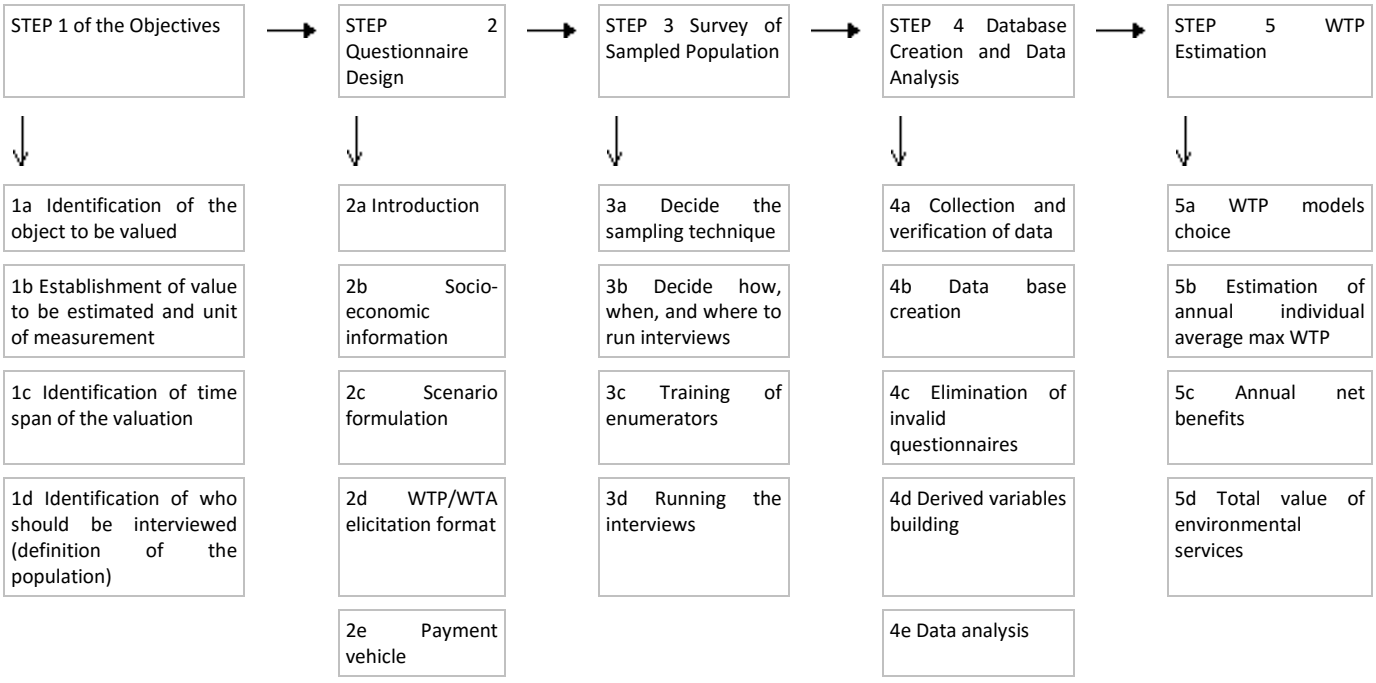
- A detailed description of the good/service being valued. The situation before and after any proposed change in environmental quality and subsequent provision of the good/service should be clearly stated. In addition, it is vital that the respondents perceive the correct good/service.
- A detailed description of the "payment vehicle", i.e. the means by which the respondent would pay for the change in provision of the good/service. The payment vehicle should be appropriate to the good/service and the hypothetical market. Moreover, it should be realistic and emotionally neutral.
- The procedure to elicit the respondent's valuation. The actual valuation can be obtained in a number of ways, for example, asking the respondent to name an amount, having them choose from a number of options. The respondent could also be asked whether they would pay a specific amount. In the case of the latter, follow-up questions with higher and lower amounts are often used. Statistical analysis of the responses is then undertaken to estimate the average WTP in this hypothetical market.

A general approach to follow when running a CV study is outlined in figure. The nature of CV means that, in principle, it can be used to value any change in environmental quality. Furthermore, CV can be used to accurately elicit values about very specific changes in the provision of goods/services, since it does not rely on observed data. Of course, this requires that the hypothetical market and elicitation questions be appropriately worded. An additional plus for CV is that, in contrast to the other valuation techniques described above, which only provide a partial estimate of the value of a good/service, CV can provide a measure of the TEV of a change in environmental quality. CV methods have nonetheless been the subject of much criticism, mainly relating to their reliance on hypothetical markets (In short, some economists argue that asking individuals hypothetical questions only provides you with hypothetical answers, which cannot be meaningfully used to value environmental quality changes. Following controversy of the use of CV to value damages from the 1989 Exxon Valdez oil spill, the US Department of Interior and the National Oceanic and Atmospheric Administration organized a "Blue Ribbon" panel to assess the validity of using CV to value environmental damage. The panel concluded that that CV could provide useful and reliable information for this type of assessment, as long as certain guidelines are followed. In general, the profession as a whole has also given CV qualified acceptance.

In addition to the above conceptual concerns over the validity of CV based benefits estimates, survey-based research is expensive and time-consuming, valid benefit estimates require properly designed sampling and enumeration procedures.

The key steps in conducting Contingent Valuation are as shown.

**FIG. 3**




## ACTIVITY 2

1. Discuss the concept of environmental values.
2. Explain various methods of environment valuation with special reference to direct and indirect methods.
3. Write short notes on the following:

- use values
- non use values
- optional values
- The travel cost method

## 1.4 CONCLUSION

The objective of environmental valuation techniques is to reveal individuals' preferences by making use of a real or hypothetical environmental market. Some valuation techniques are direct and question individuals using surveys. These methods include the Contingent Valuation Method or the use of auctions. Other techniques are more indirect, that is they use other preference revelation methods, for instance the price of goods in a market that has links to environmental amenities. An example of this is the Travel Cost Method which uses the amount people are willing to pay, transport wise, to have access to a heritage site or a natural reserve. Similarly, method of hedonic prices has been discussed as based on consumer theory, which postulates that every good provides a bundle of characteristics or attributes.

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# VALUES AND IMPLICATIONS OF KNOWLEDGE MANAGEMENT

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**ABSTRACT**

*Knowledge is considered to be "the information needed to make business decisions", and so knowledge management is the "essential ingredient of success". The focus of knowledge management is connecting people, processes and technology for the purpose of leveraging corporate knowledge. The database professionals of today are the Knowledge Managers of the future, and they will play an integral role in making these connections possible. Organizations are realizing that intellectual capital or corporate knowledge is a valuable asset that can be managed as effectively as physical assets in order to improve performance. This paper consists of Values, Objectives, Implications, Present and future state of KM.*

**KEYWORDS**

knowledge management, values, objectives, technologies, implications.

## INTRODUCTION

Knowledge Management is one of the hottest topics today in both the industry world and information research world. In our daily life, we deal with huge amount of data and information. Data and information is not knowledge until we know how to dig the value out of it. This is the reason we need knowledge management. Unfortunately, there's no universal definition of knowledge management, just as there's no agreement as to what constitutes knowledge in the first place. We chose the following definition for knowledge management for its simplicity and broad context.

Knowledge Management can be viewed in terms of:

| | | |
|---|---|---|
| People | – | How do you increase the ability of an individual in the organization to influence others with their knowledge? |
| Process | – | Its approach varies from organization to organization. There is no limit on the number of processes |
| Technology | – | It needs to be chosen only after all the requirements of a knowledge management initiative have been established. |
| Culture | – | The biggest enabler of successful knowledge-driven organizations is the establishment of a knowledge-focused culture. |
| Structure | – | The business processes and organizational structures that facilitate knowledge sharing. |

## VALUES OF KNOWLEDGE MANAGEMENT

Some benefits of KM correlate directly to bottom-line savings, while others are more difficult to quantify. In today's information-driven economy, companies uncover the most opportunities and ultimately derive the most value from intellectual rather than physical assets. To get the most value from a company's intellectual assets, KM practitioners maintain that knowledge must be shared and serve as the foundation for collaboration. Yet better collaboration is not an end in itself; without an overarching business context, KM is meaningless at best and harmful at worst. Consequently, an effective KM program should help a company do one or more of the following:

- Foster innovation by encouraging the free flow of ideas
- Improve decision making
- Improve customer service by streamlining response time
- Boost revenues by getting products and services to market faster
- Enhance employee retention rates by recognizing the value of employees' knowledge and rewarding them for it.
- Streamline operations and reduce costs by eliminating redundant or unnecessary processes

## KNOWLEDGE MANAGEMENT TODAY

According to a recent IDC report, knowledge management is in a state of high growth, especially among the business and legal services industries. As the performance metrics of early adopters are documenting the substantial benefits of knowledge management, more organizations are recognizing the value of leveraging organizational knowledge.

## KNOWLEDGE MANAGEMENT DRIVERS

The main drivers behind knowledge management efforts are:

- **Knowledge Attrition:** Despite the economic slowdown, voluntary employee turnover remains high. A recent survey by the global consulting firm Drake Beam Morin revealed an average voluntary employee turnover rate of 20 percent with 81 percent of organizations citing employee turnover as a critical issue.
- **Knowledge Merging:** The recent frenzy of corporate mergers coupled with the increased need to integrate global corporate communications requires the merging of disparate and often conflicting knowledge models.
- **E-Learning:** As the economy becomes more global and the use of PCs more pervasive, there has been a dramatic increase in e-learning, also known as computer based training. E-learning is closely linked to and overlapping with, but not equal to knowledge management. E-learning can be an effective medium for knowledge management deliverables.

## OBJECTIVES OF KNOWLEDGE MANAGEMENT

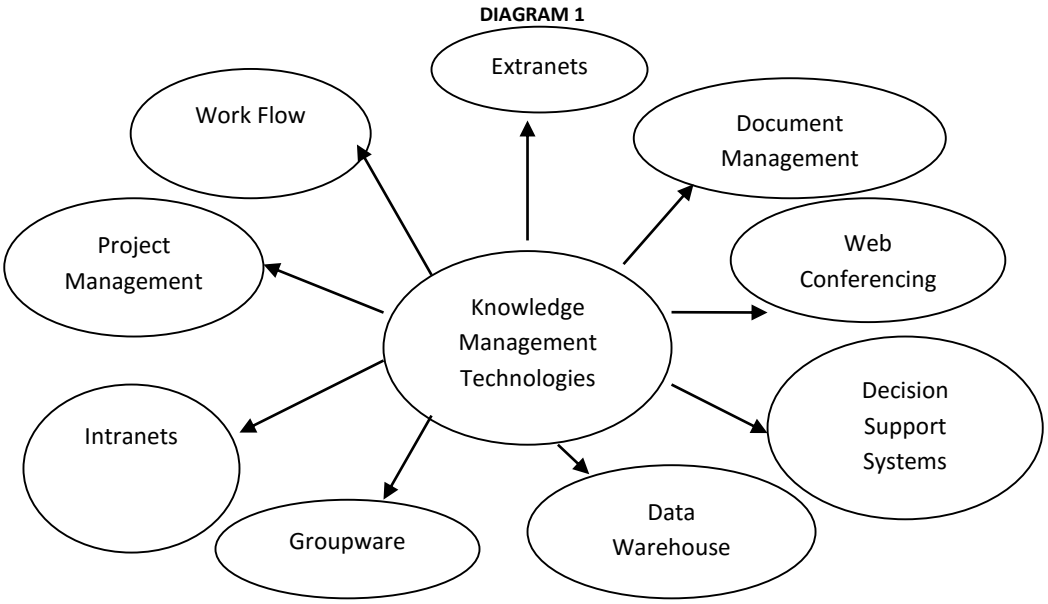
- To enhance internal collaboration
- To capture and share best practices
- To provide e learning
- Customer relationship management
- To provide a project workspace
- Competitive intelligence

- To enhance web publishing
- To enhance transactional business processes
- To manage legal property
- To enhance supply chain management

Activities related to these objectives include: creating knowledge sharing networks that facilitate a corporate knowledge culture, developing knowledge leaders, optimizing intellectual capital by producing knowledge management solutions such as codification strategies and knowledge bases, and estimating revenue and efficiency gains resulting from knowledge management in terms of return on investment (ROI).

## MAIN TECHNOLOGIES THAT CURRENTLY SUPPORT KNOWLEDGE MANAGEMENT SYSTEM

**DIAGRAM 1**




These technologies roughly correlate to four main stages of the KM life cycle:

1. Knowledge is acquired or captured using intranets, extranets, groupware, web conferencing, and document management systems.
2. An organizational memory is formed by refining, organizing, and storing knowledge using structured repositories such as data warehouses.
3. Knowledge is distributed through education, training programs, automated knowledge based systems, expert networks.
4. Knowledge is applied or leveraged for further learning and innovation via mining of the organizational memory and the application of expert systems such as decision support systems.

All of these stages are enhanced by effective workflow and project management.

## PRESENT AND FUTURE STATE OF KNOWLEDGE MANAGEMENT

Communities of practice such as the Knowledge Management Network and the development of standards and best practices are in a mature stage of development. KM curricula such as certification, corporate training and university graduate certificate programs are on the rise. Techniques such as data mining and text mining that use KM for competitive intelligence and innovation are in the early stages of development.

Finally, organizations are investing heavily in ad hoc KM software that facilitates organizational knowledge.

In the next several years' ad-hoc software will develop into comprehensive, knowledge aware enterprise management systems. KM and E-learning will converge into knowledge collaboration portals that will efficiently transfer knowledge in an interdisciplinary and cross functional environment. Information systems will evolve into artificial intelligence systems that use intelligent agents to customize and filter relevant information. New methods and tools will be developed for KM driven E-intelligence and innovation.

## THE IMPLICATIONS OF KNOWLEDGE MANAGEMENT

- Database Users: From business class users to the general public, database users will enjoy a new level of interaction with the KM system including just-in-time knowledge that delivers precise relevant information on demand and in context. More complex, smart systems will translate to optimal usability and less time spent searching for relevant information. The use of knowledge bases can reduce customer service costs by providing customers with easy access to 24/7 self service via smart systems that reduce the need to contact customer service or technical support staff. Database users may even create customized views of knowledge bases that support their needs.
- Database Developers: The design and development of knowledge based systems will be considerably more complex than current database development methods. Developers must consider the overall technical architecture of the corporation to ensure seamless interoperability. Making effective physical storage and platform choices will be equally more complex. Both knowledge base developers and administrators must understand the role of the knowledge base in the overall KM system.
- Database Administrators: Database Administrators will evolve into Knowledge Managers. The knowledge base will store and maintain corporate memory and Knowledge Managers will become the gatekeepers of corporate knowledge. The lines between technical roles such as Web Developer, Data Analyst or Systems Administrator will blur as these systems merge into and overlap with KM systems. DBAs will need to have some knowledge about each of these disciplines.
- General Public: Even if they are not interacting directly with a knowledge base, the general public will benefit from the secondary effects of improved customer service due to faster access to more accurate information by service providers.

## CONCLUSION

Knowledge is only of value when it can be used effectively and efficiently. The management of knowledge is a key element in extracting its value. In this paper we have outlined what is the value, implications and objectives of Knowledge Management process. Overall we believe, this will make knowledge management not only more acceptable in a commercial environment but also contribute to the overall productivity of the economy. A creative approach to KM can result in

improved efficiency, higher productivity and increased revenues in practically any business function. As a result, knowledge management consulting services and technologies are in high demand, and knowledge management software is rapidly evolving.

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# EXCHANGE RATE VOLATILITY IN INDIAN FOREIGN EXCHANGE MARKET WITH SPECIAL REFERENCE TO THE UNITED STATES DOLLAR

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**ABSTRACT**

*Foreign exchange market is one of the biggest traded markets across the world. In Indian foreign exchange market, the transactions are done through banks. Various organizations in India are international player, however they have to bear the exchange rate risk of volatility in the international trade as the exchange rate against United States Dollar has raised five folds during last four decades. Foreign Exchange market in India has become extremely dynamic after 1990s. At present currency market is the most volatile & liquid in all financial market in the world. An exchange rate fluctuation in the United States Dollar in respect to Indian National Rupee portrays rapid and pointed changes. The paper empirically analyzes volatile behavior of United States Dollar in respect to Indian National Rupee. It observes exchange rate volatility using daily exchange rate from 2008 to 2015 of United States Dollar and Indian National Rupee.*

**KEYWORDS**

foreign exchange market, currency market, volatility, usd & inr.

## INTRODUCTION

Volatility is one of the most usual measures of risk of a financial asset. It presents a measure for the extent of uncertainty of the financial asset prices and also signifies the variation of the returns from financial asset from their mean returns. Volatility is one of the main measures of risk for a sole financial asset investment; however, for a portfolio of financial assets the volatility depends on the extent of correlation between the returns of the financial assets.

The dispersion of returns is termed as volatility. Volatility is one of the significant factors of risks. The foreign exchange rates may perhaps exhibit higher volatility because of numerous causes like variation from basics, unnecessary speculative foreign exchange transactions, changes in macroeconomic factors, news from home and foreign country.

Foreign exchange rates extreme movements might adversely affect the sections of financial markets, may also affect the indicators of monetary policy which may lead to financial instability. Foreign trade and authentic foreign investments may have unfavorable impact due to undue movements in foreign exchange rate. Particularly if the connection between the spot-futures arbitrage is broken then, not considering the returns form underlying but by observing the fluctuations in exchange rate the investments could then be probably channelized.

Fixed or floating exchange rates are perhaps the main imperative exchange rate systems. Fixed exchange rates are hypothetically does not vary. For an enduring term they stay fixed. On the contrary, floating rates vary with the time. It is not easy to forecast a future floating exchange rate.

Volatility signifies the extent to which a variable say currency exchange rate varies eventually. Intensity of volatility depends on the degree of change in the variable and frequency of changes in the variable. If the degree of a change in the variable is very big or it changes very frequently then, the variable is highly volatile and vice-versa.

In view of the fact that fixed exchange rates does not vary we may say that they are not volatile. On the other hand, floating exchange rates have got the liberty to vary; hence, they are more volatile in nature.

## REVIEW OF THE LITERATURE

Figlewaski (1981) argued that speculation in the derivatives market is transmitted to the underlying spot markets. The speculation produces a net loss with some speculators gaining (and others loosing), thereby destabilize the market. Uninformed speculative traders increase price volatility by interjecting noise to a market with limited liquidity. The inflow and existence of the speculators in the derivatives market produces estabilization forces, which creates undesirable bubbles.

Stein (1987) developed a model in which prices are determined by the interaction between hedgers and informed speculators. In this model, opening a futures market has two effects; (1) the futures market improves risk sharing and therefore reduces price volatility, and (2) if the speculators observe a noisy but informative signal, the hedgers react to the noise in the speculative trades, producing an increase in volatility.

Kumar and Seppi (1992) and Jarrow (1992) studied the impact of currency derivatives on spot market volatility and found that speculative trading executed by big players in the derivatives market increases the volatility in the spot exchange rate. Hence, currency futures trading increases the spot market volatility.

In addition to the critique by Meese and Rogoff (1983 a, b), another puzzle quickly emerges, pertaining to the volatility of exchange rates. Marston (1989) notes that the volatility of currencies visibly increases in the '70s, after the end of the fixed exchange rates system of Bretton Woods, while the volatility of the underlying economic factors remains largely unchanged. While he comes to the conclusion that exchange rate returns are excessively volatile in regard to fundamentals, Flood and Rose (1993) conclude that macroeconomic factors can provide only little help in explaining or predicting exchange rate changes. In addition, Schwert (1989) finds some (weak) evidence that equity return volatility helps to explain future macroeconomic volatility, rather than the opposite.

Subsequently, research moves away from economic factors to explain volatility and focuses almost entirely on the new ARCH-type of models and their extensions. To model volatility based mainly on the information contained in the historical volatility, Engle (1982) develops the autoregressive conditional heteroscedasticity (ARCH) model, which is later extended into the generalized ARCH (GARCH) model by Bollerslev (1986). From there on, a multitude of models with different specifications have been constructed in order to take into account the features observed in the financial markets. Bollerslev et al. (1992) and Palm (1996) provide an extensive overview over the earlier family of GARCH models, while Bauwens et al. (2006) look in particular at the multivariate extensions of the GARCH model.

As it has often been observed that financial assets behave differently in market downturns than they do in market upturns, with a notable increase in volatility and correlation during downturns, Patton (2006) tests for asymmetric exchange rate interdependence between the German mark and the yen. Using an extension of the BEKK model, he finds that the mark/dollar and the yen/dollar exchange rates are more correlated when simultaneously depreciating against the dollar than when they are appreciating against the latter. Additionally, in line with the findings of van Dijk et al. (2011), Patton (2006) reports strong evidence for a structural break in the conditional copula with the physical introduction of the euro in January 1999.

Bodart and Reding (2001) show that exchange rates have a significant effect on expected industry stock returns and on their volatility, though the magnitude of this effect is quite small. The study also concludes that the importance of the exchange rate spillovers is influenced by the exchange rate regime, the magnitude, and the direction of exchange rate shocks.

In parallel to the studies examining the influence of macroeconomic variables on the returns of exchange rates, researchers have also paid close attention to the volatility of exchange rates. In one of the first studies on volatilities, Ederington and Lee (1993) find that the scheduled U.S. macroeconomic news announcements are responsible for most of the observed time-of-day and day-of-the-week volatility patterns observed in the foreign exchange market. In a more detailed analysis with a larger set of macroeconomic variables, Andersen and Bollerslev (1998b) confirm the strong announcement effects on the return volatility. The higher volatility observed on certain days of the week is mainly due to a clustering of news releases on such days. Besides the impact of U.S. news announcements,

Andersen and Bollerslev (1998b) also document a number of German variables that have a significant impact on the German mark - U.S. dollar exchange rate. Chaboud et al. (2004) find macroeconomic announcements to be immediately followed by higher trading volume and volatility and both remain elevated for a period of time after the announcement.

In 2013, M. Thenmozhi and Abhijeet Chandra in their research titled, "India Volatility Index (India VIX) and Risk Management in the Indian Stock", have examined the asymmetric relationship between the India Volatility Index (India VIX)3 and stock market returns, and demonstrated that Nifty returns were negatively related to the changes in the India VIX levels; in the case of high upward movements in the market, the returns on the two indices tend to move independently. When the market takes a sharp downward turn, the relationship was not as significant for higher quantiles. This property of the India VIX made it ideal as a risk management tool whereby derivative products based on the volatility index can be used for portfolio insurance against bad declines.

## EXCHANGE RATE VOLATILITY

The rise and fall in an exchange rate is termed as exchange rate volatility. It can be calculated on an hourly, daily, weekly, monthly or yearly basis. Volatility offers a thought of a range the exchange rate can vary within a particular period assuming that change in an exchange rate follow a normal distribution. The standard deviation of fluctuations of foreign exchange rates is used to measure volatility of an exchange rate in absolute terms.

Exchange rate volatility is a measure of the propensity for foreign currencies to appreciate or depreciate in rate, thus affecting the profitability of foreign currency transactions. It is the extent of the amount that these currency rates vary and the rate of recurrence of those fluctuations. There are various states of affairs at a time where foreign exchange rate volatility makes the impact, like commercial transactions between parties from different nations and global investments. It is not easy to evade this volatility in such conditions; however, by exercising the futures the users may lock in foreign exchange rates and can tone down the effects of foreign exchange rate volatility. Thus, volatility has an effect on any commercial organization whose business transactions engage two or more nations.

Figure 1.1 demonstrates the charts of the annual volatility for the USD/INR using daily data. It is apparent that volatility is not stable. Volatility is, however, statistically continual.

This means that volatility shows a trend. If it is volatile at present, then it should go on to be volatile.

In the below graph clustering can be seen. Trader cannot make money if volatility is not present. Thus it can be understood that, volatility measures variability, or dispersion about a central tendency — it is a measure of the extent of fluctuations in currency prices. Volatility also has many nuances that make it difficult to examine and execute.

## VOLATILITY DYNAMICS

One of the assumptions in *Black & Scholes Option Pricing Model* is that volatility is constant.

However, an established fact about volatility is that when the foreign exchange rate increases (decreases) volatility generally decreases (increases); thus we may conclude that there is an inverse relationship between volatility and the foreign exchange rate. This may be viewed in the Figure 1.2 [depicting USD/INR Foreign Exchange rate versus the historical annual volatility since April 2008].

Second characteristic of volatility is that it is mean reverting. It means that foreign exchange rates ultimately move back towards the mean or average exchange rate. It can be said that, currency exchange rate is mean reverting if currency exchange rate is likely to go down (go up) after striking a upper limit (lowest limit).

## VOLATILITY DEFINED

Volatility is a gauge to measure unsteadiness. A volatile material will have a propensity to vary its structure effortlessly. In the currency markets, volatility means that the foreign exchange rate will vary over time. Volatility may also be defined as the deviation of a foreign exchange income.

Volatility signifies the array of a return's fluctuation. If the value of volatility comes to be large, it shows that range in the fluctuation in returns is wide. It means that the foreign exchange rate will fluctuate significantly in a particular period of time. Thus, in a foreign exchange rate returns, volatility is the variation of returns from their arithmetic mean.

For instance, if the foreign exchange data is normally distributed, presuming the arithmetic mean of foreign exchange returns to be zero, then 5% volatility signifies that in a time period of one-year foreign exchange returns will be within [-0.05; +0.05] with 68.3% probability (1σ); within [-0.1; +0.1], with 95.4% probability (2σ), and within [-0.15; +0.15], with 99.7% probability (3σ).

**FIGURE 1.1: ANNUAL VOLATILITY OF THE USD/INR SINCE APRIL 2008 USING DAILY DATA**

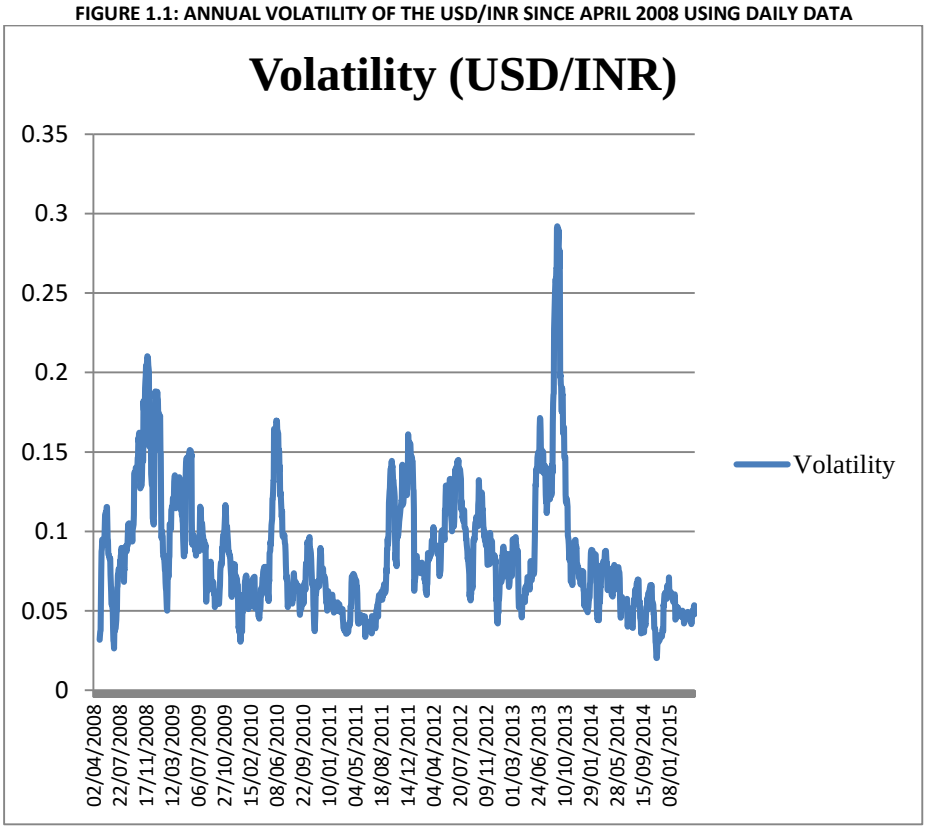
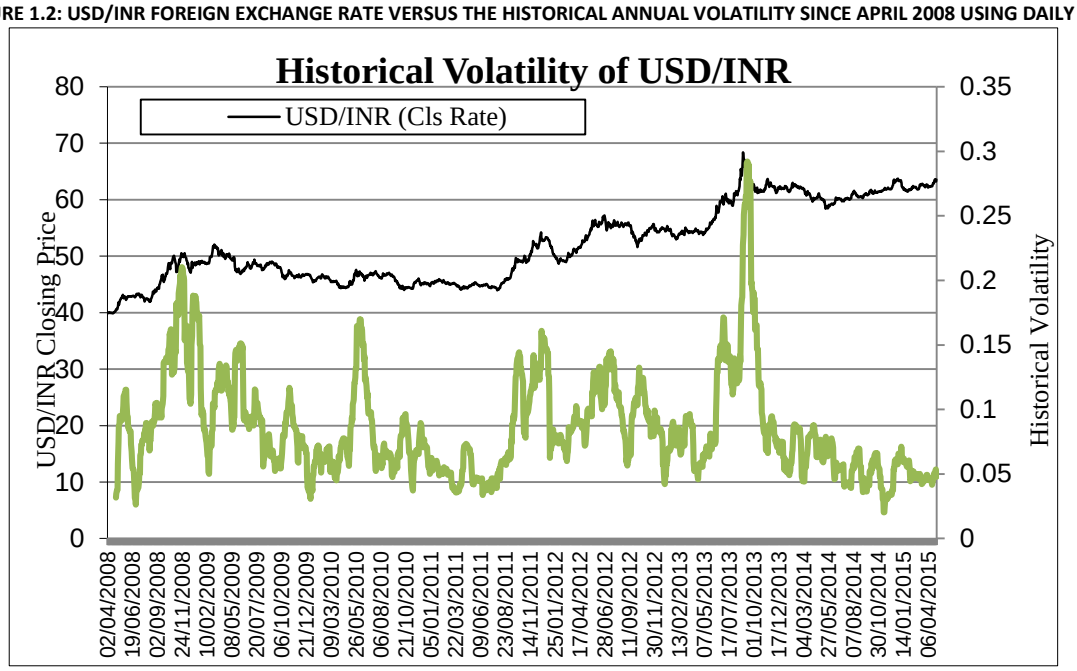


FIGURE 1.2: USD/INR FOREIGN EXCHANGE RATE VERSUS THE HISTORICAL ANNUAL VOLATILITY SINCE APRIL 2008 USING DAILY DATA




## THE VARIANCE RATE OF RETURN ($\sigma^2$)

Volatility is the amount of variability in the returns of the underlying asset. Risk reflects the chance that the actual return on an investment may be very different than the expected return. One way to measure risk is to calculate the variance (**$\sigma^2$**) and standard deviation **($\sigma$)** of the distribution of returns.

Currency risk is the probability that currency returns will be not as expected. The higher the probability, the bigger will be the risk. If a currency risk is large, then it should likely compensate to the foreign exchange trader with a greater return; otherwise, the trader would not at all presume the risk if the probability of a larger return was zero. The dispersions of foreign exchange rate returns can generally be characterized by the normal distribution curve.

Statistical methods like variance and standard deviation are used to quantify risk. Since the higher fluctuations in currency rate signifies a greater dispersion and lower fluctuations in currency rate signifies a smaller dispersion, it refers that currency rate of highly risky currency fluctuates more extensively than for less risky currency. Thus, variance (σ2) and standard deviation (σ) are absolute measure of dispersion, and, coefficient of variation is a relative measure of dispersion, i.e., risk. The degree of fluctuation in foreign exchange rate can be measured by considering the actual historical exchange rates. These values are used to measure the variance in exchange rate or the standard deviation of exchange rate. Variance is measured by computing the deviation between a particular currency exchange rate from its arithmetic mean rate. Variance is measured by the following equation:

$$\sigma^2 = \frac{\Sigma(X-\mu)^2}{N} \quad (1.1)$$

$$\sigma = \left[\sqrt{\frac{\Sigma(X-\mu)^2}{N}}\right] \quad (1.2)$$

Where,
$\sigma^2$ = Variance
σ = Standard Deviation
X = value of foreign exchange rate
μ = Arithmetic mean of foreign exchange rate
N = Number of observed foreign exchange rates

## ESTIMATION OF HISTORICAL VOLATILITY

Let daily foreign exchange rate movements are determined in a foreign exchange market. Then the natural log (ln) of the ratio (Rt) of a foreign exchange rate (S) from the current day (t) to the previous day (t-1) is worked out:

$$R_t = ln\left[\frac{S_t}{S_{t-1}}\right] \quad (1.3)$$

Then mean of daily fluctuations over a definite time period is computed and afterwards work out mean for them ($R_m$):

$$R_m = \frac{\Sigma R_t}{n} \quad (1.4)$$

The historical volatility (σ) is the "average variance" from the mean (the "standard deviation"), and is estimated as:

$$\sigma = \sqrt{\frac{\Sigma (R_t - R_m)^2}{n-1}} \quad (1.5)$$

To get annualize volatility we need to balance this approximation with an annualisation factor *m* (number of intervals per annum)

$$\sigma_{annual} = \sigma \sqrt{m} \quad (1.6)$$

For daily data m = 252; for weekly data m = 52; and for monthly data m = 12.

## CONCLUSION

Equation (1.5) is the standard deviation of the sampled data of foreign exchange rate $R_t$. Table 1.1 illustrates historical volatility estimation. It demonstrates daily exchange rates of USD/INR in sequence for 1 month (March 2015) i.e., 21 exchange trading days. The mean for the log relatives $R_m$ is 0.00061256 and the standard deviation is 0.002796457. Annualized historical volatility is 4.43923786%.

This paper investigates exchange–rate volatility for the Indian foreign exchange market with respect to the USD/INR. From the outcome of estimation for volatility of the exchange rates under consideration, it is apparent that the exchange rates between USD/INR are extremely volatile in nature. Volatility clustering is clearly evident in all the phases and among all the exchange rates.

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## ANNEXURE

## TABLE

**TABLE 1.1: HISTORICAL VOLATILITY FOR USD/INR DURING MARCH 2015**

| Date | USD/INR (Closing Exchange Rate) | $R_t$ | $R_t^2$ |
|---|---|---|---|
| 27/02/2015 | 61.7908 | | |
| 02/03/2015 | 61.8248 | 0.00055009 | 0.00000030 |
| 03/03/2015 | 61.8387 | 0.00022480 | 0.00000005 |
| 04/03/2015 | 61.8543 | 0.00025224 | 0.00000006 |
| 05/03/2015 | 62.2015 | 0.00559750 | 0.00003133 |
| 09/03/2015 | 62.616 | 0.00664172 | 0.00004411 |
| 10/03/2015 | 62.6983 | 0.00131350 | 0.00000173 |
| 11/03/2015 | 62.745 | 0.00074456 | 0.00000055 |
| 12/03/2015 | 62.5665 | -0.00284890 | 0.00000812 |
| 13/03/2015 | 62.6733 | 0.00170553 | 0.00000291 |
| 16/03/2015 | 62.8215 | 0.00236185 | 0.00000558 |
| 17/03/2015 | 62.692 | -0.00206352 | 0.00000426 |
| 18/03/2015 | 62.672 | -0.00031907 | 0.00000010 |
| 19/03/2015 | 62.4208 | -0.00401622 | 0.00001613 |
| 20/03/2015 | 62.4923 | 0.00114480 | 0.00000131 |
| 23/03/2015 | 62.2879 | -0.00327616 | 0.00001073 |
| 24/03/2015 | 62.1988 | -0.00143148 | 0.00000205 |
| 25/03/2015 | 62.3419 | 0.00229804 | 0.00000528 |
| 26/03/2015 | 62.6728 | 0.00529379 | 0.00002802 |
| 27/03/2015 | 62.6069 | -0.00105205 | 0.00000111 |
| 30/03/2015 | 62.6305 | 0.00037688 | 0.00000014 |
| 31/03/2015 | 62.5908 | -0.00063408 | 0.00000040 |
| | Mean | 0.00061256 | 0.00000782 |
| | Std Dev | 0.002796457 | |
| | Annual Volatility σ | 4.43923786 | |

# PUBLIC DISTRIBUTION SYSTEM IN WEST BENGAL: A BRIEF STUDY

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**ABSTRACT**

*West Bengal economy is fundamentally an agrarian economy. Majority of the households of the state depend on agriculture as the primary source of their livelihood, which is being severely affected by uncertain rainfall and other natural calamities almost in every year. As a result, a large group of people are living below poverty line. Public Distribution has a greater significance on the economy of the poor households because it provides food (rice) for the poor and marginalized community at lower price than the market. Thus, the system plays a safety net for the poor people which protect them from competitive market economy. In order to examine verify the real picture of this (PDS) system we have selected eight slum areas of West Bengal and their corresponding FPSs for our survey to collect primary data. We have collected secondary data from FCI. After comparing the data, we have identified some loopholes in the PDS system. We have suggested some policy measures to overcome those loopholes.*

**KEYWORDS**
fair price shop, minimum support price, public distribution system.

**JEL CLASSIFICATIONS**
D63, G18, H89.

## 1. INTRODUCTION

Public Distribution System (PDS) in India is a food security system which was established by the Government of India under Ministry of Consumer Affairs, Food, and Public Distribution. The system is managed jointly by both central and state governments in India. It distributes subsidised food and non-food items to India's poor. Major commodities distributed include staple food grains, such as wheat, rice etc., and sugar and kerosene, through a network of Public distribution shops, also known as Ration shops established in several states across the country.

Food Corporation of India (F.C.I) is a Government-owned corporation. It procures & maintains the Public Distribution System in terms of both coverage and public expenditure, it is considered to be the most important food security network. However, the food grains supplied by the ration shops are not enough to meet the consumption needs of the poor or are of inferior quality. The average level of consumption of PDS grains in India is only 1 kg per person / month. However after deprived performance of the scheme, the system was revamped and re-launched as Targeted Public Distribution System (TPDS). Under TPDS scheme, the Below Poverty Line (BPL) families would get basic commodities at a subsidized rate whereas the Above Poverty Line (APL) families would get them only at their economic cost. In order to curb down the rise in food subsidy bill borne by the Government as well as to ensure a more pointed targeting of the poor and needy, something which the earlier scheme had failed to do, the new scheme has been introduced. The TPDS is costly and gives rise to much corruption in the process of identifying the real poor from those who are less needy.

Most of the modern governments intervene in the functioning of market mechanism through public policy. There are two broad approaches available to correct the imperfections in the market dynamics viz. (i) changes in the socio-economic structure and (ii) positive intervention of the state through public policy. The Public Distribution System (PDS) belongs to the latter category.

In September 2013, Parliament enacted the National Food Security Act, 2013. The Act relies largely on the existing TPDS to deliver food grains as legal entitlements to poor households. This marks a shift by making the right to food a justifiable right. In order to understand the implications of this Act, the note maps the food supply chain from the farmer to the beneficiary, identifies challenges to implementation of TPDS, and discusses alternatives to reform TPDS. It also details state-wise variations in the implementation of TPDS and discusses changes to the existing system by the Act.

A major issue involved in the functioning of the PDS is whether it should have a universal coverage, as it did prior to 1997, or should it be specifically targeted at the disadvantaged sections of the society. The major reason why the issue crops up is the way the "disadvantaged" section is currently defined. Food subsidy is available only to people having a monthly income below the income level constituting the poverty line.

The main purpose of PDS is to make essential commodities available on a regular basis to the vulnerable sections at a price lower than the open market price. Through this system it is attempted to help the poor and the weaker sections affected by the spiralling inflations and wide spread socio-economic inequalities with the offshoots of the market imperfections.

## 2. OBJECTIVES OF THE STUDY

Public distribution system has a great importance in view of the wide spread poverty of India. In this paper, an attempt has been made to illuminate the functioning of such system and also to reveal the loopholes of the existing system in order to suggest some remedial measures for more effective implementation of the system. More precisely and specifically we can summarize the basic objectives of the project as:

5. To depict the roles and responsibilities of the organizations and stakeholders involved in different processes of the Public Distribution System.
6. To explore the status of functioning as well as document the community perception on underlying constraints of the system.
7. To come out with suggestions for policy and practice level changes in the Public Distribution System.

## 3. DATA BASE AND METHODOLOGY

Although our analysis is mainly based on primary data collected through field survey conducted in eight slum areas situated in different parts of West Bengal, we have also used, initially, some all-India level secondary data to develop an overall understanding regarding the performance of PDS in the country as a whole. We have also exploited secondary data collected from FCI to develop an overview of the urban public distribution system in West Bengal. Data from secondary sources provided important information that helped us in designing the study. Further the studies on the functioning of PDS, the analysis of food policy, government

documents and other relevant studies helped us in understanding the broader scenario of food supply and food security. The sources of secondary literature are data from the website of the department of Food and Civil Supply, NSSO, data from the website of the Ministry of Civil Supply and Food, Government of India and FCI. The study collected both qualitative and quantitative data during the process of data collection. In order to understand the actual situation, we collected perception of the cardholders and the shopkeepers. We also collected views of people involved into the management of the PDS at district level.

The benefit from the public distribution system is greatly realized in backward rural areas and other slum areas of the state. On the basis of backwardness, communication accessibility and magnitude of poverty, some specific slum areas and their corresponding Fair Price Shops (F.P.S) of different districts have been covered under the study. For the purpose of field survey, we have initially chosen eight slum areas. Details of those slum areas under study are provided in Table 1.

We have made the complete household listing for each of these areas and then selected randomly 5 households from each slum area. Thus, we have made a sample of 40 households. In order to collect some relevant important quantitative and qualitative information we then constructed two well-structured questionnaires, one for the card holders (beneficiaries) and for the shopkeepers (retailers). We conducted a pilot survey for the pre-testing of these two sets of questionnaires and finalize it making some little modifications for the purpose of maintaining the accuracy of our survey.

**TABLE -1: SLUM AREA UNDER SURVEY**

| SL NO. | SLUM AREA | LOCATION | DISTRICT |
|---|---|---|---|
| 1. | SWAMIJI NAGAR | BAGUIATI | NORTH 24 PARGANAS |
| 2. | ADARSHA PALLI | RISHRA | HOOGLY |
| 3. | TESHATTIR LANE | KESAB SEN STREET | KOLKATA |
| 4. | TIKTIKIA PARA | MECHHUA | KOLKATA |
| 5. | NARASINGHA LANE | AMHERST STREET | KOLKATA |
| 6. | KUNDU BAGAN | BAGHAJATIN ROAD | NORTH 24 PARGANAS |
| 7. | PANCHANAN TALA | DHAKURIA | KOLKATA(SOUTH) |
| 8. | KALI KRISHNA BABUR BAGAN | SINTHIR MORE | NORTH 24 PARGANAS |

As mentioned earlier this study is based on primary data collected from eight slum areas chosen from different parts of West Bengal. Our field survey was conducted in two phases. In the first phase of the field survey some retailed ration shops are sampled. In this first phase our sample size is eight. The second phase of the sample survey has been conducted on the beneficiaries for whom we have made a complete listing of each slum area chosen. Now from each slum area we have randomly selected five sample households. Thus we get a sample of forty households. Therefore, sample size in the second phase is forty.

## 4. AN OVERVIEW OF URBAN PUBLIC DISTRIBUTION SYSTEM IN WEST BENGAL

The director of rationing functions as the administrative head of the urban PDS. The entire UPDS area is divided into six sub controls viz.- Kolkata(south), Kolkata(north), Howrah, Hooghly, Barrack pore and Asansol. The sub controls are sub divided into 55 sub areas. Each sub control is under the charge of one Jt. director of rationing while each sub area is under the charge of one rationing officer. In the Directorate Head Quarters, there are three other JT. Directors of rationing for Administration, Establishment and Commercial matters. In addition, there are Jt. Directors / Assistant Directors of rationing in the sub-controls and in the Head Quarters with inspecting and clerical staffs.

Its function ranges from issue/ suspension / cancellation of ration cards /licences for the fair price shops / wholesalers for supplying of ration commodities like rice, wheat, sugar and 16 other commodities to the valid ration card holders and permit holders (sugar is for BPL and AAY card holders only) of various categories viz. – APL, BPL, AAY and Annapurna at government approved price.

The public distribution in UPDS areas is effected through ration shops called FAIR PRICE SHOP (FPS). The FPS under the sub controls like Kolkata south, Kolkata north and Howrah are authorised to make direct lifting of food grains from FCI's go-down. In other sub controls i.e. Barrack pore, Hooghly and Asansol, stock of food grains is lifted by wholesalers who, in their turn, distribute the food grains among FPS tagged with them. The UPDS run through the network of 2284 FPS and 25 wholesalers.

## 5. FINDINGS OF THE EMPIRICAL STUDY ON SLUM AREAS UNDER SURVEY

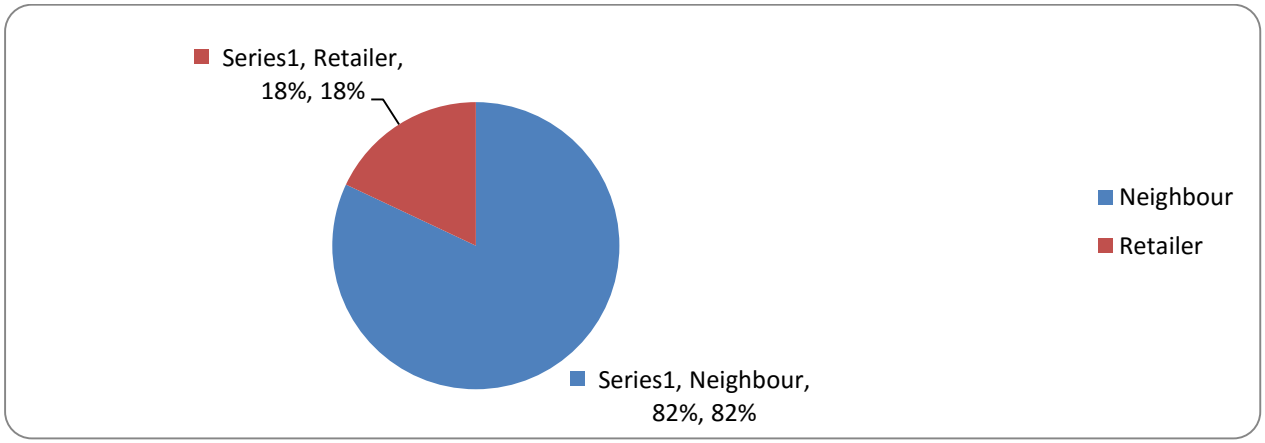
### 5.1. AVAILABILITY OF BENEFICIARY CARDS

Under the system the households are having specified ration cards in order to avail the benefits of the programme. Out of the 40 households surveyed from eight slum areas of West Bengal, all the beneficiaries have ration cards to get the benefits of PDS. While 57.5 % of beneficiaries are under the APL category possessing the APL cards, it is 42.5% of the total households who are belonging to the BPL category enjoying benefits of different schemes of the system. It has been observed that in Tiktikiapara, Kundubagan, Adarshapalli, Teshattir lane most of the people have APL cards but they are actually belonging to the BPL category. They have applied for BPL cards but they have not got yet.

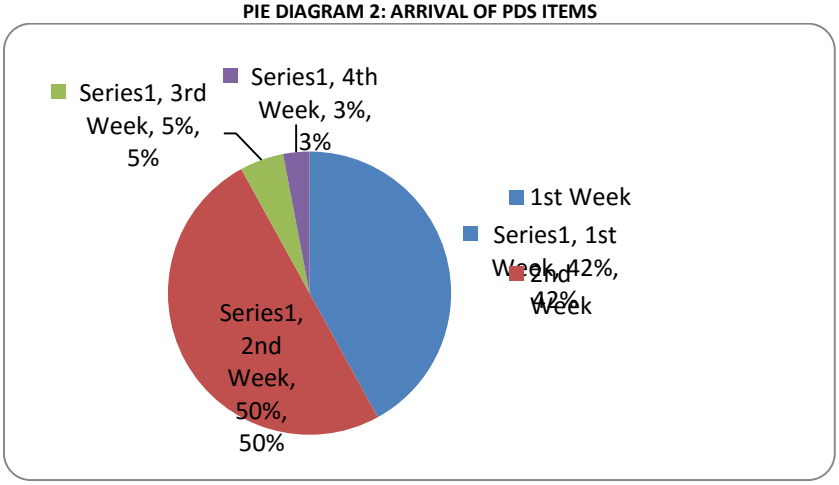
### 5.2. SOURCE OF INFORMATION, AVAILABILITY AND REGULARITY OF PDS ITEMS

Information with the community on availability of PDS items and punctuality in the opening of distribution centres play vital role for the beneficiaries to get the items in time. Delaying of availability of the items in the FPS becomes a problem for the people. They do not have sufficient amount of money to purchase PDS items in the end of the month. Though, there is a clear-cut provision in the PDS manual to inform the beneficiaries much before the distribution of PDS items, but in practice, it is not followed properly. It seems to be neither the retailer nor the Block Officer is interested to inform the beneficiaries regarding to the distribution of essential items. As a result, a part of the beneficiaries does not get any information on the distribution of essential items. The beneficiaries get information about the distribution of items from the informal sources such as neighbours or any others.

**PIE DIAGRAM 1: INFORMATION SOURCES OF THE BENEFICIARIES REGARDING THE ARRIVAL PF PDS ITEMS**

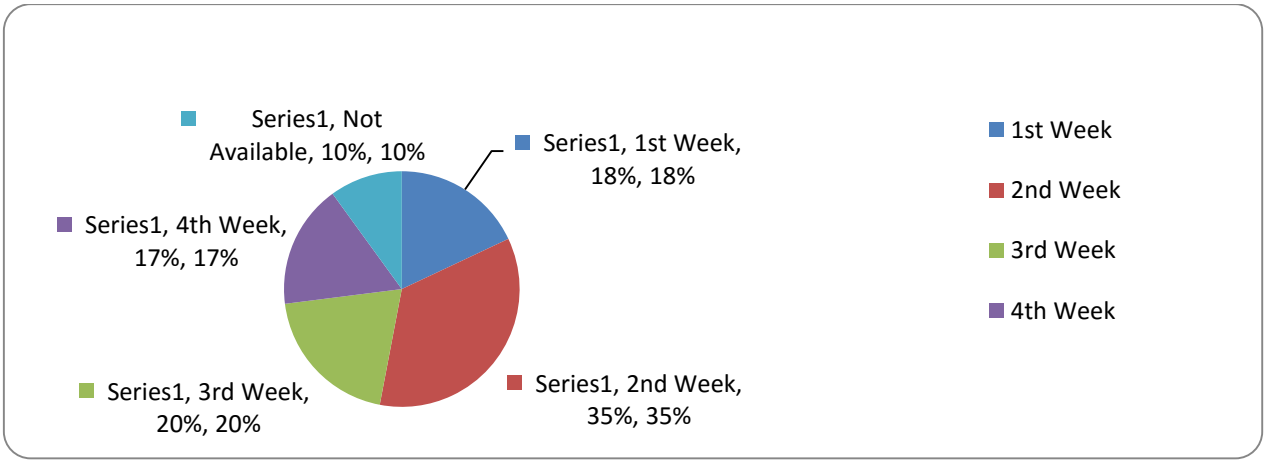


**PIE DIAGRAM 2: ARRIVAL OF PDS ITEMS**



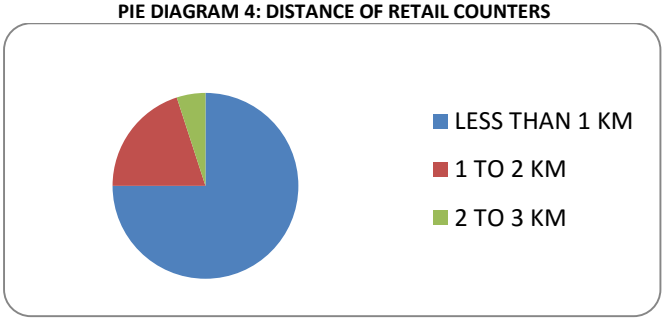

We observed in the above pie diagram-1 that out of the total sample beneficiaries 82% people get information from their neighbours about the arrival of PDS items and rest 18% people get information from the retailer. Pie diagram-2 shows that 50% FPS get PDS items in the second week of the month, 42% FPS get PDS items in the first week of the month, 5%FPS get PDS items in the3rd week of the month and finally 3% FPS get PDS items in the last week of the months.

**PIE DIAGRAM 3: AVAILABILITY OF PDS ITEMS**



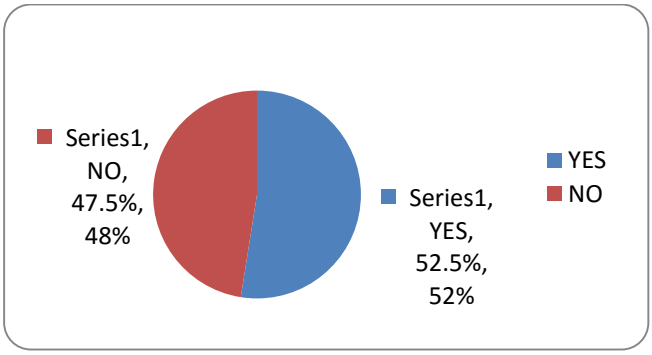

From Pie diagram-3 it has been revealed that 35% of beneficiaries get PDS items in the second week of the month, 20% get in the third week, 17 % get in the fourth week, 10% get in the first week and 18% of the beneficiaries do not get PDS items at all.

**PIE DIAGRAM 4: DISTANCE OF RETAIL COUNTERS**



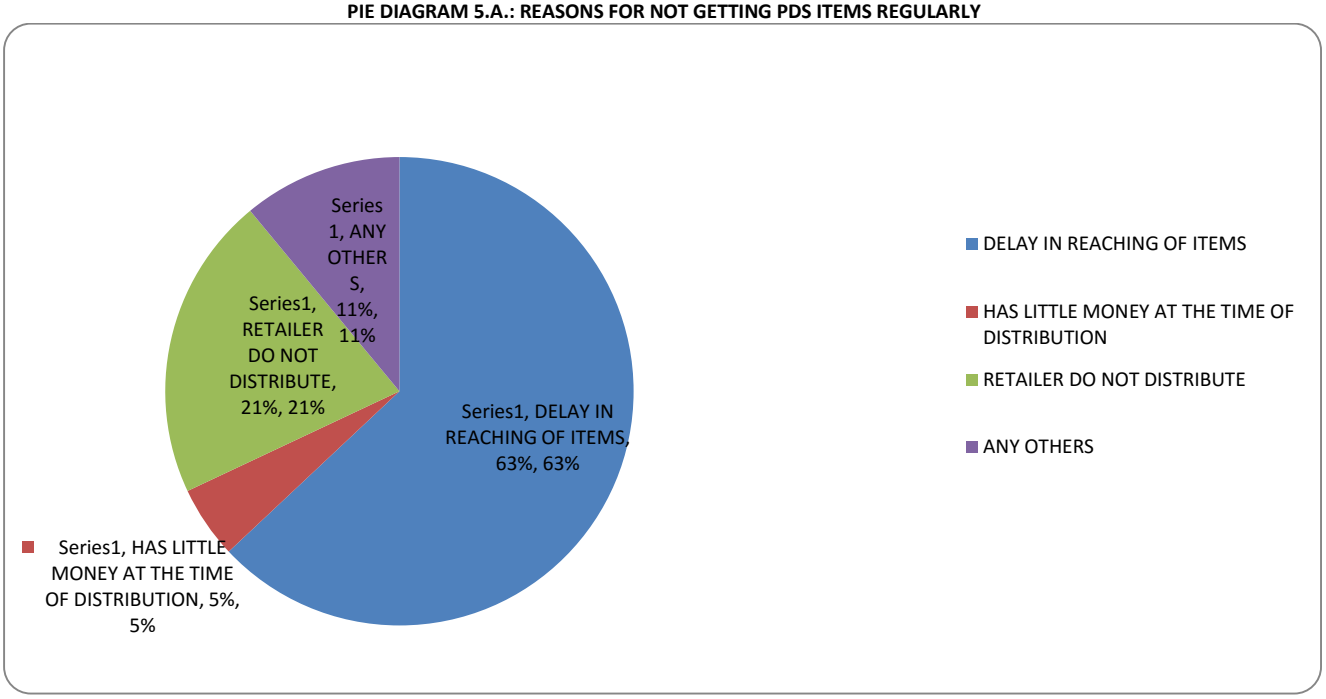

In the above pie diagram, we observe that 75% of the retail counter is more than 3 km, 20% of them are more than 1 to 2 km and finally 5% of them are 2 to 3 km from the residence of the beneficiaries.

**PIE DIAGRAM 5: REGULARITY IN THE SUPPLY OF PDS ITEMS**



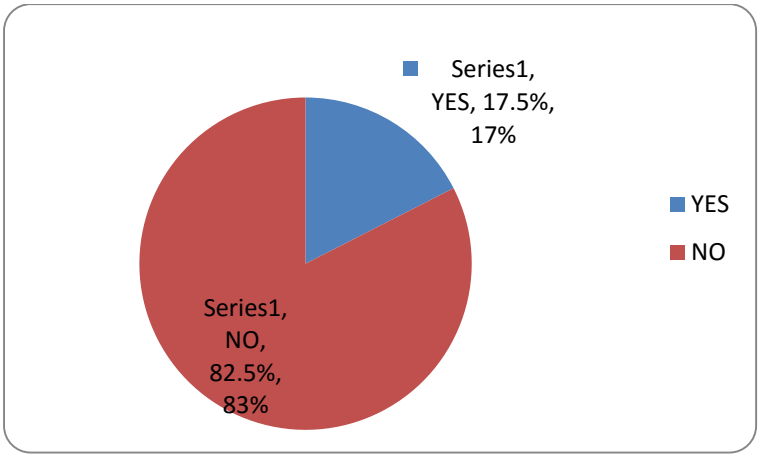

From the above pie diagram, we get that 52% of the beneficiaries are getting regular PDS items from their respective retail counter and rest 48% are getting PDS items from the retail counter quite irregularly.

**PIE DIAGRAM 5.A.: REASONS FOR NOT GETTING PDS ITEMS REGULARLY**



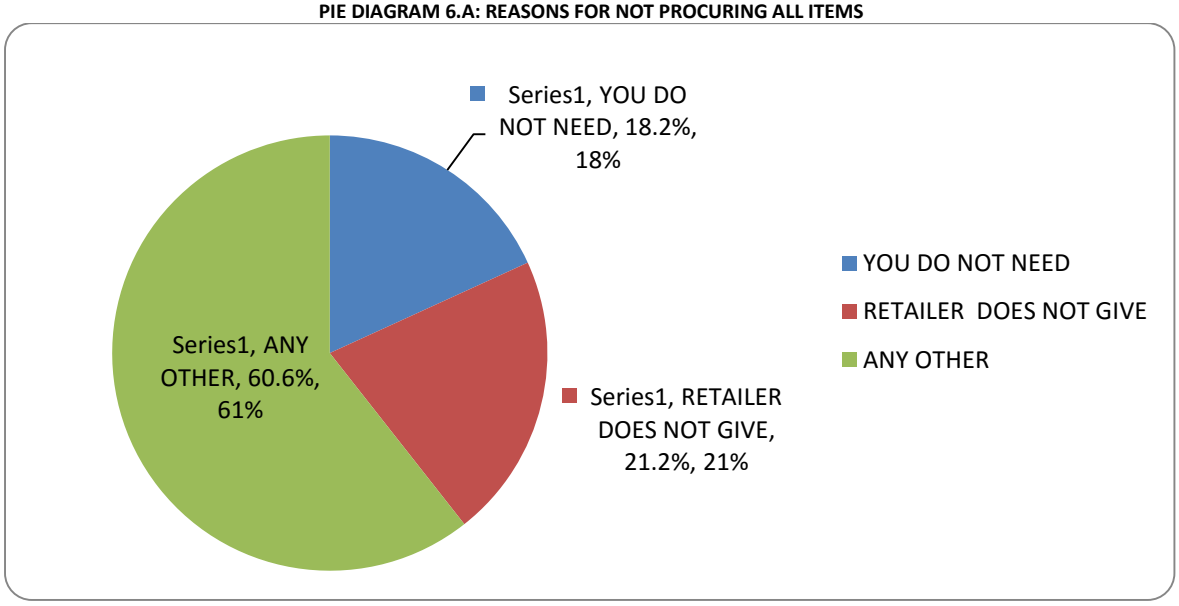

The above pie diagram has been revealed that 63% of the beneficiaries are not getting PDS items regularly because of delay in reaching of the items, 21% of the beneficiaries are not getting because retailer does not distribute, 5% are not getting because they have little money at the time of distribution and 11% are not getting the items due to some other reasons.

**PIE DIAGRAM 6: PROCUREMENT OF ALL PDS ITEMS**




We observe from the above pie diagram that 17% of beneficiaries are procuring all the PDS items and 83% are not procuring all the PDS items from FPS.

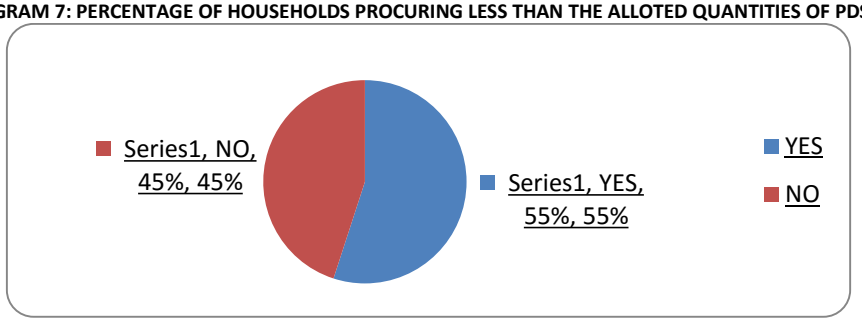
**PIE DIAGRAM 6.A: REASONS FOR NOT PROCURING ALL ITEMS**



Now the pie diagram-6. A is showing that the reasons for not procuring PDS items are as follows:

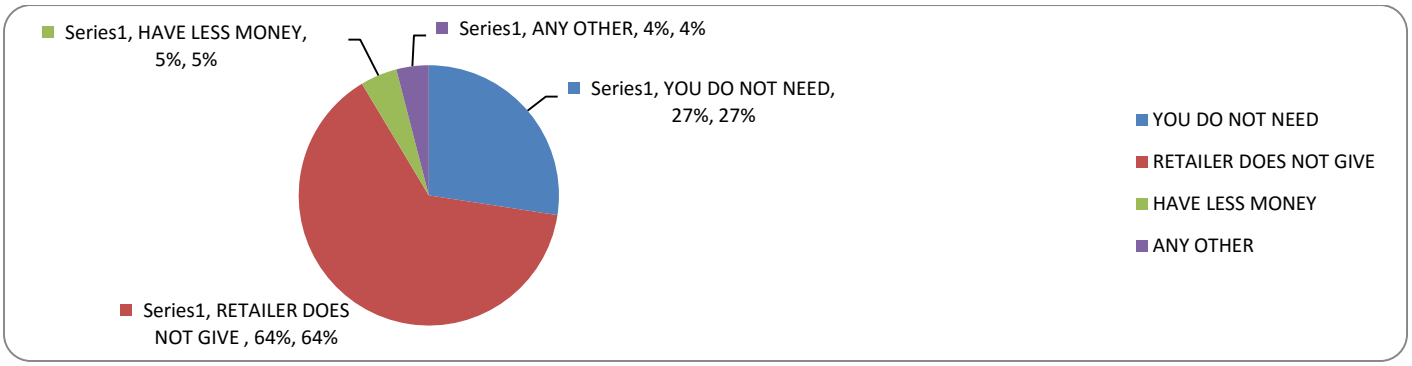
i. 21% of the retailer does not give the PDS items.
ii. 18% of the beneficiaries don't need the PDS items
iii. 61% of them have some other reason such as bad quality of the items given by FPS and market values are identical with the PDS value.

**PIE DIAGRAM 7: PERCENTAGE OF HOUSEHOLDS PROCURING LESS THAN THE ALLOTED QUANTITIES OF PDS ITEMS**




In the above pie diagram, we get that 55% of the beneficiaries are procuring less quantity of PDS items from FPS and 45% of them are not procuring less quantity of PDS items.

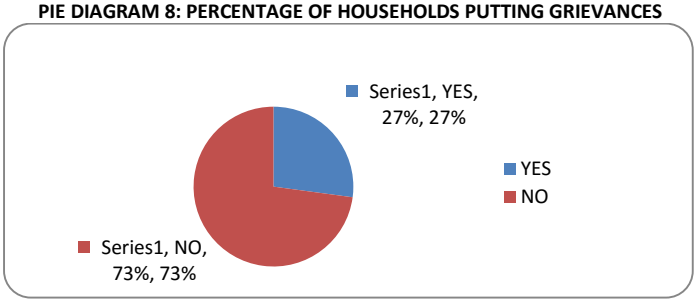
**PIE DIAGRAM 7A: REASONS FOR PROCURING LESS AMOUNT**



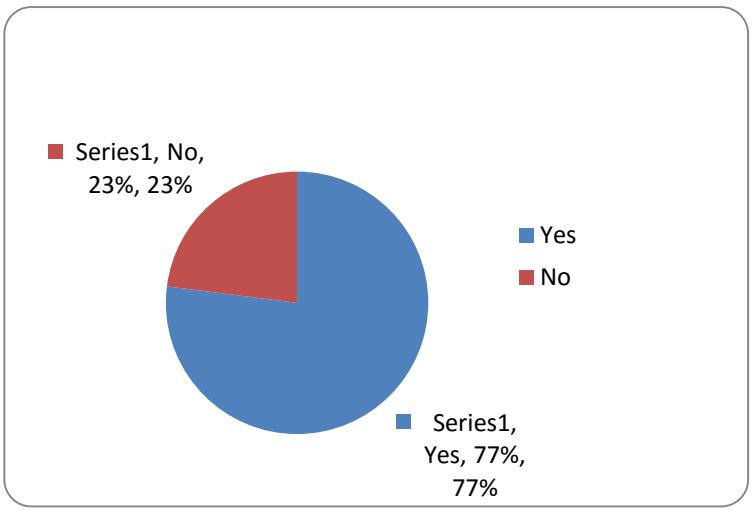

The reason of procuring less quantity of PDS items are shown in the above pie diagram. Now 64% of the retailer does not give the PDS items to the beneficiaries, 27% of them don't need the items, 4% of them have less money during the time of purchasing the items and 5% of them have some other reason.

It is observed from pie diagram-8 that 73% of the beneficiaries are not putting any grievance on the PDS items bought from the FPS and rest 27% are putting their grievance on the items. Moreover 100% of the beneficiaries are putting their grievance through the retailers. It is also found that 64% of the complaints have no result and 36% of the complaints always go against the beneficiaries. Further interrogation has revealed that 65% of the beneficiaries have desire of including some more items in PDS list. Moreover, while 57% of the sampled households have opined that the quality of PDS items is very poor, 38% of them have commented average quality. We observe from the pie diagram-9 that 77% of the FPS maintains their regularity. Further, as revealed from pie diagram 9.A, 94% FPS maintain fixed time to open the shop.

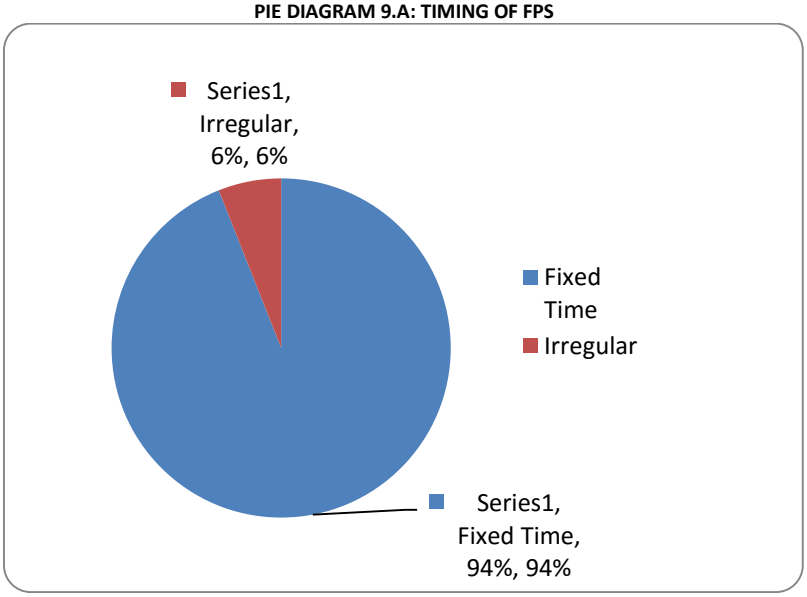
**PIE DIAGRAM 8: PERCENTAGE OF HOUSEHOLDS PUTTING GRIEVANCES**




**PIE DIAGRAM 9: REGULARITY OF FPS**



PIE DIAGRAM 9.A: TIMING OF FPS




However, in spite of all its loopholes, 60% of the beneficiaries think that PDS items are useful and essential.

## 6. FINDINGS OF THE EMPIRICAL STUDY ON FPS

### 6.1 RESPONDENTS, WAREHOUSE AND LOCATION OF THE FPS

From our survey in different FPS, we have got the information about the specific warehouse and its location from where the mentioned FPS gets their PDS items. The respondents Haran Chandra Paul, SanjoyDey, Tapan Kumar Dey, SujayKar, DebdasKundu, Gobindo Saha, Saroj Kumar Deb and JoydipMondal have helped us to get such informations.

TABLE - 3

| SL.NO. | FPS | RESPONDENT | WAREHOUSE | LOCATION |
|---|---|---|---|---|
| 1. | JAGATHPUR | HARAN CHANDRA PAUL | BIKASH BHABAN | DF BLOCK, SALT LAKE, KOL-700091 |
| 2. | RISHRA | SANJOY DEY | RISHRA | C/O PRESIDENCY JUTE MILLS,P.O RISHRA DIST. HOOGLY |
| 3. | KESHAB SEN STREET | TAPAN KUMAR DEY | COSSIPORE | |
| 4. | COLEGE STREET | SUJOY KAR | COSSIPORE | |
| 5. | AMHERST STREET | DEBDAS KUNDU | COSSIPORE | |
| 6. | GOPAL LAL TAGORE ROAD | GOBINDA SAHA | BONHOOGLY | INDUSTRIES CORP. LTD, INDUSTRIAL ESTATE, BONHOOGLY,KOL-700035 |
| 7. | TOLLYGUNGE | SARAJ KUMAR DEB | LAKE DEPOT | C/O GOVT. FOOD DEPOT, 76 DEODAR RAHMAN ROAD,TOLLYGUNGE,KOL-700033 |
| 8. | GOPAL CHANDRA BOSE ROAD | JOYDIP MONDAL | COSSIPORE | |

### 6.2 POPULATION OF VARIOUS PDS SCHEMES

As observed from Table-4, majority of the beneficiaries (83.61%) are getting the facilities of APL schemes from the sampled ration shops. Especially, under the college street ration shop, all the sampled beneficiaries are belonging to the APL category i.e. there are not a single cardholder of the others schemes (BPL, AAY, AY).Though the maximum cardholders are of APL schemes under the Keshab Sen Street ration shop, but there are 2.24% beneficiaries are BPL, 0.83% are AAY and 0.36% are the AY cardholders also. Under Jagatpur ration shop 0.02% beneficiaries are the AAY cardholders, 1.63% are the BPL cardholders and the rest of the beneficiaries are of APL schemes. Except Keshab Sen Street ration shop there are not any AY cardholders.

TABLE - 4

| SL NO: | RATION SHOP | APL | BPL | AAY | AY | TOTAL |
|---|---|---|---|---|---|---|
| 1. | JAGATPUR | 4712 | 78 | 1 | 0 | 4791 |
| | | 98.35% | 1.63% | 0.02% | 0 | 100% |
| 2. | RISHRA | 2066 | 586 | 0 | 0 | 2652 |
| | | 77.90% | 22.10% | 0 | 0 | 100% |
| 3. | KESHAB SEN STREET | 7488 | 174 | 64 | 28 | 7754 |
| | | 96.57% | 2.24% | 0.83% | 0.36% | 100% |
| 4. | COLLEGE STREET | 2400 | 0 | 0 | 0 | 2400 |
| | | 100% | 0 | 0 | 0 | 100% |
| 5. | AMHURST STREET | 5233 | 551 | 0 | 0 | 5784 |
| | | 90.47% | 9.53% | 0 | 0 | 100% |
| 6. | GOPAL LAL TAGORE ROAD | 500 | 70 | 0 | 0 | 570 |
| | | 87.72% | 12.23% | 0 | 0 | 100% |
| 7. | TOLLYGUNGE | 7839 | 4507 | 0 | 0 | 12346 |
| | | 63.50% | 36.51% | 0 | 0 | 100% |
| 8. | GOPAL CHANDRA BOSE ROAD | 2507 | 360 | 0 | 0 | 2867 |
| | | 87.44% | 12.56% | 0 | 0 | 100% |
| 9. | TOTAL | 32745 | 6326 | 65 | 28 | 39164 |
| | | 83.61% | 16.15% | 0.17% | 0.07% | 100% |

### 6.3 PRICE CHART

From the above table after surveying eight various FPSs we get a price chart. Here, by analysing the prices we observed that prices of all the items are almost same in every zones but the quantity which supplied from go-downs to FPS differ.

TABLE - 5

| ITEMS | PRICE IN FPS | | | | MARKET PRICE VARIES FROM (Rs.) |
|---|---|---|---|---|---|
| | APL PRICE (Rs.) | BPL PRICE (Rs.) | AAY PRICE (Rs.) | AY PRICE (Rs.) | |
| **RICE** | 9.00 | 2.00 | 2.00 | 10Kg. rice free of cost per month | 24.00-36.00 |
| **WHEAT** | 6.75 | 4.65 | 2.00 | | 12.00-25.00 |
| **SUGAR** | 40 | 13.50 | 13.50 | | 35.00-50.00 |
| **KEROSINE OIL** | 15.50 | | | | 35.00-50.00 |

Source: Field Survey

Here, we have compared how much quantity is supplied by the FPS to the beneficiaries in each surveyed area. In most of the areas while, for the APL category, the rice is allotted for adult is 1 kg. it is 500 gm each for children. However, in Tollygunge and College Street the adult gets 500 gm. and child gets 250 gm. Only in Keshab Sen Street it is not applicable for both (Adult & Child) because they don't provide rice to the APL cardholders.

As regards the BPL category, 1 kg rice is allotted for adult beneficiaries and 500 gm. for child in all the area under survey excepting Gopal Chandra Bose Road where the rice is allotted for adult is 500 gm. and 250 gm. for child.

Again in most of the areas there is not a single AAY cardholder. Although in few surveyed areas rice is allotted for AAY cardholders. Among these the maximum rice is allotted in Tollygunge where the adults get 5kg. and child gets the half of this and minimum is in Keshab Sen Street & Jagatpur where the adult gets 4 kg. and child gets 2kg. For AY categories the rice is allotted 10kg.Per month free of cost.

Regarding the allotment of wheat, maximum amount of wheat allotted for APL adult is 1 kg. and for child 500 gm in Jagatpur, Rishra, Amherst street & Tollygunge. The minimum amount is allotted in College Street area where adult gets 500 gm. and child gets half of this. For adult APL cardholders the allotment is 800 gm. in Keshab Sen Street, 750 gm. in Gopal Chandra Bose Road and 700 gm. in Gopal Lal Tagore Road and the allotment is half for the child in every area. Similarly, under the BPL scheme, for adult the maximum amount of wheat is allotted in Gopal Lal Tagore Road i.e. 1 kg., the allotment is 750 gm. in Keshab Sen Street, College Street & Amherst Street and 700 gm, 500 gm. in Jagatpur, Tollygunge respectively and the allotment is half for the child. In Rishra the respondents haven't given any proper information because the amount varies time to time. Lastly under AAY scheme, for the adult the maximum amount of wheat allotted in Tollygunge i.e. 5 kg. as well as minimum allotment is 750 gm. in Keshab Sen Street and Jagatpur. In few FPS there are not any AAY cardholders (Rishra, College Street, Amherst Street, Gopal Lal Tagore Road and Gopal Chandra Bose Road).

In case of sugar under APL scheme the maximum amount of sugar allotted in Amherst Street i.e.500 gm for adult and minimum allotment is 100gm in Tollygunge. The allotment is 125 gm. in Gopal Lal Tagore Road and 200 gm. in College Street. In Rishra the quantity of sugar varies time to time and last but not the least in Keshab Sen Street and Jagatpur FPS, they don't provide sugar to APL cardholders.

For adult BPL cardholders the highest allotted amount is 500 gm. in Keshab Sen Street & Amherst Street. Besides the lowest allotment of sugar is 100 gm. in Jagatpur & Tollygunge. In College Street and Gopal Lal Tagore Road the allotment is 200 gm. and 125 gm. respectively. In Rishra and Gopal Chandra Bose road the respondents haven't given any proper information because the amount varies time to time.

The adult AAY cardholders get maximum amount of sugar in Keshab Sen Street which is 500 gm. & the minimum allotment is 100 gm. in Tollygunge. In Jagatpur the allotment of sugar for AAY cardholders is 150 gm. The FPSs don't provide sugar to AAY cardholders in Rishra, College Street, Amherst Street, Gopal Lal Tagore Road and Gopal Chandra Bose Road.

## 7. PROBLEMS FACED BY THE BENEFICIARIES

Public distribution system as a biggest welfare programme of the government has created a unique identity in the sphere of food security to the poor and marginalized. Through a wide range of networking, PDS is trying to serve the people at their doorsteps in terms of reaching the essential items at subsidized prices on regular basis. But, there are lot of constraints and loopholes at different levels of the scheme to achieve the desired objectives.

At the time of analysing the data we collected from primary and secondary sources, we have found some complications which are faced by the beneficiaries that can be pointed out in such ways:

1. The rice supplied by the FPS is very poor in quality.
2. Wheat is so dusty that it can't be eaten.
3. FPS supplies less quantity of items.
4. Most of the time the retailers cheat the beneficiaries by giving less quantity of kerosene oil.
5. Due to poor quality of rice it takes too much time to cook, so fuel expenses are higher.
6. There is worm in the wheat and rice.
7. Most of the time beneficiaries get PDS items monthly rather than weekly.
8. Sugar is very poor in quality.
9. In some areas a huge number of beneficiaries who are APL card holders at present but they actually belong to BPL categories in reality haven't yet got their BPL cards though they applied for it for a long time.
10. Some of the beneficiaries have informed us that they do not get the items regularly.
11. Most of the beneficiaries do not procure all the items mainly due to very poor quality.
12. Beneficiaries are procuring less quantity of items, the main reason behind it is the retailer does not provide.
13. Beneficiaries have put grievance on PDS but they haven't got any feedback.
14. The items supplied to the beneficiaries are inadequate for their daily needs, so they have to purchase it from market at higher market price; as a result, they have to face extreme expenses to fulfil their needs.
15. Beneficiaries do not have proper idea about the entitlements i.e. they don't know the actual amount of items entitled for them.

We have found that Public Distribution System is useful in the view of the beneficiaries but when it comes to judge the working of PDS most of them said it is poor in their locality.

## 8. SUGGESTIVE MEASURES FOR IMPROVEMENT OF PDS

The policy makers are solely responsible for the formulation of plans and programmes at central level. However, while formulating the plans and programmes, they are not able to realize the basic reality at the grass root level. This happens out of their lack of exposure to the needs of the community. In the case of PDS, the above statement has lot of significance. There is a wide gap between the policy and practices at each level of the system. In this situation, the beneficiary has no other way out, rather to compromise with his entitlements.

The following are the suggestions of the beneficiaries to bring improvement in the situations of PDS through the community interface programmes as a part of this study.

**1. WEIGHT AND MEASURES:** In the public distribution system, proper weight and measures is very much important as a beneficiary is directly affected by the weight and measures of a retailer. During the community interface, it has observed a huge dissatisfaction of the beneficiaries over the issue of underweight of items at the time of the distribution. The beneficiaries have blamed the retailers for misleading them in weight and measures by 1 to 2kg of rice and 150 ml to 200 ml kerosene per beneficiary in every transaction. To get rid of this problem, they have suggested the use of electronic weight machine instead of manual weighting. Besides, they also have recommended supply of 25 kg of rice in good quality packets, which can be easily detected if any damaging is made. They also advocated supply for all other items in packets as to their monthly entitlements.

**2. FIXED DATE AND TIME FOR SUPPLY OF PDS ITEMS:** Normally all plan and programmes are attached with a time period for its greater impact over the community. While evaluating a programme, time period plays as a key indicator for its grand success. In case of PDS, the role of timeline in respect of the distribution of essential items to the beneficiaries bears significance implications than other elements.

But, there is gross destruction of timing at distribution of items to the beneficiaries. Though the government has put the guidelines for the retailers to keep their shops open from 8 AM to 12 Noon and from 4 PM to 8 PM in all required working days throughout the month, but in the practice it remains open for three to four hours a day. In this situation, lots of poor beneficiaries have deprived of the benefits out of lack of information, shortage of money at the time of distribution and delay in reaching of items. In this respect, the community suggests the fixed time period for distribution of essential items at a time. So that there is no need to communicate the beneficiaries regarding the distribution of items and the time of beneficiaries can be saved.

**3. ELIMINATION OF MIDDLEMAN SYSTEM:** In the context of PDS, it is the storage agents and sub-wholesalers who play the role of third party for better result in the system. But it has observed through the community interface programmes that most of the irregularities in the supply of PDS items happen at the level of storage agents and sub wholesalers. Some key informants and retailers have blamed the storage agents and sub wholesalers for interfering in the quality and quantity of PDS items at their levels. As a result, the incidence of the interfering is ultimately shifted to poor beneficiaries. Under these circumstances, the stakeholders have suggested for complete elimination of storage agent and sub wholesaler structure in PDS and have encouraged for the retailers to lift the essential items directly from the go-downs and distribute to the beneficiaries.

**4. AWARENESS PROGRAMMES ON BENEFICIARY ENTITLEMENTS:** The partial failure of this programme is because of lack of awareness of the beneficiaries of their entitlement of PDS items. The government is spending a lot of money in the form of subsidy in providing essential items to the poor families. But a substantial part of this subsidy is going in vain because of lack of awareness of the beneficiaries. Thus, the awareness of the beneficiaries is highly necessary to get cent percent results of PDS. The beneficiaries have suggested that frequent awareness programmes on PDS be organized in different forms i.e. posters, leaflets, community radio programmes, folk stages, group discussions etc. to strengthen their knowledge base and fight for their rights.

**5. STRENGTHENING GRIEVANCE REDRESSAL MECHANISM:** From the rational point of view, a welfare programme should have sufficient space for the public grievances. There is no such policy and planning under a programme which are 100 percent target hitting without loopholes. In case of PDS, the role of public grievance has tremendous implications over its performance. The grievance redressal mechanism under PDS suffers serious setbacks as observed in the community interface. As per the government provision, it is the supply inspector and PDS committee, which look into the cases of the beneficiaries on spot verification with early decision. But this principle fails to address the grievances of the beneficiaries out of several factors, which are discussed earlier. The beneficiaries in this respect have recommended that a youth committee at the retailers' level as mentioned earlier be given the legal powers to hear the grievances of the beneficiaries and to intimate the authority for proper action.

**6. ADDITION OF SOME EXTRA PDS ITEMS:** The government has made many efforts to procure food grains at remunerative Minimum Support Price (MSP) such as rice, wheat and sugar. But it has completely neglected the other daily needs of the beneficiaries. So, beneficiaries have recommended providing some more items such as Mustard oil, spices, pulses, potatoes, onions, salt, soap, detergent, coconut oil and exercise book enlisted to PDS.

## 9. CONCLUSION

From the above analysis though we find lot of bottlenecks on the way to gain the desired objectives of the system, even so, it has great relevance in the field of food security to the poor and marginalized. The government has taken number of initiatives to make the system pro-poor by different rules, regulations, schemes and provisions. Nevertheless, the system fails to address the needs of the community. In this context, we cannot blame to any single stakeholder responsible for this situation. It is observed that the stakeholders of government officials in distribution, monitoring and execution of the system are seriously lacking of accountability of their responsibilities. The government at this point has a larger responsibility to ensure the accountability of these stakeholders under the system. On the other hand, the beneficiaries and retailer level PDS committee is not less responsible for the irregularities in distribution of PDS items at their localities. It has been keenly observed that the retailers are not at all functional. So far as, awareness of the community over PDS is concerned it seems to be the beneficiaries are least bother about their entitlements out of ignorance and lack of scope. With this circumstance, mass scale awareness campaign over PDS is highly imperative to make the community feel the scheme their own and utilize it in best manner.

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# NATIONAL INCOME IN INDIA: CONCEPTS, MEASUREMENT AND TRENDS

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**ABSTRACT**

*In independent India, national income is estimated both at current prices as well as constant prices since 1950-51 by Central Statistical Organization (CSO). In this paper an attempt is made to present the different concepts of national income in a very simple way and national income estimates are presented in both tabular and graphical form. The analysis of the tables and graphs shows that national income in India is rising at both current as well constant prices. However, at current prices, net national income has increased by over 706 times from 1950-51 to 2010-11 whereas at 2004-05 prices it has increased by over 17 times only during the same time period. Thus, for the overall growth rates of the economy, it is suggested, that national income at current prices is not a true indicator whereas national income at constant prices can present a real picture of the growth of an economy.*

**KEYWORDS**
constant prices, current prices, development, estimates, product.

## 1. INTRODUCTION

Among macro-economic indicators, national income aggregate is the most important and foremost required indicator to know about the overall size of any economy and it is most useful to compare different economies with each other. For example, in the year 2014, United States was on the first position with current Gross Domestic Product (GDP) of United States Dollar (USD) 17,419 billion, China was on the second position with current GDP of USD 10,360 billion, Japan was on the third position with current GDP of USD 4,601 billion, Germany was on the fourth position with current GDP of USD 3,853 billion, United Kingdom was on the fifth position with current GDP of USD 2,942 billion, France was on the sixth position with current GDP of USD 2,829 billion, Brazil was on the seventh position with current GDP of USD 2,346 billion, Italy was on the eighth position with current GDP of USD 2,144 billion, India was on the ninth position with current GDP of USD 2,067 billion, and Russian Federation was on the tenth position with current GDP of USD 1,861 billion (World Bank, 2015). According to the National Income Committee, 1949, a national income estimate measures the volume of commodities and services turned out during a given period counted without duplication. The main objective of the paper is to discuss the different concepts, measurement and trends of national income in India. The paper is divided into five sections. Following introduction, second section explains the different concepts of national income. Third section discusses the various methods used for the measurement of national income. The trends of national income in India are analysed by time series method in section four and the final section concludes.

## 2. DIFFERENT CONCEPTS OF NATIONAL INCOME

Basically, there are eight concepts of *national* income as discussed below:

*(i)* *Gross Domestic Product at Market Price ($GDP_{MP}$):* $GDP_{MP}$ is the value of final goods and services produced in the domestic territory of a country during a financial year. $GDP_{MP}$ is calculated by multiplying the total output with the market price, i.e.

$GDP_{MP} = PQ$

Where, P is the Price index of goods and services produced, and Q is the total final goods and services produced.

*(ii)* *Net Domestic Product at Market Price ($NDP_{MP}$):* $NDP_{MP}$ is calculated by subtracting depreciation from $GDP_{MP}$, i.e.

$NDP_{MP} = GDP_{MP} -$ Depreciation

Thus, it can be concluded that, Gross – Net = Depreciation.

*(iii)* *Gross National Product at Market Price ($GNP_{MP}$):* $GNP_{MP}$ is calculated from $GDP_{MP}$ by adding the income earned from exports and by subtracting income spent on imports. Thus, $GNP_{MP}$ is the sum total of gross domestic product at market price and net factor income earned from abroad (NFYA), i.e.

$GNP_{MP} = GDP_{MP} +$ NFYA

Thus, it can be concluded that, National – Domestic = NFYA.

*(iv)* *Net National Product at Market Price ($NNP_{MP}$):* On the basis of above three concepts, $NNP_{MP}$ can be calculated either from $NDP_{MP}$ or from $GNP_{MP}$. For example,

$NNP_{MP} = NDP_{MP} +$ NFYA

or, $NNP_{MP} = GNP_{MP} -$ Depreciation

*(v)* *Gross Domestic Product at Factor Cost ($GDP_{FC}$):* $GDP_{FC}$ is calculated from $GDP_{MP}$ by subtracting the indirect taxes and adding the subsidies. Thus, $GDP_{FC}$ is the difference of gross domestic product at market price and net indirect taxes (NIT), i.e.

$GDP_{FC} = GDP_{MP} -$ NIT

*(vi)* *Net Domestic Product at Factor Cost ($NDP_{FC}$):* $NDP_{FC}$ can be calculated either from net domestic product at market price or from gross domestic product at factor cost as below,

$NDP_{FC} = NDP_{MP} -$ NIT

or, $NDP_{FC} = GDP_{FC} -$ Depreciation

*(vii)* *Gross National Product at Factor Cost ($GNP_{FC}$):* $GNP_{FC}$ can be calculated either from gross national product at market price or from gross domestic product at factor cost as below,

$GNP_{FC} = GNP_{MP} -$ NIT

or, $GNP_{FC} = GDP_{FC} +$ NFYA

*(viii)* *Net National Product at ($NNP_{FC}$):* $NNP_{FC}$ can be calculated either from $NNP_{MP}$ or from $NDP_{FC}$ or from $GNP_{FC}$ as below,

$NNP_{FC} = NNP_{MP} -$ NIT

or, $NNP_{FC} = NDP_{FC} +$ NFYA

or, $NNP_{FC} = GNP_{FC} -$ Depreciation

Conceptually, real NNP at factor costs is the most accurate measure of national income, but in India real GDP at factor costs is mostly used because of some practical problems in measurement of depreciation and net factor income from abroad. Thus, economic growth in India generally refers to increase in real GDP at factor costs (Chand, 2015).

## 3. MEASUREMENT OF NATIONAL INCOME IN INDIA

Soon after independence, the Government of India appointed the National Income Committee in August 1949, so as to compile authoritative estimates of national income. The final report of the National Income Committee appeared in 1954 (Datt and Mahajan, 2014). Since the formation of this committee, national income in India is measured every year (financial year) at both current as well as constant prices. For constant price estimates, base year is subsequently revised and the new estimates are spliced accordingly by this committee. So far, eight base years are used in India for the measurement of national income as shown in Table 1.

**TABLE 1: DIFFERENT BASE YEARS IN INDIA FOR THE MEASUREMENT OF NATIONAL INCOME**

| Sr. No. | Series | Base Year | Year of Adoption of New Base Year |
|---|---|---|---|
| **1.** | Conventional Series | 1948-49 | 1952-53 |
| **2.** | First Revised Series | 1960-61 | 1967-68 |
| **3.** | Second Revised Series | 1970-71 | 1978-79 |
| **4.** | Third Revised Series | 1980-81 | 1988-89 |
| **5.** | Fourth Revised Series | 1993-94 | 1999-00 |
| **6.** | Fifth Revised Series | 1999-00 | 2004-05 |
| **7.** | Sixth Revised Series | 2004-05 | 2009-10 |
| **8.** | New Series | 2011-12 | 2014-15 |

Sources: Datt and Mahajan, 2014; Government of India, 2015.

Some of the major aggregates about national income at both current as well as constant prices are gross national income at market prices, net national income at market prices, per capita net national income at market prices and, gross value added at factor cost by industry of origin. For the estimates of gross value added at factor cost by industry of origin, the economy is divided into five parts grouped into three sectors, primary, secondary and tertiary, as shown in Table 2.

**TABLE 2: THREE SECTORS IN INDIAN ECONOMY TO MEASURE GROSS VALUE ADDED AT FACTOR COST BY INDUSTRY OF ORIGIN**

| Sector | Part | Industry of Origin |
|---|---|---|
| **Primary Sector** | Part 1 | Agriculture, Forestry & Fishing, Mining and Quarrying |
| **Secondary Sector** | Part 2 | Manufacturing, Construction, Electricity, Gas and Water Supply |
| **Tertiary Sector** | Part 3 | Trade, Hotels, Transport & Communication |
| | Part 4 | Financing, Insurance, Real Estate, and Business Services |
| | Part 5 | Community, Social & Personal Services |

Source: Government of India, 2015.

For the measurement of national income, the share of agriculture is measured by using net output method. The agricultural output is measured by multiplying the area, in hectares, on which a particular crop is produced by the per hectare productivity for that crop. From the gross value of output so obtained, deductions for the cost of seed, manures and fertilizers, market charges, repairs and depreciation are made so as to derive net value of the product from agriculture. For animal husbandry, forestry, fishery, mining and factory establishments, estimates of production are multiplied with market price so as to obtain the gross value of the output. From the gross value of output deductions are made for cost of materials used in the process of production and depreciation charges etc. to obtain net value added of each sector. In order to obtain the contribution of small enterprises an estimate for the total number of workers employed in different occupations classified under small enterprises is prepared. On the basis of sample surveys, the average earnings per head are obtained. By multiplying the total number of persons employed with the average earnings per head, the contribution of small enterprises is estimated. To provide for factor payments other than wages and salaries, an addition of 20 per cent to the money earnings is made. The same procedure is used for commerce and transport and for professions, liberal arts and domestic services. For banking and insurance, wages, salaries, directors' fees and dividends (distributed and undistributed) are all added from the balance sheets of concerned firms. For public sector, wages, salaries, pensions, other benefits, dividends or surplus etc. and the contribution of government construction are added up. The contribution of house property to national income is worked by estimating the imputed net rental of all houses, rural and urban (Datt and Mahajan, 2014). All these methods used for the measuring national income are presented in Table 3.

**TABLE 3: METHODS FOR MEASURING NATIONAL INCOME IN INDIA**

| Sector | Method |
|---|---|
| **Agriculture** | Net Output Method |
| **Animal Husbandry, Forestry, Fishery, Mining and Factory Establishments** | Net Output Method |
| **Contribution of Small Enterprises** | Net Income Method |
| **Commerce, Transport, Professions, Liberal Arts and Domestic Services** | Net Income Method |
| **Banking and Insurance** | Net Income Method |
| **Public Sector** | Net Income Method |
| **House Property** | Net Income Method |

Source: Compiled from Datt and Mahajan (2014).

## 4. TRENDS OF NATIONAL INCOME IN INDIA

As shown in Table 4 and Figure 1, gross national income and net national income both are increasing since 1950-51. In 1950-51, gross national income at current prices was Rs. 10,360 crore and, it increased to Rs. 1,24,98,662 crore in 2014-15. It indicates growth of over 1206 times. But this is not the real indicator of growth of national income because the gross national income also includes depreciation. Thus, net national income is comparatively better indicator of growth of national income. In Table 4, it is found that in 1950-51, net national income at current prices was Rs. 9,829 crore and, it increased to Rs. 1,12,17,019 crore in 2014-15. It indicates a growth of over 1141 times in net national income at current prices. Thus, it is clear that by subtracting depreciation from gross national income the growth in national income falls from 1206 times to 1141 times during the period from 1950-51 to 2014-15. Even the increase in net national income at current prices cannot depict the true picture of growth of national income because the income aggregates calculated at current prices include the rise in prices also. Thus, this is not the real increase in income but monetary. To calculate the real increase in income, the best approach is to measure national income at constant prices or at base prices. As shown in Table 4, national income estimates are available in India at 2004-05 prices from 1950-51 to 2010-11 and at 2011-12 prices from 2011-12 to 2014-15. It is found in Table 4, that net national income at 2004-05 prices was Rs. 2,69,724 crore in 1950-51 and it increased to Rs. 46,57,438 crore in 2010-11. It shows a real increase of over 17 times in national income in India. During the last four years, 2011-12 to 2014-15, the net national income at 2011-12 prices increased from Rs. 78,46,531 crore (in 2011-12) to Rs. 94,00,266 crore (in 2014-15). It shows an increase of more than 1.19 times in net national income at 2011-12 prices in India from 2011-12 to 2014-15. Figure 1 shows that in the first three decades, 1950-51 to 1980-81, the increase in both net national income at current prices as well as at constant prices is modest; from 1980-81 to 2011-12, net national income increased at increasing rate and then its rate of increase shows a constant pace.

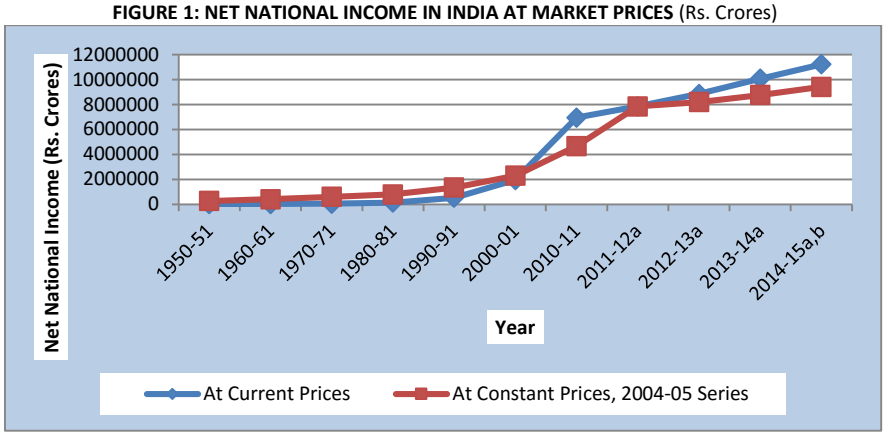
**TABLE 4: GROSS NATIONAL INCOME AND NET NATIONAL INCOME IN INDIA AT MARKET PRICES** (Rs. Crores)

| | At Current Prices | | At Constant Prices (2004-05 Series) | |
|---|---|---|---|---|
| **Year** | **Gross National Income** | **Net National Income** | **Gross National Income** | **Net National Income** |
| **1950-51** | 10,360 | 9,829 | 2,92,996 | 2,69,724 |
| **1960-61** | 17,870 | 17,062 | 4,34,497 | 4,11,519 |
| **1970-71** | 47,354 | 44,550 | 6,40,275 | 5,96,470 |
| **1980-81** | 1,49,987 | 1,38,565 | 8,66,338 | 7,95,193 |
| **1990-91** | 5,78,667 | 5,26,017 | 14,70,766 | 13,42,031 |
| **2000-01** | 21,54,680 | 19,47,788 | 25,35,911 | 22,91,795 |
| **2010-11** | 77,02,308 | 69,42,089 | 52,27,739 | 46,57,438 |
| **2011-12[a]** | 87,55,188 | 78,46,531 | 87,55,188 | 78,46,531 |
| **2012-13[a]** | 98,71,777 | 88,41,733 | 91,72,925 | 81,93,427 |
| **2013-14[a]** | 1,12,05,169 | 1,00,56,523 | 98,00,813 | 87,51,834 |
| **2014-15[a,b]** | 1,24,98,662 | 1,12,17,019 | 1,05,27,936 | 94,00,266 |

Source: Government of India, 2015.

a. 2011-12 Series.
b. Advance Estimates.

**FIGURE 1: NET NATIONAL INCOME IN INDIA AT MARKET PRICES** (Rs. Crores)




Source: Government of India, 2015.

a. 2011-12 Series.
b. Advance Estimates.

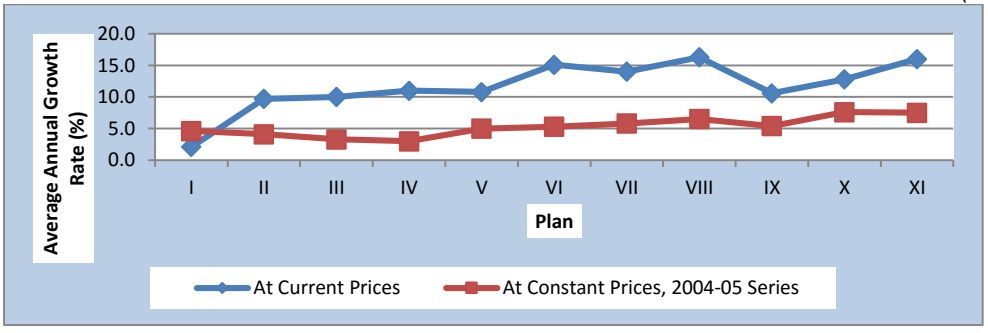
Table 5 shows plan wise annual average growth rates of gross national income and net national income in India at market prices at both current prices as well as constant prices. It is found in Table 5 that annual average growth rate of net national income at 2004-05 prices remained less than 5 per cent till fifth plan and became more than 5 per cent after fifth plan, and during fifth plan it remained at 5 per cent. As shown in Figure 2, during first plan to fourth plan annual average growth rate of net national income at 2004-05 prices falls from 4.6 per cent to 3.0 per cent and after that up to eighth plan it rises consistently and became 6.5 per cent. In the ninth plan, it falls to 5.4 per cent but in the tenth and eleventh plan more than seven per cent growth rate is achieved in Indian net national income.

**TABLE 5: PLAN WISE ANNUAL AVERAGE GROWTH RATES OF GROSS NATIONAL INCOME AND NET NATIONAL INCOME IN INDIA AT MARKET PRICES** (Per cent)

| | At Current Prices | | At Constant Prices (2004-05 Series) | |
|---|---|---|---|---|
| **Plan (Year)** | **Gross National Income** | **Net National Income** | **Gross National Income** | **Net National Income** |
| **First Plan (1951-56)** | 2.0 | 2.1 | 4.0 | 4.6 |
| **Second Plan (1956-61)** | 9.6 | 9.7 | 4.1 | 4.1 |
| **Third Plan (1961-66)** | 10.0 | 10.0 | 3.4 | 3.3 |
| **Fourth Plan (1969-74)** | 11.2 | 11.0 | 3.2 | 3.0 |
| **Fifth Plan (1974-79)** | 11.0 | 10.8 | 5.1 | 5.0 |
| **Sixth Plan (1980-85)** | 15.2 | 15.1 | 5.4 | 5.3 |
| **Seventh Plan (1985-90)** | 14.2 | 14.0 | 5.8 | 5.8 |
| **Eighth Plan (1992-97)** | 16.2 | 16.3 | 6.5 | 6.5 |
| **Ninth Plan (1997-2002)** | 10.7 | 10.6 | 5.6 | 5.4 |
| **Tenth Plan (2002-07)** | 12.8 | 12.8 | 7.6 | 7.6 |
| **Eleventh Plan (2007-12)** | 16.0 | 16.0 | 7.8 | 7.5 |

Source: Government of India, 2015.

**FIGURE 2: PLAN WISE ANNUAL AVERAGE GROWTH RATES OF NET NATIONAL INCOME IN INDIA AT MARKET PRICES** (Per cent)




Source: Government of India, 2015.

Table 6 shows that the contribution of agriculture, forestry & fishing, mining and quarrying in national income of India at factor cost at 2004-05 prices is gradually reducing whereas the contribution of other sectors is gradually increasing. This change shows that Indian economy is growing as per the theory of economic development which states that as the economy develops, the proportionate contribution of primary sector tends to decrease while that of the secondary and tertiary sectors tend to increase. As shown in Table 6 and Figure 3, the contribution of agriculture, forestry & fishing, mining and quarrying has reduced from 55.0 per cent to 19.1 per cent from 1950-51 to 2014-15. On the other hand, the contribution of manufacturing, construction, electricity, gas and water supply increased from 14.7 per cent to 28.4 per cent; in case of trade, hotels, transport & communication from 11.3 per cent to 18.9 per cent; in case of financing, insurance, real estate and business services from 8.5 per cent to 20.9 per cent and; in case of community, social & personal services from 10.4 per cent to 12.8 per cent during the period of 1950-51 to 2014-15.

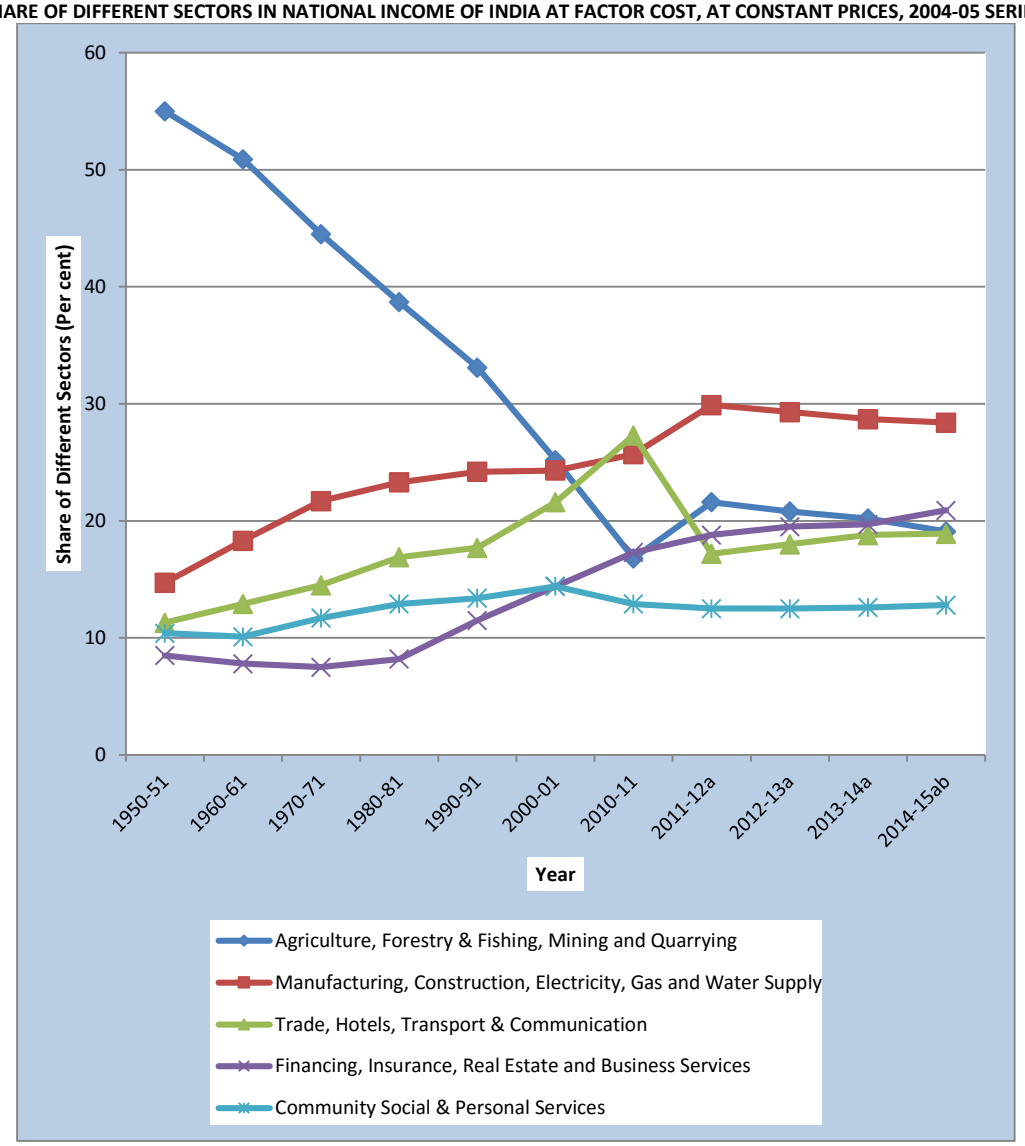
**TABLE 6: SHARE OF DIFFERENT SECTORS IN NATIONAL INCOME OF INDIA AT FACTOR COST, AT CONSTANT PRICES, 2004-05 SERIES** (Per cent)

| Year | Agriculture, Forestry & Fishing, Mining and Quarrying | Manufacturing, Construction, Electricity, Gas and Water Supply | Trade, Hotels, Transport & Communication | Financing, Insurance, Real Estate and Business Services | Community, Social & Personal Services |
|---|---|---|---|---|---|
| **1950-51** | 55.0 | 14.7 | 11.3 | 8.5 | 10.4 |
| **1960-61** | 50.9 | 18.3 | 12.9 | 7.8 | 10.1 |
| **1970-71** | 44.5 | 21.7 | 14.5 | 7.5 | 11.7 |
| **1980-81** | 38.7 | 23.3 | 16.9 | 8.2 | 12.9 |
| **1990-91** | 33.1 | 24.2 | 17.7 | 11.5 | 13.4 |
| **2000-01** | 25.2 | 24.3 | 21.6 | 14.4 | 14.4 |
| **2010-11** | 16.8 | 25.7 | 27.3 | 17.3 | 12.9 |
| **2011-12[a]** | 21.6 | 29.9 | 17.2 | 18.8 | 12.5 |
| **2012-13[a]** | 20.8 | 29.3 | 18.0 | 19.5 | 12.5 |
| **2013-14[a]** | 20.2 | 28.7 | 18.8 | 19.7 | 12.6 |
| **2014-15[a,b]** | 19.1 | 28.4 | 18.9 | 20.9 | 12.8 |

Source: Calculated from Economic Survey, 2014-15 (Government of India, 2015).

a. 2011-12 Series.
b. Advance Estimates.

**FIGURE 3: SHARE OF DIFFERENT SECTORS IN NATIONAL INCOME OF INDIA AT FACTOR COST, AT CONSTANT PRICES, 2004-05 SERIES (PER CENT)**




Source: Calculated from Economic Survey, 2014-15 (Government of India, 2015).

a. 2011-12 Series.
b. Advance Estimates.

## 5. CONCLUSION

There are eight concepts related to national income aggregates – gross domestic product at market price, net domestic product at market price, gross national product at market price, net national product at market price and same four are at factor cost. However, the real increase in national income estimated through net national income at constant prices depicts a true picture of the state of an economy. In India, a mix of net output method and net income method is used for the measurement of national income. It is found in the analysis that during fifth plan Indian economy experienced a 5 per cent annual average growth rate in its net national income at 2004-05 prices and thereafter never achieved less than 5 per cent growth. This is a very healthy development because the Indian economy crossed the barrier of the Hindu rate of growth. It is also found that Indian economy performed better during the last two decades as compared to the earlier decades. Because of the planned efforts of Indian economists and policy makers, the percentage share of secondary and tertiary sectors increased and that of agriculture and allied has decreased. It indicates a positive development in our development path. However, to find the real growth in any economy the basic and foremost condition is the satisfaction of its stakeholders which can be estimated with the help of real per capita income and on the basis of the distribution of real per capita income.

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# A STUDY ON THE IMPACT OF MICROFINANCE ON POVERTY ERADICATION WITH SPECIAL REFERENCE TO KANHIRAPUZHA GRAMA PANCHAYAT, KERALA

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**ABSTRACT**

*Government introduced Micro Finance in the existing financial structure to make the financial services accessible to poor and low income section of the society. Micro Finance refers to provision of access to small loans without physical collateral to the poor, especially the women, while encouraging them to save regularly in order to combine thrift and self-help for their own development. MF Institutions consist of Refinance Institutions, Banks, Non-Government Organizations and Self Help Groups dealing with small loans and deposits in rural, semi urban or urban areas enabling people to raise savings, productive investments and thereby their standard of living. MF scheme was implemented across the country. Though microfinance is spread across the country, it was not sure how effectively it was implemented. In order to measure the outcome of MF, an attempt is made to learn the impact of MF scheme in areas like household income, savings, employment, expenditure, assets and dwelling conditions of rural people. The study was conducted in Kanhirapuzha, a small village in Kerala and information's were collected, analysed and results are publicized in this paper accurately.*

**KEYWORDS**
micro finance, kudumbashree, poverty eradication.

## INTRODUCTION

India has made remarkable progress in several areas like technology, industry, agriculture and infrastructure during the post-independence era. Still, the eradication of poverty remains an unresolved problem. India is considered as the epi-centre of poverty with over 300 million poor people. Poverty, therefore, continues to pose the greatest development challenge in India. The planners and policy-makers identified that one major cause of poverty in India is inability of the poor to access capital to make productive investment for income and employment generation owing to the exclusion of the poor by the formal financial institutions in their lending activities. The continuous failure of the formal financial system to deliver credit and other financial Services to the poor and the realization of potential role of microfinance in poverty alleviation led to the emergence of microfinance in India.

In Kerala, microfinance has become a novel and a vital strategy of poverty reduction. Micro Finance refers to the provision of access to small loans without physical collateral to the poor, especially the women, while encouraging them to save regularly in order to combine thrift and self-help for their own development. Government-based and NGO-based microfinance systems exist side by side in the State. Both have played a dominant role in making microfinance a real movement in Kerala. Kudumbashree is the Government-initiated microfinance programme in Kerala. Kudumbasree, the poverty eradication mission of the state of Kerala is a community based self-help initiative involving poor women. It has been envisaged as an approach to poverty alleviation focusing primarily on micro finance and micro-enterprise development, and integrally linked to local self-government institutions. National Bank of Agriculture and Rural Development (NABARD) initiated women Self Help Groups (SHGs) in India with the support of local NGOs. The formation of SHGs led to the implementation of Swarnajayanti Gram Swarozgar Yojana (SGSY), launched by the Ministry of Rural Development. In a similar line Kudumbashree is sponsored by local self-government institutions in Kerala

## REVIEW OF LITERATURE

The study was taken by **Singh, Tejmani** to give an overview of all aspects of micro finance in India such as the different institutions in its promotion, different modes of delivery, weaknesses and the challenges. In the study they found that microfinance acted as an integral part of poverty eradication programme. The challenges lie in finding the level of flexibility in the credit instrument that could make it match the multiple credit instruments that could make it match the multiple credit requirement of the low income borrowers without improving unbearably high cost of monitoring to end use lenders.

The article was published in **Hindustan times** in 2007.the article was focusing on the empowerment of women in Kerala. The article states that microfinance firm intends to provide loans and other financial services to poverty stricken women. They found that through microfinance firm's government provides initial loans up to rs.12000 to women without any collateral security. And they concluded it by saying that microfinance intends to empower poor women to become economically self-reliant by giving them access to income generating activities and other financial services.

The study was conducted by **Amarjeet Kumar (2010)**. The study was to find working of Kudumbshree which has been developed by Kerala for overall development of poorest of poor. The study was conducted on the basis of detailed study on articles i.e. by secondary data. It has reviewed that micro finance has emerged as an important sector which gives economic freedom to the destitute. No doubt Kudumbshree is doing the same for Keralites. Most of the women in rural areas work in Kudumbshree and so it is the easy way of achieving the women empowerment and poverty reduction in the society

**Yahaya, K.A, Osemene, O.F and Abdulraheem**.A conducted a study on 2011 to find the effectiveness of microfinance in alleviating poverty. Both primary and secondary data were used and the data collected was analysed using t-test and analysis of variance .the results revealed that microfinance have significant role to play in the economy, as it helps reduce poverty by providing financial services to the active poor .but they found that much of awareness has not been made among the poor so they suggested that microfinance policy should further be publicized so that members of low income groups will be aware of what microfinance institutions have to offer them and how they can obtain financial services to grow their small businesses

**Knight and Farhad (2008)** mentioned that micro finance directly improves quality of life and promotes poverty reduction. By getting loans the client become self-employed and protect himself for the external threats. By getting employment they become raised from the poverty line and the poverty decreased. Micro finance is in the initial stages and in these stages most of the peoples do not know about the reality of micro finance. Some peoples take that example of micro finance where the result of micro finance is negative. It is more important that the examples where the result of micro finance is more positive than negative should be highlighted so that more and more peoples get benefit from micro finance and cross the poverty line.

**Mangara, Thomas (2010)** conducted a study on the impact of microfinance activities in 9 villages in Bangalore rural. The data were collected from 400 beneficiaries through a questionnaire. The study concludes by stating how microfinance services produce positive effect on output, effects and savings of the beneficiaries. The study also points out as to how microfinance services results in women empowerment and empowering poor people to stabilize economically.

**Kumar, Manish. Bohra, Narendra, Singh. Johari, Amar (2010)** conducted a descriptive study based on the secondary data. The paper concludes that the potential for the growth of Micro Finance institutions in India is very high and these institutions do help in alleviating poverty.

**Kashif, Muhammad, Durrani, Khan Usman, Abid, Imran Malik, Shafiq Ahmed (2011**) conducted a study on the role of micro finance in reducing poverty. The study was conducted in one of the districts in Pakistan. 100 micro finance beneficiaries were taken into consideration and questionnaire was distributed through convenient sampling method. Out of 100 the researchers received back 68 responses. The results showed that majority of the respondents were in favour of introducing and enhancing micro finance activities. It is also proven that apart from generating income and fight against poverty it also facilitates to improve the social standards of the poor.

## IMPORTNCE OF THE STUDY

Though microfinance is spread across the country, it was not sure how effectively it was implemented in Kerala. For sustainable growth, it is imperative to provide various financial services as well as financial aid. This study is an attempt to analyse the extent to which microfinance helps in eradicating the poverty through Kudumbshree programmes.

## STATEMENT OF THE PROBLEM

Majority of the population in rural areas were in the verge of poverty. This is an attempt to analyse the impact of microfinance in poverty eradication.

## OBJECTIVES OF THE STUDY

1. To assess the depth of outreach and level of participation of the poor in the microfinance programmes
2. To evaluate the impact of microfinance programmes upon the poor in terms of household income, savings, employment, expenditure, assets and dwelling conditions.
3. To examine the extent to which microfinance programmes have contributed to poverty alleviation and household welfare
4. To trace out the problems of microfinance programmes in Kerala and to suggest the methods of resolving them.

## HYPOTHESIS

H1a: There is significant relationship between microfinance and income generating activities
H0a: There is no significant relationship between microfinance and income generating activities
H1b: There is a significant relationship between microfinance and account keeping
H0b: There is no significant relationship between microfinance and account keeping
H1c: There is significant relationship between microfinance and awareness of financial products.
H0c: There is no significant relationship between microfinance and awareness of financial Products.
H1d: There is significant relationship between microfinance and level of income.
H0d: There is no significant relationship between microfinance and level of income
H1e: There is a significant relationship between microfinance and positive impact on life.
H0e: There is no significant relationship between microfinance and positive impact on life.

## RESEARCH METHEDOLOGY

**POPULATION AND SAMPLE OF THE STUDY**

Population consists of total members in NHGs in Kanhirapuzha Panchayat, Palakkad District of Kerala. Sample size is 50 members of different NHGs

**DATA COLLECTION AND TOOLS**

Simple random sampling has been used for the purpose of the study. Survey method is used to collect date. Questionnaire is used to collect primary data.
Primary data**:** Primary data is used to get relevant information for the study. Primary data has been collected from the sample consisting of 50 members of SHGs.
Secondary data: Secondary information is collected mainly from Panchayat and block office.
Following tools are used for study;
1. Chi-Square Test
2. Correlation Analysis

## RESULT AND DISCUSSION

The following tools are being used to test hypothesis
1) Chi-square
2) Correlation

**1. CHI-SQUARE**

**QUESTION**

1) Do you use these funds for income generating activities?
H0 – there is no significant relationship between microfinance and income generating activities
H1- There is significant relationship between microfinance and income generating activities

**TABLE 1.1: TEST STATISTICS**

| | incomeactivities |
|---|---|
| Chi-Square | 13.520[a] |
| Df | 1 |
| Asymp. Sig. | .000 |

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 25.0.

**INTERPRETATION**

The above table clearly shows that there is a positive significant relationship between microfinance and the income generating activities with an alpha value of .000 .as the value is less than or equal to .05 we can reject null hypothesis. This means that as the people take part in various microfinance programmes they are able to take part in income generating activities.

**QUESTION**

Do you think that your capacity to do account keeping for your own family has increased after joining NHG?
H0-there is no significant relationship between microfinance and account keeping
H1-There is a significant relationship between microfinance and account keeping

**TABLE 1.2: TEST STATISTICS**

| | Account |
|---|---|
| Chi-Square | 11.520[a] |
| Df | 1 |
| Asymp. Sig. | .001 |

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 25.0.

**INTERPRETATION**

The table clearly shows that there is a significant relationship between microfinance and account keeping of the people. The significance level lies between .000 and .05.so null hypothesis has to be rejected. ie it says that microfinance have helped in increasing the income of people which help them to start savings habit among people.

**QUESTION**

Are you aware of basic financial products like insurance and banking services?

H0- There is no significant relationship between microfinance and awareness of financial products.

H1 – There is significant relationship between microfinance and awareness of financial product.

**TABLE 1.3: TEST STATISTICS**

| | Awareness of financial products |
|---|---|
| Chi-Square | 11.520[a] |
| Df | 1 |
| Asymp. Sig. | .001 |

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 25.0.

**INTERPRETATION**

The table explains to us that null hypothesis can be rejected as the alpha value lies in between .000 and .05 ie there is a significant relationship between microfinance and awareness of financial products. Government has really succeeded in awaring people about financial products using microfinance as a tool.

**QUESTION**

Do you think that your family's level of income has increased after you joining NHG?

H0-There is no significant relationship between microfinance and level of income

H1- There is significant relationship between microfinance and level of income

**TABLE 1.4: TEST STATISTICS**

| | Level of income |
|---|---|
| Chi-Square | 9.680[a] |
| Df | 1 |
| Asymp. Sig. | .002 |

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 25.0.

**INTERPRETATION**

The table clearly explains to us that there is a significant relationship between income level and microfinance because null hypotheses has been rejected as alpha value or significance level is .002 which is less than .05. This shows that microfinance has a impact on the level of income of people which helped them to come out of poverty.

**QUESTION**

Do you feel that microfinance have positively impacted your life?

H0- There is no significant relationship between microfinance and positive impact on life

H1 –there is a significant relationship between microfinance and positive impact on life

**TABLE 1.5: TEST STATISTICS**

| | Positive impact |
|---|---|
| Chi-Square | 42.320[a] |
| Df | 1 |
| Asymp. Sig. | .000 |

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 25.0.

**INTERPRETATION**

The table shows that microfinance has positively impacted the life of respondents. The null hypothesis could be rejected as the alpha value is .000.It shows that there is a high level significance between microfinance and positive impact on the life of the respondents.

**2. CORRELATION ANALYSIS**

**CORRELATION 2.1**

**TABLE 2.1: CORRELATIONS**

| | | income | incomeactivities |
|---|---|---|---|
| Level of income | Pearson Correlation | 1 | .901** |
| | Sig. (2-tailed) | | .000 |
| | N | 50 | 50 |
| Income activities | Pearson Correlation | .901** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 50 | 50 |
| **. Correlation is significant at the 0.01 level (2-tailed). | | | |

**INTERPRETATION**

As indicated, the correlation analysis shows a significant degree of positive correlation (pearson correlation coefficient is .901) between the use of funds for generating activities and income level of people. This highlights that as the people use the funds for income activities their level of income has been changed. Thus it can be concluded that there is a significant relationship between the use of funds for income generating activities and the level of income.

**CORRELATION 2.2**

**TABLE 2.2: CORRELATIONS**

| | | performance | Income level |
|---|---|---|---|
| performance | Pearson Correlation | 1 | .709** |
| | Sig. (2-tailed) | | .000 |
| | N | 50 | 50 |
| Income level | Pearson Correlation | .709** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 50 | 50 |

**. Correlation is significant at the 0.01 level (2-tailed).

**INTERPRETATION**

As indicated, the correlation analysis shows a significant degree of positive correlation (Pearson correlation coefficient is .709) between the level of income and performance rating of NHG. This highlights that as the NHG helps in increasing the level of income the people says that the performance of NHG'S are also good. Thus it can be concluded that there is a significant relationship between level of income and performance of NHG'S. It also says that the performance rating of NHG depends on how they help people in generating income.

**CORRELATION 2.3**

**TABLE 2.3: CORRELATIONS**

| | | problems | loans |
|---|---|---|---|
| Problems | Pearson Correlation | 1 | -.405** |
| | Sig. (2-tailed) | | .003 |
| | N | 50 | 50 |
| Loans | Pearson Correlation | -.405** | 1 |
| | Sig. (2-tailed) | .003 | |
| | N | 50 | 50 |

**. Correlation is significant at the 0.01 level (2-tailed).

**INTERPRETATION**

The table shows that there is significant negative relationship (Pearson's correlation is -.405) between problems in microcredit schemes and taking of loan from NHG. That means as they take loans they are finding many problems regarding to microcredit schemes.

**CORRELATION 2.4**

**TABLE 2.4: CORRELATIONS**

| | | income | necessities |
|---|---|---|---|
| income | Pearson Correlation | 1 | .693** |
| | Sig. (2-tailed) | | .000 |
| | N | 50 | 50 |
| necessities | Pearson Correlation | .693** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 50 | 50 |

**. Correlation is significt at the 0.01 level (2-tailed).

**INTERPRETATION**

The table shows that there is a positive significant relationship (Pearson's correlation is .693) between income level and meeting of necessities. It has been found that as there is change in income level the necessities are met more easily.

## FINDINGS

The study was conducted with the objective to find out the impact of microfinance in poverty eradication in Kanhirapuzha panchayat, Palakkad District of Kerala. Data was collected from 50 members of NHGS in Kanhirapuzha panchayat using questionnaire.

Following are the important findings of the study

- Through the study it has found that all the respondents have more than five years of participation in NHGs. The depth of outreach of microfinance programme to the poor is be clearly evident as all the respondents who belonged to the BPL list had no formal credit and savings in the pre-microfinance period and now they have access to the microcredit schemes which help them to improve the standard of living.
- There is a drastic change in the borrowing pattern of the respondents as they agree that NHGs had become their major source of borrowing. Whereas, in the pre- microfinance period, money lenders where their major source of borrowing.
- Most of the women were unemployed during the pre-microfinance period. However, the intervention of microfinance through Kudumbshree got them some kind of employment. These employment opportunities helped in women empowerment and to add a source of income also.
- As microfinance played an important role in income generation, it has also inculcated saving habit among the NHG members. They were able to aware the people about the importance of savings and could succeed in its awareness programmes
- The most important findings of the study is that microfinance has a great contribution towards the eradication of poverty. That means microfinance has a positive impact on the life of the people. It also makes a clear point that active participation in the microfinance programmes brought perceptible changes in the life of people. It not only helped them in improving the life style it also helped in empowering in various lines such as acquiring knowledge, leadership qualities, communication skills, self-confidence and abilities to face problems. Moreover, it has been found that all are aware of the importance of education in their life, where everyone agrees that education is important and they will educate their children.

## SUGGESTIONS

The impact of microfinance on poverty eradication with the help of NHG and SHG can be further improved. Following are few recommendations to improve the performance of Kudumbshree units. Close monitoring and follow up on the effective utilization of microcredit provided through NHG AND SHG. Guidance may be given to members in utilizing the loan effectively and to avoid the diversification of the credit for the purposes other than the one mentioned in the application. Continuous and need based training is required for various activities of KDMS. An institution can be set up at state level to provide training and orientation.

## CONCLUSION

Microfinance programme has achieved a remarkable success in reaching the poor and bringing banking services to the door steps of the poor. By increasing the employment and income level microfinance has also succeeded in making the poor economically active. Microfinance intervention in rural areas through NHG and SHG has become a vital channel for reducing under-nourished and poverty and for promoting human capital investment such as education and health. The clients are experiencing an impressive improvement in their personality and social conditions. In addition to this they tell that they can experience a considerable progress in the household welfare. However, microfinance can serve as a still better instrument of poverty alleviation and of promoting household welfare if the State

Government and the NGOs focus greater attention to widen economically viable self-employment choices and the skill- base of the clients, to get interest free or low interest- bearing loans, in marketing the products and improving the quality and by ensuring benefits of the programme accruing to the core and to the moderate poor too.

## SCOPE OF FURTHER RESEARCH

1. The study is based only on Impact of Micro Finance on Kanjirampuzha Grama Panchayat. The same can be extended to the entire state.
2. A study can be conducted to analyse the impact of Micro Finance in Women Empowerment.

## LIMITATIONS OF THE STUDY

1. The time period of study is limited to two months
2. As the study is restricted to NHGs of a particular Panchayat, a generalized conclusion cannot be obtained.
3. Reluctance on the part of Panchayat officers to furnish the relevant data.
4. Personal opinion of the respondents may vary affecting the results of the study.

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# ASSESSING THE EFFECTIVENESS OF GROUP BASED BORROWING OF OROMIYA CREDIT AND SAVING SHARE COMPANY, JIMMA ZONE, ETHIOPIA

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**ABSTRACT**

*This study has focused particularly on assessing the effectiveness of group lending on Oromiya Credit and Saving Share Company (OCSSCO) of Jimma Zone Ethiopia. Primary data were collected from 252 group based borrowers. With the help of Logit model the study found that educational level, business type, land size, other source of credit social ties, number of the group, screening the group before the formation, internal rule and conduct, credit officer visit the group, distance and family size were positive and statistically significant. While, the age of the group member, gender of the group member, visiting each other and training are positive and insignificant. The study recommended that the OCSSCO of Jimma zone should give attention on distance between the group members, the period of training, educational level of the borrower, experience and credit officer visit/pressure to make the group lending effective and to have impacts on profitability.*

**KEYWORDS**

group based borrowers, loan repayment, logit model.

## INTRODUCTION

Microfinance is the supply of loans, savings, money transfers, insurance, and other financial services to low-income people. Microfinance institutions (MFIs) encompass a wide range of providers that vary in legal structure, mission, and methodology offer these financial services to clients who do not have access to mainstream banks or other formal financial service providers (Lafourcade *et.al* 2005). Microfinance institutions (MFIs) grant collateral-free loans (group lending) to poor entrepreneurs whose income originates mostly from informal economic activities. As a consequence, MFIs are often committed to rely on soft information to assess their borrowers' creditworthiness (Bernheim *et.al* 2012).

Beginning in the mid-seventies, savings and credit institutions started extending small loans to groups of poor women in the villages in order to empower them to invest in micro level businesses. This form of micro-enterprise credit is based on solidarity based group lending where every group member is tasked to ensure the repayment of all members (Chakravarty *et.al* 2010). Microcredit is one of the financial services which include the act of providing loans of small amounts to the poor and other borrowers that have been ignored by commercial banks. Under this definition, microcredit encompasses all lenders, including the formal participants such as specialized credit cooperatives set up by governments to encourage economic development and those of a more informal variety like the village moneylenders or even loan sharks.

In some countries where poverty levels are high and financial services do not reach to the vast majority of the poor. Microcredit is important in encouraging entrepreneurial activity and alleviating poverty. However, microcredit can only be effective if it is carefully used to ensure that both the lender and the borrower acquire the maximum possible gain. Group lending has been used successfully in some parts of the world to expand the reach of microcredit programs that is notably by the Grameen Bank (Kodongo *et.al* 2013).

Group lending provides a loan to an individual borrower, who is a member of a borrowing group. The groups of borrowers are made responsible for the repayment of the loan of the individual group member. Non-repayment by the group means that all borrowers in the group will be without future access to loans from the program. In this way, group lending creates incentives for individual group members to select the other members of the group to enforce repayment, because each individual wants to reduce the risk to ensure the access for future loans. Group lending structure is more effective in providing group lending than the lender, because group members usually live close to each other and has high social ties. Group lending structure motivates screening, monitoring and enforcement within the group, to improves the effectiveness of group lending due to the fact that the group members live in the same area and socially tied, repayment of group loans will be higher(Lehener, 2009).

Since the establishment of the Grameen Bank in Bangladesh in 1976, the practice of group lending has been widely adopted in microfinance programs in developing countries as an important tool to provide credit to the poor. In group lending (or joint liability) a loan is granted to a group of borrowers and the whole group is liable for the debt of any individual member in the group. This practice allows microfinance programs to mainly rely on accountability and mutual trust among group members rather than financial collateral to insure against default. Given that the poor often do not have appropriate financial collateral to offer, group lending programs offer a feasible and even profitable channel to extend credit to the poor, who are usually kept out of traditional banking systems (Li *et.al* 2009). Lending is a risky enterprise because repayment of loans can seldom be fully guaranteed. For this reason, lenders devise varies institutional mechanisms aimed at reducing the risk of loan default like pledging of collateral, third party credit guarantee, use of credit rating and collection agencies, group lending and etc.(Sharma and Zeller, 1996).

The effectiveness of microcredit as a tool to combat poverty is much debated now that after years of rapid growth microfinance institutions (MFIs) in various countries - including India, Bosnia and Herzegovina, and Nicaragua are struggling with client over indebtedness, repayment problems, and in some cases a political backlash against the microfinance sector as a whole (Attanasio *et.al,* 2011).

Repayment of loans is an important measure for the success of group lending programs. In the long run, programs may only survive if groups repay the loans they receive. When borrowers form groups and are held liable for each other, lending to the poor can be profitable even if borrowers do not possess any collateral and lack a credit history (Lehener, 2009). The difficulty to reach the financial sources is one of the main obstacles to an increased involvement of the poor borrowers to the economic development. This layer of the population is ineligible to the classic banking sector because of lack of collateral permitting the covering of the

value of the loan in case of repayment problems. Microfinance emerged as an economic development approach oriented toward households of weak income. Instead of bestowing some individual micro credits, MFI in developing countries prefer to lend to groups of people that are jointly responsible for the repayment of the received loan (Bassem, 2008). One important reason why the methodology of group lending with joint liability is popular among MFIs is that it forces group borrowers to use their social ties in order to screen, monitor and enforce loan repayment on their peers (Postelnicu, 2012).

Like other in developing areas of the world, people in Ethiopia are living under poverty. MFI play an important role in mobilizing financial resources for micro enterprise by extending credit to various business and individuals (member of group). Lending represents the heart of the MFI and loans are the dominant assets as they generate the largest share of operating income. However, loan exposes the institution to the risk. The past studies in Ethiopia on microfinance institution focused on determinants of access to credit and loan amount on household level evidence from urban Ethiopia. However, if any development effort is to bring about improvement in the microfinance institution group lending, making the group benefited from increased production, consumption, education and health. The impacts of group lending on repayment performance should be answered so that appropriate interventions can be made. However, this study examined on different problems associated with that reduces the effectiveness of group lending and its impact on profitability of microfinance institutions. Hence the main objective of this study was to examine and assess the effectiveness of group lending in OCSSC of Jimma zone, Ethiopia. Specifically: identify factors that affect the effectiveness of group lending and; assess the loan repayment performance of the group.

## EMPIRICAL LITERATURE

Many studies have been conducted in both developed and developing countries to identify the factor that affect the effectiveness of group lending. Based on the time constraint and the number of empirical literature available on the related area of this research it was quite difficult to present the results of all researches. Therefore, the empirical studies in this study on the effectiveness of group lending and factors affecting loan repayment performance of borrowers focus on those that have been conducted after 1976's.

Sharma and Zeller (1996) use data of 128 groups from four group-based lending programs in Bangladesh to study the determinants of loan repayment. They use a number of variables that may measure screening, monitoring and enforcement activities within groups. Their results show the following; First, the repayment problems increase when there are more relatives in the same group. This help their hypothesis that screening, monitoring and enforcement among relatives does not take place or at least is less effective, since relatives may more easily collude against the program and delay repayment. Second, if borrowers are more credit rationed this increases repayment performance. Their result can be taken as evidence for the fact that group members have more motivations to screen, monitor and enforce if they have no other credit sources. Third, groups that were formed using a self-selection process show good repayment ability.

Bassem (2008) discussed with the use of a Logit model, the internal and external delinquency of a self-designed survey of 208 groups of credit. His result of estimation shows that the repayment is influenced positively by the internal rule of conduct, the same business, the knowledge of the members before formation of the group, peer pressure, the self- selection, sex, the educational level and the non-financial services. In contrast to this the homogeneity and the marital status are among the main factors acting negatively on the repayment performance which can determine the effectiveness of the group lending and its impact on profitability of the microfinance institutions.

In support to Bassem (2008) stated that based on the successes of Grameen Bank showed that, there is possibility to provide money to a number of low income people with financial services by using a group methodology. In their study peer pressure and group solidarity are used as instrument to gain high repayments. As well as urban, homogenous group, good leadership and training and history in groups had the more probability of loan repayment. Besides to these the credit terms, creating inherent (matching problem) as group lending is repeated over time reduces the repayment of loan. All variables that have a positive and negative impact on loan repayment performance have their own impact on effectiveness or in effectiveness of group lending directly or indirectly. To measure the relevance of positive and negative, the researchers accomplish a survey of 140 groups in Bangladish.

Hermes *et.al* (2003) by using data from an extensive questionnaire held in Eritrea among participants of 102 groups they showed that the social ties of the group leader do have a positive effect on repayment performance of the groups. In opposite to it is not true for social ties of other group members. As well as they suggested that the two ways on the issues addressed in their paper. The First way is the methodology proposed, separately look at the group leader and other group members when it comes to monitoring and enforcement activities should also be applied for other programs in other countries to generalize the results of the study. Second way is the theoretical as well as empirical studies could verify whether the delegated monitoring model is superior not terms of reducing repayment problems as compared to other group based lending practices. From this study there are different variables that have impacts on the effectiveness of the group lending and its impact in many ways. The variables that used by him are the same to the other researchers. Among them, length of time for loan, rate of interest number of members and etc. with the help of Logit model to analyze his results.

Abafita (2003) conducted a study at OCSSCO Kuyu Woreda of North Showa of Oromiya with the aim of analyzing the factors that influence borrowers loan repayment performance, evaluating the loan rationing mechanism and also assessing the impact of program on the living standard of borrowers by the help of primary data through structured questionnaire. In his study estimation results of the descriptive statistics and the Probit model show that the variables such as education, income, loan supervision, suitability of repayment period, availability of other credit sources and livestock are important and significant factors that increases the loan repayment performance, but loan diversion and loan size are assessed as the factors that decreases the loan repayment performance.

Okurut *et.al* (2009) investigated on the key factors influence loan repayment performance among group clients of microfinance institutions (MFIs) in Tanzania. The study was based on a sample of 150 respondents in Kariakoo division of Dar salaam, Tanzania. In their study the Logit model was used. The regression model results showed that experience, training time and sanctions have positive and significant effects on loan repayment performance among group clients of MFIs. This is the sign of the effectiveness of group lending and it has effect on profitability. In opposite to this the study shows that transaction cost and group size have negative and significant effect on loan repayment performance. This negativity of the two variables contributes to the default of the group which has its own effect on the effectiveness of group lending and its impact on profitability.

Godquin (2004) discussed his result by the help of Probit model. Microfinance programs are a key element of poverty alleviation strategy through different lending methodologies such as group lending, nonfinancial services and dynamic incentives as means to alleviate poverty. In this the explanatory power of theoretical model that attribute the performance of MFIs in terms of repayment to the use of such financial innovations has tested. The result described that group homogeneity and the age of the group have a negative impact on the repayment performance that determine the success of group lending. That is at this time the groups become ineffective and negatively affect the profitability of the group lending.

## METHODOLOGY

This study was made by using of primary data. The primary data to be generated included characteristics of borrowers, loan size, age of borrowers, marital status of the users, and etc. The study used instruments as self-administered questionnaires and semi-structured interviews to collect primary data from the respondents and hence this study has sampled 256 group borrowers. A two stages sampling technique had been used to draw sample from the population. In the first stage, four Woredas was randomly selected among 16 Woredas among the Woredas that OCSSCO has a branch within the zone. In the second stage, 256 group borrowers had been randomly drawn from each of the four Woredas these Woredas are Karsa, Mana, Sakka cokorsa and Gomma Woreda. To determine sample size we used the following formula, by assuming that Δ =0.5. That is in the absence of specific information about Δ or $\sigma$ effect size of $\delta$ could be 0.5 that is the medium one to survey sampling determination.

$n = \frac{16}{\Delta^2}$ Or $n = \frac{16}{\delta/\sigma}$(Allen Jr 2011).

Where n = the sample size and

Δ = variance

Therefore, $n = \frac{16}{0.5^2} = \frac{16}{0.25} = 64$

Based on the above description and result, we multiplied the result by number of the Woredas randomly selected. So the result is 64*4=256.

**ECONOMETRIC MODEL**

In the analysis of binary response, Logit model is a parametric lead practice. Many researchers apply the Logit model routinely to analyze binary data. Maddala 1987 states that for the analysis of the fixed effects model, the Logit model is the appropriate one. The reason of choosing of Logit in the fixed effects cannot be justified by anything but convenience. Also Amemiya 1985 identify a major justification for the Logit model is that the logistic distribution function is similar to the normal distribution function but has a simpler form. In the Logit model the errors are assumed that the standard logistic. The Logit model used in order to avoid the problem encountered by Ordinary Least Square (OLS) model such as, the marginal effects are linear in parameters, there is heterocedasticity, OLS might predict values below zero and above one (Truglia, 2008). Based on the above advantage and other specification we used the Logit model.

$$F(z_1) = \frac{\exp(z_t)}{1+\exp(z_t)} \quad [1]$$

Hence;

$$log\frac{F(z_t)}{1-F(z_t)} = z_t \quad [2]$$

Note that for the Logit model

$$log\frac{p_1}{1-p_t} = \beta_0 + \sum_{j=i}^{k}\beta_j\, x_{ij} \quad [3]$$

The left hand side of this equation is called the log-odds ratio. Thus the log- odds ratio is a linear function of the explanatory variables. So the study has been conducted by using the Logit model that has a regression model of

$$y = \sum_{j=1}^{k}\beta jxij + \mu \quad [4]$$

Where "y" is dependent variables,
"xij" is explanatory variables and
"μ" is error term.

In this, what had been observed is a dummy variable "y" defined by:

y =1 if y > 0 and
y = 0 if otherwise

**DEFINITION OF VARIABLES AND WORKING HYPOTHESIS**

**TABLE 1: DESCRIPTION OF VARIABLES AND MEASUREMENT**

| Variables | Type | Measurement | Variable label |
|---|---|---|---|
| Ag | continuous | year | Age of the respondents |
| Educ | continuous | year of education | Education level of the respondents |
| Las | continuous | local measurement[1] | Land size |
| OTSC | Dummy | yes=1, no=0 | Other source of credit |
| Kmbegif | Dummy | yes=1, no=0 | Knowing members before group is formed |
| Numgroup | continuous | number | Number of the group (group size) |
| Gen | Dummy | yes=male, no=female | Gender of the borrower |
| Sgmbtf | Dummy | yes=1, no=0 | Screening the group |
| Rulecond | Dummy | yes=1, no=0 | Internal rule and conduct |
| Viseot | Dummy | yes=1, no=0 | Visiting each other (peer pressure) |
| Crovgr | Dummy | yes=1, no=0 | Credit officer visit |
| Dis | continuous | distance/ km | Distance from credit source |
| Training | continuous | number | Training given by the institution |
| Familysize | continuous | number | Number of the member of the household |

*Other source of borrowing:* Groups with more outside borrowing opportunities will have access to higher loan size giving group members greater incentive for risky projects. However, outside credit options can also be signals of credit quality, sound economic conditions in the area, etc. The expected sign on outside credit options would therefore be ambiguous.

*Age:* At younger age, people are likely to be at career stages where higher future incomes are expected. It may also be argued that the growth rate of income increases in the early stage of the earning life cycle but then declines, as one gets older. On the other side, at older age a borrower may acquire stability, may gain a lot of experience in running a business or may feel a sense of more responsibility hence could be positively related to loan recovery. Therefore, it will be difficult to hypothesis the sign.

*Education:* the educational background of the group ranges from illiterate to tertiary. It is assumed that as the lender gets educated, they could acquire more knowledge so that their efficiency in allocation of resources increases and so does the proper utilization of the loan. Their ability to adopt themselves to changing situation would be better than the illiterate ones; hence it would have positive relation with effectiveness of group lending and its impact on profitability.

*Sex:* Most studies attach positive sign to females in relation to repayment that show the effectiveness of group lending arguing that female borrowers feel more responsibility to their families than male counterparts. In opposite to this we hypothesized that lending to male is effective and has positive impact on loan repayment performance.

*Training:* Training may avoid problems from emerging and may teaching groups to develop a stronger intergroup contract, leading to better group lending effectiveness. The program may train groups very effectively so that they learn how to create a system of contingent contracts to obtain or cover the repayment of an individual experiencing problem which is the indicator of the effectiveness of group. Therefore, training may have positive sign on the effectiveness of group borrowers.

*Screening:* The variable screening is a dichotomous variable that equals "1" if the group has screen the group to reject a person who wanted to join and "0"otherwise. The variables screen is meant to measure the ability of group members to exclude members from joining the group. These variables contain information about group members at the moment the group is being formed. This may have a positive relationship with the effectiveness of group lending and its impact on profitability.

*Peer pressure:* Peer pressure measures the group members' willingness to influence the in effective partners (groups). Peer pressure may have positive sign on the effectiveness of group lending.

*Social ties*: reflect the degree of homogeneity/connectivity among the group members. Based on this the social ties may have positive sign on the effectiveness of the group and its loan repayment performance of the individual borrowers.

*Family size:* if the group member has large household size, a considerable amount of income from the project could be diverted away from the intended purpose of the project, which may be the sign of loan diversion and hence would results unable to pay back their loan. Therefore, the sign is expected to be negative.

*Loan Diversion*: If the borrower diverted to more productive use than the intended project, then it will have a positive impact. However, the borrower (group member) diverted it to unviable projects it will have a negative impact. Thus it all depends on their performance of the project the loan is diverted to. Therefore, the sign of the variable can't be predetermined.

*Group size:* to identify that the size of the group does have influence on the effectiveness of the group lending and its impact on profitability.

[1] In the local areas land is measured by "ttimad"

*Internal rule and conduct:* it identifies the effect of rule and conduct on the effectiveness of group lending and its impact on profitability. The researcher assumed that it has positive impact on the effectiveness of group lending and its impact on profitability.

## RESULTS

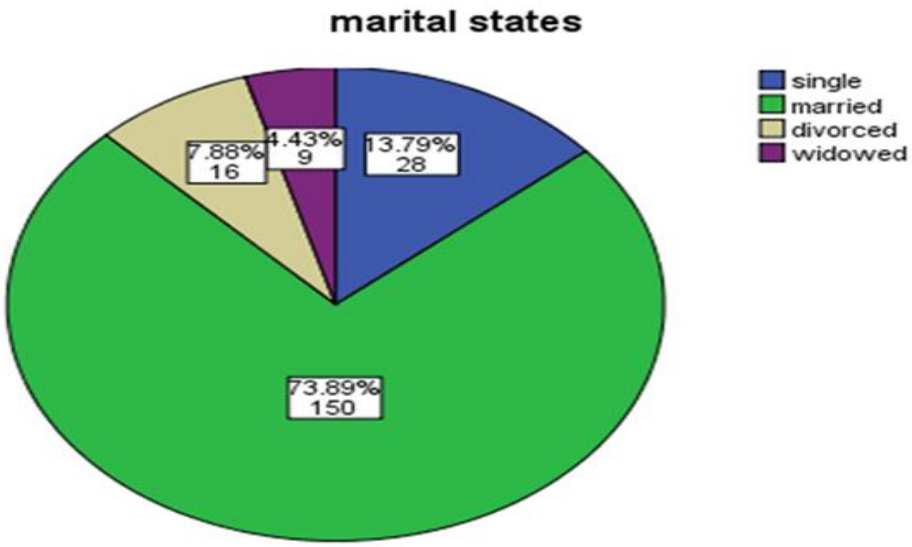
From the total 252 questionnaires intended to be collected from OCSSCO group based borrower, only 203 (81% response rate) questionnaires were effectively collected and analyzed. The selected sample size of this study was 252 OCSSCO group based borrower for whom questionnaire distributed and interviewed. Out of these, 203 from group based borrower were returned the questionnaires. The information obtained from document analyses used as a complementary data for analysis.

**TABLE 2: RESPONDENTS TAKEN PROPORTIONALLY FROM WOREDA**

| OCCSCO group based borrower Sample woreda | Sample size | Percentage (%) | Number of respondents who provide their reply | Percentage (%) |
|---|---|---|---|---|
| Kersa wereda | 64 | 25 | 50 | 24.60 |
| Seka chokorsa woreda | 64 | 25 | 47 | 23.50 |
| Mana woreda | 64 | 25 | 52 | 25.60 |
| Gomma woreda | 64 | 25 | 54 | 26.60 |
| Total | 256 | 100 | 203 | 100 |

**Source:** Survey of (2014)

**FIGURE 1: THE MARITAL STATES OF THE RESPONDENT**




**Source:** survey of (2014)

The marital status of the responding group members shows that 150 (73.9 %) of the respondents were married. While the rest of the respondents are; single, divorced and widowed with the count of 28 (13.8 %), 16 (7.9%) and 9 (4.4%) respectively. The groups that are formed with the married group member are influential on the effectiveness of group lending than the other group formed that is single, divorced and widowed. This is because the married people are worry and think for their family future life.

For the empirical analysis of this study, binary Logestic regression method was used to come up with the econometric results. For the test statistics 10% significant level is used to reject or not to reject the null hypothesis. The first test used in this study was Hosmer and Lemeshow model fitness test because they are the means to know whether the model is valid or not to continue with the regression. Accordingly, Omnibus tests of model coefficients and collinearity test were tested and the results are presented at the appendixes part. As these tests prove the validity of the model, the study had continued into regression analysis and hypothesis testing. Logistic regression was used to investigate the effectiveness of group lending among the OCSSCO borrowers. The maximum likelihood estimation technique was used. Tables 3 present the results of the logistic model for OCSSCO borrowers.

The result (Table 3) shows that predicted influencing factors were statistically significant at (Chi-Square = 175.838, P-Value = 0.000, 89 degrees of freedom, Nagelkerke R Square (R) = 0.774 and Cox and Snell R Square ($R^2$) = 0.579). The estimated coefficients were statistically different from zero variously at the 1%, 5% and 10% levels of significance. Overall, the logistic model successfully predicted factors contributing to the effectiveness of the group lending.

Correlation is a way to which two or more variables are associated with or related to each other. The inter correlation between the two variables can be measured by the partial correlation coefficient between one variable with another variable. As a rule of thumb, if the correlation coefficient between the two variables is greater than 0.8, one can conclude that there is a series problem of multicollinearity. Accordingly the test result shows that the correlation coefficient between all variables under consideration is less than 0.8 implying that the explanatory variables can separately contribute to the variation in the dependent variable.

**TABLE 3: LOGIT ESTIMATE FOR THE EFFECTIVENESS OF GROUP LENDING AND ITS IMPACT ON PROFITABILITY**

| | | | | | | | | 90.0 CI for Exp(B) | |
|---|---|---|---|---|---|---|---|---|---|
| | | B | S.E | Wald | Df | Sign. | Exp(B) | Lower | Upper |
| Step1[a] | Ag | .342 | .616 | .307 | 1 | .579 | 1.407 | .511 | 3.878 |
| | Educ | -.661 | .387 | 2.915 | 1 | .088*** | .517 | .273 | .976 |
| | Busty(1) | | | 15.387 | 3 | .002* | | | |
| | LaS | .586 | .328 | 3.187 | 1 | .074*** | 1.797 | 1.047 | 3.082 |
| | OTSC(1) | -4.019 | 1.634 | 6.051 | 1 | .014** | .018 | .001 | .264 |
| | Kmbgif(s.ties) | | | 6.696 | 2 | .035** | | | |
| | Numgroup | | | 12.612 | 2 | .002* | | | |
| | Gen(1) | | | 3.667 | 2 | .160 | | | |
| | sgmbtf(1) | 6.620 | 2.737 | 5.851 | 1 | .016** | 750.221 | 8.317 | 6.767E4 |
| | rulecond(1) | 10.842 | 3.859 | 7.891 | 1 | .005* | 5.111E4 | 89.434 | 2.921E7 |
| | viseot(1) | 40.944 | 2.502E4 | .000 | 1 | .999 | 6.048E17 | .000 | . |
| | Crovgr(1) | -8.165 | 4.707 | 3.008 | 1 | .083*** | .000 | .000 | .656 |
| | dis(1) | -3.670 | 1.169 | 9.848 | 1 | .002* | .025 | .004 | .174 |
| | training(1) | -2.421 | 4.019E4 | .000 | 1 | 1.000 | .089 | .000 | . |
| | Familysize | | | 13.572 | 3 | .004* | | | |
| | Constant | 4.407 | 1.063E5 | .000 | 1 | .457 | 82.035 | | |

***Source:*** Own computation from collected data (2014)

*, **, and ***, significant at significance level of 1%, 5% and 10% respectively.

*Chi-Square = 175.838, P-Value = 0.000, df = 89 Nagelkerke R Square = 0 .774 Cox & Snell R Square = 0 .579 and -2 Log likelihood =104.155[a]*

*Educational level (Educ):* The variable educational level of the respondents is positive and statistically significant at 10%. This show that, highly educated borrowers are 0.623 times better to repay their loan than when the group member is none educated (illiterates). This is because of the educated group member can manage their expenses and their business activities than illiterate group members. These play a great role on the effectiveness of group lending and its impact on profitability of the group. In line with this finding, Bassem (2008) showed that the more educated borrowers are supposed to have the necessary facilities to select the profitable projects and to manage them appropriately thereafter.

*Group Size /Number of member of the group (Numgroup):* The variable group size /member of group have positive and significant influence on the effectiveness of the group lending at 1%. This result implied that large number of member of the group is more likely repay their loan than those which have less number of group member. The impact of many members of group size /number of group on the effectiveness group lending are 0.002 times than those of less group size. On the contrary by the study of Okurut *et.al* (2009) the group size variable , which was measured by the number of people that form a particular group was found to have a negative and significant effect (at 5%) on loan repayment performance.

*Screening (sgmbtf):* Screening the group before the group is formed has a positive and significant influence on effectiveness of group lending at 5 % level of significance. This implied that the effectiveness of group lending is higher when the group member screen the group before formation than the group did not screen the group member. This help the group member to identify the behavior of the group member, who is hard worker and not and who worry about their credit. Because the group member who differentiated through this struggle for their group effectiveness. These show that the screening and effectiveness of group lending are directly related to each other. The influence of screening the member of the group before the formation is 2.017 times higher than the groups did not held on the screening of group members before the formation.

*Social ties (kmbgif):* Results on the effect of social ties on repayment are in line with (Zeller, 1998). Information contained in socially tied groups and group members' sensitivity to their social network both lessen the consequences of adverse selection and moral hazard problems which improve repayment performance that increase the effectiveness of group lending. This variable has a positive and significant influence on the effectiveness of group lending at 5 % level of significance.

*Other source of credit (OTSC):* This variable has positive and significant influence on group lending and its impact on profitability at 5 % level of significance. This show that as other source of credit decrease the effectiveness of group lending is increased. This is the same result (positive) as hypothesized before. Other sources of credit influence the effectiveness of group lending and its impact on profitability by 0.018 times than if there is no other source of credit to group based lending.

*Family size (Familysize):* Family size is positive and statistically significant at 1% level of significance. From the logistic regression result, it can be concluded that family size can influence the effectiveness of group lending positively and significantly. This implies that those borrowers with large family size have the advantage to use cheap labor cost of production and hence easily produce agricultural products. This result also confirms the same.

*Internal rule and conduct (rulecond):* the effectiveness of group lending is high when the group has internal rule and conduct than when the group did not have it. It indicates that as the internal rule and conduct strengthened the effectiveness of group lending by 10.842 units. Internal rule and conduct imposes the effectiveness of the group lending by 5.111 times than those groups with no internal rule and conducts.

*Land size (Las):* In this study the land owned by group members was 0.5 hectare at a minimum and 8 hectares at a maximum. The logistic model shows that land size variable has positive and significant 10%. The high land size owned by group borrower has positive impact on loan repayment performance than when the group borrower has less land size.

*Business type (Busty):* The business type variable was positive and significant at the 5% level of significance. This implied that the borrowers involved in agriculture, such as coffee plantation and animal fattening have impact on effectiveness of group lending. Also Bassem (2008) in his finding he puts the fact one cannot decide on an exact sign of the business type.

*Credit officer visit/staff pressure (crovgr):* Credit officer visit is the visit that the credit officer /staff held to look the business activities of the group borrowed the money from the institution (OCSSCO). The effectiveness of group lending is negatively related to the credit officer visit/staff pressure. The result is more of contradictory. This may be because the group members only think about their loan repayment only, not about the profitability of the group and they worried daily he/she would come today or tomorrow and the like.

*Distance (dis):* The main distance between the group members is 0.5 km at the minimum to 6 km at maximum on average at the rural area and 0.02 km at minimum and 1.5 km at maximum in average at urban area. The distance is taken approximately as the respondents' replied in this study. This variable had a negative and significant influence on the effectiveness of group lending. The effectiveness of group lending is higher when the distance between the members is less than as compared to it is longer.

## CONCLUSIONS

With regard to credit default as an effectiveness of group lending measure for the study, Educational level, Business type, Land size, Other source of credit, Social ties, Number of group/group size, internal Rules and conduct, Credit officer visit/pressure, Distance and family size variables have a positive and significant impact on the effectiveness of group lending. Against the hypothesis one the regression analysis result indicated that female borrowers are effective. This means that females are more effective in group lending than male counter parts. Also the family size had a sign against the hypothesized at the regression analysis result. This means that as the family size increase the effectiveness of group lending can increase. This show that as the group members strives for the survival of his/her family life he/she also contributes for the effectiveness of group lending. In opposite to the above explanatory variables the variables such as Age, Gender, Visiting each other/peer pressure and training have positive sign but insignificant influence on the effectiveness of group lending.

## RECOMMENDATIONS

OCSSCO should give attention to the group member that are formed from educated people because the group can understand the training given to them to manage their credit, pay their credit and can save the money they got. It is also essential that the prospective microcredit clients (group lending) should given training prior to being entrusted with loans for a long period of time that enables the members to manage their credit, save and repay their credit.

The group members recruited into the credit program should have adequate business experience in their Kebeles or villages in some group based activities such as Kebele administration, Idir Iqub and the like to run viable business. The members of group formation into the credit program should be formed without the initiation of credit officer. This does not mean that the credit officer totally held in the initiation of the group formation, even if the credit officer take part in the initiation in few, the credit officer should save themselves from initiation to form the group. The OCSSCO should give loan to group member that are located at the nearest to each other those who can visit each other to discuss about their business in detail daily.

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## APPENDIX

**HOSMER AND LEMESHOW TEST**

**CLASSIFICATION TABLE[A,B,C]**

| Observed | | | Predicted | | |
|---|---|---|---|---|---|
| | | | know the credit default of the group | | |
| | | | Yes | No | Percentage Correct |
| Step 0 | | | | | |
| | know the credit default of the group | Yes | 0 | 93 | .0 |
| | | No | 0 | 110 | 100.0 |
| | Overall Percentage | | | | 54.2 |

a. No terms in the model.
b. Initial Log-likelihood Function: -2 Log Likelihood = 281.418
c. The cut value is .500

**OMNIBUS TESTS OF MODEL COEFFICIENTS**

| | | Chi-square | Df | Sig. |
|---|---|---|---|---|
| Step 1 | Step | 50.470 | 24 | .001 |
| | Block | 50.470 | 24 | .001 |
| | Model | 50.470 | 24 | .001 |

**MODEL SUMMARY**

| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
|---|---|---|---|
| 1 | 230.947[a] | .220 | .294 |

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

**HOSMER AND LEMESHOW TEST**

| Step | Chi-square | df | Sig. |
|---|---|---|---|
| 1 | 4.387 | 8 | .821 |

**CLASSIFICATION TABLE[a]**

| Observed | | | Predicted | | |
|---|---|---|---|---|---|
| | | | know the credit default of the group | | Percentage Correct |
| | | | Yes | No | |
| Step 1 | | | | | 62.4 |
| | know the credit default of the group | Yes | 58 | 35 | |
| | | No | 25 | 85 | 77.3 |
| | Overall Percentage | | | | 70.4 |

a. The cut value is .500

**CONTINGENCY TABLE FOR HOSMER AND LEMESHOW TEST**

| | | know the credit deffoult of the group = yes | | know the credit deffoult of the group = no | | |
|---|---|---|---|---|---|---|
| | | Observed | Expected | Observed | Expected | Total |
| Step 1 | 1 | 17 | 16.795 | 3 | 3.205 | 20 |
| | 2 | 15 | 15.355 | 5 | 4.645 | 20 |
| | 3 | 14 | 13.346 | 6 | 6.654 | 20 |
| | 4 | 11 | 11.116 | 9 | 8.884 | 20 |
| | 5 | 10 | 9.420 | 10 | 10.580 | 20 |
| | 6 | 10 | 8.064 | 10 | 11.936 | 20 |
| | 7 | 5 | 6.718 | 15 | 13.282 | 20 |
| | 8 | 5 | 5.678 | 15 | 14.322 | 20 |
| | 9 | 2 | 4.133 | 18 | 15.867 | 20 |

# MARKETING MARGIN OF ONION MARKETER'S IN SOME SELECTED AREAS OF PABNA DISTRICT

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**ABSTRACT**

*Onion (Allium cepa L.) is one of the most important and widely used vegetable and spice crops in Bangladesh as well as in many countries of the world. During winter, onion is widely cultivated all over Bangladesh. A large number of people are involved in the production and marketing of the onion. The imbalance in the supply-demand in onion is increasing every year due to low production coupled with an increased population. Realizing the increasing importance of onion as spice, the present study was undertaken. Farmers in Pabna have achieved remarkable success in onion cultivation, officials said. Preliminary survey was conducted in Sujanagar upazila of Pabna district. The total sample size was 30, which include producer, faria, beparis, arathdar, wholesaler, retailer, consumer was selected purposively from different markets of Sujanagar Upazila. The total marketing cost was estimated at Tk. 275 per Mound of onion. Among all intermediaries Beparis cost were highest and the lowest for arathdar's. The net marketing margin of per Mound onion of farias, beparis, arathdars, wholesalers and retailers were Tk. 152.86, 33.14, 15.6, 79.2, 54.2, and 68 respectively. The value addition of onion in marketing chain for farmers, farias, beparis, arathdars, wholesalers and retailers were 24.52, 8.06, 7.81, 9.05, 8.08, and 8.23 for per Mound of onion. The entire farmers and the intermediaries in the study areas faced many problems in the marketing of onion. The major problems faced by them included in the study & measures suggested by the reporting farmers and intermediaries for solving the problem.*

**KEYWORDS**
net marketing margin, spice crop, intermediaries; value addition; marketing cost.

## 1. INTRODUCTION

Onion (*Allium cepa L.*) is one of the most important and widely used vegetable and spice crops in Bangladesh as well as in many countries of the world. It ranks first in production (889000 MT) and second in area (125101 ha) among the spices (BBS, 2008). It covers almost 36% of the total areas under spices. During winter, onion is widely cultivated all over Bangladesh. Farmers generally follow traditional method for cultivating onion in Bangladesh. Area and production of onion in Bangladesh during the last five years are given below; Although production of onion is increasing day by day, but in a land hungry country like Bangladesh it may not be possible to meet the domestic demand due to increase in population. There is an acute shortage of onion in relation to its requirement. Every year, Bangladesh has to import a big amount of onion from neighboring and other countries to meet up its demand. Total import of onion stood at 55499 metric tons in 2005 (BBS, 2007).

The imbalance in the supply-demand in onion is increasing every year due to low production coupled with an increased population. Onion suffers from many diseases, such as leaf blight, downy mildew, purple blotch, white rot, neck rot and Fusarium basal rot among which leaf purple blotch caused by Alternaria porri (Ellis) Cif. is a major one. This disease caused substantial loss of both bulb and seed yield of onion in most onion growing countries including Bangladesh.

It is, thus, a serious bottleneck in the cultivation of onion. The extent of yield loss incurred by the diseases was not well documented; there were evidences of complete damage of a number of onion yields every year. Although water is regarded as the life blood for plants, it is generally believed that onion plants become susceptible to diseases when produced under irrigation.

So, many farmers do not apply irrigation to onion. Some farmers irrigate this crop, but with a lower amount and number of irrigation than required. However, proper irrigation practices and disease control measures may be the key components of the strategy to offset the imbalance in the supply-demand in onion.

Onion is grown extensively during winter season in Bangladesh, occupying the first position both in area (291000 acre) and production (872000 m tons) (BBS, 2010). It is grown in more or less in all the districts of the country. It is grown in all the district of the Bangladesh and its cultivation on commercial scale is found to be concentrated in greater district of Faridpur, Dhaka, Rajshahi, Comilla, Rangpur and Pabna. There is an acute shortage of onion in relation to be requirement. This necessitates an improvement of per hectare yield, which is possible through adoption of high yielding varieties and judicious application of fertilizer. The mean yield of onion in Bangladesh is very low (2.96t/acre) compared to world average of 6.99 t/acre (FAO, 1999).

## 2. OBJECTIVES OF THE STUDY

The specific objectives of the study are as follows:

- To estimate marketing cost, margin and price at various stage.
- To identity problems and recommendation for solving such problems.

## 3. JUSTIFICATION OF THE STUDY

Agriculture sector contains to play a very important role in the economy of Bangladesh. Agriculture sector attained modest growth and experienced slow transition during the two decades since independence. The goal of the sector was to replace the traditional and vulnerable agriculture by modern agriculture capable of sustained growth.

The study would be justified on the following issue-

- The research would be helpful for the government research, planning and the policy making.
- It would provide information to farmers, intermediaries and consumer in providing their efficiency in onion marketing in the country.
- It would provide information about the marketing channel, value addition about the onion market in Bangladesh.
- It would add new knowledge in the field of onion market and build a foundation for further research in this respect.

## 4. REVIEW OF LITERATURE

The aim of the present chapter is to review empirical studies related to this price of research work. Many research and studies were conducted on Onion production and marketing is abroad. But in Bangladesh there are very few studies on onion marketing and value chain. Some important studies on onion production, which have been conducted in the recent past, are discussed below:

Rashid et al. (2002) conducted a study on an economics of Onion cultivation at Foridpur region in Bangladesh. They conducted that the profitability of the input utilization patterns in and the constraints to onion cultivation in Foridpur, Bangladesh were examined. Data for the crop year 1999-2000 were obtained from a sample of 100 onion farmers. Onion cultivated was profitable in study area. Excessive use of insecticides and fertilizers, lack of quality seeds and high cost of seedlings were some major production constraints of Onion production.

Farmers in Pabna have achieved remarkable success in onion cultivation, officials said. Although a majority of the onions produced in the country come from Pabna, the farmers in the district are more frustrated over poor market prices. According to the Department of Agricultural Extension (DAE) in the district, a total of 36,040 hectares of land in 9 upazilas in the district were brought under onion cultivation this year although the target was 33,100 hectares. Each hectare produced at least 10 to 10.5 tons of onions, while the amount was 8.5 tons last year, officials said.

Chanda (1990) conducted a study on onion and garlic in India. Area of production of onion garlic in the world and India, exports from other countries and factor limiting production and productivity in India are described. The research infrastructure, varietal improvement and productivity in India are described.

Mahmood (1995) examined the relative profitability of selected spices, compared with their competing crops. Among all competing crops onion was the most profitable crop with net profit of Tk. 26673, which was followed by potato (Tk 25875), lentil (Tk.20652.1) and garlic (Tk 16755.49) in respect of net return per hectare.

Singh (2005) conducted an economic study on production and marketing of vegetable in Bangladesh. He used data collected for the year 1997-98. The study analyzed the data on tomato, onion, arvia, okra, brinjal, and potato. He examined production costs and returns; marketable and marketed surplus; marketing cost; channels, margins and efficiency.

Hossain (1974) conducted a short analysis of consumer demand for onion in Maymnshingh town. The elasticity of onion has been estimated to be from 0.38-0.94 which indicated that one percent increase in consumer's aggregate expenditure would bring less than one percent increase in the quantity of onion demanded. The computed elasticity with respect to aggregated expenditure indicated that onion has an inelastic demand with per capita daily consumption of onion was estimated to be 0.93 seers during its peak supply period. The income elasticity of onion for the urban panel consumers was estimated to from 0.38-0.94, which indicated that onion was a normal good and not a luxury food item of urban consumers. Price elasticity's of onions ranged from (-0.56 to-1.26) for low income people, and it ranges from -0.61 to-0.95 for high income people. The analysis or cross price elasticity of onion with respect to potato, been and cauliflower and cabbage provided pervasive results with unexpected signs.

Rahman (2004) studied effect of growth regulators on growth and yield of three varieties of onion growth from set. Three varieties of onion viz; Taherpuri, Zhitka, kalashnagar and four different growth regulators, namely IAA (200ppm), GA3 (100 ppm), NAA (200 ppm), CCC (500ppm) and control were used. The Taherpuri produced the highest, number of leaves per plant, bulb diameter, mean bulb weight, and bulb yield compared to control plants of onion.

From the above discussion, it is clear that several studies have been conducted on onion production and marketing in Bangladesh. The present study was, therefore undertaken to determine the profitability of onion and marketing of onion. Findings of the review would help conceptualization on the important aspects of the onion marketing system in general and understanding functions of the market actors in onion marketing in the selective areas in particular.

## 5. METHODOLOGY OF THE STUDY

Farm management research depends on the proper methodology of the study. Proper methodology is a prerequisite of a good research. It's also Involves collection of primary data from the farmers. The type of primary data to be collected however depends upon the nature of the study and its aims and objectives. It's also depends on availability of necessary resources, materials and time.

**5.1 Selection of the study area:** Selection of the study area is an important step for the farm management research. "The area in which a farm business survey is to be carried out depends on the survey and the possible cooperation from the farmers" (Yang 1965). Such a study usually requires selection of an area for collecting data in accordance with the objectives set for the study.

The researcher himself conducted a preliminary survey in Sujanagar upazila of Pabna district to achieve the objectives of the study. Keeping this mind, five villages namely, Sadlapur, Vitbila, Raipur, khetupara, Bonkola under Sujanagar Upozilla in the district of Pabna were selected purposively because a large number of farmers grow onion in these areas.

The main considerations behind the selection of above Upazilas as study are as follows:

1. The Upazilas were found to be good onion growing areas.
2. There was high expectation to get cooperation from the farmers and intermediaries.
3. Easy accessibility and good communication in the Upazilas.

**1.2 Period of study:** Since farming is seasonal one, a farm business survey should cover a whole crop year in order to have a complete sequence of crops. The researcher must determine to what extent the information for a particular year represents normal or average condition, particularly for crop yields, annual production and price level. Farmers generally plant onion from mid-December to January and harvest after three or four months. The data collection period, therefore pertained this period of 2012.

**1.3 Selection of sample and sampling technique:** It is not possible to make a farm business survey covering all farms. For this reason, sampling was done to select representative farms to minimize time and cost of the study. Producers were selected from different villages under the Upazilas. Farias, Beparis, Arathdars, Wholesalers, and Retailers were selected from different markets. A total number of 30 farmers and intermediaries who cultivated and traded onion where selected purposively from different villages and markets of the sujanagar Upazilas of Pabna.

**1.4 Preparation of survey schedule:** Preparation of survey schedule is an important part of the study. A comprehensive survey schedules were set to collect necessary information from the farmers in such a way that all factors in the production of onion could be included in conformity with the objectives of the study. Before finalizing the schedule, it was pre-tested for judging its suitability with respondents.

**1.5 Collection of Data:** Obviously, both technical and socioeconomic data are needed in the relevant research. The researcher himself collected the data by interviewing the selected respondents. It was very difficult to collect accurate data since farmers did not keep any written records of their farm activities. To overcome this problem, all possible efforts were made by the researcher to ensure the collection of reasonably accurate information from the field. At first, the objectives of the present study were explained to the farmers and were requested to provide correct information so far as they could remember.

**5.6 METHOD OF DATA COLLECTION**

**5.6.1 PRIMARY DATA COLLECTION**: Primary data were collected from primary producers, Bepari, Faria, wholesaler, and Retailer. Selected respondents were interviewed personally with the help of pre-tested questionnaires. Framers' fields were also visited in order to get clear understanding, observations and perceptions about the production and marketing systems in the study area. Primary, secondary and terminal markets were also visited for primary data collection and, field perception and observation.

**5.6.2 SECONDARY DATA**: The secondary sources include govt. publications; annual reports, seminar papers, journals, published and unpublished thesis, and topic reelected various books, BBS, web site etc.

**5.7 PROCESSING OF DATA**

The collected data were manually edited and coded. Then all the collected data summarized and scrutinized carefully. Data were processed to transfer to master sheets to facilitating tabulation in order to meet the objectives of the study. It may be noted here that information was collected initially in local units.

## 6. RESULTS AND DISCUSSION

In this chapter, an attempt has been made to analyze the marketing cost, margins and price spread of different market participants in the marketing of onion in the study area.

### 6.1 MARKETING COSTS

Marketing costs are composed of the total costs incurred on marketing of produce by each agency. One way of defining costs is as all the expenses incurred in organizing and carrying out the marketing process. Another definition is as the charges which are paid for any marketing activity such as, assembling, transportation, storage, grading processing, wholesaling and retailing. The most important factors, which influence marketing costs, are distance between production and consumption markets, conditions of the roads, seasonality, perish ability, packaging, storage and processing (Smith, 1992). In the present chapter, marketing cost for different items at farmer's level as well as intermediaries level have been work out.

### 6.1.1 MARKETING COSTS OF FARMER

Major items of marketing cost farmers all of the groups are transportation, market toll, grading, storage and wastage. Data on the marketing costs of onion have been presented in table.

**TABLE 1: MARKETING COST OF FARMER**

| Cost items | Cost(Tk./ Mound) |
|---|---|
| Transportation | 14 |
| Marker toll | 6 |
| Personal expense | 8 |
| Storage | 10 |
| Wastage | 16 |
| Grading | 4 |
| Total | 58 |

Source: Field survey (2012)

The marketing cost of farmers has been calculated per Mound basis. Total marketing of farmers of the study area was Tk.58 per Mound. Table shows that the highest cost item of farmers of the study area was wastage and Transportation.

### 6.2.2 MARKETING COST OF FARIAS

Major items of marketing cost farias all of the groups are Transportation, Loading and unloading, Grading, Wastage, Market toll, Personal expense. Data on the marketing costs of onion have been presented in table.

**TABLE 2: MARKETING COST OF FARIAS**

| Cost items | Cost(Tk./Mound) |
|---|---|
| Transportation | 8 |
| Loading and unloading | 3.8 |
| Grading | 2.8 |
| Wastage | 10.4 |
| Market toll | 4 |
| Personal expense | 14 |
| Total | 43 |

Source: Field survey (2012)

The marketing cost of farmers has been calculated per Mound basis. Total marketing of farmers of the study area was Tk.43 per Mound. Table shows that the highest cost item of farmers of the study area was Personal expense.

### 6.2.3 MARKETING COST OF BEPARI

Major items of marketing cost Bepari all of the groups are Transportation, Loading and unloading, Wastage, Salary and wages, Packaging, Market toll, Personal expense, Arathdari commission, Tips and donation. Data on the marketing costs of onion have been presented in table.

**TABLE 3: MARKETING COST OF BEPARIS**

| Cost item | Cost(Tk./ Mound) |
|---|---|
| Transportation | 16 |
| Loading and unloading | 6.8 |
| Wastage | 6 |
| Salary and wages | 5 |
| Packaging | 3.6 |
| Market toll | 4 |
| Personal expense | 7 |
| Arathdari commission | 14 |
| Tips and donation | 4 |
| Total | 66.4 |

Source: Field survey (2012)

The marketing cost of farmers has been calculated per Mound basis. Total marketing of farmers of the study area was Tk.66.4 per Mound. Table shows that the highest cost item of farmers of the study area was Transportation cost.

### 6.2.4 MARKETING COST OF ARATHDAR

Major items of marketing cost Arathder all of the groups are Salary and Wages, Personal expense, Rent, Tax, and Miscellaneous. Data on the marketing costs of onion have been presented in table.

**TABLE 4: MARKETING COST OF ARATHDARS**

| Cost items | Cost(Tk./Mound) |
|---|---|
| Salary and Wages | 4.8 |
| Personal expense | 5.6 |
| Rent | 4.8 |
| Tax | 1.6 |
| Miscellaneous | 6 |
| Total | 22.8 |

Source: Field survey (2012)

The marketing cost of farmers has been calculated per Mound basis. Total marketing of farmers of the study area was Tk.22.8 per Mound. Table shows that the highest cost item of farmers of the study area was Miscellaneous.

**6.2.5 MARKETING COST OF WHOLESALER**

Major items of marketing cost Wholesaler all of the groups are Transportation, Loading and unloading, Packaging, Grading, Salary and Wages, Market toll, Tips and donation, Storage, Wastage, Personal expense, Tax etc. Data on the marketing costs of onion have been presented in table.

**TABLE 5: MARKETING COST OF WHOLESALER**

| Cost item | Cost(Tk/Mound) |
|---|---|
| Transportation | 6 |
| Loading and unloading | 4 |
| Packaging | 3.2 |
| Grading | 2.4 |
| Salary and Wages | 4 |
| Market toll | 3.2 |
| Tips and donation | 2 |
| Storage | 4 |
| Wastage | 4.8 |
| Personal expense | 8 |
| Tax | 3.2 |
| Total | 44.8 |

Source: Field survey (2012)

The marketing cost of farmers has been calculated per Mound basis. Total marketing of farmers of the study area was Tk.44.8 per Mound. Table shows that the highest cost item of farmers of the study area was Transportation.

**6.2.6 MARKETING COST OF RETAILER**

Major items of marketing cost Wholesaler all of the groups are Transportation, Grading, Market toll, Wastage, Personal expense, Tax, Entertainment, Tips and Donation. Data on the marketing costs of onion have been presented in table.

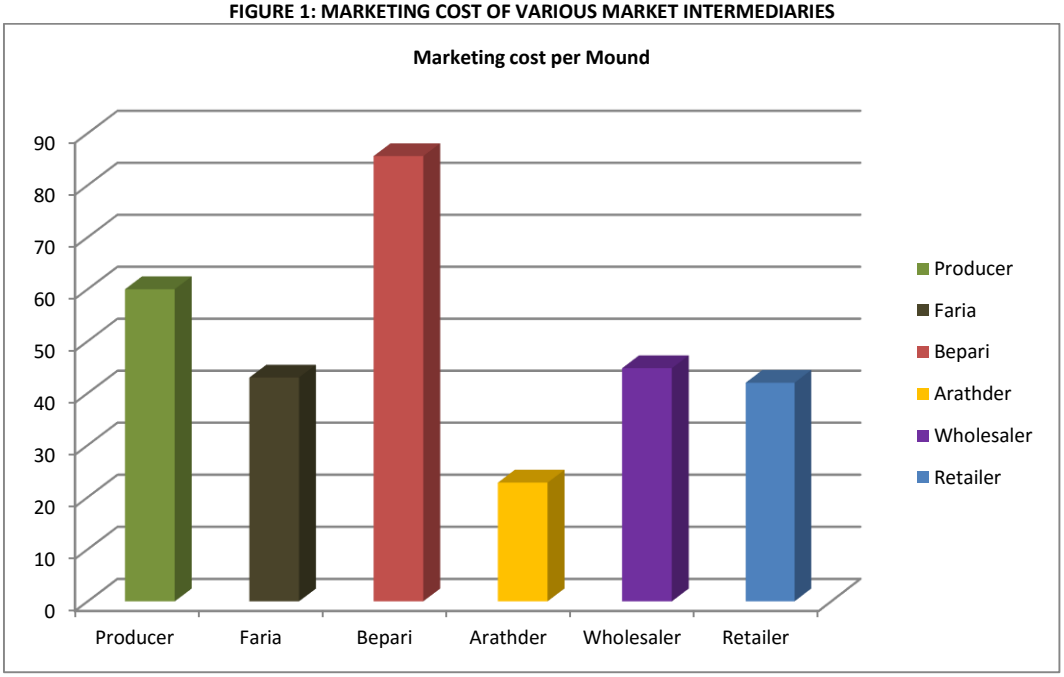
**TABLE 6: MARKETING COST OF RETAILERS**

| **Cost items** | **Cost(Tk/ Mound)** |
|---|---|
| **Transportation** | 4 |
| **Grading** | 2.4 |
| **Market toll** | 3.6 |
| **Wastage** | 10 |
| **Personal expense** | 8 |
| **Tax** | 6 |
| **Entertainment** | 4 |
| **Tips and Donation** | 4 |
| **Total** | 42 |

Source: Field survey (2012)

The marketing cost of farmers has been calculated per Mound basis. Total marketing of farmers of the study area was Tk.42 per Mound. Table shows that the highest cost item of farmers of the study area was Wastage.

**FIGURE 1: MARKETING COST OF VARIOUS MARKET INTERMEDIARIES**




From the following Diagram we may see that the highest Marketing cost of the intermediaries is Bepari because of the fact that they incurred higher transportation cost as they took onion from primary market to the long distant urban market and the lowest marketing cost of the intermediaries is Arathdar.

**6.3 MARKETING MARGIN OF ONION**

Marketing margin at a particular stage of product flow may be defined as the difference between purchase and sale price of a commodity. Marketing margin is defined as the difference between what is paid by the consumers and what is received by the producers.

Gross marketing Margin = selling price – Buying price

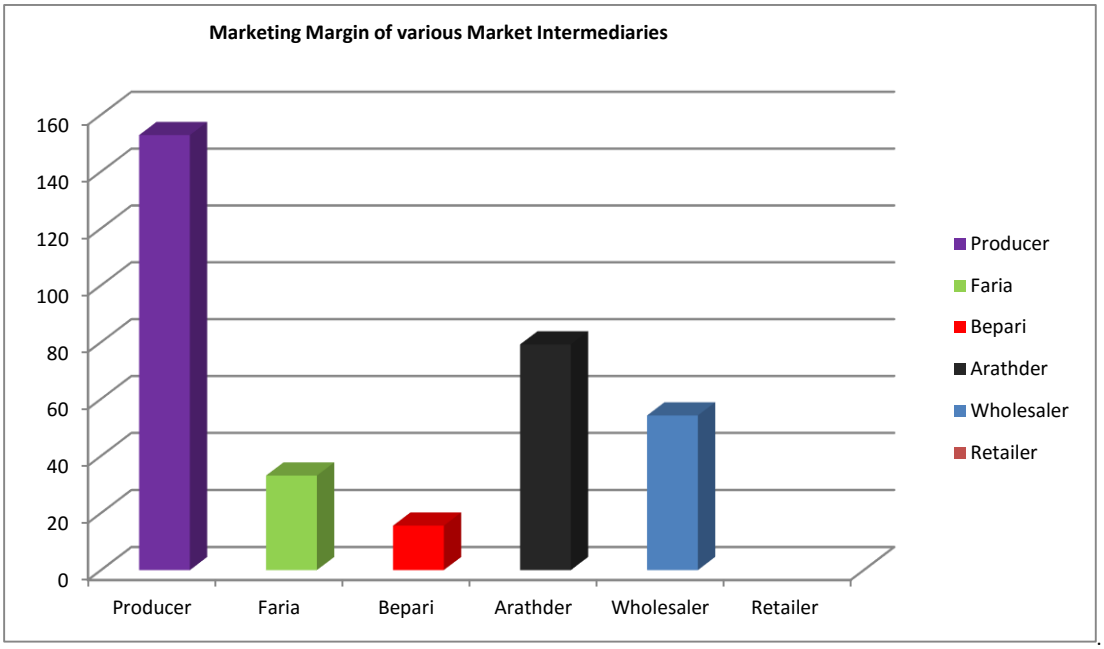
Net Marketing margin = Marketing Margin – Marketing cost

TABLE 7: MARKETING MARGIN (TK/MOUND) OF ONION FOR VARIOUS INTERMEDIARIES

| Intermediaries | Purchase price (Tk/mound) | Sales price(Tk /mound) | Gross marketing margin (Tk /mound) | Marketing cost (Tk /mound) | Net marketing margin (Tk /mound) |
|---|---|---|---|---|---|
| **Producer** | 655 | 867.86 | 212.86 | 60 | 152.86 |
| **Faria** | 867.86 | 944 | 76.14 | 43 | 33.14 |
| **Bapari** | 944 | 1024 | 80 | 64.4 | 15.6 |
| **Arathder** | 1024 | 1126 | 102 | 22.8 | 79.2 |
| **Wholesaler** | 1126 | 1225 | 99 | 44.8 | 54.2 |
| **Retailer** | 1225 | 1335 | 110 | 42 | 68 |

Source: Field survey (2012)

FIGURE 2: NET MARKETING MARGIN OF VARIOUS MARKET INTERMEDIARIES




Net marketing margin for the various market intermediaries are different. The heights net marketing margin is of Producer and the lowest net marketing margin is of bepari. The Net marketing margin of farmers, Farias, beparis, arathdars, Wholesalers and Retailers were respectively of 152.86, 33.14, 15.6, 79.2, 54.2, and 68 of all the participants.

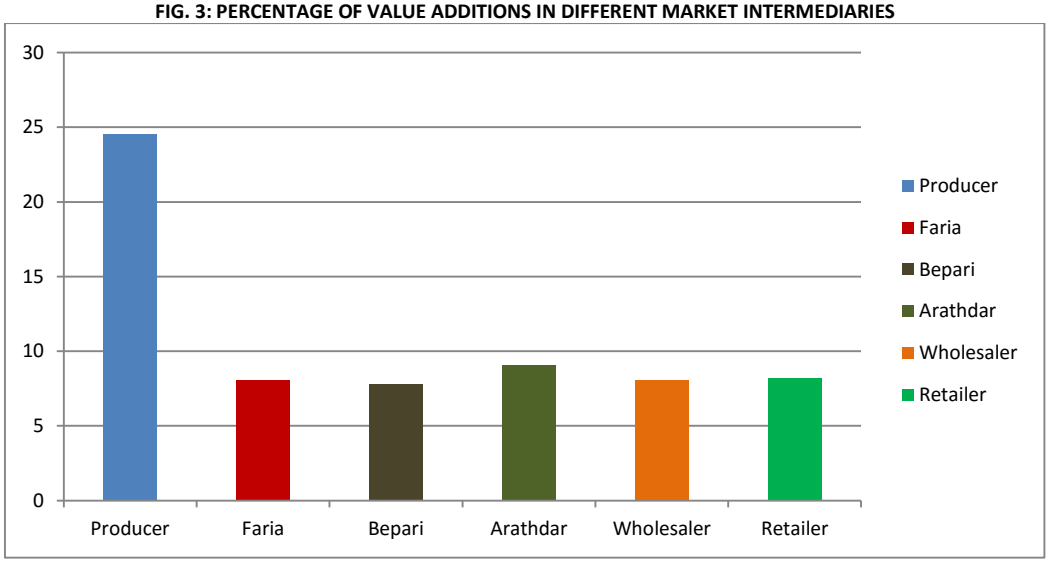
**6.4 VALUE ADDITION OF ONION IN SUPPLY CHAIN**

Value chain analysis is the profit and cost effectiveness analysis of an enterprise. Profit is the difference between the total value of product and total cost of performing the activities. The profit and cost effectiveness of enterprise are assessed by the tool known as Generic Value chain analysis suggested by porter (1985).

TABLE 8: VALUE ADDITIONS (TK/MOUND) OF ONION IN SUPPLY CHAIN

| Intermediaries | Purchase price (Tk/mound) | Sales price (Tk/mound) | Value Addition (Tk/mound) | % of Value Addition (Tk/mound) |
|---|---|---|---|---|
| **Producer** | 655 | 867.86 | 212.86 | 24.52 |
| **Faria** | 867.86 | 944 | 76.14 | 8.06 |
| **Bapari** | 944 | 1024 | 80 | 7.81 |
| **Arathder** | 1024 | 1126 | 102 | 9.05 |
| **Wholesaler** | 1126 | 1225 | 99 | 8.08 |
| **Retailer** | 1225 | 1335 | 110 | 8.23 |

FIG. 3: PERCENTAGE OF VALUE ADDITIONS IN DIFFERENT MARKET INTERMEDIARIES



Percentage of Value addition for the various market intermediaries is different. The heights Percentage of Value addition is of Producer and the lowest Percentage of Value addition is of bepari. The Net marketing margin of farmers, Farias, beparis, arathdars, Wholesalers and Retailers were respectively of 24.52, 8.06, 7.81, 9.05, 8.08, and 8.23of all the participants.

## 7. CONSTRAINS AND SOLUTIONS

Farmers faced a lot of problems in producing of onion. The problem is social and cultural, financial and technical. This chapter aims at represent some socioeconomic constrains and solution of producing onion. The problems and constrains faced by the respondent farmers and intermediaries in marketing of onion and solutions to those problems as suggested by them are discussed.

### 7.1 PROBLEMS AND CONSTRAINS FACED BY THE FARMER AND SOLUTIONS OF THESE PROBLEMS

**TABLE 9: PROBLEM FACED BY THE FARMER AND MEASURE SOLUTION**

| PROBLEMS AND CONSTRAINS FACED BY THE FARMER | MEASURE SOLUTIONS BY THE FARMER |
|---|---|
| Lack of market facilities<br>In the study area of Pabna district, the farmers faced the problem of protecting their onion from rain or sun due to lack of adequate market facilities. | Development of market facilities<br>The market facilities should be improved such as pucca floor, good shed, water and electricity supply etc. should be arranged to facilitate proper marketing of onion. |
| Lack of scientific knowledge of farmer<br>Although modern agricultural technologies have been using in the study area; a large number of farmers have no adequate knowledge of right does and method of using modern inputs and technologies of producing their enterprise. | Improvement of technical knowledge of farmer<br>Modern technologies use by the farmer and give their training about the new technology and scientific knowledge can solve this problem. |
| Dominance of intermediaries<br>Onion traders in the markets were small in number and they were found well organized. On the other hand, farmers were scattered and large in number. So, intermediaries always dominated the marketing system and they were in better position in determining price than the farmers. | More market power for Farmer<br>Government should ensure the more market power for the farmer. Large market share can ensure the farmer or producer market power. Market information can also help the farmer to get the more market power. |
| Low market price at harvest period<br>Low price of onion, particularly at harvesting time, caused disincentive to the farmers to produce the crop. | Provision of institutional credit<br>Institutional credit facilities that are loan should be made available to the farmers to fulfill their cash need. |
| Lack of transportation & communication<br>Due to poor transportation and communication facilities, the farmers were bound to sell their products in local markets at a low price. | Improvement of transportation facilities<br>Local Government administration may develop transportation facilities and reduce the farmer loss. |
| Lack of market information<br>Market information played an important role in onion marketing. There was lack of adequate market information in onion business in the study areas. | Available of market information<br>By dissemination of market information, the farmers should be helped in getting fair price of their products. |
| Lack of farmer community<br>Farmer is not organized at all like the other market intermediaries. | Formation of farmers' organization<br>This might improve bargaining power of the farmers, enabling them to face the intermediaries and ensuring them better return from onion production. |

### 7.2 PROBLEMS AND CONSTRAINS FACED BY THE INTERMEDIARIES AND SOLUTION OF THESE PROBLEM

**TABLE 10: PROBLEM FACED BY THE INTERMEDIARIES AND SUGGEST BY THE INTERMEDIARIES**

| Problem and constrains faced by the intermediaries | Measure suggest by the intermediaries |
|---|---|
| **Price instability**<br>Price instability was a major problem as reported by Farias, Beparis, wholesalers and retailers faced this problem. | **Ensure price stability by Govt.**<br>The marketing system should be improved to avoid the risk of price instability and weight loss and damage of onion. |
| **Lack of transportation facilities**<br>All intermediaries complained poor communication and lack of adequate transportation facilities as a marketing problem. | **Develop Transport Facilities by Govt.**<br>Government should take the initiative to increase the transport facilities and the transport medium. Their specific suggestions were to improve the transportation system. |
| **Lack of adequate market information**<br>The intermediaries did not get proper market information in the study area. | **Available Marker information**<br>Further suggested that market information should be supplied to the functionaries at right time. Government may ensure stable price by intervening the market in different ways. |
| **Lack of market facilities**<br>The intermediaries about 17 percent reported that lack of marketing facilities was a problem. Among the intermediaries, 100 percent Farias, 67 percent of Beparis, 40 percent of wholesalers and 11 percent of retailers faced this problem. | **Physical facilities of Market**<br>Physical facilities like proper supply of electricity and improvement of market facilities such as pucca floor, tinshed, supply of drinking water on the market would greatly facilitate the trading of onion. |
| **Lack of capital**<br>The traders in the study reported that they were severely affected by the lack of capital. | **Government and NGOs loan**<br>The intermediaries need much more cash for conducting their business. They suggested provision should be made for adequate and easy loans from institutional sources. |
| **Lack of storage facilities**<br>The intermediaries about 14 percent reported that lack of storage facilities was a problem. | **Government storage facilities**<br>The government should set up godowns for storing onion. They suggested that the improved storage facility would increase marketing efficiency. |
| **Weight loss and damage**<br>Weight loss and damage were a problem mentioned by all types of intermediaries except Farias and Arathdars | **Government intervention for weight loss and Damage**<br>The marketing system should be improved to avoid the risk of weight loss and damage of onion |
| **Problem of strike & political unrest**<br>Frequent strike and hartal often posed as a problem reported by intermediaries faced this problem and it is affected their trade. | **Government help and political stability**<br>Political stability and the government willingness can solve the problem of business and positively affect the trade. |

## 8. CONCLUSION

Onion is extensively cultivated species in sujanagar upazilla of pabna district. However, onion production was more profitable than any other spices production. The management practice of onion enterprise in the study area was not found efficient enough. The marketing channel of onion is so long. The farmers don't get the highest margin. Long marketing channel increase the product damage.

The well planned management training and the marketing practice in accordance to with their problems, need, goals, and resource base can lead to viable marketing practice and sustainable income from the onion production.

## 9. LIMITATION OF THE STUDY

1. The study was restricted to one upazilla where onion production was concentrated. The study might be meaningful results if it covered a number of upazilla producing potatoes.
2. Due to shortage of time the study could not cover wide side areas for collecting necessary information.
3. Some written records were maintained by the literate respondents, but maximum respondents had no written document. Therefore, the researcher had to depend solely on the memory of the respondents.
4. Respondents were very busy. A study that encloses interview of 30 samples cannot conclude anything accurately and as such, it was based on miss information.

## 10. RECOMMENDATIONS

The following suggestions are put forward with a view to improve the onion production as well as the existing marketing system of onion in the study areas.

- Operating capital is a problem for the resource poor farmers of the study area. Institutional credit program should be launched aiming at particularly the small and medium farmers. The commercial bank should be encouraged to provide loans at a low interest rate to enable farmers to operate their farming on commercial basis.
- Crop incurrence is new to Bangladesh. It was not experienced in study area. Farmers opined that if crop insurance could be executed they could be relieved from heavy loss due to natural climates.
- To avoid price fluctuation, support price should be ensured to the farmers.
- Market cost is high because of inadequate information, infrastructure, high price risk etc.
- So steps should be taken to ensure – fair price, quality of product, floor price, and the stability of production.
- Storage facilities and suitable market infrastructure should be improved at primary and secondary markets by establishing public and private go-downs and warehouse.
- Development of transportation system is essential for the improvement of trading and reducing cost of onion.

Moreover, a large number of people were involved in the production and marketing of onion. So, the farmers and intermediaries could be more benefited financially if production and marketing of onion were well expanded.

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# EFFECT OF JANANI SURAKSHYA YOJANA ON WOMEN: A STUDY IN BOUDH DISTRICT

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**ABSTRACT**

*Janani Surakkshya Yojana (JSY) is a safe motherhood intervention under the National Rural Health Mission (NRHM). It is being implemented with the objective of reducing maternal and neo-natal mortality by promoting institutional delivery among poor pregnant women. The scheme is under implementation in all states and Union Territories (UTs), with a special focus on Low Performing States (LPS) like Odisha. It was launched in April-2015 by modifying the National Maternity Benefit Scheme (NMBS) where the women get both the services of institutional delivery and financial incentive to take care the baby. Thirty beneficiaries of JSY women from different villages of Boudh district have been selected for the study. Personal interview method has been selected to collect information about benefits of JSY Scheme. After analysis, it has been seen that they are quite happy about the scheme as they get the assistance of ASHA workers for taking care of their health during pregnancy period and after math. They also get financial assistance for taking care of their health and that of the child.*

**KEYWORDS**

JSY, NRHM, ASHA workers, female foeticide, son preference.

## INTRODUCTION

Janani Surakshya Yojana (JSY) is an ambitious scheme launched under the National Rural Health Mission (NRHM), the Government of India's flagship health program. The scheme is intervention for safe motherhood and seeks to reduce maternal and neo-natal mortality by promoting institutional delivery, i.e, by providing a cash incentive to mothers who deliver their babies in a health facility. There is also provision for cost reimbursement for transport and incentives to Accreditated Social Health Activists (ASHA) for encouraging mothers to go for institutional delivery. The scheme is fully sponsored by the Central Government and is implemented in all states and Union Territories (UTs), with special focus on low-perferming states (LPS). There is also provision for roping in the private sector by giving accreditation to willing private hospitals/nursing homes for providing delivery services.

JSY was launched in April. 2005 and has been under implementation for over three years. The Ministry of Health and Family Welfare, Government of India, through UNFPA, commissioned a concurrent assessment of the scheme in large states, namely, Bihar, Madhya Pradesh, Rajasthan, Odisha and Uttar Pradesh which constitute 39 percent of the total population of the country.

## REVIEW OF LITERATURE

Review of literature is an essential part of research as it enables the researcher to know in which area researches have been done and which area is untouched by the researchers. Let us focus on few studies undertaken in this field.

Mridula Bhaduria (1992) in "Women in India" describes about the status of health of women. She stated that, the conditions of women in different countries and time varied from total slavery to complete freedom and sometimes even to status superior to that of men. One cannot also say that women have enjoyed an equal status in the West throughout its history or that they have always remained degraded in the West.

A World Bank Report on Women's Health in India released in 1996 has grimly catalogued the variety of ways in which women are discriminated. As girls, they get less vaccination, less education and less nutrition than their male counterparts and succumb more easily to sickness and disease. An alarming number of women also die in childbirth than a man in the West.

Neeraja K.P. (2003) in "Rural Women: Maternal Child Health and Family-Planning Services" stated that utilization of health delivery by rural women, the components of health delivery which encompasses anti-natal, natal, post-natal and child care services and family planning have been seriously analyzed which is a product of some case studies from some regions of Andhra Pradesh.

Ersheng GAO (2003) in "Reproductive Health, Gender and Development: An International perspectives" stated several other issues such as adolescent reproductive health, adult women's reproductive health and strategies for control of STDs: HIV /AIDS and women's development.

Bansal Sadhana (2001) in "Sex and Health Education for Modern Women" explores the role of women in all its dimensions. An insightful representation is made in this work about modern women's education which is a key towards development of the society.

## NEED / IMPORTANCE OF THE STUDY

Janani Surkshya Yojana is an ambitious scheme introduced by the government of India for safe motherhood and it also promotes institutional delivery. So the maternal mortality rate has been diminished after the launch of JSY scheme. In developing countries like India and low performing states like Odisha, it is a boon for the people. Many people in the village as well as the urban areas get benefit out of this scheme. It also furthers the development of a country as maternal mortality rate has been checked and the health workers like ASHA will take the total responsibility for keeping the mother and the child in safe condition, providing medicine, vaccine and other medical benefits under JSY. Thus it is accepted by the people as a welfare scheme of the Government.

## STATEMENT OF THE PROBLEM

Janani Surkshya Yojana (JSY) is a conditional cash transfer scheme introduced by Government of India to improve the institutional delivery rates and thereby reduce the maternal and infant mortality rate in all states and Union territories of it from April 2005. The pregnant women get the assistance of JSY scheme by the help of ASHA workers appointed under the National Rural Health Mission, Government of India. The assistance includes both the facility of institutional delivery and financial incentive to take care the child after birth.

## OBJECTIVES

The present study undertakes the following objectives:

- To assess the survival of healthy mother and children of Boudh District.
- To ascertain the impact of JSY on women.
- To study whether the incentives provided by the state is sufficient.
- To analyze the nexus between motherhood and women's independency.
- To measure the extent of benefits of the JSY.
- To suggest the difficulties for policy makers about the lacuna of the JSY.

## HYPOTHESES

The study has been undertaken to examine the following hypotheses:

- There is no significant difference between motherhood and women's independency.
- There is no any pressure on women by family members for conceiving baby.

## RESEARCH METHODOLOGY

The present study has been undertaken by following survey method. Thirty women JSY beneficiaries from different villages of Boudh district comprise the sample of the study. The researcher himself conducts face-to-face interview by the help of a structured questionnaire with the subjects to get required data. Other informations were given by the ASHA workers.

## RESULTS & DISCUSSIONS

The women of Boudh District expressed their views about the JSY scheme that, they have been benefitted under it only by the help of the ASHA workers of their respective villages. They feel safe and secure while delivering their child. In health centers, they took the advice of ASHA workers from time to time starting from register of their names in health centre to getting financial benefits after delivery of their child and aftermath. The services provided by health centre was good and this was facilitated by ASHA workers even though many of them were denied by their family members at first. To register their names under JSY scheme, the ASHA workers advised them about the benefit and hence both mother and child found safe and secure due to this scheme.

## FINDINGS

Following are some of the finding of the study:

- It has been seen that the mothers register their name in JSY scheme before 4/6 months of their pregnancy. They took the help of ASHA workers before the child was born at the health centre and after it also.
- They felt safe while delivering their babies in the health centre.
- They also got financial incentive from the government which served their expenses on the child, even though some of them complained about the bad habit of their husband and family members to utilize the money in household purposes.
- They also felt that, their health condition after returning from health centre was good as the treatment provided was good.
- Few respondents expressed that at first their family members denied them to register their names in JSY scheme but later agreed due to the aid and advice of ASHA workers.
- Almost fifty percent of the respondents expressed that, they conceive children due to the pressure of their family members.
- Few of the respondents expressed that they opt female feticide due to the pressure of their husband and other family members.
- Majority of the respondents expressed their positive reaction towards son preference and it is the major cause of female foeticide. There are also other causes like dowry burden, education expenses and the like.
- Finally, all the respondents felt that JSY scheme was a very good one which helped them to become a healthy mother and child. So the launch of the scheme under NRHM was appreciated by the women of Boudh District.

## RECOMMENDATIONS / SUGGESTIONS

In the present study, the researcher has selected thirty women from different villages of Boudh district who are the beneficiaries of JSY scheme. But the study may also be undertaken by taking subjects from other districts of Odisha or other states of India. So that, the result will be more trustworthy and generalized. The feelings of women from urban and rural areas regarding JSY scheme may be compared and contrasted to find out the difference in the results if any.

## CONCLUSIONS

It has been seen from the study that the women beneficiaries of JSY expressed their interest in it as it provides the opportunity to deliver their child safely. Side by side, they also expressed about their health which was also safe. They took the advice of ASHA workers and got the benefits of the JSY scheme. Even though there is pressure of family members for conceiving child and son preference, still than the launch of the scheme helped them a lot to have a safe child and mother.

## LIMITATIONS

The study has been delimited to thirty women from different villages of Boudh district. It tries to find out the effect of JSY on women who are the beneficiaries of the scheme. It further delimits on the problems faced by women in the family while conceiving and aftermath in the health centre, while taking care by ASHA workers.

## SCOPE FOR FURTHER RESEARCH

The present study highlights on the views of women beneficiaries on JSY scheme in Boudh district. The study may be extended to other districts of Odisha to get reliability of the result and to make it more comprehensive and trustworthy. Studies related to other issues of women during pregnancy and aftermath may also be undertaken to find out more problems faced by them while living in the family and in the society.

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## APPENDIX / ANNEXURE

**TABLE-1: CLASSIFICATION OF RESPONDENTS**

| Health centre | No.of respondents | Percentage(%) |
|---|---|---|
| Boudh | 10 | 33.3 |
| Janhapank | 10 | 33.3 |
| Baunsuni | 10 | 33.3 |
| Total | 30 | |

**TABLE – 2: AGE-WISE CLASSIFICATION**

| Age (Years) | No.of respondents | Percentage(%) |
|---|---|---|
| 17 - 19 | 0 | 0 |
| 20 – 24 | 5 | 17 |
| 25 – 29 | 19 | 63 |
| 30 – 34 | 4 | 3 |
| 35 – 39 | 2 | 7 |
| Total | 30 | |

**TABLE – 3: FAMILY TYPE CLASSIFICATION**

| Family type | No. of respondents | Percentage(%) |
|---|---|---|
| Joint | 1 | 3 |
| Neutral | 1 | 3 |
| Joint patriarchal | 25 | 84 |
| Neutral patriarchal | 3 | 10 |
| Total | 30 | |

**TABLE – 4: SON PREFERENCE OF THE FAMILY**

| Preference | No. of respondents | Percentage(%) |
|---|---|---|
| Son | 26 | 87 |
| No preference | 4 | 13 |
| | Total = 30 | |

**TABLE – 5: ANNUAL INCOME OF THE FAMILY**

| Income | No. of respondents | Percentage(%) |
|---|---|---|
| 5000 – 10,000 | 2 | 7 |
| 10,001 – 30,000 | 8 | 27 |
| 30,001 – 50,000 | 10 | 33 |
| 50,000 and above | 10 | 33 |
| | N = 30 | |

**TABLE – 6: EDUCATION OF THE RESPONDENTS**

| Education | No. of respondents | Percentage(%) |
|---|---|---|
| Std – V | 2 | 6 |
| Std – VI to X | 11 | 37 |
| Std – X to XII | 6 | 20 |
| B.A./B.Sc./B.Com | 11 | 37 |
| | N=30 | |

**TABLE – 7: RESPONDENTS OPTING FEMALE FOETICIDE**

| Female foeticide | No. of respondents | Percentage(%) |
|---|---|---|
| Yes | 8 | 27 |
| No | 22 | 73 |
| | Total = 30 | |

**TABLE – 8: USE OF FINANCIAL INCENTIVES**

| Used for | No. of respondents | Percentage(%) |
|---|---|---|
| Only child | 18 | 60 |
| Child and other expenses | 12 | 40 |
| | Total = 30 | |

**TABLE – 9: COMPULSION OF FAMILY FOR CONCEIVE**

| Family compulsion | No. of respondents | Percentage(%) |
|---|---|---|
| Yes | 15 | 50 |
| No | 15 | 50 |
| | Total = 30 | |

# GROWTH OF SPICES PROCESSING INDUSTRY IN TIRUCHIRAPPALLI DISTRICT, TAMIL NADU

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**ABSTRACT**

*An attempt on spices processing industry has been undertaken with the specific objective is: to analyse the growth of spices processing industry with reference to selected economic indicators. The relevant informations have been collected from secondary sources. The study covers the period from 1990 to 2012. The data for the selected product groups have been drawn from the records of the District Industry Centre (DIC), Tiruchirappalli. The cross check has been made in order to check the validity of secondary data collection with 20 spices processing units in the study region. By adopting the complete enumeration method, the data have been collected from all these units. For the purpose of analysis, the collected data were classified into product group-wise over different years and compound growth rate has been used. The overall growth rate of spices processing industry was 6.11 percent. From the analysis, it is witnessed that the performance of spices processing industry has grown drastically in the study period.*

**KEYWORDS**

growth, spices, spices-mix & spices processing industry.

## INTRODUCTION

The food industry across the globe is turning more and more to spice products to create newer varieties of food. New flavour systems are being developed to introduce new products in the market and create competitive advantages. The Indian spices products industry is engaged in continuous innovation and upgradation of process and products to meet the new global demand. India produce and market over 50 different varieties of spices and export them to more than 150 counties around the globe.

In recent years, the changes in technology and consumption pattern have made a large number of products obsolete. Consumer's acceptance of new products and new styles of living have become an accepted fact. Growing urbanization, the increasing number of working couples, the spread of consumption culture through television, the difficulty in getting reliable domestic help in the urban areas, the increasing affluence of the high and middle income group of the population, the trend towards "quick food" life styles and the high price of domestic cooking fuels etc., have resulted in a remarkable progress of the spices processing industry with diversified products in recent times. In this light of its importance, an attempt on spices processing industry has been undertaken with the specific objective is: to analyse the growth of spices processing industry with reference to selected economic indicators.

## DATA SOURCE AND METHODOLOGY

The relevant informations have been collected from secondary sources. The study covers the period from 1990 to 2012. The data for the selected product groups have been drawn from the records of the District Industry Centre (DIC), Trichy. The cross check has been made in order to check the validity of secondary data collection with 20 spices processing units in the study region. By adopting the complete enumeration method, the data have been collected from all these units. For the purpose of analysis, the collected data were classified into product group-wise over different years and compound growth rate has been used.

## GROWTH MODEL

Growth is studied with reference to annual growth rates computed based on the compound interest rate formula adopted by the World Bank using the least square methods.

The least squares growth rate 'r' is estimated by fitting a least squares linear regression trend line to the logarithmic annual values of the variable in the relevant period. More specifically, the regression equation takes the form

$\text{Log } X_t = a + bt + e_t$

Where this is the equivalent to the logarithmic transformation of the compound growth rate equation

$X_t = X_0 (1+r)^t$

In these equations 'X' is the variable, 't' is time period and $a=\log X_0$ and $b= \log(1+r)$ are the parameters to be estimated, 'e' is the error term. If $b^*$ is the least squares estimates of 'b' then the average annual percentage growth rate 'r' is obtained as (antilog $b^*$) –1 and multiplied by 100 to express it as percentage (World Bank, 1992).

## NUMBER OF ENTERPRISES

The spices processing industry products varieties from pure spices powder to instant mixes. On the basis of spices processing industry products, the products are classified into five categories; upto 5, 6-10, 11-15, 16-20 and above 20. The classification of products is based on their diversification are presented in the following tables.

Table 1 presents data on the number of spices processing industry in Tiruchirappalli district during the period from 1990 to 2012. In the beginning period, there were 5 units and the number has gradually increased to 20 units in 2012 thus recording a growth rate of 7.43 percent. Product group-wise in 1990, 6-10 has accounted for maximum number of 3 enterprises. Product groups both upto 5 and 11-15 witnessed the minimum of just one unit. In 2012, the maximum of 5 units observed in both upto 5 and 6-10. Product group-wise the highest growth rate of 8.71 percent was found in upto 5 followed by 7.17 percent in 16-20 and 6.59 percent in above 20. Product group 6-10 has continued to dominate with number of units but subsequently it not increased prominently over the period, which reflects the minimum growth rate of 1.31 percent.

It is evident that out of 5 product categories, upto 5 product group has obtained higher growth rate than the sectoral growth rate of 7.43 percent. High demand and availability of raw-materials is the main reasons for higher growth rate of spices processing industry in Tiruchirappalli district. It indicates this industry attracts more number of units and encoverage then for modernization.

**TABLE 1: NUMBER OF ENTERPRISES** (in numbers)

| Sl. No | Year/Units | Upto 5 | 6 to 10 | 11 to 15 | 16 to 20 | >20 | Total |
|---|---|---|---|---|---|---|---|
| 1 | 1990 | 1 | 3 | 1 | | | 5 |
| 2 | 1991 | 1 | 3 | 1 | | | 5 |
| 3 | 1992 | 1 | 3 | 1 | | | 5 |
| 4 | 1993 | 1 | 3 | 1 | | | 5 |
| 5 | 1994 | 1 | 3 | 1 | | | 5 |
| 6 | 1995 | 2 | 2 | 1 | 1 | | 6 |
| 7 | 1996 | 2 | 3 | 1 | 1 | | 7 |
| 8 | 1997 | 2 | 2 | 1 | 2 | | 7 |
| 9 | 1998 | 2 | 2 | 1 | 2 | | 7 |
| 10 | 1999 | 3 | 2 | 1 | 2 | | 8 |
| 11 | 2000 | 3 | 1 | 1 | 1 | 2 | 8 |
| 12 | 2001 | 2 | 2 | 1 | 1 | 2 | 8 |
| 13 | 2002 | 1 | 3 | 1 | 1 | 2 | 8 |
| 14 | 2003 | 1 | 4 | 1 | 1 | 2 | 9 |
| 15 | 2004 | 1 | 2 | 2 | 2 | 2 | 9 |
| 16 | 2005 | 4 | 4 | 2 | 2 | 2 | 14 |
| 17 | 2006 | 4 | 3 | 2 | 3 | 2 | 14 |
| 18 | 2007 | 6 | 2 | 3 | 3 | 2 | 16 |
| 19 | 2008 | 6 | 3 | 2 | 4 | 2 | 17 |
| 20 | 2009 | 5 | 4 | 3 | 3 | 3 | 18 |
| 21 | 2010 | 5 | 3 | 3 | 3 | 4 | 18 |
| 22 | 2011 | 7 | 3 | 3 | 3 | 4 | 20 |
| 23 | 2012 | 5 | 5 | 3 | 3 | 4 | 20 |
| **C.G.R** | | **8.71** | **1.31** | **6.27** | **7.17** | **6.59** | **7.43** |

Source: Compiled from the records of DIC, Tiruchirappalli

**GROSS BLOCK**

The data pertaining to the investment of gross block for a period of twenty-three years from 1990 to 2012 is shown in Table 2. Aggregate investment at the initial period was Rs.372.75 lakh and the cumulative investment has steadily increased to Rs. 1,190.42 lakhs in 2012. During the period of study, the sectoral growth rate of gross block by all the product groups was 5.16 percent, which was less than the growth rate recorded by number of enterprises.

At the beginning of the period, across the product groups, 6-10 had account for the highest investment in gross block of Rs.186.65 lakh. The minimum amount of Rs.90.55 lakh was found in upto 5. Crosswise the product groups, 6-10 fluctuated over the period and had account for the highest investment of Rs.344.58 lakh at the end of the study period. The least investment of 148.75 lakh was found in 11-15. Regarding the product group-wise rate of growth, above 20 recorded the highest growth rate of 5.70 percent followed by 4.32 percent in upto 5 and 2.05 percent in 11-15. The least growth rate of 1.41 percent was 6-10, since there is low growth in number of enterprise.

Out of 5 product groups, above 20 has attained higher growth rate than the sectoral growth rate of 5.16 percent during the period of study. It is indicting improvement in the assets base of the enterprises in above 20. Sharp rise in demand for instant mixes for home consumption and availability of suitable raw-materials were the main reasons for good growth rate.

**TABLE 2: GROSS BLOCK** (Rs. in lakh)

| Sl. No. | Year/Units | Upto 5 | 6 - 10 | 11 - 15 | 16 - 20 | >20 | Total |
|---|---|---|---|---|---|---|---|
| 1 | 1990 | 90.55 | 186.65 | 95.55 | | | 372.75 |
| 2 | 1991 | 90.64 | 189.93 | 96.64 | | | 377.21 |
| 3 | 1992 | 100.94 | 235.81 | 111.94 | | | 448.69 |
| 4 | 1993 | 103.21 | 239.62 | 113.21 | | | 456.04 |
| 5 | 1994 | 105.81 | 247.44 | 115.81 | | | 469.06 |
| 6 | 1995 | 163.48 | 193.48 | 96.74 | 83.05 | | 536.75 |
| 7 | 1996 | 166.11 | 249.16 | 83.05 | 96.74 | | 595.06 |
| 8 | 1997 | 180.09 | 182.09 | 91.04 | 172.09 | | 625.31 |
| 9 | 1998 | 184.31 | 182.31 | 91.15 | 185.32 | | 643.09 |
| 10 | 1999 | 239.30 | 184.53 | 91.77 | 189.53 | | 705.13 |
| 11 | 2000 | 239.46 | 80.82 | 79.82 | 88.82 | 159.64 | 648.56 |
| 12 | 2001 | 169.91 | 159.91 | 79.95 | 89.95 | 159.91 | 659.63 |
| 13 | 2002 | 80.08 | 240.23 | 86.08 | 90.08 | 160.15 | 656.62 |
| 14 | 2003 | 82.34 | 285.24 | 87.31 | 92.31 | 162.62 | 709.82 |
| 15 | 2004 | 84.32 | 252.63 | 162.36 | 142.63 | 172.63 | 814.57 |
| 16 | 2005 | 174.15 | 284.15 | 164.07 | 144.07 | 182.07 | 948.51 |
| 17 | 2006 | 191.66 | 243.75 | 165.83 | 145.75 | 185.83 | 932.82 |
| 18 | 2007 | 292.89 | 197.63 | 186.44 | 146.44 | 187.63 | 1011.03 |
| 19 | 2008 | 295.92 | 237.96 | 91.97 | 183.94 | 191.97 | 1001.76 |
| 20 | 2009 | 217.74 | 274.19 | 120.64 | 130.64 | 230.64 | 973.85 |
| 21 | 2010 | 222.83 | 223.70 | 130.76 | 133.70 | 278.26 | 989.25 |
| 22 | 2011 | 342.24 | 240.62 | 143.07 | 146.67 | 285.57 | 1158.17 |
| 23 | 2012 | 244.58 | 344.58 | 148.75 | 156.85 | 295.66 | 1190.42 |
| **C.G.R** | | **4.32** | **1.41** | **2.05** | **1.81** | **5.70** | **5.16** |

Source: Compiled from the records of DIC, Tiruchirappalli

**EMPLOYMENT**

Table 3 presents the details about employment in the spices processing industry in Tiruchirappalli district during the period from 1990 to 2012. In the initial period, there were 169 employees involved in manufacturing and the number of persons employed has increased to 426 in the last year with the growth rate of 5.24 percent. It is evident that the growth rate of employment was higher than the growth rate recorded by gross block.

**TABLE 3: EMPLOYMENT** (in numbers)

| Sl. No. | Year/ Units | Upto 5 | 6 - 10 | 11 - 15 | 16 - 20 | >20 | Total |
|---|---|---|---|---|---|---|---|
| 1 | 1990 | 40 | 84 | 45 | | | 169 |
| 2 | 1991 | 40 | 86 | 45 | | | 171 |
| 3 | 1992 | 42 | 85 | 48 | | | 175 |
| 4 | 1993 | 42 | 85 | 48 | | | 175 |
| 5 | 1994 | 43 | 86 | 49 | | | 178 |
| 6 | 1995 | 61 | 71 | 41 | 41 | | 214 |
| 7 | 1996 | 70 | 95 | 45 | 45 | | 255 |
| 8 | 1997 | 70 | 71 | 45 | 61 | | 247 |
| 9 | 1998 | 74 | 71 | 46 | 61 | | 252 |
| 10 | 1999 | 94 | 73 | 51 | 63 | | 281 |
| 11 | 2000 | 95 | 32 | 52 | 32 | 60 | 271 |
| 12 | 2001 | 65 | 65 | 52 | 32 | 60 | 274 |
| 13 | 2002 | 33 | 98 | 53 | 33 | 60 | 277 |
| 14 | 2003 | 30 | 120 | 50 | 30 | 60 | 290 |
| 15 | 2004 | 35 | 110 | 60 | 60 | 60 | 325 |
| 16 | 2005 | 84 | 104 | 62 | 62 | 62 | 374 |
| 17 | 2006 | 85 | 94 | 62 | 84 | 62 | 387 |
| 18 | 2007 | 105 | 68 | 87 | 87 | 68 | 415 |
| 19 | 2008 | 108 | 94 | 66 | 102 | 66 | 436 |
| 20 | 2009 | 96 | 107 | 88 | 88 | 88 | 467 |
| 21 | 2010 | 97 | 78 | 88 | 88 | 97 | 448 |
| 22 | 2011 | 124 | 83 | 83 | 93 | 101 | 484 |
| 23 | 2012 | 89 | 98 | 44 | 94 | 101 | 426 |
| **C.G.R** | | **4.04** | **0.76** | **2.65** | **5.57** | **5.12** | **5.24** |

Source: Compiled from the records of DIC, Tiruchirappalli

Product group-wise in the beginning of year, 6-10 has employed 84 employees followed by 11-15 (45 employees) and upto 5 (40 employees). In the end of study period employment in the manufacturing of various product groups were: above 20 has employed 101 employees, 6-10 has employed 98 employees, 16-20 has employed 94 employees, upto 5 has employed 89 employees and 11-15 has employed 44 employees. From 1990 to 2012, product group-wise growth rate was as follows: maximum growth rate of 5.57 percent in 16-20, 5.12 percent in above 20, 4.04 percent in upto 5, 2.65 percent in 11-15 and least growth rate of merely 0.76 percent registered in 6-10. It is clear from the analysis, 16-20 has recorded higher growth rate than the sectoral growth rate of 5.24 percent, indicating want to spend more on capital instead of labour.

**OUTPUT**

Table 4 presents data on the output of the spices processing industry in Tiruchirappalli district during the period 1990 to 2012. In the initial period, spices processing industry produced for Rs.447.26 lakh by all the product groups and the output has considerably increased to Rs. 1,799.36 lakh at the end of study period with the growth rate of 6.62 percent.

Product group-wise output in the starting period, 6-10 produced for Rs.206.48 lakh followed by 11-15 (Rs.135.49 lakh) and upto 5 (Rs.105.29 lakh). In the end of study period output in the manufacturing of various product groups were: upto 5 produced for Rs.484.80 lakh, 6-10 produced for Rs.434.84 lakh, above 20 produced for Rs.347.87 lakh, 16-20 produced for Rs.269.94 lakh and 11-15 produced for Rs.261.91 lakh. From 1990 to 2012, product group-wise growth rate as follows: prominent growth rate of 7.35 percent in upto 5, 4.03 percent in 16-20, 3.24 percent in 11-15, 2.11 percent in 6-10 and least growth rate of 1.86 percent noticed in above 20. Among the product groups, upto 5 had recorded higher growth rate than the sectoral growth rate of 6.62 percent.

Increased the demand for value-added spices products enhanced the development of the spices processing industry in Tiruchirappalli district. Hence manufacture of spices processing industry had got a good scope. Changing lifestyles, food habits, organized food retail and urbanization are the key factors responsible for the impressive growth rate of this industry in Tiruchirappalli district.

**TABLE 4: OUTPUT** (Rs. in lakh)

| Sl. No. | Year/Units | Upto 5 | 6 - 10 | 11 - 15 | 16 - 20 | >20 | Total |
|---|---|---|---|---|---|---|---|
| 1 | 1990 | 105.29 | 206.48 | 135.49 | | | 447.26 |
| 2 | 1991 | 108.09 | 216.98 | 138.99 | | | 464.06 |
| 3 | 1992 | 103.28 | 229.79 | 143.26 | | | 476.33 |
| 4 | 1993 | 105.74 | 237.14 | 145.71 | | | 488.59 |
| 5 | 1994 | 108.88 | 246.50 | 148.83 | | | 504.21 |
| 6 | 1995 | 253.65 | 153.65 | 126.83 | 116.83 | | 650.96 |
| 7 | 1996 | 223.59 | 235.38 | 111.79 | 121.79 | | 692.55 |
| 8 | 1997 | 231.55 | 131.56 | 115.78 | 201.58 | | 680.47 |
| 9 | 1998 | 241.89 | 141.87 | 120.93 | 241.87 | | 746.56 |
| 10 | 1999 | 335.10 | 123.40 | 111.70 | 223.46 | | 793.66 |
| 11 | 2000 | 358.30 | 109.43 | 119.43 | 129.93 | 238.87 | 955.96 |
| 12 | 2001 | 259.45 | 159.45 | 129.92 | 131.72 | 259.45 | 939.99 |
| 13 | 2002 | 137.12 | 211.36 | 137.12 | 139.02 | 274.24 | 898.86 |
| 14 | 2003 | 134.05 | 224.21 | 130.05 | 131.05 | 262.11 | 881.47 |
| 15 | 2004 | 135.72 | 171.44 | 270.44 | 201.49 | 221.34 | 1000.43 |
| 16 | 2005 | 367.08 | 267.08 | 188.54 | 180.56 | 181.83 | 1185.09 |
| 17 | 2006 | 376.23 | 182.17 | 198.11 | 282.17 | 188.71 | 1227.39 |
| 18 | 2007 | 514.20 | 170.41 | 250.10 | 267.20 | 174.49 | 1376.40 |
| 19 | 2008 | 503.01 | 251.51 | 167.67 | 335.34 | 187.07 | 1444.60 |
| 20 | 2009 | 425.60 | 340.48 | 205.36 | 215.38 | 235.06 | 1421.88 |
| 21 | 2010 | 427.56 | 256.57 | 236.54 | 226.14 | 342.05 | 1488.86 |
| 22 | 2011 | 546.44 | 334.19 | 234.10 | 239.11 | 312.25 | 1666.09 |
| 23 | 2012 | 484.80 | 434.84 | 261.91 | 269.94 | 347.87 | 1799.36 |
| **C.G.R** | | **7.35** | **2.11** | **3.24** | **4.03** | **1.86** | **6.62** |

Source: Compiled from the records of DIC, Tiruchirappalli

**COMPARATIVE ANALYSIS OF GROWTH RATES**

Table 5 presents the selected growth indicators for the period of 1990 to 2012. The overall growth rate of spices processing industry was 6.11 percent. The sectoral growth rate of number of enterprises, gross block, employment and output by all the product groups were order of 7.43 percent 5.16 percent, 5.24 percent and 6.62 percent respectively. Among the different growth indicators, number of enterprises has registered the highest growth rate (7.43 percent) followed by output (6.62 percent) and employment (5.24 percent).

**TABLE 5: COMPARATIVE ANALYSIS OF GROWTH RATES**

| Sl. No. | Units | No. of Enterprises (C.G.R) | Gross Block (C.G.R) | Employment (C.G.R) | Output (C.G.R) | Overall Growth Rate (%) |
|---|---|---|---|---|---|---|
| 1 | **Upto 5** | 8.71 | 4.32 | 4.04 | 7.35 | **6.11** |
| 2 | **6 - 10** | 1.31 | 1.41 | 0.76 | 2.11 | **1.40** |
| 3 | **11 -15** | 6.27 | 2.05 | 2.65 | 3.24 | **3.55** |
| 4 | **16-20** | 7.17 | 1.81 | 5.57 | 4.03 | **4.65** |
| 5 | **>20** | 6.59 | 5.70 | 5.12 | 1.86 | **4.82** |
| Total | | 7.43 | 5.16 | 5.24 | 6.62 | **6.11** |

Source: Compiled from the records of DIC, Tiruchirappalli

## CONCLUSION

All the indicators also noticed significant growth during the period under review. From the analysis, it is witnessed that the performance of spices processing industry has grown drastically in the study period. Sharp rise in demand for instant mixes for home consumption and availability of suitable raw-materials are the main reasons for fine growth rate. Hence manufacture of instant mixes had got a good scope. Changing lifestyles, food habits, organized food retail and urbanization are the key factors responsible for the impressive growth rate of this product group in Tiruchirappalli district.

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# INTERNATIONAL INSTITUTIONS FOR FOREIGN TRADE DEVELOPMENT: A THEORETICAL VIEW IN THE CONTEXT OF INDIA

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**ABSTRACT**

*The present study describes the role of world level institutions in export promotion of India. In the changing scenario of liberalization, privatization and globalization, the world level institutions is trying to preen the development gap between less developing, developing and developed nations through rules, regulations or agreement on export subsidy, anti-dumping duty, patents, countervailing duty etc. These also provide a plate-form to solve the dispute among trading nations. The present study concludes that being an agriculture economy, India is having comparative & competitive advantage in agricultural exports and playing a leader-role in developing countries. With this, it is an emerging large market for other developed and developing nations for exports and imports. Apparently, India is a pivotal point of business strategies of world players for foreign trade. Indeed, it is a pessimistic situation to see the world trade share of India (1.7% in exports and 2.5% in imports in 2013-14 according to WTO), which is not satisfactory with increasing balance of payment per year simultaneously.*

**KEYWORDS**
export promotion, international institutions and developing Vs. developed nations.

## INTRODUCTION

In the current scenario of globalization, foreign trade has an important place in the national economy of any country. It is an engine of growth and development. Along with this, any country, take advantage with the proper use of specific resources of its own and other countries. It offers a number of opportunities to expand its output base, to specialize in certain areas of large production, to gain access to raw materials and machineries and also to acquire latest technological knowledge. With the proper regulation and control, it effects production, employment, income, industrialization etc. positively for the development of an economy.

During first half of the 20th century, whole world had been facing the tragedy of flood, droughts, recession, two major world wars etc. After the Second World War, most of the economies was destroyed tremendously. Thereafter, it was realized to concentrate on reconstructing the world's economies in planned ways through various international level institutions INCTAD, IBRD, IMF, GATT (WTO) etc. But the world has divided into developed, developing and least developing countries. The developed countries have been trying to exploit the developing as well as least developing countries. These institutions have been providing the intrinsic balanced framework to develop the economies with keeping in view, the structure of economies through world foreign trade policies for export promotion.

Being an agriculture economy, India is having comparative & competitive advantage in agricultural exports and playing a leader-role in developing countries to protect their rights. With this, it is an emerging large market for other developed and developing nations for exports and imports. Apparently, India is a pivotal point of business strategies of world players for foreign trade.

## RESEARCH METHODOLOGY

The study is theoretical nature. Being a developing economy and a leader of developing economies at world trade plate-form, India is having comparative and competitive advantage in agricultural exports over other agricultural exporting countries of the world (Davar & Bhupinder, 2013). But, Indian imports is increasing with enormous rate than exports. The Government of India is trying to mitigate the effect of increasing balance of payment through establishing various institutions/committees/boards/organizations at national level. On the other hand, the international level institutions are also provide the protection against developed economies' business strategies i.e. export subsidies, countervailing duties, antidumping duties domestic support, other infrastructural development supports etc. Hence, the study discusses the international level institutional mechanism for export promotion.

## OBJECTIVE OF THE STUDY

To explore the institutional set up for export promotion of India at international level.

## INTERNATIONAL LEVEL INSTITUTIONS FOR EXPORT PROMOTION

International business is governed by several institutions with their laws and provisions i.e. World Trade Organization (WTO), United Nations Conference on Trade & Development (UNCTAD), International Trade Centre (ITC), International Finance Corporation (IFC), International Monetary Fund (IMF) etc.

### A WORLD TRADE ORGANIZATION (WTO)

After the seven years negotiations (September, 1986 to December, 1990), the Uruguay Round (UR) multilateral negotiations were concluded on 15th December 1993 and formally ratified in 15th April 1994 at Marrakech, Morocco. Traditionally, the GATT was limited to trade in goods. But in UR went much beyond to goods, services, technology, investment and information. It was characterized by profound conflict between the interests of developing and developed nations. The Trade Related Intellectual Property Rights (TRIPs) agreement of GATT has come in for scathing criticism in India. TRIPs sections of GATT covers nine types of rights i.e., copy rights, trademark, trade secrets, geographical indications, industrial designs, integrated circuits, patents, microorganisms and plant varieties. Arthur Dunkel prepared the complete and compromise agreement and it known as Dunkel Draft. The final act was signed by 125 nations on 15th April, 1994 and this led to the creation of WTO on 1st January, 1995 in Geneva. It now serves as a single institutional framework encompassing GATT and all the results of the UR. It have 161 members since 26 April, 2015. The WTO members now account for over 97 percent of the world trade indicating the potential of the WTO in bringing about an orderly development of the world trade. It is directed by a ministerial conference (MC) that will meet at least once every two years. These ten MCs are:

1. **Singapore, 9-13 December 1996:** The first MC discussion was based on information technology products because 80 percent world trade is in these products.

2. **Geneva, 18-20 May 1998:** The second MC was establishing a comprehensive work programme to examine all trade-related issues relating to global electronic commerce. The MC has also taken the economic financial & development needs of the developing countries into account.
3. **Seattle, November 30 – December 3, 1999:** This MC was related to main issues of export subsidies, market access, domestic support, antidumping, sanitary and phytosanitary measures, technical barriers to trade, trade related investment measures (TRIMs), Trade-Related Aspects of Intellectual Property Rights (TRIPs) etc. in various fields of world trade.
4. **Doha, 9-13 November 2001:** This MC was related to procedures for extension of transition period of agreement of subsidies & countervailing measures and Seattle MC issues for developing country members.
5. **Cancun, 10-14 September 2003:** In this MC, the focus is on to implement the Doha Declarations and Decisions fully and faithfully.
6. **Hong Kong, 13-18 December 2005: I**n Hong Kong, ministers are expected to review progress and to take any decisions necessary to advance the negotiations on Doha MC issues.
7. **Geneva, 30 November - 2 December 2009:** The general theme for discussion was "The WTO, the Multilateral Trading System and the Current Global Economic Environment" regarding to implement the speedy action on Doha round deal.
8. **Geneva, 15-17 December 2011:** The key issues in this MC were Keeping markets open and resisting protectionism in the light of Doha negotiation, current global challenges including climate change, energy, food security, trade and exchange rates, competition & investment etc., the role of the Committee on Trade and Development (CTD), food security etc.
9. **Bali, 3-6 December 2013:** At the 2013 Bali Ministerial Conference, much of the focus was on a proposal to shield public stockholding programmes for food security in developing countries, so that they would not be challenged legally even if a country's agreed limits for trade-distorting domestic support were breached.
10. **Nairobi, 15-18 December 2015 (Coming Soon)**

## IMPACT OF WTO ON INDIA

- The Indian goods are facing more and more competition in foreign as well as in domestic markets.
- Foreign goods are also finding an easy access to Indian markets.
- Product reservation for small-scale sector has been dispensed with.
- India enjoys the Most Favoured Nation (MFN) status with all the other members of the WTO.
- WTO has led to speedy external liberalization. But India could not bring a internal liberalization with the same speed. This has hurt domestic industries and the competitiveness severally. Industry has to suffer from poor infrastructure, absence of Value Added Tax (VAT), obsolete labour laws, lack of coordination among ministries and non-availability of economical quality services –Banking, Insurance, and Inland Transport. With corresponding internal liberalization of domestic policies, much of the benefits of WTO may remain a mirage.
- Ignorance among Small and Medium Enterprises (SMEs) on WTO has set to attract injuries from sudden spurts in unfair imports.
- In India, exporters of agricultural products do not get any direct subsidy. The only subsidies are available in the form of exemption of export profit from Income Tax under section 80HHC of the Income Tax Act and subsidies on cost and freight on export shipment.
- Being the member of WTO, India's policies are also guided by it, directly or indirectly. There are many issues that explain the equation between India and WTO. Some of the significant issue with a wide range of courage are agricultural subsidies, TRIPs agreement, Anti-Dumping measures etc.
- The WTO bans various activities of Governments or Organizations that distort normal world trade. It is also contemplated that there will be no discrimination between member nations and no-member nations.
- Import duties have been reduced from 300 percent to 50 percent to comply with the WTO tariff lines and it is committed to remove all Quantitative Restrictions (QRs) by 2003. Following the decision of Dispute Settlement Panel of WTO in 1997, India has removed QRs on 1429 tariff lines on 1st April, 2001. With a view to create free trade regime as per GATT agreement India has amended host of legislative and more to follow.

## (A) AGREEMENT ON AGRICULTURE (AOA)

The implementation of the AOA started from 1st January, 1995 to establish a fair, market oriented agriculture-trading system through substantial progressive reductions in agriculture support and protection. In brief, the AOA seeks to remove trade distortions resulting from unrestricted use of production and export subsidies and import barriers both tariff and non-tariff. Here the goal was not free trade but reduction of trade distortions. Hence, the agriculture remained a special subject within a progressive liberalization framework.

### 1. DECISION ON AOA IN GENEVA 1995

As per the agreement, the developed nations would complete 36 percent reduction of export subsidies within 6 years, i.e., by the year 2000, whereas the developing nations would be completed 24 percent within 10 years, i.e., by the year 2004. The least developed nations (48 nations according to WTO) are not required to make any reductions.

**THREE PILLARS OF AOA**

| Pillars | Types of Subsidies/Tariff/Support | Developed countries | Developing countries |
|---|---|---|---|
| | | 6 years: 1995-2000 | 10 years: 1995-2004 |
| 1. Market Access | Average cut for all agricultural products | -36% | -24% |
| | Minimum cut per product | -15% | -10% |
| 2. Domestic support[2] | Total AMS cuts for sector (base period: 1986-88) | -20% | -13% |
| 3. Exports Subsidies | Value of subsidies | -36% | -24% |
| | Subsidized quantities (base period: 1986-90) | -21% | -14% |

[2] **Boxes In Domestic Support**

1. Amber Box (slow down — i.e. be reduced)
   Domestic support for agriculture that is considered to distort trade and therefore subject to reduction commitments. Technically, it is calculated as "Aggregate Measurement of Support" (AMS).
2. Blue Box
   Amber Box types of support, but with constraints on production or other conditions designed to reduce the distortion. Currently, it is not limited.
3. Green Box
   Domestic support for agriculture that is allowed without limits because it does not distort trade, or at most causes minimal distortion.
4. De Minimis
   Minimal amounts of domestic support that are allowed even though they distort trade — up to 5% of the value of production for developed countries, 10% for developing.

**2. DECISION ON AOA IN DOHA 2008**

But, according to Committee on Agriculture (**Doha, 6th December, 2008**), the developed nations are acquired to eliminate all export subsidies by 2013, of which half is to be eliminated by 2010 and the rest in equal installments by 2013. The developing nations are required to do so by 31 December 2016 and they will continue to have the right to use some types of export subsidies until the end of 2021.

## (B) AGREEMENT ON ANTI-DUMPING (AAD) MEASURES

The AAD allows member nations to impose special duties on imports if dumping causes serious damage to the domestic industry in the importing nation. Further, anti-dumping measures are not allowed if the margin of dumping or price differences 2 percent of the export prices of the product or the volume of the dumped imports is less than 3 percent of the imports of the product. In India, anti-dumping actions are controlled by Directorate of Anti-Dumping and Allied Duties Cell in Ministry of Commerce, Customs Tariff Act, 1975, Article VI of GATT 1994.

In India, The Directorate General of Anti-Dumping and Allied Duties was inaugurated on 13 April 1998 with a view to expediting the investigations of dumping as well as subsidy. Once investigations are initiated, the Designated Authority should submit its findings to the government within one year from the date of initiation of the proceedings. In exceptional circumstances, the period of one year may be extended upto 6 months. The normal time taken to impose provisional duties in India is around 7 months, which compares favourably with the time taken in Europe. The Anti-dumping Directorate has now also been strengthened to reduce the time taken. Dumping in India has become a major problem in post-liberalization scenario. Big enterprises, which can bear big losses, are able to bear the burden of dumping as well, but Indian production units find their market threatened by dumping. The AAD is most important for domestic manufacturers. Small Scale units sector have been hurt by 'unfair import'. Action has been taken against such imports of large-scale units.

## (C) AGREEMENT ON SAFEGUARD MEASURES (SMs)

The SMs are special agricultural agreement. Temporary increase in import duty to deal with import surge or price falls injurious to domestic manufacturers during the transition period (initially for 4 years extendable up to 10 years from 1st January, 1995 in India). Directorate of Safeguard works under the control of Ministry of Finance with a view to protect the interest of domestic manufacturers.

## (D) AGREEMENT ON SANITARY AND PHYTO-SANITARY MEASURES (SPSMs)

The governments implement SPSMs to protect human, animals and plants life and health and to help ensure that food is safe for consumption. It has the same objective as GATT except that Most Favourable Nation (MFN) ruling countries can deny import from certain country due to fear of spread of pests or diseases. As most of India's standard are at par with international standards. There is no special need for changing of laws regarding maintaining of quality standards such as FAO, Codex Alimantarius etc. However, there is need of certain improvements in existing policy.

## (E) AGREEMENT ON SUBSIDIES AND COUNTERVAILING MEASURES (SCMs)

The SCMs agreement restricts subsidies, allows permissible subsidies, and asks the developing countries to phase out the subsidies by 2003 with some exception and to freeze their level and coverage during transitional period. This agreement is for all kinds of subsidies, domestic as well as export subsidies. It applies to all goods, agriculture as well as manufactured goods and does not apply on services. However, certain disciplines of the SCM Agreement do not apply on agriculture as disciplines elsewhere apply to subsidies on agriculture. Countervailing duty (CVD) is imposed to neutralise the adverse effect of export subsidies on the domestic industry of importing nation. All countervailing duties normally have a life of not more than 5 years. If there is a change in the extent of subsidy or in the injury to domestic industry, a case can be made for the review of CVDs within reasonable period. If no review takes place within five years, all CVDs must automatically terminate, and any case for the imposition of CVDs has to be made afresh.

The Government of India (GOI) has set up a separate Directorate in the Ministry of Commerce for the implementation of SCMs Agreement. Under the EXIM Policy, The GOI introduce Duty Exemption Scheme, Schemes for EOUs/EPZS/SEZs etc., Export Promotion Capital Goods (EPCG) Scheme, Duty Entitlement Passbook (DEPB) Scheme, Duty Drawback Scheme, Export Credit Guarantee, Export insurance etc. and modify them according to WTO provisions.

## (F) TRADE RELATED INTELLECTUAL PROPERTY RIGHTS (TRIPS) AND PATENT

TRIPs were formed under the UR Agreement. It amounts to rules for trade and investment in ideas and creativity. The rules state how seven categories of TRIPs i.e. copyrights, patents, trademarks, designs, integrated circuit layout-designs and undisclosed information such as trade secrets, should be protected when trade is involved.

**A PATENTS**

Patents involve new varieties of plants. It has allowed for 20 years in food, agri-chemicals and pharma. Patented products need a compulsory license for manufacturing and revocation of the patent if it is not worked in the country. Compulsory licensing means grant of license to a third party to work the patent in the country. But make, use or for public purpose, if necessary.

The Indian Parliament has passed the Protection of Plant Varieties and Farmers' Rights Act, 2001 with the objective of giving a significant thrust to agricultural growth by providing an effective system for the protection of plant varieties and farmers' rights. The act acknowledges that the conservation, exploration, collection, characterization, evaluation of plant genetic resources for food and agriculture are essential to meet the goals of national food and nutritional security. Geographical indication[3] is implemented to protect basmati rice. It is grown in India and Pakistan. So it cannot be patented by any other nation.

**B WORLD BANK**

The IBRD and its associate institutions as a group known as world band. After the Second World War, the global economies needed reconstruction and International Bank for Reconstruction and Development (IBRD) was established in December 1945 with IMF based on recommendation of the Bretton Wood Conference. It develops resources and production facilities in under developed nations. It provides guarantee for loans granted to small and large units and other agricultural projects of member nations.

**C INTERNATIONAL MONETARY FUND (IMF)**

The IMF is one of the twins born because of the Bretton woods Agreement concluded in 1944. It was entrusted with the task of looking after the problems of international liquidity and exchange rate stability. It contributes to the promotion and maintenance of high levels of employment and real income and to the development of the production resources of all member nations. It provides machinery for altering sometime the par value of the currency of a member country. It tries to provide an orderly adjustment of exchange rates, which will improve the long-term balance of payments position of member nations.

**D UNITED NATIONS CONFERENCE ON TRADE & DEVELOPMENT (UNCTAD)**

The IMF, GATT and other world level agencies favoured the developed nations and failed to solve the commercial and economic problems of developing and less developing nations. In 1964, UNCTAD was established to promote international trade with a view to accelerate the economic development and to formulate principles and policies on international trade and related problems of economic development. The major activities of UNCTAD includes research and support the negotiation of commodity agreements, technical elaboration of new trade schemes, such as a new import preference system and various promotional activities designed to assist developing nations in the area of trade. There is 194 member nations on 12 October 2012 and divided into 4 lists. The UNCTAD was held 11th conference in Sao Paulo (Brazil) on 13-18 June 2004, 12th in Accra (Ghana) on 21-25 April, 2008 and 13th in Doha (Qatar) on 21-26 April, 2012.

**E INTERNATIONAL TRADE CENTRE (ITC)**

[3] The TRIPS clause defines Geographical indication as "a good originating in the territory of a member, or a region or locality in that territory, where a given quality, reputation, or other characteristic of the good is essentially attributable to its geographical origin."

ITC was a trade plate-form for technical cooperation with developing nations in trade promotion. It assists to develop a national trade promotion strategy including analyzing export potential, choosing priority markets and setting export targets. It gives advice to establish appropriate government institutions and services, such as a central trade promotion organization and service for exporters in trade information, export financing, export quality control, export costing & pricing, export packaging, trade fairs and commercial publicity etc. it trains export promotion personnel and assist governments in developing adequate export promotion services. The WTO and UNCTAD continued to cooperate closely on training and technical assistance to developing countries and least-developed countries (LDCs). UNCTAD is a major WTO partner on programmes such as the Enhanced Integrated Framework and the Joint Integrated Technical Assistance Programme. The latter partnership, which also involves the International Trade Centre (ITC), provides technical assistance to selected least-developed and other African countries. The WTO and UNCTAD jointly sponsor the ITC, a trade promotion body for developing countries

**F ORGANIZATION OF ECONOMIC COOPERATION AND DEVELOPMENT (OECD)**

The OECD is an international economic organization of 34 countries, founded in 1961 to stimulate economic progress and world trade. It is a forum of countries describing themselves as committed to democracy and the market economy, providing a platform to compare policy experiences, seeking answers to common problems, identify good practices and coordinate domestic and international policies of its members. It draws attention to emerging systemic issues likely to have an impact on global development and more specific development challenges faced by today's developing and emerging economies.

**G INTERNATIONAL RICE RESEARCH INSTITUTE (IRRI)**

The IRRI was established in Philippines in 1960 to help in high yield productivity of rice at low cost. It organizes research programmes on country-basis for the improvement of production, productivity and profitability of rice at global level.

**H FOOD AND AGRICULTURE ORGANIZATION (FAO)**

The FAO was set up on 16th October, 1945 in Italy. It is a specialized agency of UN that leads international efforts to defeat hunger. Servicing both developed and developing nations, it acts as a neutral forum where all nations meet as equals to negotiate agreements and debate policy. It launched its initiative on Soaring Food Prices to help small producers raise their output for domestic and international consumers.

The FAO and WHO created the Codex Alimentarius Commission in 1963 to develop food standards. The main objectives of this commission are protecting consumer health, ensuring fair trade and promoting co-ordination of all food standards work undertaken by inter-governmental and non-governmental organizations. It promotes greater investment in agriculture and rural development by helping developing nations, identify and formulate sustainable agricultural policies, programmes and projects.

## CONCLUSION

Foreign trade is more than ever before in the driving force of economic activity. It not only enables the exchange of goods and services among countries, but in the modern technological world, it also serves as the bedrock for the increasing global network of technology, investment and production. No country can ignore these developments, which create both opportunities and challenges.

In the technological and competitive world, different business environments, Government rules and regulations has been taken in consideration in world trade. The national level institutions (Bhupinder, 2015) as well as international level institutions have been trying to alleviate the gap between domestic and international business rules and regulations. Frequently, international level institutions have been taking decisions to solve the problem of unbalanced economic development through conferences, seminars, workshops etc.

At international level, WTO has been performing a revolutionary role to settle the balanced sustainable economic development with a view to raise standards of living, ensure full employment, increase in real income, effective demand, expanding the production and trade in goods and services and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development (Hedge, 1998). It focuses on the need of positive effort to design polices for ensuring sustainable economic development of developing countries as well as especially for least developed countries and secure a share in the growth in international trade commensurate with the needs of their economic development with making different agreements keeping in view the international trade.

World Bank, IMF, WTO, UNCTAD, ITC, OECD, IRRI and FAO are the main pillar of international institutional mechanism for export promotion and especially for basic needs such as food security matter of developing as well as least developed countries.

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# IMPACT OF NEW TECHNOLOGY ON AGRICULTURAL PRODUCTION

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**ABSTRACT**

*Agriculture is the most important sector of our economy which contributes about 45% of the national income, provides employment to about 70 % of our population and contributes substantially to under export earnings only with mass production being aided by modern technology. The volume of production depends not only on the capital investments and marketing strategies but also on the technical capacity used during the production and processing stage. In fact, technology has come to play a very significant role for the development of agriculture production and also plays a significant role even in marketing these days. Paper is conceptual in nature and tries to know the new Agriculture technologies in India and their impact on agriculture production.*

**KEYWORDS**
agricultural production, use of technology.

## INTRODUCTION

Agriculture is considered to be mainstay of the Indian economy. At the same time, this statement needs to be examined with due diligence. Today Indian agriculture is at crossroads with an approximate 2.5 % all crop - output growth rates in 10th five-year plan (FVP) as against estimated 4.0 - 4.5 % growth rate earmarked by national agriculture policy in the year of 2000. With a significant contribution, 50 % in 1950s to Indian GDP by agriculture and allied sectors has sharply declined to 25 % in 1999 and further, has come down to a mere 17. 5 % in 2008-2009 in fact, we try to correlate the workforce engagement with agriculture, which shows a decimal relationship. From 70 % involvement of manpower in agriculture, it has decreased to 51 % (approximately) as of now. Besides Indian consuming classes show a strong tendency of " consumerism "towards packaged food and ready to eat products after the resurgence of organized relating in 2004 -05.

Only with mass production being aided by modern technology and intensive marketing can the agriculturist exploit both the domestic market as well as the international market to the fullest extent. The volume of production depends not only on the capital investments and marketing strategies but also on the technical capacity used during the production and processing stage. In fact, technology has come to play a very significant role even in marketing these days.

During the past five decades, technological changes in agriculture and allied sectors backed by massive investment in irrigation, infrastructure and institutions have propelled many food - insecure, import - dependent developing countries including India, into food self - sufficiency. The adoption of biochemical and mechanical technologies in India have led to near - tripling of food grain production and four -fold increase in production of fruits and vegetables during the period 1966 -97 to 2011- 12. There has also been an unprecedented increase (6- 10 times) in the production of animal food products during this period. Milk production has increased six - fold, egg production 12 - fold and aquaculture production 8 - fold. Agriculture production systems will come under the confluence of biotic and abiotic stresses. Land will emerge a strong limiting factor to food and agricultural production. India's net cropped area almost stagnates at around 140 million hectares; and the scope to increase food and agricultural production through area expansion is limited. According to an estimate, about 120 million hectares of land in the country suffers from one or the other form of degradation. Water is a critical input in agriculture, which uses over 80 per cent of available water. Ground water in the intensively cultivated north western food basket of the country has already reached its limit of exploitation. The agricultural production will become more energy intensive but with a concomitant shift from the use of renewable to fast exhausting non renewable sources. Intensification of agriculture will further strain these natural resources. Increasing competition for land, water and energy will intensify due to their pressing demands for housing and industrialization; and thus there is a high probability of their diversion away from agriculture. These challenges will be aggravated further by increasing frequency of extreme climatic events, such as droughts, floods, cyclones, heat waves etc. Slow growth in agriculture will adversely impact farm incomes, food security, and even growth of non -farm sector which has strong backward and forward linkages with agriculture. In view of the challenges, the future growth in agriculture has to come and from acceleration in the rate of technological change and sustainable intensification of the production system.

Technology has been the key drive of agricultural growth. Only with mass production being aided by modern technology and intensive marketing can be agriculturist exploit both the domestic market as well as the international market to the fullest extent. The volume of production depends not only on the capital investments and marketing strategies but also on the technical capacity used during the production and processing stage. In fact, technology has come to play a very significant role even in marketing these days.

Agriculture Technology includes wide range of improved techniques, methods, equipments, processes and products by which farmers can increase their production, productivity, input profit and overall quality of life. Generally, technology is used to improve the human condition, the natural environment or to carry out other socio - economic activities. Agriculture technology is a complex blend of materials, processes and knowledge. Agriculture technology may be classified in to two major categories

1. Hardware (Material technology); where knowledge is embodied into a technological product such as tools, equipments, agrochemicals, seed materials, medicines etc.
2. Software (Knowledge based technology); It includes technology knowledge, management skills and other processes that farmers and rural people need for better production in their enterprises.

## NEW AGRICULTURE TECHNOLOGIES IN INDIA

Technologies play an essential role in agricultural production and impact upon the life of farmers everywhere. Technical innovations such as the plough, irrigation, mills, crop rotations, fertilizers and much more have shaped the history of mankind time and time again.

**PLOUGH**

Ploughing is the first preparation for planting. The plough is primarily designed to prepare the ground for cultivation by turning it over, thus burying the weeds and loosening the earth in effect, a hand held hoe was used in which the user scratched at the earth to form a tilt were corn could be sown. Over a period of time,

these hand held hoes soon developed in to simple ploughs. These primitive ploughs eventually pulled by animals like oxen, camels and elephants. Animals enabled the land to tilled more easily and faster; thus more food was produced.

**HARROW**

After ploughing, other implements were used. The harrow was necessary to smoothen the soil in areas were the soil remained rough. It consists of a wooden or metal framework bearing metal disks, teeth or sharp projecting points, called tines, which are dragged over plowed land to crush the clods of earth and level the soil. Harrow also used to uproot weeds, aerate the soil and cover seeds.

**SEED DRILLER**

Seed driller is an innovation that allowed seeds to be easily planted deep into the soil instead of on top where the majority where washed away or otherwise lost. The machine was pulled by horses and consisted of rotating drills or runners that planted seeds at a set depth.

**HORSE HOE**

It is horse - drawn machine which loosened the soil and killed weeds.

**REAPER**

The first reapers cut the standing grain and with a revolving reel, sweeping it on to a platform from which it was raked off into piles by a man walking alongside. The reaper could thus harvest more grain than five men using the earlier cradles. The reaper was eventually replaced by the self - propelled combine, operated by one man, which cuts, gathers, threshers and sacks the grain mechanically.

**THRESHING MACHINES**

Threshing machine is designed for rapidly removing the husk from grain. The machines could be driven by wind or water power or by horses, but the steam powered threshers became the most familiar sight.

**TRACTOR**

Tractor is a vehicle particularly crafted to exert, traction at slow speeds, for the purpose of hauling a trailer or machinery used in agriculture

**IRRIGATION TECHNOLOGY**

Water is undoubtedly the sine qua non for all irrigation activities, worldwide. Particularly in India, an unpredictable monsoon coupled with an increasing demand for food production (at the self - sustenance as well as commercial levels) has induced an imperative need for irrigation options other than those that are either extremely laborious and time consuming or simply too expensive for small and marginal farmers. Electric and diesel pumps can be used to extract groundwater for irrigating any large areas of land; however, some effective technologies that are being availed by a major section of farmers are as follows:

**TREADLE PUMP**

It is a foot operated water lifting device that can irrigate small plots of land of small holders in regions that have higher water table (not deeper than 25 feet).

**DRIP IRRIGATION TECHNOLOGY**

Drip irrigation is water - saving technology which enables slow and regular application of water directly to the roots of the plants through a network of economically designed plastics pipes and low discharge emitters. It maximizes crop productivity through increase in the Corp yield and also the area for cultivation and protects the environment through conserving soil, water and fertilizer resources, thus increasing the farmer income. Currently, this is being promoted by the government of India in the form of kits in the water scarce regions in India. They include: 1. Drum kit. 2. Bucket kit. 3. Family Nutrition kit.

Timely receipt of relevant expert advice / information / market information can help the farmers in following ways.

(1) Information on schemes and programs of Government of India can help every farmer to reap benefits out of these schemes thus widening the footprints of these schemes.
(2) Weather forecast can help the farmer in planning farm operation effectively on the onset of any adverse weather conditions; advice can be provided to the farmers on effective resources to be adopted.
(3) Outbreak of disease /pests can be controlled as advisories can be provided immediately to the farmers in and around the area of initial report of the disease /pest.
(4) Crop advisory will lead to the adoption of more appropriate technologies suited to local situation.
(5) Selection of suitable and better variety /breed by the farmer based on the information /advisory can be provided to him /her.
(6) Timely market information will give better bargaining power to the farmer.
(7) Soil test results in his mobile will help in selecting the right fertilizer and the dosage.

**USE OF MACHINES ON FARMS**

Now a farmer can cultivate on more than 2 acres of land with less labor. The use of planters and harvesters makes the process so easy. In agriculture, time and production are so important; you have to plant in time, harvest in time and deliver to stores in time. Modern agricultural technology allows a small number of people to grow vast quantities of food and fiber in a shortest period of time.

**MODERN TRANSPORTATION**

This helps in making products available on markets in time from the farm. With modern transportation, consumers in Saudi Arabia will consume a fresh carrot from india with in the same day that carrot lives the garden in india. Modern transportation technology facilities help farmers easily transport fertilizers or other farm products to their farms, and it also speeds the supply of agricultural products from farms to the markets where consumers get them on a daily basis.

**COOLING FACILITIES**

These are used by farmers to deliver tomatoes and other perishable crops to keep them fresh as they transport them to the market. These cooling facilities are installed in food transportation trucks, so crops like tomatoes will stay fresh upon delivery. This is a win-win situation for both the consumers of these agricultural products and the farmers. How? the consumers get these products while still fresh and the farmer will sell all their products because the demand will be high.

**GENETICALLY PRODUCED PLANTS**

like potatoes, can resist diseases and pests, which rewards the farmer with good yields and saves them time. These crops grow very fast they produce healthy yields. Since they are resistant to most diseases and pests, the farmer will spend less money on pesticides, which in return increases on their (RIO) return on investment.

**DEVELOPMENT OF ANIMAL FEEDS**

This has solved the problem of hunting for grass to feed animals, now these feeds can be manufactured and consumed by animals. The price of these feed is fair so that a low income farmer can afford them. Most of these manufactured animal feeds have extra nutrition which improve on the animal's health and the out put of these animals will also increase. In agriculture, the health of an animal will determine its output. Poorly feed animals are always unhealthy and they produce very little results in form of milk, meet, or fur.

**BREEDING OF ANIMALS WHICH ARE RESISTANT TO DISEASES**

Most of these genetically produced animals will produce more milk or fur compared to normal animals. This benefits the farmer because their production will be high. Cross breeding is very good in animal grazing; cross breed animals are more strong and productive.

## CONCLUSION

Agriculture is considered to be mainstay of the Indian economy. Technology has been the key driver of agriculture growth. It plays a very significant role in agriculture production and marketing. Slow growth in agriculture will adversely impact farm incomes, food security, and even growth of non - farm sector which has strong backward and forward linkages with agriculture. Agriculture technologies includes wide range of improved techniques, methods, equipments, processes and products by which farmers can increase their production, productivity, input profit and overall quality of life. Technology is used to improve the human condition, the natural environment or to carry out other socio -economic activities.

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# A LITERATURE REVIEW ON GROWTH AND DEVELOPMENT AND THE FINANCIAL HEALTH OF CO-OPERATIVE CREDIT SYSTEM WITH REFERENCE TO JHARKHAND

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**ABSTRACT**

*The base of every research needs encyclopedia or reviews. In this paper the researcher focuses upon the important literature reviews regarding cooperative banks in India. The word 'Co-operative' is derived from the term cooperation. The cooperative banks in India started functioning almost 100 years ago. Co-operative credit institutions constitute the major source of institutional credit for agricultural and non- agricultural purposes as well. Co-operative banks have been working at the village, district and State levels. Co-operative banks in India are registered under the Co-operative Societies Act. (1904). The major development in the growth of cooperative institutions came during 1930- 1950, when Reserve Bank of India played the pioneering role in guiding and supporting the cooperatives. However, during this phase, signs of sickness in the Indian rural cooperative movement were evident. From 1990 onwards there was an increasing realization of the disruptive effects of intrusive state patronage and politicization of the co-operatives, especially financial cooperatives, which resulted in poor governance and management and the consequent impairment of their financial health. A number of Committees were therefore set up to suggest reforms in the sector. Though many studies have been done at the National level and at various State levels, not much has been done for Jharkhand which is relatively a new State.*

**KEYWORDS**
cooperative banks, credit, governance, reform.

## INTRODUCTION

India passed her first Co-operative Credit Act in the year 1904. The main features of this act were its simplicity and elasticity. With the expansion of the co-operative movement it became necessary to have a broader co-operative law encompassing the non-credit wing of the movement, which gave birth to the 1912 Act. After struggling from the initial stage co-operative practice developed further. From time to time several committees have been formed to analyze the working and to suggest reforms. Scams in co-operative sector, failure and closure of unviable branches imposition of penalty by Reserve Bank of India (RBI) or National Bank for Agriculture and Rural Development, (NABARD) etc., are some of the significant reasons which tempt to have a look into the financial affairs of these institutions. Jharkhand, which is located in the eastern region of the country, was born on 15 November 2000. It was bifurcated from the southern part of Bihar. It has some of the richest deposits of minerals. Though it is one of the most industrialized regions in the country, yet almost 75 percent of the people in the State depend on agriculture. As per the report of the "Working Group on Improvement of Banking Services in Jharkhand" (Chairman V.S.Das- Executive Director, RBI), there is low outreach of Banks and their services in the State. The Group recommends a need for the State Government to sign Memorandum of Understanding (MoU) with the RBI so as to address various issues and problems of the Co-operative Banks especially in the context of this sectors role in the economic development of Jharkhand.

## LITERATURE REVIEW

**CHAKRABARTY, K.C.**

Addressing the Review Meet on Implementation of the Vaidyanathan Task Force, Dr. K. C. Chakrabarty stressed upon the important role played by the co-operatives in India. He pointed out that the co-operatives are in a better position to further financial inclusion agenda than any other institution. Hence there is a compelling need to strengthen the Co-operative movement to make it a vibrant medium to serve the credit needs of rural India. He noted that 25 States have signed the Memorandum of Understanding(MoU) and progressed towards implementation of reform agenda. A large number of State Co-operative Banks and Central Co-operative Banks were functioning without a banking license for decades. The Committee on Financial Sector Assessment recommended that no unlicensed co-operative banks should be allowed to function beyond 2012. The Reserve Bank would license those co-operative banks which have Capital to Risk Weighted Assets Ratio (CARA) of 4 percent and above. There would be full computerization of all tiers of the co-operative institutions along with use of information and communication technology. Biometric cards would be issued to the members. The reform package envisages freedom to all tiers of the structure to avail loan from any of the RBI regulated entities at a competitive rate of interest. The focus area should be training and capacity building of the personnel. He hoped that after the implantation of the revival package all the co-operative banks would soon be at par with the commercial banks as far as regulatory norms are concerned and all prudential norms would be made applicable to them.

## GOVERNMENT OF INDIA (2000)

Recognizing the relevance and catalytic role of co-operative banks in the development of agricultural and non agricultural sectors of Indian rural economy the Government of India appointed a Task Force on Revival / Restructuring Package for Cooperative Banks on 9 April 1999. The Task Force observed that inadequate role space and autonomy for decision making are the reasons behind the slow pace of changes in co-operatives. The co-operatives have neither remained member driven enterprises nor their leadership in majority of cases had proved to be professional, transparent, accountable and financially effective. Low volume of business/ low resource base, low borrowing membership, lack of professionalization, poor recovery performance, etc., are some of the factors responsible for the deterioration in the performance of cooperative banks. Task Force recognized increasing borrowing membership and volume of business as essential steps in order to improve the performance of co-operative. Task Force also suggested that areas having potential for setting up of more than one society should be allowed by the State Government to have more than one Primary Agricultural Credit Society. Human Resources Development is an important component for the success of any organization, however this fact has not been accorded the importance it deserves in the co-operative institutions. The co-operative banks are generally headed by a committee of elected members, who are not necessarily professionals. It is necessary to evolve scientific staffing norms. The Task Force suggested that the banks should have objective and transparent policy for recruitment of its staff. Absence of Professionalism among the co-operatives has proved to be the weakest and a neglected area in their evolution. It was observed that the low interest spread had affected the overall net margin available to the co-operative credit institutions. In many of the co-operative banks, an efficient system of funds management has been absent due to which the co-operatives are often struck with high quantum of surplus funds mobilized at high cost. It was observed that the position at District level was worse with the virtual absence of money market instruments. Lack of professional approach to investment activities, have resulted in co-operative banks maintaining liquidity far in excess of the required levels. The Task Force advised to have periodic skill up gradation programmes to Chief Executive Officers and staff of Investment Cell to keep abreast of changes in the money market conditions. A brief review of the growth of deposits and advances of co-operative Banks since 1993-1994 revealed that the growth rates in deposits were higher than the growth rates in loans and advances. The Task Force recognized that the co-operative banks do not have access to the market as in the case of commercial banks. The Debt Recovery Tribunals (DRT) was operational for recovery of commercial bank's dues where individual loan outstanding were above Rs 10 lakh. The Task Force suggested that the provisions of the existing Debt Recovery Tribunals should be made applicable in case of co-operative banks as well where loan size is more than 1 lakh. It was observed that the lack of appropriate internal control systems like inspections, internal and concurrent audit and

periodic branch visits by the higher tier officials in co-operative banks was also a matter of increasing supervisory concern. There was also a need for greater transparency in the balance sheets of co-operative banks. The Task Force emphasized that the co-operative banks continue to be the largest rural financial network. Notwithstanding their numerical strength and geographic spread, co-operative banks suffer from various degrees of financial weakness. Hence the Task Force was convinced of the urgent need to initiate measures for the rehabilitation of co-operative banks.

## GOVERNMENT OF INDIA (2005)

The Government of India, felt it necessary to commission a fresh review to revive and revitalize the rural co-operative credit structure. As such the Union Government constituted a Task (vide Government of India notification dated 05 August 2004) in order to formulate a plan of action to rejuvenate the rural co-operative credit structure. The Task Force was under the supervision of Professor A. Vaidyanathan. The Task Force provided a brief review of the various phases of the evolution of co-operatives in general over the past century. The passage of the Cooperative Credit Societies Act in 1904 and the enactment of the Cooperative Societies Act in 1912 marked the beginning of a government policy of active encouragement and promotion of co-operatives. Specific provisions were made in Reserve Bank of India Act, 1934 for the establishment of an Agricultural Credit Department (ACD) in the bank and also for extending refinance facilities to the co-operative credit system. NABARD was created on the recommendation of the Sivaraman Committee in 1981. The Task Force mainly relied on secondary data obtained from NABARD and National Federation of State Co-operative Banks (NAFSCOB). While using the data it became apparent that the statistical data reporting to the co-operative sector leaves much to be desired. It was found that data are not up –to –date and validated. There were significant variations in the data obtained from different sources for the same period and parameters. To ensure that data on the credit system is collected and used meaningfully, the Task Force recommended that NABARD should utilize sufficient resources and personnel to handle the Task. It was also noted that NABARD does not maintain any data base on Primary Agricultural Credit Society. It was found that number of rural branches of commercial banks had gone down marginally as part of the branch rationalization programme thereby proving that in a country predominated by small or marginal land holdings, the reach of the co-operative system is much deeper than the other institutional arrangements in the rural areas. It was noted that the impairment in the management of the rural co-operatives is a direct result of the impairment in governance. This was mainly due to the fact that managers of Primary Agricultural Credit Society in several states were drawn from common staff pools who do not feel accountable to the Primary Agricultural Credit Society and also because of a generally ageing staff profile characterized by inadequate professional qualifications and low levels of training. It was observed that the accumulated losses of Primary Agricultural Credit Society exceed that of District Cooperative Credit Banks. The reason for the losses could be traced mainly to the overall business levels and poor recovery position of the tiers. Poor recovery loan had resulted in a peculiar phenomenon, often referred to as “imbalances”. The “captive deposits” syndrome which requires the lower tier to compulsorily place a part of its deposits with the higher tier, puts pressure on the system as a whole, to fix a higher rate of interest. In working out the requirements of resource support for co-operatives the Task Force has followed the bottom up approach that is, once the losses at the primary level are met, there would be a resultant downward impact on the accumulated losses at level of district and state. It was recognized that, there could be no “one-size-fits-all” model. The States should therefore be given reasonable freedom to decide the pattern they want to follow to fulfill the basic aims of the Restructuring Programme within a reasonable period.

## REPORT OF THE WORKING GROUP ON IMPROVEMENT OF BANKING SERVICES IN JHARKHAND

The working group for Jharkhand was constituted on October 17, 2007 to review the role of banks and financial institutions in supporting the initiatives taken by the State Government for promoting the economic development of Jharkhand. The group recommended the setting up for a State Co-operative Bank in Jharkhand. Jharkhand largely comprises of the forest tracts of Chotanagpur plateau and Santhal Pargana and has a distinct cultural tradition. Jharkhand is adorned with some of richest deposits of iron ores, coal, uranium, mica, copper, bauxite, etc, and accounts for 40 percent of the nation’s mineral reserves. Yet, Jharkhand has one of the highest levels of poverty in India at 40.3% (2004-2005). Agriculture and Allied Activities play an important role in the economy of Jharkhand. This sector contributes about 13% to Net State Domestic Product, (2006-2007) and provides livelihood to about 80% of the State’s population. The agricultural economy of the State is characterized by high dependence on monsoon, low productivity, monocropping, inadequate irrigation facilities, etc. The Committee stressed that massive public investment is required to utilize the land for agricultural cultivation in order to bring a horizontal expansion in the agriculture sector. The agro-climatic conditions of the State are conducive for commercial cultivation of large varieties of fruits, vegetable, flowers and medicinal and aromatic flowers as well. However due to lack of irrigation facilities and also due to non-availability of quality planting material. The State also has potential for the development of inland fisheries. Promotion of rural industries is also among the priorities of the Government as this provides huge employment opportunities to the vast sections of the society, specifically to the weaker sections, minorities and women. For the fulfillment of all the above development process finance is the main requirement. Consequent upon the carving of the State of Jharkhand from Bihar, The Bihar State Cooperative Bank was not bifurcated to form a separate State Cooperative Bank of Jharkhand. One of the Terms of Reference of the Group was to specifically examine and recommend measures to improve the effectiveness of the co-operative banks (rural and urban) in the State and also to suggest measures (immediate and medium term) for the setting up of a State Cooperative Bank in Jharkhand. The Group observed that there was low Credit Deposit Ratio for the State vis-à-vis the national average. Since the Credit Deposit Ratio also depended on several factors such as demand for credit as also the absorption capacity, therefore, the Group suggested that the State Government should strive for improving the various infrastructures in the State so as to increase the State’s absorption capacity. The Group observed that the banks have not been achieving the targets set under agriculture, Small Scale Industries and other priority sector for almost all the years that is 2002-2003 to 2006-2007.

## SEN, PRABAL KUMAR (2003)

Professor Prabal Sen observes that even though the co-operative sector has an overwhelming presence in India, yet these institutions continue to be plagued by lack of ‘stability’ and ‘efficiency’. The hallmark of the co-operative form of organization is its democratic set up where there is voluntary and open ended membership. Because of the informal behavior of the co-operative bank they have a greater accessibility to the customers particularly from the middle and the lower income groups. The Indian Financial development follows ‘supply leading’ phenomenon under which the financial institutions come into existence first and the it creates the demand for their services while on the other hand the co-operative banks are the result of the people’s own efforts to create an institutional mechanism to meet the specific credit requirements of the people. Professor Sen noted that co-operative institutions have few special features, some of which have a debilitating impact. These include inadequacy in the level of professionalism in the conduct of management functions, lack of internal control and corporate governance, fragile audit system, etc, most co-operative banks in India have a very narrow capital base. As on March 31, 2002, as many as 9 out of 30 State Co-operative Banks and 139 out of 367 District Central Cooperative Banks could not comply with even the minimum share capital requirement of a mere Rs. 1 lakh as prescribed under section 11(1) of the Banking Regulation Act, 1949. Almost all the committees appointed by Government of India and Reserve Bank of India, pointed out that in most cases the co-operative banks are not audited regularly and in a comprehensive manner. Since co-operative banks are not enforced to disclose their financial status, hence it is possible for some (unscrupulous) banks to indulge in some unhealthy practices. Certain unfavorable developments witnessed in this sector in the recent past (March 2001) onwards, such as the crises faced by Madhavpura Bank, ‘The Government Securities Scam’ of May 2002, ‘Acute Liquidity Crisis’ faced by a number of Urban Cooperative Banks and District Central Cooperative Banks, has led to the deceleration of its overall growth. It has also affected the ‘image’ of the co-operative credit sector. Hence there is need for adoption of a comprehensive strategy for rebuilding the image of the co-operative credit sector. There is need of generating awareness about the strength and opportunities of this sector. The co-operative sector needs to be given a requisite degree of autonomy.

## IMPORTANCE OF THE STUDY

The present work is expected to have considerable significance in the economy of Jharkhand. The future of rural economy in Jharkhand and for that matter in any Indian State depends upon the performance of the Co-operative Credit Institutions. If the rural economy is to be made strong, then the Co-operative Credit Institutions have to play a positive role.

## STATEMENT OF THE PROBLEM

The proposed research work will examine the growth and development and the financial health of Co-operative Credit System in Jharkhand.
It would also try to study the effects brought about in the working of the Co-operative Credit Institutions in Jharkhand after the implementation of the Task Force. (Government of India. 2004: Task Force on Revival of Rural Cooperative Credit Institutions. Chairman, A Vaidyanathan. Government of India: India).

## OBJECTIVES

1. The main objective of this research work is to identify the factors responsible for the current state of affairs in the co-operative system in Jharkhand.
2. The present research work will try to suggest ways and means for revamping the system.

## HYPOTHESES

The following are the main hypotheses which are to be tested in this study.

a) Policies pertaining to banking system in general and Co-operative Credit Structure in particular as enunciated by Government of India and/or RBI and /or Government of Jharkhand have an impact on the functioning of Co-operative Credit System in Jharkhand.
b) Capital base and skill endowment of the employees also impact the health and efficiency of the Cooperative Credit System.

## RESEARCH METHODOLOGY

The study will cover the period 2000 – 2009 which is long enough to examine the trends of macro-economic variables. The present study will be based on the secondary data. Taking the data available from Reserve Bank of India, National Bank for Agriculture and Rural Development and Government of Jharkhand sources. Reference will be made to reports of various Committees/Task Forces etc which had studied the functioning of the Co-operative Credit Systems in the country. It will try to study the overall condition of the Credit Institutions in Jharkhand.

## RESULTS AND DISCUSSIONS

There has been research work and many Committees were formed to study the working of Co-operative Credit Institutions at the National level but very few works have been done to show the status and working of the Credit Institutions in Jharkhand.

## SUGGESTIONS

Every State in our country is unique and diverse with problems that is quite different and as such needs a different approach. There should be more intensive studies for Jharkhand to identify the causes behind the poor working of co-operatives in Jharkhand and to suggest ways of rectifying them.

## LIMITATIONS

The non availability of data relating to the functioning of Co-operative Credit Institution operating in Jharkhand is likely to pose difficulty in the conduct of study.

## SCOPE FOR FURTHER RESEARCH

Jharkhand being a new State, many aspects of the working of co-operative sector needs to be studies and analyzed properly.

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# IMPACT OF FISCAL DECENTRALIZATION ON MAJOR ECONOMIC INDICATORS IN INDIA

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**ABSTRACT**

*Fiscal decentralization is known to increase the efficiency in the delivery of public goods and services and especially when regions are heterogeneous in nature. While countries have been known to undertake extensive expenditure decentralization across sub-national governments, however the extent of tax decentralization that is undertaken is of a much lesser extent. Generally, countries prefer that the central government retains the collection of major tax revenues because of the benefits of economies of scale in tax collection. Collection of taxes by the Central government is also seen as an important mechanism for undertaking fiscal equalization between sub-national governments especially when they differ substantially in fiscal capacities and cost disabilities. However, when sub-national governments undertake more of the expenditure responsibilities a major part of which is funded by intergovernmental transfers it can lead to increased dependency and fiscal profligacy by sub-national governments and adversely affect economic growth. Hence this paper tries to find out the impact of tax decentralization on two important economic indicators. This paper undertakes a panel regression comprising of 14 non-special category states from 1981-82 to 2012-13 to empirically find out the impact of tax decentralization on Net State Domestic Product and fiscal deficit. The findings suggest that tax decentralization has a positive and significant lagged impact on Net State Domestic Product and negative significant lagged impact on fiscal deficit.*

**KEYWORDS**
tax decentralization, fiscal deficit, sub-national government, intergovernmental transfers.

**JEL CODE**
H20, E620, H71, H77.

## INTRODUCTION

Different fiscal arrangements and institutions determine the conditions for economic growth and fiscal profligacy, and so their relative impact can be assessed based on their effect on Gross State Domestic Product (GSDP) and fiscal deficit of sub-national governments. In this regard, the customary public finance instruments that include taxes and government expenditures, revenues and transfers can either enhance or dampen regional Gross State Domestic Product and fiscal deficit of sub-national governments.

Intergovernmental financial relations contain five main features, Bird R.M and Vaillancourt F (2006), Marinkov M (2013):

1) Expenditure decentralization: The assignment and devolution of spending responsibilities to sub-national governments.
2) Revenue and tax decentralization: The assignment and devolution of tax and revenue sources and autonomy to sub-national governments.
3) Fiscal Equalization: inter-jurisdictional fiscal transfers and grants to decrease fiscal imbalances.
4) Sub-national borrowing.
5) Institutional structure within which the national and sub-national government powers are put into effect.

Each of these five features can have different effects on the major economic indicators of the sub-national governments.

In general, the first wave of decentralization beginning in the 1950's and 1960's focused on administrative decentralization amongst countries, which meant merely delegating responsibilities funded by the state to local governments. The second wave of decentralization from mid 1970's upto 1980's attempted to devolve central government responsibilities and revenue sources to local governments. As it was realized that decentralized planning and increased local participation was a more effective strategy to implement development programs that focus on meeting basic needs, such as health and education programs. However local governments often found themselves with greater share of responsibilities but not the revenue sources. The third wave of decentralization which is ideologically driven is based largely on the principle that in a increasingly globalized economy, states need to be more market oriented that is keeping customer at the centre. The third wave also focuses on the fiscal devolution model of decentralization. Lindaman K and Thurmaier K (2002). Fiscal decentralization is a complex phenomenon involving many different aspects including fiscal, political and administrative. Fiscal decentralization can be considered as the fiscal empowerment of lower levels of government which includes the devolution of taxing and expenditure powers along with the arrangements for correcting mismatches in resources and responsibilities Oommen M.A (2004). Inorder to empirically understand the impact of decentralization on economic indicators, the decentralization indicator needs to be quantified. Different empirical papers have used different measures of fiscal decentralization including expenditure decentralization Qiao, B., Martinez-Vazquez, J., & Xu Y (2008), revenue decentralization Oommen M. A. (2006) and political decentralization Asfaw A., Frohberg K, James K.S. and Jütting J (2007). No matter what measure of fiscal decentralization is used many economists feel that the decentralization indicator should be constructed in such a way that it reflects the autonomy of the sub-national governments and the measure does not include expenditure or revenue components over which the sub-national governments have no control in terms of spending decisions or revenue raising ability. When the decentralization measure reflects the autonomy of the sub-national government it will reflect the true level of decentralization and thus empirical findings will be reliable Akai N and Sakata M (2002). This chapter limits its analysis to tax decentralization at sub-national.

The first section of the paper comprises of literature review followed by need of the study and statement of the hypothesis this in turn is followed by description of data, research methodology, theoretical framework, empirical findings and conclusions.

## REVIEW OF LITERATURE

Fiscal decentralization has been associated with a number of benefits like increase in productivity of the public sector, increase in the accountability of the sub-national governments, better delivery of public goods and services due to the closer proximity to the beneficiaries and thus less wastage of resources Bird and Wallich (1993), Ostrom, Schroeder & Wynne (1993), Boadway R and Shah A (2007), Falch & Fischer (2012). Fiscal decentralization is specially found to be effective when sub-national governments are heterogeneous in nature because in such a situation uniform provision of services by the Centre will be less effective as each region will have its own requirements and fiscal capacities Oates W (1972). While the extent of expenditure decentralization is fairly similar across federations, the extent of revenue and tax decentralization varies widely. Economies of scale in tax collection by the Centre provide an efficiency argument for assigning greater taxation powers to the central government Boadway R and Shah A (2007). These are the traditional efficiency and equity arguments that promote asymmetry in expenditure and revenue-raising responsibilities between different levels of Governments that gives rise to fiscal imbalances. Sub-national expenditure funded by common pool resources such as grants and revenue-sharing might have a deteriorating effect on fiscal balances. By separating the link between taxes and benefits it might turn the public sector's resources into a common pool that competing local governments will try to take advantage of as per their requirements and extract greater resources from the Central government Rodden J (2003). This happens because regional governments' fail to internalize the entire cost of transfers on national taxpayers and in the recognition that the central government maintains a strong interest in the matters of the regions. Since citizens of the state link state goods and services with relatively low tax burdens, they underestimate the costs to themselves of public goods provided by the state as a considerable part of the state expenditure is funded through transfers. The result is excess demand on state spending by its residents Boadway R

and Shah A (2007). These detrimental incentives are prevalent in a federal setup with important tax sharing arrangements or egalitarian fiscal equalization, but low tax autonomy of the sub-national governments, or when heavily indebted regions can easily expect a bail-out Goodspeed TJ. (2002). When sub-national governments can obtain funds from the federal government to resolve their financial or economic difficulties, then any effort to consolidate their budgets becomes difficult Schaltegger C A. And Feld LP (2009).

When a sub-national jurisdiction has to finance its spending by own tax revenue, the local politicians do not have particular incentives to over-spend. This promotes fiscal competition amongst regional governments wherein they resort to use of improved quality of public goods and taxes as instruments to attract mobile production factors. Brennan and Buchanan (1980) put forth that the resulting fiscal competition provides for a check on government size and, and even on government debt. Fiscal adjustment may be used as a successful reform strategy by regional governments to compete with their successes in achieving sound public finances in order to attract good taxpayers and this in turn will encourage fiscal consolidation at the sub-national and consequently at the central level. Successful fiscal adjustment thus becomes more likely under competitive federalism Schaltegger C A. And Feld LP (2009). Maximum efficiency in a decentralized system requires that lower-level governments internalize all the social benefits and costs of their policy choices Boadway R and Shah A (2007). Decentralization of tax capacity arises from the need for regions to bear some responsibility for financing their expenditure from their own sources; however decentralization of revenue capacity is not efficiency enhancing per se due to loss of economies of scale. But, it is argued, regional government accountability is enhanced to the extent that governments are required to raise their own revenues to finance their (major part) expenditures programs Boadway R and Shah A (2007).

However, tax decentralization can also have negative effects as greater tax decentralization at the sub-national level means less resources available at the Central government level and thus it may affect the equalization mechanism of the Central government and lead to an increase in fiscal disparities as poorer regions may be unable to compete with richer regions due to their structural and economic conditions. Greater tax decentralization and increased autonomy of the sub-national governments can lead to macroeconomic instability as sub-national governments pursue their local policies, without regard for the situation at the macro level Rodden J. and Wibbels E. (2002). Greater tax decentralization may also lead to tax competition between sub-national governments to attract trade and business and thus affect the overall revenue collection of the sub-national governments and this in turn may be a cause for reduction of government undertaking important expenditure in areas of social importance Rao G and Singh N (1999).

Following are the results of a literature review undertaken of similar studies regarding the impact of fiscal decentralization on economic growth and fiscal deficit. A panel data study of 16 Central and Eastern European countries for the period 1990−2004 was undertaken and their findings suggest that the long-term effects on economic growth differ according to the type of decentralisation that is expenditure and intergovernmental transfers to sub-national government is found to be negatively correlated with economic growth, whereas taxes devolved at sub-national level have positive effects on long-term economic growth Rodriquez-Pose and Krøijer (2009). In another study comprising of a panel data set of 61 provinces in Vietnam, the authors found that the effect of expenditure decentralisation on economic growth was negative, but the effect of revenue decentralisation on economic growth was positive Nguyen and Anwar (2011). On the other hand, a study in Indonesia for the period 1992–2002 found that the expenditure indicator of fiscal decentralisation is positively related to economic growth, whereas the revenue indicator of fiscal decentralisation is negatively related to economic growth Ismail and Hamzah (2006). A study by Jin and Zou (2005) uses a panel dataset for 30 provinces in China to examine the relationship between fiscal decentralisation and economic growth over two sample periods. Their results suggest that divergence (rather than convergence) between sub-national revenue and expenditure assignments leads to higher rates of growth in China. A study comprising of 50 states of the United States between 1992 and 1996 proved that that fiscal decentralization contributes positively to economic Akai N and Sakata M (2002)

A few studies regarding the impact of fiscal decentralization on fiscal deficit are available. A study that used a panel of 26 Swiss cantons from 1981 to 2001, it was found that fiscal centralization decreases the possibility of successful budget consolidations. Central government institutions encourage the discretionary use of public funds and thus get in the way of long-lasting fiscal adjustments. In addition, the authors present empirical evidence that an increase in federal transfers significantly reduce the chance of successful consolidations. On the other hand, fiscal competition in a federation strengthens fiscal discipline thereby increasing the reliability of long-lasting fiscal stabilization (Schaltegger C A. and Feld LP (2009). In yet another study, a measure of vertical fiscal imbalance (VFI) was used to find out the relationship between overall fiscal performance and the financing structure of sub-national governments using data from 28 OECD countries for the time period 1995-2007. On average, the general government fiscal balance is found to improve by one percent of GDP for each 10 percentage point reduction in VFI Eyraud L and Lusinyan L (2013). In a panel data set of 30 countries regressions were undertaken for the entire 30 countries together as well as for sub-samples amongst these 30 countries comprising of OECD and Non-OECD Countries. The study showed that sub-national tax autonomy was found to worsen fiscal positions at the sub-national level for the entire sample as well as for the subsamples. This according to the authors could be the result of coordination failures due to moral hazards in decentralized policy-making. In a study comprising of panel data from 32 industrial and developing countries, 1980–1994, it was found that expenditure decentralization leads to smaller national governments, larger sub-national governments, and larger aggregate governments; revenue decentralization increases sub-national governments by less than it reduces national governments, hence leads to smaller aggregate governments Jin J & Zou H F , 2002 .

Hence the findings of previous empirical studies reveal that while in some countries fiscal decentralization has had a positive impact on economic growth in other countries it had a negative impact. Similarly in terms of fiscal decentralization and fiscal deficit while some studies have found a negative relationship between fiscal decentralization and fiscal deficit other countries have found a positive relationship. Hence the results of fiscal decentralization on major economic indicators is ambiguous and probably differs from country to country depending on the structural and institutional arrangements within the country and the extent of fiscal decentralization that has been undertaken within the country.

## NEED AND IMPORTANCE OF THE STUDY

A panel level study on the impact of tax decentralization on major economic indicators like Net State domestic product and fiscal deficit has not been previously undertaken for the sub-national level of governance in India. India is a country where the extent of expenditure decentralization is greater than the extent of tax decentralization and hence it would be useful to undertake a study on the impact of decentralization on Net state domestic product. This is because if tax decentralization is indeed having a positive impact on NSDP then without increasing the amount of resources that are devolved by merely changing the arrangement in tax collection it can enhance income. States have also been struggling to curtail their fiscal balances and thus if tax decentralization has a negative impact on fiscal deficit then it would be worthwhile to undertake greater tax decentralization at the sub-national level.

Objective of the study**:** To find out the impact of tax decentralization on Net State Domestic Product and fiscal deficit

1) Hypothesis: Ho: Tax Decentralization has no significant impact on NSDP growth
2) Hypothesis: Ho: Tax Decentralization has no significant impact on NSDP growth

The author has not put any alternate hypothesis because as in the literature review fiscal decentralization can have both negative as well as positive effects on economic growth and fiscal balance and hence in the case of India too fiscal decentralization can have an either positive or negative impact on NSDP and fiscal deficit.

## DATA DESCRIPTION

The author has undertaken the analyses for 14 non-special category states as classified by the Finance Commission The states included in the study are Andhra Pradesh (AP), Bihar and Jharkhand together (BJ), Gujarat (Gu), Haryana (Ha), Karnataka (Ka), Kerala (Ke), Madhya Pradesh and Chattisgarh (MPC), Maharashtra (Ma), Orissa (Or), Punjab (P), Rajasthan (Ra), Tamil Nadu (TN), Uttar Pradesh and Uttarakhand (UPU) and West Bengal (WB). The author has dropped Goa from the analysis because it is an outlier in per capita terms being a comparatively small state with lesser population. The analysis has been restricted to non-special category states because the special category states have very different fiscal capacities and expenditure needs and hence it would not be appropriate to club both the category of the states together.

The tax decentralization (TD) measure has been computed in such a way that it reflects autonomy of the state in terms of tax revenue collection as follows:

TD = State own tax revenue per capita of state 'i' divided by the sum of central tax revenue per capita and state own tax revenue per capita (central tax revenue is revenue prior to transfers of the state share in Central taxes).

$$TD = \frac{\text{State own tax revenue pc}}{(\text{Central tax revenue pc}+\text{State own tax revenue pc})} \quad (1)$$

While constructing this measure of tax decentralization, the measure used by Oommen M.A. (2006) was adopted. However, the only difference from the measure used by Oommen MA (2006) was that in this study the measure was compiled in per capita terms and did not include the third tier level of governance as time series data for the same is not available.

The share of Central taxes has not been included in the tax revenue of states because though the state has full autonomy in its expenditure decision however the state has no control (increasing or decreasing its revenue share) over the tax rate or base from the point of view of revenue collection.

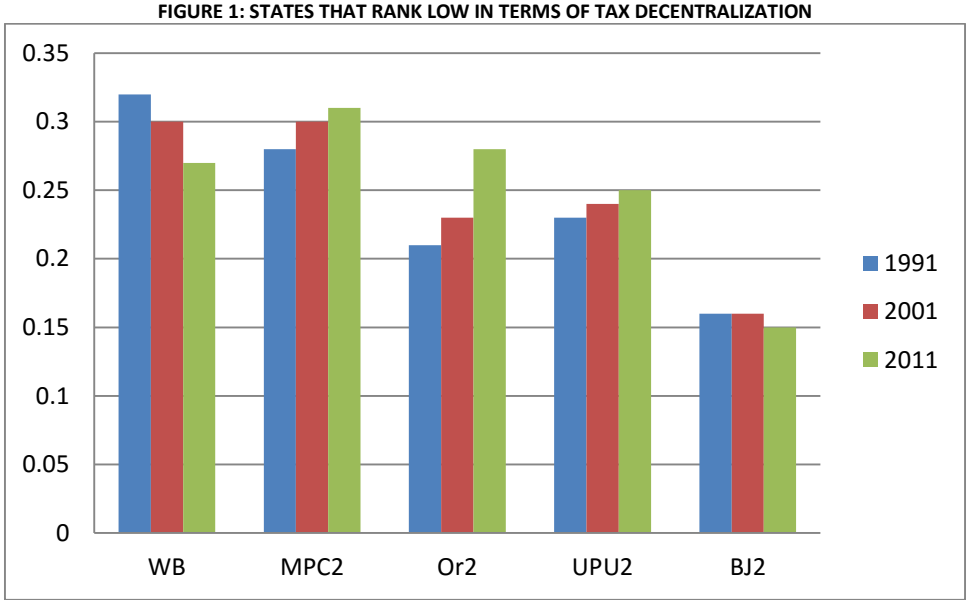
**TABLE 1: TRENDS IN TAX DECENTRALIZATION FROM 1981-82 TO 2011-12**

| 1991 (Average 1981-1991) | | 2001 (Average 1992 - 2001) | | 2011 (Average 2002-2011) | |
|---|---|---|---|---|---|
| **T D <0.5** | **TD>0.5** | **T D <0.5** | **TD>0.5** | **T D <0.5** | **TD>0.5** |
| **Ke, TN,** WB, Or, MPC,BJ, Ra, UPU, ,Ka, Gu | P | Ke, Ka AP, BJ, WB, Ra, UPU, MPC, Or | **TN**, P, **Ma, Ha, Gu** | **AP**, Ka, Ke, **Gu, P** BJ,MPC, UPU, Ra, Or, WB, | TN, Ma, Ha |

Source: Author's compilation of data from EPWRF

In table 1 average trends of tax decentralization have been compiled. A state with the value of tax decentralization of 0.5 or greater is considered to be a highly decentralized state in terms of tax revenue. A state with a decentralization value less then 0.5 is not considered to be highly decentralized. During 1981 -1991 only one state was highly decentralized and that was Punjab, all other states had decentralization values below 0.5. In the period between 1992-2001 there was some improvement with Tamil Nadu, Punjab, Maharashtra, Haryana and Gujarat now moving into the highly decentralized category. However, during 2002-2012 only Tamil Nadu, Maharashtra and Haryana were considered highly decentralized with Punjab and Gujarat slipping below 0.5 in terms of tax decentralization.

**FIGURE 1: STATES THAT RANK LOW IN TERMS OF TAX DECENTRALIZATION**




Source: Author's compilation of data from EPWRF

The data compiled in Figure 1 is average data for the previous ten years. Bihar- Jharkhand is the worst performing state and the level of tax decentralization decreased in 2011, wherein its value of tax decentralization was 0.15 (Figure 1). Orissa which was the second last in terms of tax decentralization upto 2001 improved drastically in 2011and overtook UPU and West Bengal. West Bengal showed a steady decline in tax decentralization over the years. It initially had a value of 0.33 in 1991 and it declined to 0.27 in 2011. UPU has witnessed a steady increase in tax decentralization values since 1991.

Hence huge differences exist in terms of tax decentralization across these 14 non special category states. And hence in this chapter the author tries to find the impact of these decentralization indicators on some important economic factors of India.

## RESEARCH METHODOLOGY

This study undertakes a panel data regression of 14 non-special category states in India. In comparison to purely cross-sectional data, panels are attractive since they often have far more information than single cross-sectional analysis and thus allow for an increased accuracy in estimation

Following regressions and tests have been undertaken in this study:

Breusch–Pagan LM test: Ordinary Least Square (OLS) Model vs Random Effect Model

Sargan Hansen Statistic: Fixed Effect (FE) Model vs Random Effect (RE) Model

Fixed effects regression with Draay and Kriscoll standard errors

Theoretical Framework

The following panel regression has been undertaken using Equation 2:

$$lnYit = \beta 0it + \beta 1Decit + \beta 2Xit + \beta 3Dummy + eit\text{----------} \quad \textbf{(2)}$$

Where

The subscript *i* is the observation unit, state; *t* is the time unit

lnY= Natural log of per capita Net state domestic product at current prices

$\beta_1$ Dec= tax decentralization indicator

Regarding the tax decentralization measure it could either have a positive or negative impact on NSDP

$\beta_2$X= control variables as stated below:

Governance indicator: total administrative expenditure divided by the total revenue expenditure of state "i" in per capita terms in current prices.

If an increasing amount of revenue expenditure is used for government administrative purposes than it will have a negative impact on the economy as it will crowd out resources from more purposeful uses and it also means that the administration is ineffective. And therefore an increase in governance indicator is expected to have a negative impact on NSDP

Inflation Indicator which is the state GSDP deflator measured as the ratio of GSDP current prices divided by GSDP constant prices of individual states in different time periods.

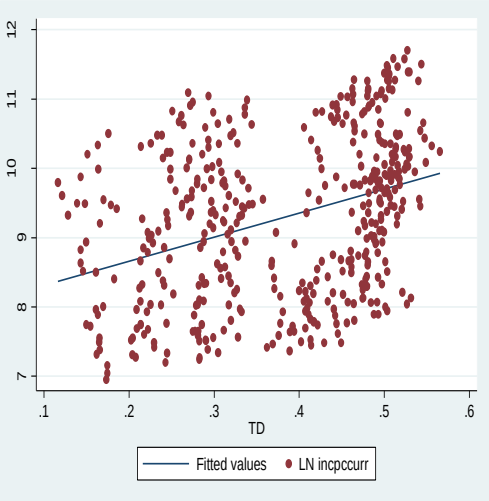
Inflation is expected to have a negative impact on growth as higher inflationary pressure will increase price of inputs and thus affect production negatively. At the same the interest rates will be hiked to tackle inflation again affecting production and thus inflation is expected to have a negative impact on NSDP. However moderate inflation can have a positive impact on growth.

Capexatio: capital outlay per capita divided by aggregate expenditure per capita of state i in current prices.

The capexratio is used because it increases the productive capacity of the state and hence an increase in the capital expenditure compared to total expenditure is expected to have a positive impact on income.

β3 Dummy= Liberalization dummy that is 0 for pre liberalization years and 1 after that (1991) (it captures the impact of trade, foreign direct investment that increased drastically after liberalization)

**FIGURE 2: SCATTER PLOT OF TAX DECENTRALIZATION AND NATURAL LOG OF NSDP PER CAPITA**




Source: EPWRF

There seems to be a positive relationship between tax decentralization and NSDP per capita (Fig2).

## EMPIRICAL FINDINGS

In table 2 we divide the regression results into different parts depending on the type of regression that is used. The indicator of fiscal decentralization is run along with other variables as mentioned above. Basically through the regressions we try to understand the impact of tax decentralization indicator on NSDP per capita in India.

Intially the Breusch-Pagan Lagrange multiplier (LM) test was undertaken to test whether a simple Ordinary Least Square (OLS) regression was more appropriate than the random effects model. The null hypothesis states that a simple OLS is appropriate and the alternate hypothesis states that the random effects model is appropriate. The results of the test show that a random effects model is significant as compared to a simple pooled OLS regression.

**TABLE 2: REGRESSION RESULTS: DEPENDENT VARIABLE: LN NSDP PER CAPITA**

| Variables | Random Effects | Fixed Effects | Driscoll and Kraay |
|---|---|---|---|
| TD | 2.27*** | 5.39** | 5.39* |
| inflation | -0.04 | 0.06 | 0.06 |
| Governance | -7.08* | -23.5*** | -23.5*** |
| Capexratio | 2.62** | 5.09*** | 5.09*** |
| Liberalization | 1.78*** | 1.47*** | 1.47*** |
| constant | 7.59*** | 7.61*** | 7.61*** |
| Adjusted Rsquared | within = 0.73 between = 0.61 overall = 0.71 | within = 0.76 between = 0.56 overall = 0.59 | 0.7 |
| Breusch and Pagan Lagrangian multiplier test for random effects Prob > chibar2 = | 0.00 | | |
| Sargan-Hansen statistic, P value | | 0.00 | |
| Modified Wald test for groupwise heteroskedasticity, Pvalue | | 0.00 | |
| Breusch-Pagan LM test of independence, Pvalue | | 0.00 | |

Source: EPWRF and MOSPI

Robust Cluster Standard Errors for random and fixed effects model, No of Obs: 448 Significance Level: ***1 per cent , **5 percent, *10 percent

Since 14 different states with different linguistic, cultural, demographic and geographical distributions have been used in the regression model we further undertake the Hausman test to choose between the fixed and random effects model. Since we have used the cluster robust standard errors we cannot use the standard Hausman test for post-estimation to check between fixed and random effects model. Hence instead of the Hausman test we use the Sargan Hansen test to choose between the random and fixed effects model. The null hypothesis states that the Random effects model is consistent and the alternate hypothesis states that the fixed effects model is consistent. The Sargan Hansen test rejects the null hypothesis and thus suggests that the fixed effects model is significant over the random effects model (Table 2). The Adjusted R squared has decreased for all the regressions at 0.6 as compared to the random effects model. The tax decentralization indicator is significant at 5 percent level and a one-unit increase in tax decentralization will lead to a 5 percent increase in NSDP per capita. The Governance indicator has a significant and negative impact on NSDP per capita and the coefficient has increased in size as compared to the earlier regression. Inflation is non-significant throughout. As expected capex and liberalization ratio are highly significant at one percent and have a positive impact on NSDP growth.

The Modified Wald test for group-wise heteroskedasticity in fixed effects regression suggests the presence of heteroskedasticity amongst the variables. Hence the robust clustered standard errors have been used in order to account for heteroskedasticity and first order autocorrelation.

Similarly, Breusch-Pagan LM test of independence of the error terms shows the presence of correlation amongst errors across clusters (states) and hence the Driscoll and Kraay standard errors have been used for the fixed effects regression. The results of Driscoll and Kraay standard errors for the fixed effects regression are similar to the fixed effects regression with robust clustered standard error; however, the only difference is that tax decnetralization variable is significant at 10 percent level.

**FISCAL DECENTRALIZATION AND FISCAL DEFICIT**

**THEORETICAL FRAMEWORK**

In this section we try to analyse the impact of tax decentralization on fiscal deficit indicator

$$Fisc\ Def = \beta 0it + \beta 1Decit + \beta 2Xit + \beta 3Dummy + eit \text{----------} \quad (3)$$

**Where:**

The subscript *i* is the observation unit, state; *t* is the time unit

**Fiscal Def:** Fiscal deficit as a percentage of GSDP

$\beta_1$ **Dec**= tax decentralization as stated above

$\beta_n$**X**= control variables as stated below

**Inflation Indicato**r: which is the state GSDP deflator measured as the ratio of GSDP current prices divided by GSDP constant prices of individual states in different time periods.

**IP:** Interest Payments as a percentage of GSDP

**Growth Rate:** Growth rate of NSDP per capita current prices

**Dummy Variable:** The year of implementation of the FRBM Act in the states

## EMPIRICAL FINDINGS

The Breusch and Pagan Lagrangian multiplier test shows that the random effects model is more appropriate to a pooled OLS regression. The adjusted R-squared is around 40 percent. Tax decentralization seems to have no impact on fiscal deficit in the random effects model. While Interest payments and inflation have a significant positive impact on fiscal deficit, Growth and Liberalization has a significant negative impact on Fiscal deficit (Table 3).

**TABLE 3: REGRESSION RESULTS: DEPENDENT VARIABLE: FISCAL DEFICIT AS A PERCENTAGE OF GSDP**

| Variables | Random Effects | Fixed Effects | FE with Driscoll and Kraay standard errors | | |
|---|---|---|---|---|---|
| TD | -0.49 | -2.29 | | | |
| TD Lag 1 | | | | -4.3** | |
| TD Lag 2 | | | | | -7.5*** |
| inflation | 0.28** | 0.21 | 0.21 | 0.14 | 0.04 |
| Interest Payments as a percentage of GSDP | 0.68*** | 0.61*** | 0.61*** | .59*** | 0.57*** |
| Growth rate of NSDP per capita current prices | -0.03*** | -0.04*** | -0.04*** | -0.04*** | -0.04*** |
| FRBMA Act | -1.38*** | -1.37*** | -1.37*** | -1.37*** | -1.34*** |
| Constant | 2.65*** | 3.6** | 3.6*** | 4.55 | 5.96*** |
| Adjusted R Squared | within = 0.35 between = 0.77overall = 0.41 | within = 0.37 between = 0.48 overall = 0.36 | 0.36 | 0.37 | 0.38 |
| Breusch and Pagan Lagrangian multiplier test for random effects Prob > chibar2 = | 0.00 | | | | |
| Sargan-Hansen statistic , Pvalue | | 0.00 | | | |
| Modified Wald test for groupwise heteroskedasticity, Pvalue | | 0.00 | | | |
| Breusch-Pagan LM test of independence, P value | | 0.00 | | | |

Source: EPWRF and MOSPI

Robust Cluster Standard Errors for random and fixed effects model, No of Obs: 448 Significance Level: ***1 per cent , **5 percent, *10 percent

The Sargan-Hansen statistic shows that fixed effects model is more appropriate. In this model tax decentralization has no significant impact on fiscal deficit although it has a negative coefficient just as in the previous regression. Robust clustered standard errors have been used to account for heteroskedasticity. While Interest payments and inflation have a significant positive impact on fiscal deficit, Growth and Liberalization has a significant negative impact on Fiscal deficit. Lastly we run the regression with Driscoll and Kraay standard errors because we found correlation amongst errors across clusters. In this regression tax decentralization variable now becomes significant at the lags. The tax decentralization variable is significant on the first lag at five percent and second at one percent and has a negative impact on fiscal deficit. All the other variables have similar signs and significance as previous regressions.

## CONCLUSION

The results suggest that tax decentralization has a positive and significant impact on NSDP per capita. Hence it will be worthwhile to increase tax decentralization at the sub-national level as it enhances income. However more importantly is that tax decentralization having a significant and negative lagged effect on fiscal deficit. Hence tax decentralization is the perfect combination for sustainable growth as the sub-national governments bear the costs of their expenditures through the revenue they have raised and do not depend on intergovernmental transfers. This makes the sub-national governments more responsible as there is a direct link between expenditure undertaken and the revenue raised, hence their accountability to the taxpayer's increases. The results also suggest that increase in the administrative expenditure has a negative impact on NSDP per capita and hence it should be curtailed. Capital expenditure is also growth enhancing and therefore should be encouraged and liberalization too has had a significant impact on NSDP per capita. On the other hand, Interest payments lead to an increase in fiscal deficit hence along with greater tax decentralization of states, a limit can be imposed on the borrowing of states. The FRBM act has had a significant and negative impact on fiscal deficit. Hence tax decentralization should be taken along with other monitoring mechanisms to inorder to reap the full benefits of its positive effects.

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