The Impact of Health and Education on Economic Growth of Asia: A Multilevel Modelling Approach

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Abstract

This study examines the impact of aggregate variables like educational attainment, health as proxied by expectation of life at birth, per capita real capital and openness in trade on economic growth of 32 Asian countries under balanced panel setting over the period of 1965-2010. It estimates the extent of impact of these variables on economic growth by applying multilevel modelling (Mixed effect modelling) based on the latest data extracted from the Penn world Tables, Barro and Lee and World Development Indicators of the World Bank. The elasticity of income in respect to capital ranges from 0.48 to 0.51 per cent which remains unchanged in all the specifications estimated. This value is found to be higher by 0.02 to 0.11 per cent than that of the estimates provided by Jamison et. al. (2004). The elasticity with respect to adult male survival rate (proxied as health) is highly significant and positive which ranges from 0.44 to 0.52 per cent. Since the male survival rate significantly increases the per capita income in Asia, improving the health of population is considered as one of the major contributing factors of growth in Asian countries. On the other hand, the co-efficient of total fertility rate is significantly negative and reduces the income in Asia. It means to that the higher fertility rate increases the dependency ratio of unproductive population which in turn depresses the productivity of the working population in these economies. The additional regressors like openness of trade and interaction variable combining adult survival rate and per capita capital are also used in this study. The introduction of interaction variable in the specification has significantly increased the income by 0.29 per cent and such introduction makes the co-efficients of capital and health negative. Besides, the coefficient of openness of economy is positive and significantly increases the income in Asia.

Key words : Educational attainment, Survival rate, Production function, Total fertility and Multilevel Modelling

Introduction

The most of the growth studies define labour quality only with education and neglects health as one of the major contributors of economic growth (Bloom et.al, 2003). A healthy working population do contribute more to the growth of economy by being regular to work and get better wages. On the other hand, ill health makes the labourers to irregular to work and also pave the way for earlier retirement from work which ultimately decreases the ratio of country's working population to non-working population (cited in Jamison et al, 2003: 02). One of the earlier studies has examined the relationship between life expectancy and economic growth (Bloom, et.al, 2003) and found that one year improvement in life expectancy of population increases the aggregate output by 4 per cent. Hence, in the examination of the regularity of school attendance and cognitive abilities of healthier children, the studies have found that the healthier students were regular to school as well as appeared to have better learning potential in academics. The present study reviews to find the solution for the various queries raised in the

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researcher's mind such as why do healthier people are found to be wealthier than the less healthy working population? What extent does health contribute to economic growth in developing and emerging economies in Asia? Does health explain cross country differences in Asia at level and growth rates of income? A number of studies have examined by applying appropriate tools in determining the impacts of health on output (income) over the years. Most of the studies in this line have used the past data base, which are to be refined to make the results very dependable as well as to provide answers to such questions. Some of the illustrative econometric works in determining the growth are, Ecevit (2013) for Asian countries, Mehmood, et. al, (2014) for OECD countries and Bloom et al, (2003) for a panel of countries including both developed and developing economies.

Background of the Study

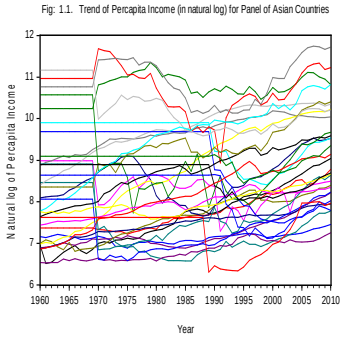
Asia is the biggest continent in the world consisting of 50 independent countries. The Asian continent is so large and diverse that it is often divided into sub-regions like Northern Asia, Central Asia, Middle East, Southern Asia, Eastern Asia and South-Eastern Asia. It is also considered as rich in cultures, and many of the world's major religions such as Christianity, Judaism, Islam and Buddhism are came out from Asian continent. It plays an influential role in world's culture and in the economy of countries like Russia, China, Japan and India. Asian continent is also abundant in natural resources. Middle East Asia is the major supplier of oil into most of the countries in world. Armenia and Cyprus geographically are in Asia, but politically and culturally they are considered as a part of Europe. Russia is the biggest continent of the Asian countries by area, which occupies about 30 per cent of the total territory. Maldives is the smallest one of the independent states in Asia; it is an archipelago of islands famous for its beach resorts. Generally, two types of psychological contracts have been distinguished: transactional and relational. Whereas transactional contracts are focused on economic returns, closed-ended, and static, relational contracts are primarily socio-emotionally focused (non-economic returns), open-ended, and dynamic (Rousseau and Parks, 1992; Shore and Tetrick, 1994). In transactional contracts both parties aim at maximizing their own gains, while in relational contracts the aim is to maximize current and future outcomes for both parties (employees and employers). Relational contracts are more complex and they entail a variety of economic and psychosocial returns (i.e., beside pay and benefits also organizational support and loyalty to the employees are important factors), burdens and benefits are shared among the parties and balanced over time. Also, relational contracts are considerably less explicit than transactional ones, as they are based on assumptions and many provisions of the contract are not clearly specified.

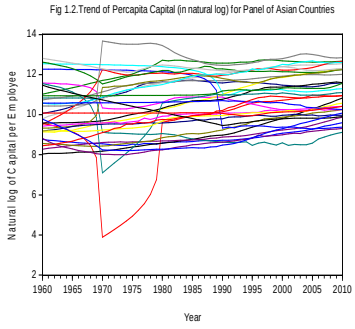
Trend Analysis

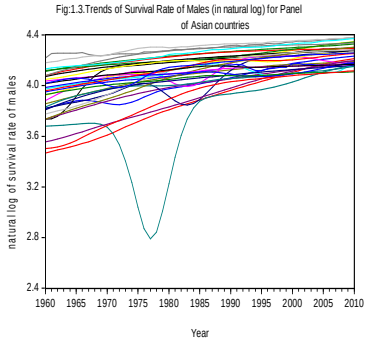
On the basis of the research questions, the study found the necessity to examine the trends of the different variables. Fig. 1.1 examines the trends of per capita income of 32 Asian countries chosen for the analysis. Generally the trends of per capita incomes of Asian countries have shown oscillating after a dip and have upward trends.

Similarly, the trends of per capita capital of some of the countries have found be in a falling trend and after some years (fig.1.2). The figure 1.3 presents, the trend of survival rates of 32 Asian countries undertaken for the study over the period of 1965 to 2010. For some countries, the survival rates have deeper dip and then started to have common trend across the countries in Asia.

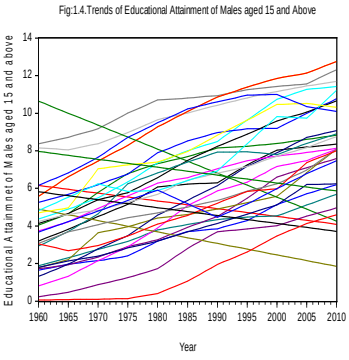
Fig.1.4 represents trend of educational attainment of males from 15 year to 60 years for Asian countries. The trend analysis of educational attainment is found to be different from country to country in Asia continent like straight line pattern, falling downward and rising upward.

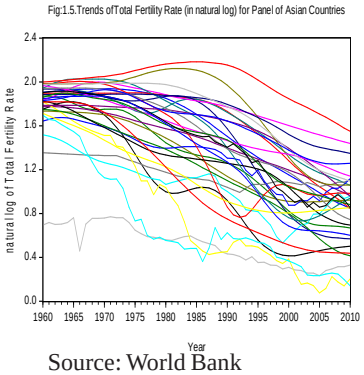


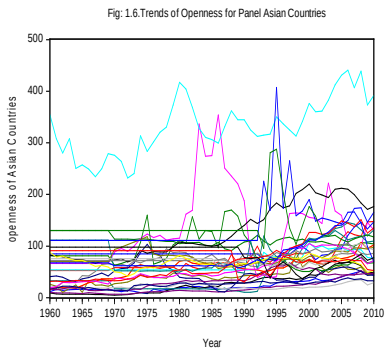




Source: World Bank







Source: World Bank

Fig.1.5 illustrates the trend pattern of total fertility of women population. Generally the trends of total fertility rates appear to be falling in nature. Fig 1.6 presents, the extent of openness of economies of Asia. After 1980, most of the economies have experienced oscillating trend. The Asian economies since 1980, have recorded perceptible shocks in exports and imports of goods.

Objective of the Study

The main objectives of the study are:

-To determine grand mean, region mean and country mean by estimating intercept only model, and,

-To examine the determinants of income of the Asian countries.

Importance of the Study

The study focuses to analyse the impacts of health on economic growth in Asian countries. Health inequality is the main problem of underdeveloped and developing counties in Asia. Many studies have examined the relationship and its effects on income. Applying the extended version of Cobb-Douglas Production Function, many studies have attempted to determine the extent of impact of health on economic growth choosing tools like two stage least squares (Bloom, et al, 2003; Bloom, et. al. 2002). Besides, few studies have examined the causality between health and economic growth by applying error correction models (Arora, 2001; Mehmood, et al, 2014 and Ecevit, 2013). Jamison et. al, (2004) have examined the determinants of income by inputs like health, educational attainment, openness of economy and per capita capital for panel of countries choosing the tool of multilevel modelling technique since

they treat data as nested type. The present study examines the determinants of income by using multilevel modelling or mixed effects modelling to determine the impacts of inputs.

Theoretical Framework and Data Base

The multilevel data are characterized by a hierarchical structure (Stata, 2013). A classical example is that children rested within class rooms and classrooms rested within schools. As a result, the academic performance of the students are correlated within a school due to exposure of similar socio economic level of students. So also, macro variable like gross domestic product, survival rate of males/females, educational attainment etc. reflect the socio-economic status of the people in a country and the group of counties are rested in region sharing similar characteristics. To analyze the rest of the data, the following specification is suggested.

$$Y_{ijk} = \mu + e_{ijk} \quad - - - - - - - (1)$$

Where Y_{ijk} is observed variable of i^{th} region, j^{th} country and k^{th} observation, μ (fixed part) grand mean and e_{ijk} denotes random part of the model. If e_{ijk} is random part of the model and it can be splitted into three parts and the specification is as follows.

$$Y_{ijk} = \mu + u_{..} + u_{ij} + e_{ijk} \quad - - - - - - - - (2)$$

The residual e_{ijk} has been partitioned into components that describe its magnitude relative to country, region and grand means. This is also called as "Variance Component Model".

Random Slope Model

By introducing the variable 'year' to the fixed part of the model, the grand mean is turned into a regression line. Similarly, we can interpret this variable year into random slope of this model. New specification is as follows.

$$Y_{ijk} = \alpha_0 + \alpha_1 (year) + u_{i..} + u_{ij..} + u_{1ij.} (year) + e_{ijk} \quad - - - - - (3)$$

By introducing a fourth random component that is a function of time, we can effectively estimate a separate regression line within each country. Based on this inputs as stated above, we provide specification to estimate the results of the equation (Jamison et al, 2004) as stated below.

$$lnyp_{ir} = \alpha_{0i} + \alpha_{1i} (time)_t + \alpha_2 lkpc_{it} + \alpha_3 eat_{it} + \alpha_4 lnsr_{it} + \alpha_5 lntfr_{it} + \alpha_6 open_{it} + \varepsilon_{it} \ldots\ldots (4)$$

where the variables and co-efficient are explained as follows:

$lnyp_{ir}$: The natural log of average per capita GDP in country i over a period from 1960-2010

$time_t$: The number of lapsed series (t-1960)

$lkpc_{it}$: The natural log of average per capita physical capital in country i over a period 1960-2010

eat_{it}: The average number of years of education in male population, aged 15 and above, of country i time t;

$lnsr_{it}$: The natural log of the male survival rate in country i; at time t;

$lntfr_{it}$: The natural log of the total fertility rate in county i at time t;

α_{0i}: intercept

α_{1i}: The effect of "technical progress" in increasing income per capita in county i;

α_2: The elasticity of income with respect to per capita physical capital;

α_3: The responsiveness of per capita income with respect to changes in male education;

α_4: The elasticity of income with respect to adult male survival rate;

α_5: The elasticity of income with respect to total fertility rate;

α_6: The responsiveness of per capita income with respect to openness; and

ε_{it}: Unexplained residual for country i as time t; assumed to be normally distributed.

The following section will discuss the data base of the study

Data Base

This study has compiled data through various sources for 32 countries and is grouped into five regions. For some Asian countries, the non-availability of data has forced us to exclude them from the analysis.

Table 1. Descriptive Statistics of Variables used in the Analysis

Variable Name	No. of obs.	Mean	S.D
Total fertility rate (tft)	1632	4.429489	1.880113
Income per capita (ypc)	1632	11851.24	18092.95
Capital per head of employee (kpc)	1632	83312.44	107243.5
Male survival Rate (msr)	1632	61.35526	9.592556
Openness of economy(open)	1632	78.83457	62.6102
Educational attainment of male population (eat)	1632	6.19125	2.746216
Natural log of per capita income (lnyp)	1632	8.567027	1.246875
Natural log of fertility rate (lntft)	1632	1.382982	0.4819795
Natural log of capital per employee (lkpc)	1632	10.51992	1.401376
Natural log of male survival rate (lnsr)	1632	4.102324	0.17828

Source: Computation based secondary data

Table 2. Mean values of Variables

Country Name	No. of Obs.	Mean (ypc)	Mean (msr)	Mean (tft)	Mean (kpc)
Bangladesh	51	1268.5266	56.274804	5.1018235	6998.1894
Bhutan	51	2558.6751	49.027608	5.3937843	24245.341
Brunei Darussalam	51	48237.301	69.661922	4.0252941	240947.64
Cambodia	51	1879.2114	44.814118	5.3382941	15371.7
China	51	2707.4818	64.525725	3.217549	11773.306
India	51	1519.6767	55.041196	4.4153137	7844.0487
Indonesia	51	2292.295	59.031765	3.9201569	11575.467
Iran, Islamic R	51	5962.9523	58.166725	4.8506471	86407.443
Iraq	51	4690.3213	61.241451	6.0143725	48628.431
Israel	51	16919.557	73.652745	3.2448824	112128.15
Japan	51	19724.146	74.106471	1.6916471	143892.21
Kazakhstan	51	15092.435	59.803765	2.9678431	172523.5
Korea, Rep.	51	10384.734	64.677667	2.7032941	70779.231
Kuwait	51	51397.36	68.690529	4.6063137	165491.86
Kyrgyz Republic	51	10701.867	60.015706	3.8770196	114742.07
Lebanon	51	12851.975	68.306882	3.5623725	192582.9
Malaysia	51	7158.8882	67.058471	3.8218235	49938.912
Mongolia	51	3174.3067	56.161255	4.9750588	49503.087
Nepal	51	939.23577	50.415216	5.0331765	5801.1376
Oman	51	12225.173	60.216549	6.2862353	111236.96
Pakistan	51	1828.0954	57.165373	5.7902353	16784.112
Philippines	51	2972.346	61.210216	4.9460392	21572.008
Qatar	51	61888.666	71.284137	4.9003333	383216.42
Saudi Arabia	51	32846.366	61.697882	5.8905686	232116.1
Singapore	51	18597.532	70.853647	2.3047647	152310.44
Sri Lanka	51	3063.3438	65.313118	3.2717647	19158.148
Tajikistan	51	4286.3976	59.380451	5.3010392	39170.429
Thailand	51	4261.2103	62.848451	3.334451	27733.112
Turkmenistan	51	8242.9452	57.478431	4.6135098	67182.499
Uzbekistan	51	5918.2961	61.736216	4.6178235	31111.343
Vietnam	51	1862.6702	63.298471	4.2361765	8591.9282
Yemen, Rep.	51	1785.547	50.211333	7.4900392	24639.786

Note: Authors own computation based on secondary data.

Table -1 represents the descriptive statistics of the variables employed for the study. The variables like income per capita and capital per capita have shown a wider difference in standard deviation. Similarly, the variables like openness of economy, educational attainment of males and male survival rate have shown the smaller value in standard deviation. The variables given in logarithmic form have also shown a small variation. The per capita income adjusted on purchasing power parity coveted GDP per capita income (Laspayre's series) at 2005 international dollars per person. The capital stock per employee has been computed by dividing total capital stock at constant 2005 national prices (in millions 2005 USD) by total employees (in millions) for the respective countries. Table 2 discusses the mean values of the variables chosen for the study.

Based on the theoretical frame work developed in this chapter, this study employs mixed effect modelling technique to analyse the data.

Table 3. Natural log Analysis of Panel Variables of Asian Countries

Country name	Years	Mean (lnyp)	Mean (lntfr)	Mean (lnsr)	Mean (lkpc)
Bangladesh	51	7.138746	1.5647451	4.0211228	8.8031953
Bhutan	51	7.7393082	1.6337127	3.8657596	9.0876058
Brunei, Darussal	51	10.736779	1.3134138	4.2418539	12.270423
Cambodia	51	7.2992503	1.6398889	3.7475999	9.199335
China	51	7.653729	1.0390178	4.1570807	8.9960841
India	51	7.2500745	1.4545178	4.0001757	8.88194
Indonesia	51	7.620774	1.3128965	4.073384	9.1602712
Iran, Islamic R	51	8.5485234	1.4657023	4.0503476	11.271256
Iraq	51	8.3653776	1.7802091	4.1100269	10.679689
Israel	51	9.671752	1.1700344	4.298391	11.560761
Japan	51	9.7416775	.51037433	4.3040043	11.608743
Kazakhstan	51	9.504351	1.0556663	4.0896842	11.888634
Korea, Rep.	51	8.7782453	.83090124	4.162412	10.665629
Kuwait	51	10.706293	1.4238532	4.2277567	11.814241
Kyrgyz, Rep	51	8.9453599	1.3236642	4.0923424	10.983836
Lebanon	51	9.0176908	1.1920135	4.2219451	12.146399
Malaysia	51	8.7247342	1.2931036	4.2038834	10.57643
Mongolia	51	7.8000187	1.4899285	4.0253017	10.445648
Nepal	51	6.8172798	1.5903105	3.900468	8.5825415
Oman	51	9.2336127	1.7757221	4.0831625	11.335876
Pakistan	51	7.4731071	1.7392816	4.0417657	9.7013267
Philippines	51	7.9562998	1.5681348	4.1135473	9.9342838
Qatar	51	10.903113	1.5198895	4.2642541	12.488254
Saudi Arabia	51	10.242255	1.7299722	4.1093201	12.341335
Singapore	51	9.5266423	.72009726	4.2579959	11.702266
Sri Lanka	51	7.9821115	1.1363744	4.1776943	9.7665818
Tajikistan	51	8.2320424	1.6429384	4.0830598	10.569631
Thailand	51	8.1403491	1.067655	4.1369463	9.9365738
Turkmenistan	51	8.9998593	1.4730333	4.0501644	11.099264
Uzbekistan	51	8.6335584	1.4629286	4.1219519	10.164401
Vietnam	51	7.381	1.3364653	4.1439187	8.8672565
Yemen, Rep.	51	7.3809607	1.9989817	3.8970621	10.107687

Source: Computation based on secondary data

Empirical Estimates of the study:

(a) Mixed Effects Modelling

Table 4 presents the estimates of mixed effects models (Fixed and Random Effects) for the panel of Asian Countries. Model 1 is estimated without random slope (without time variable) either for grand mean or random intercept mean for country. This specification provides estimates ignoring whatever the point data come from. As per the model 1, the estimated grand mean (μ) is 8.64 and is considered highly significant.

Table -4: Determination of Income in Asian Countries: Estimation of Grand Mean, Region Mean and Country level Mean using Mixed Effect Model for Asia

Dependent variable: Natural Log of Per capita Income

Fixed part the model	Intercept only models		
	1	2	3
Time	-	0.00879 *(9.55)	0.008785 ***(1.81)
Constant (Grand Mean)	8.6383 *(29.45)	8.40989 *(28.57)	8.4312 *(19.69)
Random Part of the Model Region			
σ^2	0.51586 * (2.016)	0.515863 *(2.0155)	0.83974 *(2.4482)
Time	-	-	0.027664 *(7.9935)
Country σ^2	1.023503 * (7.487)	1.023666 * (7.489)	1.156346 *(7.4356)
Residual σ^2	.5709209 *(57.445)	0.5557825 * (57.446)	0.3719169 * (56.858)
Chi^2	2559.66 (0.0000)	2631.24 (0.0000)	3809.9 (0.0000)
Log Likelihood	-531.4138	-1487.072	-897.7224
Number of Obs.	1683	1683	1683

Source: Computation using Stata v.12. 't' values are given in brackets. *, **, *** denote 1%, 5% and 10% respectively.

The region mean is 9.16 (Grand Mean + standard deviation of region). Similarly, the country level mean is 9.66 (Grand Mean + standard deviation of country). In this specification, none of the variables of random components is function of time. In model 2, after introducing time (random intercept to grand mean), the region mean is 8.94 (Grand mean + standard deviation of region mean). Similarly, the computed country mean is 9.43. In model 3, the study introduce random slope of time to country. As a result, the means of region and country have changed. The computed region mean is 9.27.

(b) Multilevel Modelling Analysis

Table 5, table 6 and table 7 reflects main results of aggregate production function estimates of the 32 countries based on panel data over the period 1965-2010. Table 5 shows that more or less similar results which are appeared in the early studies (Barro 1997, Sachs and Warner, 1997 and Jamison et al, 2004). The model 4 through 6, the elasticity of income in respect to capital ranges from 0.48 to 0.51 per cent which remains unchanged in all our specifications. This value is found to be higher by 0.02. - 0.11 per cent than that of the estimates provided by Jamison et. al. (2004). The elasticity with respect to this adult male survival rate (lnsr) ranges from 0.44 to 0.52 per cent, which is statistically significant. The co-efficient of lnsr and lntfr are highly significant and bear the expected signs. Both the co-efficient of lnsr and lnftr are robust. The male survival rate significantly increases per capita income in Asia for both models 5 & 6. Therefore the health variable is considered to be the major contributing factor of growth. On the other hand, co-efficient of the total fertility rate (lntfr) is significantly negative and reduces the income in Asia. Since, the higher fertility rate implies the higher dependency ratio of unproductive population and is contributing to the productivity of a country in Asia. The country mean with random slope (time) is 9.77.

Table 5. Determinants of Economic Growth: The Effects of Physical Capital, Health, Education and Total Fertility of Asian Countries

Dependant variable: Natural Log of Per capita Income

Independent variable	Model		
	4	5	6
I. Time invariant determinants of income (Constant)	3.04359 *(16.84)	1.343208 * (2.59)	2.13602 * (4.08)
II. Time varying determinants of income (Lkpc)	0.506629* (34.58)	0.500909 * (34.03)	0.47745 * (32.18)
eat	0.05135 * (5.32)	0.053513* (5.57)	0.05439 * (5.74)
Insr	-	0.444971* (3.46)	0.52407 * (4.12)
Intfr	-	-	-0.44844* (-7.22)
Common co-efficient assumes for all country (Time)	-0.00477 * (-4.35)	-0.007785* (-5.61)	-0.01763* (-9.10)
Wald chi^2	1405.93 (0.0000)	1435.69 (0.0000)	1527.71 (0.0000)
Log Likelihood	-983.8499	-977.967	-952.3801
No. of Obs.	1632	1632	1632

Note: Computation using Stata v.12. 't' values are given in brackets. *, **, *** denote 1%, 5% and 10% respectively.

Models 7 through 9 convey the results of the analysis after introduced additional regression like openness (open) and inter action variable (IAV-lnsr* lnkpc) in the specification. The elasticity of output with respect to physical capital stock ranges from .047 to 0.67 per cent. The elasticity is increased from 0.01 to 0.16 per cent. Model 9 explores the possibility of interaction between the health of the population and physical capital levels. The interaction variable significantly increases income by 0.29 per cent (in model 9). As a result the co-efficient of capital (lkpc) and health (lnsr) are turned negative. The results are in confirmation with the estimates given by Jamison et. al. (2003). The estimated co-efficient of the study for capital and health respectively are -2.02 and -2.40 when this interaction variable capital health introduced. Besides, the openness of the economy significantly increases the income and the co-efficient and highly significant.

Table 6. Determinants of Income Levels: With Openness and Interaction Term in Asia

Time-invariant Determinants of Income

Independent Variables	Model		
	7	8	9
Constant	3.6623* (7.16)	3.6309* (7.15)	14.1102* (7.27)
Time - varying determinant of Income level (Lkpc)	0.485297* (31.98)	0.47275* (31.06)	-0.67329* (-3.28)
eat	0.01657***(1.89)	0.00660 (0.75)	-0.003029 (-0.34)
Lnsr	-0.05648 (-0.50)	-0.05313 (-0.47)	-2.71283* (-5.56)
Lntfr	-0.051645 (-1.15)	-0.01989 (-0.44)	0.060208 (1.29)
Open	-	0.002123* (5.28)	0.00040* (5.71)
IAV (lkpc*lnsr)	-	-	0.287065* (5.61)
Wald Chi^2	1363.94(0.0000)	1412.41 (0.0000)	1412.41(0.0000)
Log Likelihood	-992.444	-978.658	-978.658
No. of Obs.	1636	1632	1632

Note: Computation using Stata v.12. 't' values are given in brackets. *, **, *** denote 1%, 5% and 10% respectively.

The intercept model, after introducing random slope to country mean, has given estimates of grand mean, region mean and country mean respectively as 8.43, 9.27 and 9.77. The estimates of multilevel models have further pointed out that capital per head, educational attainment of male population,

health; total fertility rate and openness of economy are significantly contributing to income in Asia. Of these variables, health and physical capital contribute to income respectively 0.48 and 0.54 per cent in Asia. On the other hand, the fertility rate reduces the income to the extent of 0.45 per cent. The openness, though it has significant impact, the contribution to income is negligible.

Findings of the study

The study has estimated the values of sample mean, region mean and country mean without random slope (without time variable) either for grand mean or random intercept mean for country. This specification provides estimates ignoring whatever the point data come from. As per the model, the estimated grand mean (μ) is 8.64 and is considered highly significant. The region mean is 9.16. Similarly, the country level mean is 9.66. In this specification, none of the variables of random components is the function of time. After introducing time (random intercept to grand mean), the region mean is 8.94. Similarly, the computed country mean is 9.43. The introduction of random slope (time) to country, the means of region and country have changed. The computed region mean is 9.27. The country mean with random slope (time) is 9.77. Therefore, the study has introduced the random intercept to grand mean in analysing the determinants of income accurately. The results of the analysis confirm more or less similar results which are appeared in the earlier reports (Barro 1997, Sachs and Warner, 1997 and Jamison et al, 2004). The elasticity of income in respect to capital ranges from 0.48 to 0.51 per cent which remains unchanged in all the specifications. This value is found to be higher by 0.02. - 0.11 per cent than that of the estimates provided by Jamison et. al, (2004). The elasticity with respect to health variable which ranges from 0.44 to 0.52 per cent is statistically significant. The co-efficients of health and total fertility are highly significant and bear the expected signs. Both the co-efficient of health and total fertility rate are robust. The health variable significantly increases per capita income in Asia. Therefore the health variable is considered to be the major contributing factor of economic growth. On the other hand, co-efficient of the total fertility rate is negative which reduces the income level in Asia significantly. Since, the higher fertility rate implies the higher dependency ratio of unproductive population reduces the productivity.

Limitations of the study

1. The study makes a comparative analysis of the health and economic growth in Asian counties. So the analysis differs from within country and country to country.
2. The present study depends on the official data published by the government departments and other research institute. Hence the reliability of the data is subjected to the objectivity of the data published by the agencies.
3. The health and economic growth articles are caused by many factors at the international level as well as the national level. The present study focused only on the factors responsible for health and economic growth in Asian countries.
4. The study used limited number of variables so for the whole it may differ.

Conclusion

The present study concludes that with the note of health, capital accumulation and openness of the Asian economies are considered as the major contributing factors of growth of the Asian continent. Therefore, these economies should improve their health care sector as well as initiate the steps to accumulate better infrastructure to speed up growth of the economy. Future research in this direction requires adding more variables to examine the same.

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Financial Accounting Information and Its Impact on Investment Decision in Equities

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Abstract
Present research work investigates the significance of accounting information on equity share investment in companies listed on Indian Stock Exchange. The accounting information variable used to establish the significance of accounting information on equity share investment. The study investigated the influence of financial information on equity share investment decision making. Primary data is used for the study. Data for the study were collected from a sample of 177 respondents invested in equity market. The study indicates that investor's information seeking behaviour is based on their year of experience, their investment horizon and their investment intention. The study also indicated that years of experience has no significant impact on investment source choice. Similarly it was found that investment horizon has no significant impact on investment source choice.

Keywords: Accounting information, Equity share investment, Net book value per share

Introduction:
In the present digital world the companies use financial statements as one of the major medium of communication with their stakeholders. Individual investments behaviour is concerned with choices about purchases of small amounts of securities for his or her own account. Investment decisions are often supported by different decision tools. It is believed that information structure and the factors in the market systematically influence individuals' investment decisions as well as market outcomes. Therefore, stock market regulators and accounting standards setters are trying to improve the quality of financial statements in order to increase the transparency level in financial reporting (Vishnani & Shah, 2008).
Financial Statements may consist different type of information which can be named as Financial Information/Accounting Information and Non Financial Information/Non Accounting Information. Accounting Information are information which describes an account for a utility. It processes financial transactions to provide external reporting to outside parties such as to stockholders, investors, creditors, and government agencies and non accounting information are information which cannot be measured in monetary terms to make investment decisions by the investors. Though the investors use non financial information in order to make investment decisions, still conventional investors give more weight to financial information. In one of the study carried out by the Bosten College (2007), 62 percent of respondents favoured financial information and only 38 percent favour to the non financial information for use in investment decisions. In United Kingdom, it has found that the financial statement was considered as the least effective means of communicating information (Guthrie, 2007). Further the

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researchers expressed that this findings backed by the theory of life cycle stage, high technology, rapidly changing business environment etc., influence investor decision. In the stock market, many factors can be responsible for the fluctuations in equity share investment. Malhotra and Tandon (2013) state that in those factors, financial accounting information is the main factor that most investors usually consider in making investment decisions as to whether to invest in a company shares or not. Investors usually rely on financial accounting information to assist them with stock selection.

Several survey studies have addressed the question of the importance of different information sources. These studies were, among other things, concerned with priority ranking of different information sources, based on participants' perception. Although the findings from these studies are somewhat inconclusive, annual financial reports are generally found to rank very high in the stated order of information priority. Emmanuel, Otley and Merchant consider control as the primary purpose of accounting information. Management control includes both, strategic and operational matters and thus, planning and control are not separated issues. However, decision-making falls within this wider process of management control and is thus identified as a "vital aspect of the overall control process".

William states that the decision maker decides what information inputs he/she considers as relevant for his/her decision. If the proportion of input of accounting information compared to non-accounting information is more then zero, then the accounting data may affect the decision.

Accounting plays a significant role within the concept of generating and communicating wealth of the companies. Financial statements still remain the most important source of externally feasible information on companies. Regardless of their extensive use and enduring advance, there is some concern that accounting theory and practice have not kept pace with rapid economic changes and high technology changes (Meyer, 2007). This situation affects the relevance of accounting information. Number of previous studies explored that accounting information decreased their relevance over the period of time (Francis and Schipper, 1999). In the same time a number of researchers claim that accounting information has not lost its relevance (Oyerinde (2009), Vieru, Perttunen and Schadewitz (2005), Collins, Maydew and Weiss (1997): cited by Oyerinde (2009)). For financial reporting to be effective, accounting information to be relevant, complete and reliable (Hendricks, 1976). The primary purpose of the financial statements is to provide information about a company in order to make better decisions for users particularly the investors (Germon and Meek, 2001). It should also increase the knowledge of the users and give a decision maker the capacity to predict future actions. Therefore, relevant accounting information can be described as an essential pre requisite for stock market growth (Oyerinde, 2009). According to the previous studies many researchers used relationship between market price per share as the dependent variable and a set of independent variables. Ball and Brown in 1968, highlighted the relationship between stock prices and the accounting information disclosed in the financial statements . Ohlson in ICBI 2010 (University of Kelaniya, Sri Lanka) explained that the value of a firm can be expressed as a linear function of book value, earnings and other relevant information. The Ohlson model stands among the most important developments in capital market research (Dung, 2010). Francis and Schipper in 1999 had different approaches in this regard. The predictive view of value relevance (the accounting numbers are relevant if it can be used to predict future earnings, dividends or future cash flows), the information view of value relevance (the value relevance is measured in terms of market reactions to new information), fundamental analysis view of value relevance (the accounting information is relevant in valuation if portfolios formed on the basis of accounting information are associated with abnormal returns) and the measurement view of value relevance (the financial statement is measured by its ability to capture or summaries information that affects equity value (Francis and Schipper, 1999). Oyerinde in 2009 explained the correlation between accounting information such as Earning Per Share (EPS), Return On Equity (ROE), Earning Yield (EY) and Market Price per Share (MPS). Dhar and Chhaochharia (2008) postulate that by using the signaling theory, managers issue bonus shares and stock splits, especially in undervalued firms, so as to express confidence in a company and lead to an increase in the number of

shareholders in the company. In this way, the announcement of a bonus share is a signal to the profitability of a company and therefore an attractive investment to shareholders.

Mishra (2005) opines that the announcement of bonus shares is a signalling effect because it reflects on the good standing of a company. To this effect, Mishra notes that there are significant positive abnormal returns for a five-day period prior to the announcement of a bonus issue.

The potential investors are usually interested in the same information as effective investors: enterprise profitableness, growth prospects, business continuity, legislation stability, labor quality and likelihood of social convulsions. According to Ghofar and Saraswati (2008), investors in many cases are too dependent on the quality of accounting disclosure. However, the quality of information disclosure in the financial reports of companies has been an area of debate by both accounting theoreticians and those in practice (Beest, Braam & Boelens, 2009).

According to William (2011), the best measure of a company is its profitability, for without it, it cannot grow, and if it does not grow, then its stock will trend downward. Increasing profits are the best indication that a company can pay dividends and that the share price will trend upward. Investors will put their money at a cheaper rate to a profitable company than to an unprofitable one; consequently, profitable companies can use leverage to increase stockholders' equity even more. Decision-making involves the selection of the best course of action. In order to decide on the best option, management has to judge the effectiveness of various alternatives. Research in the field of the usage of accounting information has been accomplished more from the investors' point of view. Inter alia Barton et al. (2010) investigated the most valued performance measure around the world by investors. The results implied that investors all around the world do not value the same measures the most but when it comes to the information of cash flows, the information is relevant for all. Barton et al. (2010) suggested that the standard setters should focus more on the information relevance instead of concept of the best measure. Little research has focused on investigating accounting information as a balance sheet and income statement numbers have lost their relevance. The results pointed out that the overall relevance of the balance sheet has remained stable but at the same time the loss of relevance of income statement has become current (Hail 2013). The concern of the accounting information relevance notably for creditors, investors and managers has increased the importance towards researching the usefulness of accounting information more. Lawrence (2013) examined individual investors and concluded that they invest more in companies with clear and concise financial accounting information. Therefore they need some guidance that is usually provided in form of data and information. For this , it is necessary to explore the financial accounting information and their role in influencing investor and their investment decision.

Objective of the study:

The current study is taken up with the following objectives:

- To analyse the investor information seeking behaviour for taking investment decision
- To examine the impact of financial accounting Information on Investors investment decisions.

Methodology

The study follows the descriptive and analytical method by tracking and investigating the subject matter. The analysis and conclusions are derived through the study of relevant references and sources of accounting disclosure and through review studies and by identifying the reality of work. This study relies on two methods to data collection through interviews and questionnaires. Interviews are conducted with the select investors and questionnaires are used to reconnaissance the views of respondents about the importance of financial and other information to rationalize their investment decisions.

Table 1. Demographic Characteristic of Respondents

Characteristics	Group Category of respondents	Number of Respondents	%
	Total Number of Respondents	177	100
Age	Upto 25 Years	10	5.6
	25-35 Years	77	43.5
	35-45 Years	52	29.4
	45 to 55 Years	2	1.1
	above 55 Years	36	20.3
Gender	Male	121	68.4
	Female	56	31.6
Marital Status	Married	117	66.1
	Unmarried	53	29.9
	Separated	7	4
Family size	Upto 2 members	48	27.1
	3 to 4 Members	111	62.7
	5 to 6 members	14	7.9
	More than 6 members	4	2.3
Education	Up to Matriculation	3	1.7
Qualification	Intermediate	23	13
	Graduate	58	32.8
	Post Graduate and others	77	43.5
	Super specialization degree	16	9
Level of Income	Upto Rs.15000	17	9.6
	Rs. 15001 to Rs 30000	49	27.7
	Rs. 30001 to Rs. 45000	56	31.6
	Rs. 45001 to Rs. 60000	23	13
	Rs 60001 to Rs.100000	20	11.3
	Above Rs. 100000	12	6.8
Profession	Salaried	84	47.5
	Businessman	49	27.7
	Retired	7	4
	Independent professional	31	17.5
	Vocation (where specific skills are required)	6	3.4

Source : Field survey

The information presented in the above table reveals the demographic characteristics of the investors. It is seen that sample is dominated by the respondents belonging to age category 25 to 35 years. It was followed by respondents in age group above 35-45 years. The study indicates that sample is dominated by male respondents as it account for 68.4% respondents in the sample. Majority of the respondents are married and having family size ranging from 3-4 members. It is seen that most of the respondents are highly educated as more than three fourth respondents are having graduation and post graduation degree to their credit. It is observed that majority of the respondents are in the income category of 30000 to 45000PM. Majority of the respondents belong to salaried class.

Table 2. Years of Experience of Investment in Equity

Years of Experience	Frequency	Percent	Valid Percent	Cumulative Percent
Upto 1 years	42	23.7	23.7	23.7
1-3years	58	32.8	32.8	56.5
4-6 years	45	25.4	25.4	81.9
7-9 years	28	15.8	15.8	97.7
More than 9 years	4	2.3	2.3	100.0
Total	177	100.0	100.0	

Source : Field survey

The information presented in the table 2 indicates the year of experience of investment in the equity. From the table, it can be seen that maximum respondents were having experience of 1 to 3 years, followed by respondents in 4 to 6 years. There were very few respondents who were having experience of more than 9 years.

Table 3. Amount of Annual Saving

Amount of Saving	Frequency	Percent	Valid Percent	Cumulative Percent
Upto Rs. 1,00,000PA	26	14.7	14.7	14.7
Rs. 1,00,000to 3,00,000PA	49	27.7	27.7	42.4
Rs 3,00,000 to Rs5,00,000PA	28	15.8	15.8	58.2
Rs. 5,00,000 to Rs.10,0000PA	41	23.2	23.2	81.4
More than Rs10,00,000PA	33	18.6	18.6	100.0
Total	177	100.0	100.0	

Source : Field survey

The information presented in the table 2 indicates the annual saving of the respondents. From the table it can be seen that maximum respondents(27.7%) were earning from Rs. 1,00,000 to Rs. 3,00,000 and it was followed by respondents (23.2%) earning Rs. 5 lakhs to 10 lakhs. It can be seen that 18.6 percent respondents were earning more than 10 lakhs.

Table 4. Nature of Investment

Nature	Frequency	Percent	Valid Percent	Cumulative Percent
Long term- more than one year horizon	36	20.3	20.3	20.3
Medium term- 3 months to one year	50	28.2	28.2	48.6
Short term- one day to 3 months	91	51.4	51.4	100.0
Total	177	100.0	100.0	

Source : Field survey

The information related to nature of investment presented in the table 4 revealed that majority of the respondent are of the opinion that they invest in short term equity i.e. ,1 day to 3 months. Whereas 28.2% respondents were found inclined towards investing for medium term i.e., 3 months to 1 year. 20.3% respondents were found inclined towards investing for long term investing i.e., more than 1 year.

Table 5. Reliable Source of Information

	Responses		Percent of Cases
	N	Percent	
Print media (including newspapers like Business Standard, ET)	50	8.7	28.4
Business news review	56	9.7	31.8
Regular stock market index	19	3.3	10.8
Expert opinion	69	12.0	39.2
Personal finance consultant	22	3.8	12.5
Price index	20	3.5	11.4
Economic policy of government	23	4.0	13.1
Market stability	10	1.7	5.7
Television (including CNBC, NDTV etc.)	68	11.8	38.6
Websites from the internet	55	9.6	31.2
Reference groups	104	18.1	59.1
From the broker/fund manager	79	13.7	44.9
Total	575	100.0	326.7

a. Group

A descriptive analysis was carried out to analyse the information seeking behaviour of investor for making investment in equity. From the table above, it can be seen that most of the respondents were using reference groups for taking information for investment decision. Broker and fund manager recommendation were also found important for making investment decision. Also TV and expert opinion were also most preferred options used by investor for making investment decision (68 and 69 respectively).

Table 6. Descriptive Statistics

Types of Investor Information	N	Mean	Std. Deviation
Company Specific Information	177	2.9425	0.73201
Other than Financial Specific News	177	2.8555	0.76158
Industry Specific Information	177	3.0551	0.83692
Economy Specific Information	177	3.0452	0.68638
Global Economic Related News	177	3.3517	0.69971
Valid N (listwise)	177		

The information presented in the table indicates the descriptive statistics related to the investor information seeking behaviour. Construct was developed in terms of questionnaire related to Company Specific Information such as I take into consideration Changes in profitability of firm while making investment decision, I take into consideration Changes in liquidity condition of firm while making investment decision, I take into consideration Changes in assets of firm while making investment decision, I take into consideration Changes in solvency condition of firm while making investment decision, I take into consideration Changes in management efficiency of firm while making investment decision, I take into consideration dividend history of the firm while making investment decision, I take into consideration the promoter's holding while making investment decision, I take into consideration the number of shareholders of the firm while making investment decision, I take into consideration the investments by institutional investors while making investment decision, I take into consideration the bulk deals related to the firm's share while making investment decision, I take into consideration the quantity of pledged shares while making investment decision. Other than Financial Specific News such as Information about stock split, Information about bonus issue, Information about rights issue, Information about changes in management of the company, Mergers and acquisitions news related to the company, Dividend declaration by the company, New product/ services launch by the company. Industry Specific Informa-

tion like Changes in government policy, Changes in number of competitors, Changes in number of suppliers, Technological changes, Economy Specific Information: such as GDP growth rate of country, Inflation situation of country, FDI flows in the country, Currency rate fluctuations, Policy rates changes by RBI, Export-Import condition, Global Economic Related News: such as like Stock exchange fluctuation in major global indices, Dollar exchange rate fluctuations, Crude oil fluctuations, News related to international trade blocks. Mean and standard deviation was calculated using SPSS and presented in the table 6. From the table it can be seen that GER (Global Economy Related News) has highest mean of 3.35 it implies that most of the respondents are tracking global news for taking investment decision. After global information, respondents are valuing the information provided by Economy Specific Information (ESI) and Industry Specific Information (ISI). The mean for Company Specific Information is 2.94 and Other than Financial Statements sources has the lowest mean of 2.85.

Further one way ANOVA was carried out to measure the impact of years of experience on preference towards source of information the information is presented in the table 7 below:

Table 7. One Way ANOVA Across the year of experience of Investment in Equities across the different source of Information

		Sum of Squares	df	Mean Square	F	Sig.
CSI	Between Groups	3.786	4	0.946	1.798	0.131
	Within Groups	90.521	172	0.526		
	Total	94.307	176			
OFS	Between Groups	3.860	4	0.965	1.690	0.154
	Within Groups	98.221	172	0.571		
	Total	102.081	176			
ISI	Between Groups	3.837	4	0.959	1.381	0.242
	Within Groups	119.439	172	0.694		
	Total	123.275	176			
ESI	Between Groups	1.501	4	0.375	0.793	0.531
	Within Groups	81.415	172	0.473		
	Total	82.916	176			
GER	Between Groups	1.890	4	0.472	0.964	0.429
	Within Groups	84.280	172	0.490		
	Total	86.169	176			

From the table 7, it can be seen that the significance value for all the sources of information are greater than 0.05. it implies that there is no significant difference in the preference towards sources of information on the basis of years of experience.

One way ANOVA was carried out to measure the impact of investment horizon on dependency on source of information. The information is presented in the table 8.

Table 8. One Way ANOVA Across the investment Horizon of equity Investment across the different Source of Information

		Sum of Squares	df	Mean Square	F	Sig.
CSI	Between Groups	0.531	2	0.266	0.493	0.612
	Within Groups	93.776	174	0.539		
	Total	94.307	176			
OFS	Between Groups	2.961	2	1.481	2.599	0.077
	Within Groups	99.120	174	0.570		
	Total	102.081	176			
ISI	Between Groups	2.444	2	1.222	1.760	0.175
	Within Groups	120.831	174	0.694		
	Total	123.275	176			
ESI	Between Groups	0.941	2	0.471	0.999	0.370
	Within Groups	81.975	174	0.471		
	Total	82.916	176			
GER	Between Groups	2.076	2	1.038	2.148	0.120
	Within Groups	84.093	174	0.483		
	Total	86.169	176			

From the table it can be seen that the significance values for all the sources of information and investment horizon is greater than 0.05. It means that the null hypothesis is accepted. It implies that there is no significant impact of investment horizon on choice of source of information.

One way ANOVA was carried out to measure the impact of nature of investment on intention to invest in equity market. The information is presented in the table 9.

Table 9. One Way ANOVA of nature of investment on intention to invest in equity market

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	16.675	2	8.337	3.452	0.034
Within Groups	420.274	174	2.415		
Total	436.949	176			

From the table it can be seen that the significance value $0.03 < 0.05$. It implies that null hypothesis is rejected. Thus, there is no significant impact of nature of investment on intention to invest in equities. The following model tries to evaluate the impact of various information sources on investor's decision to invest:

Table 10. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.515a	0.265	0.244	1.37039

a. Predictors: (Constant), GER, OFS, ESI, CSI, ISI

Table 11. ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	115.819	5	23.164	12.335	0.000b
	Residual	321.130	171	1.878		
	Total	436.949	176			

a. Dependent Variable: I Will definitely Invest in Equity

b. Predictors: (Constant), GER, OFS, ESI, CSI, ISI

Table 12. Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-0.534	0.770		-0.693	0.489
	CSI	1.196	0.166	0.556	7.216	0.000
	OFS	-0.362	0.159	-0.175	-2.275	0.024
	ISI	0.009	0.154	0.005	0.057	0.955
	ESI	0.008	0.183	0.004	0.045	0.965
	GER	0.303	0.150	0.135	2.024	0.045

a. Dependent Variable: I Will definitely Invest in Equity

From the table above it can be found that model fit is 26% which implies that the selected independent variables explain 26 % of variation in dependent variable which is inventor's intention to invest. The significance value is 0.00 < 0.05 thus the study fails to accept null hypothesis. Thus it was found that there is significant relationship between the independent variables and dependent variables.

Further it was found from the coefficient table that the significance values for company specific information, other than financial statement information and global economy related information are less than 0.05. Thus null hypothesis is rejected in case of these variables. Thus it can be said that the company specific information, other than financial statements and global economy related information plays an important role in investor decision making process.

Conclusion

From the study it can be seen that investor's information seeking behavior can be studied based on their year of experience, their investment horizon and their investment intention. It was found that the years of experience has no significant impact on investment source choice. Similarly it was found that investment horizon has no significant impact on investment source choice.

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Analysis of Inter-Sectoral Linkages in Mizoram

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Abstract

The concept of sectoral linkage has played a crucial role and had provided substantial contribution towards guiding the appropriate strategies for future economic development. The sectors with the highest linkages are likely to stimulate rapid growth of production, income and employment. The State Government of Mizoram in 2016 developed a Comprehensive Growth Strategy, named 'New Economic Development Policy (NEDP)' to push the economy towards higher growth path. The basic component of NEDP is to drive the economy through the identified key growth sector. Given the identification of key growth driver as the requirement for priority setting under the policy, analysis of inter-sectoral linkages is critical for the decision makers to achieve effective priority setting for efficient allocation of resources. This paper analysed the linkages of the three key sectors of the economy in Mizoram using VAR model. The analysis supports the notion of unidirectional linkage from service sector to agriculture and industries, and agriculture and allied to industries. The service sector has been identified to be the key growth sector of the economy in the state. The growth of this sector has positively impacted agricultural development, while it acts as substitute (competitive) to industrial sector growth as its average impulse response over five years is negative.

Key words : Sectoral linkage, New Economic Development Policy, VAR model and Impulse response

Introduction

The concept of sectoral linkage, which evolved from Hirschman's theory of 'unbalanced growth,' has been recognised as playing a crucial role and providing substantial contribution towards guiding the appropriate strategies for future economic development (Saikia, 2011). The sectors with the highest linkages are likely to stimulate rapid growth of production, income, and employment (Hirschman, 1958). The significance of these linkages can be gauged from the fact that agriculture supplies raw materials to industrial sector, while transportation, marketing, and distribution of the output of these sectors come under the purview of service sector. The growth of a particular sector has both forward and backward linkages to the other sectors and leads to further unbalancing of growth. For example, growth of fruit processing industries would result in the increased earning of income in the fruit cultivation and production which supply raw materials for fruit processing unit. The growth of fruit production may be stated as the backward linkage of industries sector. At the same time, increased production by fruit processing units will generate employment and income in the process of transportation and marketing, which may be called its forward linkages to other sectors of the economy. Given the paucity of fund for big investment in all sectors to achieve balanced growth, need for unbalancing of growth through investment in key growth sector has been of crucial importance.

Most of the studies in India followed the Lewisian 'two-sector' framework for discussing sectoral linkages (Saikia, 2011). They gave more emphasis on the interrelationship between agriculture and industries. Studies of Patnaik (1972), Bhattacharya and Rao (1989), Rangarajan (1982) analysed the interrelationship between agricultural and industrial sectors. The post-1991 economic growth has shown the dominant role played by the service sector, and a relatively lower rate of growth of agriculture

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and industrial sectors. Several studies (Singh, 2007; Gordon & Gupta, 2004; Saikia, 2011; etc) have observed strong linkages of service sector to other sectors of the economy. Unlike the two-way interdependence between agriculture and industry, the linkage between agriculture and service sectors is one-way and is mainly a backward linkage. While there are two-way linkages between service and industrial sectors, the former has stronger backward linkage to other sectors than forward linkages.

Background

There can be two views on the economy of Mizoram state, agrarian and service, as significant majority of the population depends on agriculture and allied activities as their main source of livelihood. A look at the sectoral contribution of Gross State Domestic Product (GSDP) clearly indicates the dominance of service sector which is excessively driven by government expenditure. The stagnancy of agriculture and industrial sectors has invited attention of the policy makers since long time back. Several policy initiatives to push agriculture and allied sector were initiated since the later part of the 1970s. The available data have shown that these initiatives have significant results on commercialisation of agriculture and crop diversification (Thanga, 2016). However, sluggish growth of industrial sector vis-a-vis significant service sector growth led by expanding government expenditure has crippled the sustainability of agriculture development. In such a situation, the manufacturing sector cannot absorb the rural surplus workforce, while the absorption capacity of the service sector has been limited by sluggish demand from other sectors. Consequently, the economy experienced jobless growth in practical sense. This is the result of several government policies which normally put strong emphasis on agriculture sector development without giving due emphasis on the interdependence of all sectors of the economy.

Government of Mizoram, since the beginning of 2016, embarked on a Comprehensive Growth Strategy, called 'New Economic Development Policy (NEDP)' to push the economy towards higher growth path. The basic component of NEDP is to drive the economy through an identified key growth sector. The key growth sectors identified under NEDP are agriculture and allied, industry-manufacturing sector, infrastructure development, and service sector. These identified potential key growth drivers of the state economy will be prioritized in proper sequence that would provide maximum linkages in the economy for propelling and fueling economic growth and development in the State. Given this background, analysis of inter-sectoral linkages is critical for the decision makers to achieve effective priority setting for efficient allocation of resources.

Methodology

The study is based on the time series data of Gross State Domestic Product (GSDP) obtained from various issues of Basic Statistics by Directorate of Economics and Statistics, and Economic Survey of Mizoram published annually by Planning and Programme Implementation, Government of Mizoram. The problem faced in data collection is the anomaly of data sources and varying magnitudes of GSDP figures from different sources. This has seriously limited the reliability of the results. After careful preliminary analysis and simulation, it was decided that the GSDP (at current prices) at factor cost by industry origin be adopted. Data fluctuation and limited number of years prohibited the use of standard econometric tools to generate factual information. Taking into account all these limitations, the following econometric tools were found most appropriate: (i) Augmented-Dickey Fuller (ADF) test to test the presence of unit root in the series, (ii) Vector Auto-Regressive (VAR) model for the analysis of the simultaneous relationship and inter-linkages of the sectors of the economy.

The sectors under study are agriculture & allied sector (At), industries sector (It), and service sectors (St). Agriculture and allied activities includes forestry, horticulture, fishery, etc., Industry cover manufacturing, quarrying, construction, mining; and Service sector includes transport & communication,

storage, hotel, trade & restaurant, banking & insurance, real estate, and public administration. There are three major approaches to analyse the linkages of the different sectors of the economy, two-way analysis by estimating output elasticity between the sector (Rangarajan, 1982; Satyasai and Viswanathan, 1999), input-out analysis framework (Saikia, 2011), and time series econometric tools like VAR, Causality, etc (Paul, 2010; Westermann, 2012). As the three sectors are, by simple reasoning, interdependent, it may be impracticable to make distinction between endogenous and exogenous variables, and so they should be treated on an equal footing. VAR model which represents a proper simultaneous equation systems in that all the variables in it are treated as endogenous would be the most appropriate for the analysis of the interdependence of the three economic sectors. The VAR model corresponding to the three sectors may be specified as follows

$$A_t = \alpha_1 + \sum_{j=1}^{p} \beta_j A_{t-j} + \sum_{j=1}^{p} \gamma_{t-j} I_{t-j} + \sum_{j=1}^{p} \delta_{t-j} S_{t-j} + u_{1t}$$

$$I_t = \alpha_2 + \sum_{j=1}^{p} \theta_j A_{t-j} + \sum_{j=1}^{p} \vartheta_{t-j} I_{t-j} + \sum_{j=1}^{p} \rho_{t-j} S_{t-j} + u_{2t}$$

$$S_t = \alpha_2 + \sum_{j=1}^{p} \mu_j A_{t-j} + \sum_{j=1}^{p} \varphi_{t-j} I_{t-j} + \sum_{j=1}^{p} \tau_{t-j} S_{t-j} + u_{3t}$$

------ Eq (1)

Each equation contains p lag values of A, I, S and a stochastic error term which is called impulses or innovations or shocks. It may be noted that all the variables should be stationary before applying VAR model, and if they are non-stationary, we have to make them stationary by taking their differences, denoted by d(A), d(I), and d(S). To test if the variables are stationary, ADF test was adopted. Under the null hypothesis that d=0, the following equation involving the lagged values and differences of the variable of interest Yt was estimated and tested.

$$\Delta Y_t = \alpha + \delta Y_{t-1} + \sum_{i=1}^{m} \gamma_i \Delta Y_{t-i} + u_t$$

--------- Eq (2)

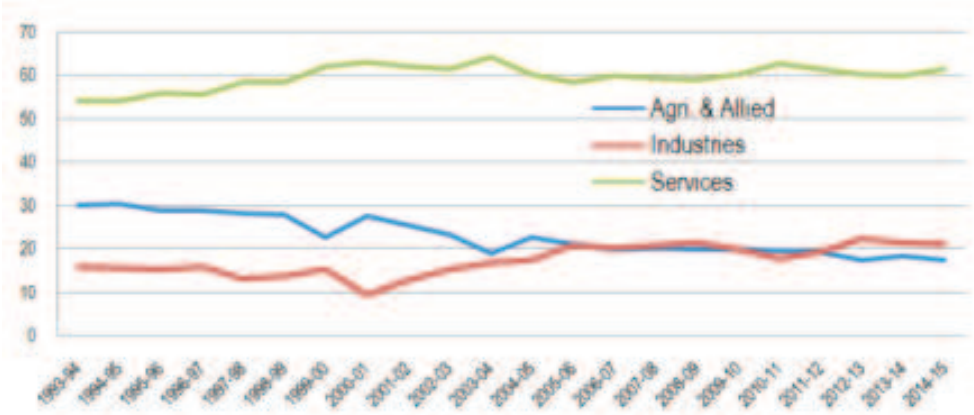
Where Δ and u_t are the difference operator and disturbance term respectively.

Sectoral Overview of GSDP

The GSDP at current prices, as given in Table 1, recorded significant growth by achieving 14.13 percent of annual growth during the last 22 years under study. Industries sector (16.77 percent) and services (14.57 percent) recorded rates higher than the overall GSDP growth, while the agriculture and allied sector, though it achieved significant growth (11.63 percent), lagged behind the others. However, these are only in nominal terms, and so, an examination of the changing pattern of the sectoral distribution would be more convincing and realistic to analyse the development of each of these sectors. This is presented in Figure 1.

It is clear from Figure 1 that service sector remains to be the main growth driver of the state economy, while the contribution of agriculture and allied activities decreased consistently during the period. Interestingly, industrial growth relative to other sectors picked up since 2000-01, which was followed by a spike in service sector growth during 2004-05, and reached a high in 2005-06 but declined afterwards. Again the share of industrial sectors started to increase from 2010-11.

Figure 1. Changing Pattern of the Sectoral Distribution of GSDP (at Current Prices) in Mizoram (in percentages)

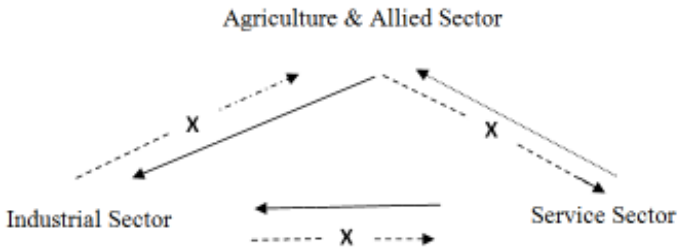


Service sector has constituted around 60 percent of the GSDP throughout the years, while the contribution of agriculture and allied sector steadily declined from around 30 percent in 1993-94 to 17.50 percent in 2014-15. At the same time, the contribution of industries sector has slightly increased to 21.10 percent in 2014-15 from 16.06 percent in 1993-94. The failure of the agriculture and allied sector, which provides livelihood for majority of the people, to keep pace with the growth of other sectors implicates the unsustainable nature of economic development in Mizoram. Meanwhile, the growth of the industrial sector is apparently insufficient to catch up with the declining importance of agriculture sector. Looking at this trend, an inference that appears to be reasonable is the inability of the industrial sector to absorb the surplus labour force from agriculture sector leading to unemployment. A robust growth of the economy should ensure smooth transition of workers from agriculture to manufacturing and further to service sector. The structural failure of the economy needs appropriate policy attention and further empirical analysis.

Identifying the Nature of Sectoral Linkages

The starting point of analysing causality between the sectors is to check whether the data series are stationary, and to convert it if they are not. The result of ADF test for stationarity is presented in Table-2. The series are not stationary at levels, but their first differences series are stationary. Thus, the differences of the series are adopted for causality analysis. The result of VAR and Granger Causality as presented in Table-3 and Table-4 show the weak causalities or weak linkages among the three sectors of the economy. The trend observed here is in clear contrast to inter-linkages of the sector as envisioned by the traditional economic theory. Interestingly, industrial sector has significant linkages with the remaining sectors at approximately 10 percent levels. However, the sector does not have either significant backward or forward linkages to other sectors. At the same time, causal effect of service sector development on agriculture and allied is weakly significant (say, 20 percent level). The pattern of causality based on the results is presented in Figure 2.

Figure 2. Pattern of Inter-Sectoral Linkages in Mizoram

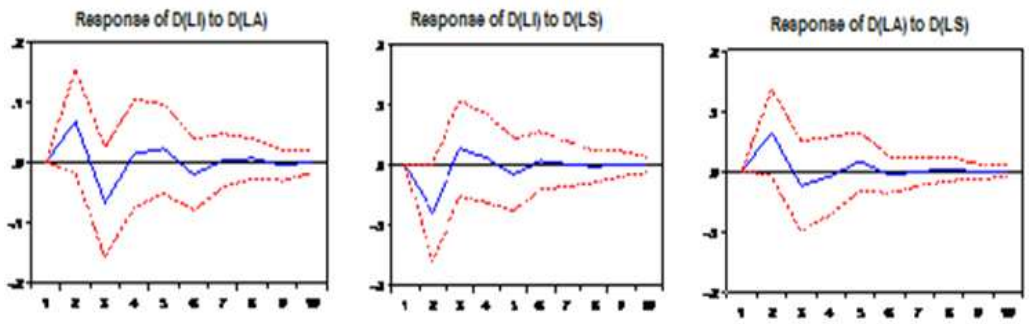


Note: Arrow mark indicates the direction of linkages, and X is no causal effect

It may be observed from this figure that there is no bi-directional linkage among the three sectors. It is interesting see that industrial development is affected by growth in agriculture and allied sectors as well as service sectors, positively by the former while it is negatively affected by the later. The negative impact of service sector development may have an interpretation that service sector grows at the expense of industrial growth. This is possible in many respects because there is no large scale manufacturing units worth mention in Mizoram, and family owned small scale units are doing both manufacturing activities and servicing like marketing, repairing, etc. Further, it is unfortunate to observe that industrial sector does not have significant linkage to agriculture and allied sector development where it is supposed to, as the two sectors depend on each other for raw materials. At the same time, service sector has substantial impact on the growth of agriculture and allied sector. In short, the observations from Figure 2 can be summed up as the existence of unidirectional causation between agriculture & allied and industrial sector, and service sector and industrial sector.

Further, attempt was made to look at their impulse responses to get an overall view of the direction and magnitude. The impulse response functions trace out the responses of the dependent variables in the VAR system to shocks in the error term. The shock, also called innovations, may indicate pushing of the sector by outside factors over and above its normal trend values. It may come in the form of fiscal push, credit expansion, etc. To simplify the presentation, only sectors between which significant linkage is observed are presented in Figure-3, while avoiding responses to own shock. As our goal is to assess the existence of the response, we consider only mild shock (innovation) that is within one standard deviation of the trend.

Figure-3: Impulse Responses of Industrial and Agri. & Allied Sectors in Mizoram



It may be observed from Figure-3 that innovation (shock) in agriculture would be positively responded to by industrial sector from the first year and reach the highest impact in the second year, though it has negative impact on the third year. Again, its impact picks up till the fifth year and follows the long run equilibrium path afterward. On average, growth of agricultural outputs would push the industrial sector growth at least for a period of five years. At the same time, service sector growth would have negative impact till the second year, and have positive impact during the third and fourth year on industrial sector development. Further, shocks (growth) in service sector would be positively responded by agriculture sector in the 2nd and 3rd years and merge into the long term equilibrium path.

Conclusion & Implications

VAR and Granger Causality analysis support the notion of unidirectional linkage from service sector to agriculture and industries, and agriculture & allied to industries. The results of the analysis do not indicate any significant causal linkage from industries to other sector. Based on the result of VAR Analysis and Impulse Responses, the following points may be made. Firstly, service sector is the key growth sector of the economy in the state. The growth of this sector has positively impacted agricultural development, while it acts as substitute (competitive) to industrial sector growth as its average impulse response over five years is negative.

Secondly, positive impulse to be perceived by agriculture sector to the one time investment (shock/ innovation) in service sector over five years is quite interesting. As Public Administration remains to be the main contributor of the service sector growth in the economy, the pace of Administrative Reform process, to increasingly ensure efficiency in delivery system, will have significant impact on the development of agriculture and allied sector. Similarly, as transport & communication, trading, etc are important contributors of service sector growth, investment to improve existing marketing system and distribution channels of agricultural commodities may be considered as innovation which would be positively responded to by agriculture development.

Thirdly, positive response of industrial growth to agriculture development in a long span of five years, on an average, should be another area of interest. The result is in favour of industrial development through agriculture growth. In view of this observation, the key strategy for industrial sector growth would be the development of agriculture and allied sector. This may be construed as the strong forward linkage of agriculture development, while agriculture development would be considered as the backward linkage of industries in the future. Thus, agro-horticulture industries should be the key trust area of any industrial policy in Mizoram.

Lastly, absence of causal linkage from industrial sector to other sectors needs appropriate attention. This is an indication of industrial backwardness as well as the failure of the industrial policies implemented from time to time. Thus, it is necessary to forward structural change in the existing industrial policy keeping in view the local resources and existing marketing system, and marketing opportunities. Further, the appearance of service sector growth as substitute to industries development may also implicate overlapping of activities between the two sectors. So, it is necessary to effectively classify activities into industries or service to avoid accounting errors.

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Appendix Tables

Table 1. Gross State Domestic Product at Factor Cost by Industry Origin in Mizoram - At Current Prices

Year	Rs. In Lakhs				Percent to GSDP		
	Agri. & Allied	Industries	Services	GSDP	Agri. & Allied	Industries	Services
1993-94	21225	11428	38498	71151	29.83	16.06	54.11
1994-95	22138	11508	39631	73277	30.21	15.70	54.08
1995-96	26963	14446	52245	93654	28.79	15.42	55.79
1996-97	30751	16921	59562	107234	28.68	15.78	55.54
1997-98	31698	14966	65653	112317	28.22	13.32	58.45
1998-99	34705	17009	72876	124590	27.86	13.65	58.49
1999-00	32064	21586	87289	140939	22.75	15.32	61.93
2000-01	48613	16901	111358	176872	27.48	9.56	62.96
2001-02	48699	24578	119140	192417	25.31	12.77	61.92
2002-03	50881	33569	135043	219493	23.18	15.29	61.52
2003-04	44324	39050	149124	232498	19.06	16.80	64.14
2004-05	63025	48296	167830	279151	22.58	17.30	60.12
2005-06	64787	63687	180351	308825	20.98	20.62	58.40
2006-07	68565	68991	205061	342617	20.01	20.14	59.85
2007-08	80109	82332	235170	397611	20.15	20.71	59.15
2008-09	94065	101203	279587	474855	19.81	21.31	58.88
2009-10	107836	108767	327052	543655	19.84	20.01	60.16
2010-11	128206	117377	412886	658469	19.47	17.83	62.70
2011-12	137955	136273	438830	713058	19.35	19.11	61.54
2012-13	151960	192764	520421	865145	17.56	22.28	60.15
2013-14	184213	214384	598446	997043	18.48	21.50	60.02
2014-15	201994	243631	708893	1154518	17.50	21.10	61.40
CAGR (%)	11.63	16.77	14.57	14.13	-2.66	2.31	0.42

Sources: (i) Statistical Handbooks (Various Issues), Directorate of Eco. & Stats., Mizoram, (ii) Economic Survey of Mizoram (Various issues), Planning & Programme Implementation, Mizoram

Table 2. Result of Unit Root Test using Augmented Dickey-Fuller (ADF) test

Null Hypotheses	t-Statistic	Sig.	Status
D(Log Agriculture has Unit Root)	-7.078	0.000	Reject
D(Log Industries has Unit Root)	-5.58	0.000	Reject
D (Log Service has Unit Root)	-6.26	0.000	Reject
Test critical values:	1% level	-3.808546	
	5% level	-3.020686	
	10% level	-2.650413	

Table 3. Vector Autoregression (VAR) Estimates Among the three Sectors

Sample (adjusted): 4 22 Included observations: 19 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	D(LA)	D(LI)	D(LS)
D(LA(-1))	-0.820168	0.569981	-0.162468
	(0.30705)	(0.34543)	(0.14366)
	[-2.67115]	[1.65008]	[-1.13094]
D(LA(-2))	-0.225253	-0.174800	-0.009663
	(0.35628)	(0.40082)	(0.16669)
	[-0.63223]	[-0.43611]	[-0.05797]
D(LI(-1))	0.014729	-0.248746	0.018280
	(0.23984)	(0.26982)	(0.11221)
	[0.06141]	[-0.92189]	[0.16290]
D(LI(-2))	0.051799	-0.365671	-0.035049
	(0.20645)	(0.23225)	(0.09659)
	[0.25091]	[-1.57445]	[-0.36286]
D(LS(-1))	1.128482	-1.418782	0.084058
	(0.61240)	(0.68895)	(0.28652)
	[1.84273]	[-2.05935]	[0.29337]
D(LS(-2))	0.417947	-0.401620	0.008559
	(0.64609)	(0.72685)	(0.30228)
	[0.64689]	[-0.55255]	[0.02832]
C	-0.007703	0.453672	0.145584
	(0.15201)	(0.17101)	(0.07112)
	[-0.05067]	[2.65288]	[2.04700]
R-squared	0.420437	0.444670	0.169243
Adj. R-squared	0.130655	0.167005	-0.246135
Sum sq. resids	0.173948	0.220152	0.038077
S.E. equation	0.120398	0.135448	0.056330
F-statistic	1.450873	1.601462	0.407444
Log likelihood	17.62783	15.38998	32.05960
Akaike AIC	-1.118719	-0.883155	-2.637853
Schwarz SC	-0.770768	-0.535204	-2.289902
Mean dependent	0.105988	0.148697	0.137251
S.D. dependent	0.129129	0.148405	0.050462

Determinant resid covariance (dof adj.)	6.00E-07
Determinant resid covariance	1.51E-07
Log likelihood	68.31459
Akaike information criterion	-4.980484
Schwarz criterion	-3.936630

Table 4. VAR Granger Causality/Block Exogeneity Wald Tests

Sample: 1 22
Included observations: 19

Dependent variable: D(Log of Agriculture)			
Excluded	Chi-square Statistic	df	Prob.
D(Log of Industries)	0.063312	2	0.9688
D(Log of Services)	3.397750	2	0.1829
All	3.553413	4	0.4698
Dependent variable: D(Log of Industries)			
Excluded	Chi-square statistic	df	Prob.
D(Log of Agriculture)	4.649771	2	0.0978
D(Log of Services)	4.296153	2	0.1167
All	6.292818	4	0.1783
Dependent variable: D(LS)			
Excluded	Chi-square Statistic	df	Prob.
D(Log of Agriculture)	1.576831	2	0.4546
D(Log of Industries)	0.183712	2	0.9122
All	2.084278	4	0.7203

Testing the Trade-off and Pecking Order Theory in Indian Cement Industry

Nishu *
Harvinder Singh Mand**

Abstract

This study seeks to test the applicability of trade-off and pecking order theory of capital structure in Indian Cement Industry.The required data have been collected from PROWESS from BSE listed cement firms over the period of 10 years (2004-05 to 2013-14). The independent variables taken for the study are size, growth, tangibility, liquidity, uniqueness, non- debt tax shield, profitability, debt service capacity, effective tax rate, business risk and promoter shareholdings.Total debt to total assets has been used as a proxy to measure leverage. The panel data regression model has been applied to identify the major determinants that affect capital structure decisions. The results of the study reveal that size, tangibility, liquidity, uniqueness and debt service capacity are only statistically significant variables, it is concluded that no single theory can explain the financing pattern in Indian Cement Industry.

Key words : Panel data, leverage, cement industry, trade-off and pecking order.

Introduction

Capital structure decision is the mix of debt and equity capital used by a company to finance its business (Damodaran, 2012). Capital structure is the right blend of different sources of finance. It is the optimum proportion of all kinds of funds used by firms to finance their assets. According to Chen (2007), capital structure refers to the way a corporation finance itself through some combination of equity, debt or hybrid securities.Optimal capital structure is an important part of the financial planning of the finance manager. Ensuring an optimal capital structure with least cost of capital and enhanced stakeholder's wealth is important for all corporate entities.

It was found out thatstudies on the determinants of capital structure includeselected determinants in a regression equation (Eldomaity, 2007). The results in many cases turned out tobe mixed. This is what Fama and French (2002) referred to as the two theories ofcapital structure (trade-off and pecking order) share many generalprediction aboutthe determinants of leverage, turning out results to be indecisive (Prasad et al., 2001).The impact of various determinants of capital structuresuch as (size, growth, tangibility, business risk, debt service capacity etc), in financing decisions has also been proved by these theories.

This paper is divided into four main sections. Section one gives introduction. Section two presents the review of literature. Section three provides a detailed description of the methodology, operational definitions of the variables and model used. Section four then presents the results of the analysis, comparing the results with the past findings. Finally, section five summarizes and concludes.

Review of Literature

For better understanding some literatures concerning the capital structure determinants of different countries, different industries as well as different economies have been reviewed. In this section, attempt has been made to review the existing literature related with determinants of capital structure to get some insight into this topic.

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Bhatt (1980) tried to analyze the impact of various determinants on financial leverage e.g., growth, firm size, profitability and business risk with leverage ratio and found that financial leverage does not have any significant relationship with growth, size and degree of operating leverage but debt service ratio, risk and dividend payout ratio have negative relation with financial leverage.

Kakani and Reddy (1998) attempted to find out the factors affecting the capital structure for 100 Indian firms for a period of 11 years by using correlation and multiple regressions and concluded that Profitability and capital intensity were found to be negatively associated to leverage.

Banerjee et al. (2000) tested the determinants of a time-varying optimal capital structure of 426 US firms for the period 1989-1996 by using dynamic adjustment model and panel data method. They concluded that factors affecting optimal leverage were in general in UK. But in USA, leverage was affected by growth in positive sense in the dynamic model particularly.

Gaud et al. (2003) analyzed the determinants of capital structure using panel data regression pertaining to 106 Swiss companies for 1991to 2000. They found that leverage was positively related to size, tangible assets and business risk while current profitability and growth were negatively related with leverage.

Gill et al. (2009) discussed various determinants of capital structure in the service industry in United States for the period between Jan.1, 2004 and Dec. 31, 2005. This study showed that profitability was negatively correlated with leverage and income tax rate was positively related with leverage of the firm.

Ahmad et al. (2011) in their paper tried to determine the impact of explanatory variables on the determination of capital structure and also examined the applicability of pecking order theory and trade off theory in 336 Pakistani non-financial sector firms by using panel data regression. They proved that among the determinants of capital structure size, liquidity, payout, non-debt tax shield and tangibility of assets showed positive relationship with leverage.

Reddy (2012) examined the capital structure practices and its effect on profitability in selected software companies in South India by taking 10 BSE listed companies using Ratio and percentage technique. He found that Software companies in south India were suffering from the crisis of low profitability and this declining trend was due to the increasing dependence on internal sources of financing.

Chandrasekharan (2012) examined the determinants of capital structure of 87 companies listed in Nigeria stock exchange for the period of 2007 to 2011 using panel multiple regression.The result revealed that age, size, profitability, growth and tangibility had great impact on the leverage in Nigerian firms.

Khanna (2013) attempted to examine the determinants of capital structure of 284 Indian corporate by using Panel regression model and found that COVA, size and liquidity of the firm had positive relationship whereas stock liquidity, growth and uniqueness had negative relationship with firm leverage.

Sharma and Singh (2014) examined the relationship between capital structure and firm's characteristics of 46 automobile companies for 10 years through panel data and multiple regression analysis. They revealed that leverage is positively associated with tangibility, size and growth whereas negative relation exists between tax rate and leverage. Profitability has shown negative relationship with long term debt and liquidity with total leverage.

Poddar and Mittal (2014) tested the impact of leverage on independent variables viz., size, profitability, Liquidity and interest coverage of the five Indian steel sector companies applying panel data analysis techniques. The results of their study revealed that profitability, liquidity and interest coverage ratio are negatively associated with leverage whereas there is positive relationship between size and leverage.

It is evident from the literature review that capital structure decisions are very important for firms and so many studies have been conducted so far on this concept but there is no consistency regarding the significant determinants of capital structure. Moreover the determinants are country specific and industry specific, therefore, this study has been conducted to identify the significant determinants of capital structure in Indian cement industry.

Research Methodology and Scope of the Study

Objectives

The purpose of this paper is to examine the various determinants of capital structure in Indian cement industry.

Scope

The scope of this paper is restricted to cement firms listed on Bombay Stock Exchange. Top 20 firms based on maximum capitalization have been selected for the study. The time period of the study is ten years from 2004-05 to 2013-14. The required secondary data has been taken from the corporate data base PROWESS maintained by centre for monitoring Indian Economy (CMIE).

Dependent Variable (Leverage)

Leverage is the proportion of debt in firm's capital composition. As there is no clear cut definition of leverage so it can be defined as the ratio of firm's debt to assets. Previous literature on capital structure show that Taub (1975), Pandey et al (2000), Garg & Shekhar (2002), Dass & Roy (2007), Mishra (2011) and Kumar et al. (2012) have used different measures of leverage.Keeping in view the previous studies the researcher took total debt/total assets measure of leverage in line with Pandey (2000), Bevan and Danbolt (2000), Gaud et al. (2003), Chen (2004), Hizazi and Tariq (2006), Dass & Roy (2007), Ghani and Bukhari (2010), Siddiqui (2012), Hossain & Ali (2012) and Srivastva (2012). Total debts include both short term and long term debts from financial institutions, banks,fixeddeposits from government, foreign loans & funds raised from capital market through debt instruments such as commercial papers and debentures (both convertible & non-convertible) and total assets include both current and fixed assets.

Independent Variables

So many independent variables have been used by previous researchers. This study included size, growth, tangibility, liquidity, uniqueness, profitability, business risk, non-debt tax shield, debt service capacity, promoters shareholdings and effective tax rate, as these are important variables affecting capital structure decisions of the firms.

1. Profitability

Profitability is an important determinant affecting capital structure. According to pecking order theory, a profitable firm prefers to finance from internal sources first, then debt and at last external equity. On the other hand trade off theory expects positive relationship and states that the firms with higher profits will have better access to outside financing and they prefer debt to have more income to shield from taxes as interest payment on debentures are tax deductible which results in reduction of cost of capital.Empirical Studies support mixed results. Bhatt (1980), Titman and Wessels (1988), Harris and Raviv (1991), Rajan and Zingales (1995), Kakani and Reddy (1998), Pandey (2000), and Ahmed (2011) all found leverage to be negatively related to the level of profitability while Taub (1975) and Bevan and Danbolt (2000) locate a positive relationship between leverage and profitability. The present study has used most commonly measure of profitability i.e. EBIT divided by total assets in line with Bhatt (1980), Pandey et al. (2000) and Hossain and Ali (2012).

2. Tangibility

The asset structure of the firm denotes tangibility. The firms with higher level of tangible fixed assets have higher tendency of issuing debt by using fixed assets as collateral rather than issuing equity predicting the positive relationship in line with trade off theory. Pandey (2000), Jong et al. (2007) and Ghani (2010) found significant positive relationship between tangibility and leverage. However Rajan and Zingales (1995), Titman and Wessels (1988), Bevan and Danbolt (2002) predicted negative relationship in support of pecking order theory. The present study has used gross fixed assets to total assets in line with Pandey (2001), Bevan and Danbolt (2002) and Oztekin (2010).

3. Business Risk

Harris and Raviv (1991) suggest that in high volatile firms, risk of cash flow to honour the payment of debt remains high. According to trade off theory negative relationship exists as higher debt ratio may increase the probability of financial distress and hence firms should use less debt in order to maintain a balance of total risk profile. Pecking order theory states that high volatile firms always try to accumulate cash when there are surplus profits to avoid external finances in order to avail investment opportunities, thus also support negative relationship. Kakani and Reddy (1998), Eldomiaty (2007) and Akdal (2011) found significant negative relationship between leverage and business risk. But Bhatt (1980), Titman and Wessels (1988), Frank and Goyal (2007), found no significant relationship between risk and leverage, whereas some researchers such as Booth et al (2001), Pandey (2001) and Rafiq et al (2008) supports positive relationship between risk and leverage ratio. Standard deviation of return on assets (Bauer 2004), standard deviation of the per cent change in operating income e.g., Titman and Wessel (1988), Pandey (2000) and Pathak (2010) measure has been used. As standard deviation and coefficient of variation gives a single value for a given variable and it is not possible to use this measure in the present study with panel data. So this study follow Rafiq et al (2008) and Shah and Khan (2007) and used the value of the deviation from mean of net profit scaled by total number of years for each firm in a given year as a proxy for measuring business risk.

4. Size

Size may then be inversely related to the probability of bankruptcy thus suggesting the positive relationship between size and leverage (Titman and Wessels 1988 and Rajan and Zingales 1995). Same positive relationship is expected under trade off theory.On the other hand pecking order theory states that there is less asymmetric information about large size firms and it reduces the chances of undervaluation of the new equity issue and larger firms favor to use equity financing and supports negative relationship, Rajan and Zingales (1995). The present study has used the natural log of the net sales to measure size of the firm in line with the studies Bhatt (1980)and Titman and Wessels (1988).

5. Debt Service Capacity

Debt service capacity indicates the ability of the firm to serve its fixed payments funding after paying all expenses except taxes and interest are paid. If the ratio is high it shows that the capacity of the firm is less to serve debt and hence resulting in the lower proportion of debt in the capital structure of the firm. Baral (2004), Bhatt, (1980) and Kumar, et al. (2012) have used earnings before interest and taxes to fixed interest charges as proxy for measuring the debt service capacity. This study has also used the same measure in line with above studies.

6. Uniqueness

Uniqueness is another important determinant affecting capital structure decisions. It is predicted that firms with unique goods has to spend large amount of expenditures on selling and distribution and research and development, so these firms have more intangible assets and they are not able to get long term loans from banks and other financial institutions, hence uniqueness is expected to be negatively associated to debt ratios (Titman and Wessels, 1988). But when the research and development expenses are higher, then the firm need more funds to finance its activities thus issue more debt capital means positive relationship as per pecking order theory. Frank and Goyal (2007) and Rasoolpur (2012) found negative relationship between uniqueness and leverage whereas Kakani and Reddy (1998), Frydenberg (2004) and Pathak (2010) found that leverage is positively associated with uniqueness. Selling and distribution expenses divided by sales has been taken as a proxy for uniqueness in line with Khanna (2013), Rasoolpur (2012) and Pandey (2000).

7. Non- Debt Tax Shield

Items other than interest expenses,that contribute reduction in tax payments, are characterized as non-debt tax shields. All these expenses are charged to profit and loss account and thus reduce the tax liability of the firm. Thus, one can expect positive association between leverage and non-debt tax shield. But DeAngelo and Masulis (1980) states that non-debt tax shields can be alternates for the tax benefits of debt financing and a firm with larger non-debt tax shields is expected to use less outside

debt due to the probability of bankruptcy increases with leverage. Modigliani and Miller also argue that the main benefit of borrowing is to take advantage of interest tax shield. Thus the firms with considerable amount of non-debt tax shields do not require the tax shield provided by debt hence a negative relation is expected between non debt tax shield and leverage in support of trade off theory. Literature review provides mixed results. Some of the researchers like Kakani and Reddy (1998), Ozkan (2001) and Oztekin (2010) establish significant negative relationshipwhereas Frank and Goyal (2007), Rafiqet al. (2008) and Srivastava (2012) found positive relationship among them. Titman and Wessels (1988) observed that non debt tax shield is not statistically significant variable of capital structure. The present study has used depreciation scaled down by total assets as a proxy to measure the relationship of the debt and non debt tax shield in line with other studies i.e., Benerjee et al. (2000), Bauer (2004), Qian et al. (2007) and Oztekin (2010).

8. Liquidity

Liquidity is the indicator of short term solvency of the firm. This ratio indicates that the firms with more liquid resources are able to meet its short term obligations without any difficulty. As per trade off theory highly liquid firms have higher level of leverage and these firms can employ external debt and other financing as they are able to pay back liabilities easily and can avail the benefit of tax shields, so expects the positive relationship. On the other, pecking order theory expects negative relationship between leverage and liquidity and assumes that highly liquid firms first use its internal sources of financing then external financing. Most of the studies such as Jong et al (2008), Pathak (2010), Akdal (2011), Rasoolpur (2012), and Srivastava (2012)observed significant negative relationship between liquidity and leverage while Jong et al.(2007) showed that there is positive relationship between liquidity and leverage. Current assets divided by current liabilities proxy has been used in the present study in line with Ahmed (2011), Rasoolpur (2012) and Siddiqui and Khanna (2013).

9. Effective Tax Rate

Debt tax shields play an important role in determining the capital structure. The impact of tax on capital structure can be measured through non-debt tax shields and tax. De Angelo and Masulis (1980) found that the non-debt tax shields such as net operating loss carry forwards, depreciation expense, and investment tax credits are substitute mechanisms for the tax benefits of leverage. Higher the tax rates, more the interest tax benefits of debt, as interest paid on debt is tax deductible,hencethe effective tax rate is expected to be positively related with leverage thus supports the trade-off theory. On the other hand, it is assumed that when the tax rates are high the internal funds are used to reduce the cost of capital, thus supports negative relationship.Ahmed et al.(2011), Oztekin (2010), Eldomiaty (2007), Sarvanan (2006) and Bauer (2004) found positive significant relationshipwhereas Taub (1975), Booth et al (2001), Frank and Goyal (2007) and Mishra (2011) have found negative relationship between tax rate and leverage. A large number of measures have been used to compute the effective tax rate. The present study has been usedthe measure (1- Earnings after Tax / Earnings before Tax) in line with Rasoolpur (2011)and Sharma and Singh (2014).

10. Growth

Firms with high growth opportunities have greater future need for funds. To fulfill the need of finance firms financed their assets through issue of equity instead of debt due to minimizing the risk per shareholder that leads tonegative relation between firm growth and leverage supporting trade off theory. Rajan and Zingales (1995), Bevanand Danbolt (2002) found negative significant relationship whereas Titman and Wessels (1988) and Pandey et al (2000) claimed a positive relationship between leverage and growth opportunities.The present study measures the growth as annual percentage change in total assets in line with studies Gaud et al (2003), Ghani (2010) and Qyyum (2013).

Model Specification

This study has used panel dataand it combines cross-sectional data with time series data. Panel data have space as well as time dimension (Gujarati, 2004). Combination of time series with cross-section observations, panel data give "more informative data, more variability, less collinearity among variables, and more efficiency," Baltagi (2001). Panel data models are certainly attractive and appealing since they provide ways of dealing with heterogeneity and examine fixed and/or random effects in the longitudinal data under the condition of well organized data (Park,2011). Panel data techniques of Random Effects Model and Fixed Effects Model have been applied on this random sample. Then Hausman's specification test is applied to test the applicability of relevant model. This test tells the rejection or acceptance of null hypothesis, which is, "Random effect model is appropriate," otherwise fixed effect model is used. After this, the validity of random effect model is tested by applying the Wald chi square and if this model also if not supported by this test, then only Pooled Ordinary Least Square (OLS) regression can be applied.

Variance Inflation Factor (VIF) is used to check the problem of multicollinearity among variables. In this study all the analysis has been done with the help of software packages STATA.The regression equation for our model is:

$LR = b_0 + b_1SZ + b_2GR + b_3TANG + b_4LIQ + b_5UNIQ + b_6NDTS + b_7PROF + b_8DSC + b_9ETR + b_{10}BR + b_{11}PH$

where,

LR = Total Debt to Total Assets Ratio
b_0 = Intercept
SZ = Size Measured in Terms of Sales
GR = Growth Measured in Terms of Assets
TANG = Tangibility
LIQ = Liquidity
UNIQ = Uniqueness
NDTS = Non-debt Tax Shield
PROF = Profitability
DSC = Debt Service Capacity
ETR = Effective Tax Rate
BR = Business Risk
PH = Promoter Shareholdings

ANALYSIS AND DISCUSSION OF RESULTS

Variance Inflation Factor (VIF) Test

VIF test has been applied to test the multicollinearity among the independent variables used in the study. If two variables are not correlated then VIF will be one. But it is not possible that VIF will be 1 in actual practical situation, because there would always be some degree of correlation among the independent variables (Banerjee and De, 2015). In this study overall average VIF is less than 2, so it specifies that there is no problem of multicollinearity and we can continue for regressions analysis.

Hausman's Specification Test

Hausman'sSpecification Test has been applied to check whether fixed effect model is appropriate or random effect model is suitable for the study. Only on the basis of outcome of this test the present study accepts the null hypothesis which is, "Random effect model is appropriate." So, Random effects model is used for further analysis.The value of Hausman's Specification Test is negative that shows the acceptance of null hypothesis of random effect model.

Panel Data Analysis

Table 1 presents the panel regression results to examine the impact of determinants of capital structure. Random effect model is used on the basis of outcome ofHausman's specification test and random effect results for all firms have been presented here.

Discussion and Analysis

Value of Wald chi-square 276.89 and p-value 0.0000 shows the validity and significance of model. The value of R-square is 0.6340, indicates that the model has explained 63.4 per cent variation in leverage.

Table 1: Random-effects Regression Results for Cement Industry

R-sq: within = 0.4231	Number of groups = 20
between = 0.8641	Wald $chi^2(11)$ = 276.89
overall = 0.6340	Number of observations= 200
	Prob > chi^2= 0.0000
Variable	Regression Coefficients
Size(sales)	-.135(5.36)*
Growth (Assets)	.002(0.18)
Tangibility	.503(4.36)*
Liquidity	-.101(4.55)*
Uniqueness	-1.91(6.79)*
Non debt tax shield	.918(1.72)
Profitability	-.349(1.95)
Debt service capacity	-.002(3.71)*
Effective tax rate	-.032(0.78)
Business Risk	.001 (0.63)
Promoters Shareholding	.037(0.35)
Cons	.991(8.38)
Durbin-Watson Test= .6255942	

Note: Values given in parenthesis shows z-values

* Denotes significance at 1% level

It is observed from the table that size, tangibility, liquidity, uniqueness and debt service capacity are only significant variables and among these significant variables negative relationship of size and liquidity with leverage shows that larger and highly liquid firms have easy accessibility to equity as compared to smaller firms supporting the predictions of Fama and Jenson (1983) and approve the applicability of pecking order theory while positive relationship of tangibility with leverage is consistent with the results of trade off theory. In addition uniqueness and debt service capacity proves that these two determinants also play important role in deciding capital structure but their negative association reveals that firms with unique products use equity rather than debt to fulfill their needs. It is observed from the analysis that both theories are applicable to sample firms and concluded that no single theory explain the financing pattern in Indian Cement Industry.

Limitations

This study also encompasses with some limitations.The study is based on secondary data that is available on prowess data base. The study sample is restricted to cement sector. The leverage is measured by taking one proxy, so other measures can be taken to study the relationship of leverage with other factors.

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Public Health Care Schemes in Mizoram

Lalhriatpuii Ralte*

Abstract

Health is a concept used to reflect a sense of well being in the society. In developing countries like India, people, especially the poor tend to have less access to health services. As the poor have to pay from their own pocket, they remain shied away from entering into proper health care. Health care financing is an effective means of poverty alleviation, as well as to improve the health condition of the people as a whole. Health care in Mizoram has seen commendable success in terms of enrolment progress. The paper while studying the coverage and impact of the two health care schemes that is being implemented in Mizoram, found that the high enrolment progress does not suggest clear relationship with the incidence of poverty. The paper proposes some suggestions to enhance the performance of health care schemes.

Keywords: Health care, Aibawk RD Block, Health care coverage, Household health expenditure

Introduction

Health is a concept used to reflect a sense of well being in the society. The World Health Organisation defines health as "a state of complete physical, mental and social well being and not merely the absence of disease or infirmity". This is considered too wide and not amendable for any meaningful economic analysis or for any resource allocation. Rout and Nayak (2007) suggested that health be construed as a condition of well being, free of disease or infirmity, having basic human rights. People in poor countries tend to have less access to health services than those in better-off countries, and within countries, the poor have less access to health services (Peters et al., 2008). Large portion of the population in the poor countries are deprived of institutional heath care because of acute poverty. As these people have to pay from their own pocket for their health expenditure, they remained shied away from entering into proper health care, institutional or non-institutional, and thereby, rate of hospitalisation is very low even for critical illness.

In case of hospitalisation, out of pocket payment causes financial catastrophe and impoverishment of vulnerable households. The major problems faced by workers in the unorganised sector, who constitute 93 percent of the total workforce in India, is the frequent incidence of illnesses. Thus, one should consider that health care financing is not only a welfare measure, but also an effective means of poverty alleviation in developing countries like India (Thanga, 2013). However, public health insurance may also have a deleterious effect on the participants. People tend to seek more care from expensive tertiary care providers. Another policy challenge for the implementation of community health insurance is the rise of moral hazard of the beneficiaries and the service providers.

In India the programme for health insurance dates back to the late 1940s and early 1950s when the civil servants (Central Government Health Scheme-CGHS) and formal sector workers (Employees' State Insurance Scheme-ESIS) were enrolled in a contributory but heavily subsidised health insurance programmes. Some of the major health care schemes in the country are CGHS, ESIS, RSBY, all at the national level and Rajiv Aarogyasri Scheme, Kalaignar, Vajpayee Arogyasri Scheme, Yeshasvini, that are implemented at the state level. Mizoram is also among the states that have initiated health public health care scheme.

Literature Review

It is observed that Community Based Health Insurance have achieved commendable success in improving the existing health conditions of the poor and reduced the burden of out-of-pocket payment

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for health expenditure (Dhingra, 2001; Jutting, 2003; Devadasan, et. al, 2004). The systematic analysis of healthcare demand function in China showed positive relationship between health care demand and GDP and healthcare demand follows the pattern of classical law of demand, while supply was determined purely by government and does not response to price (Chow, 2006). Kumar et.al (2011) found the failure of Third Party Administrator (TPA) Model due to information asymmetry. At the same time, Seth and Patel (2014) proposed Data Envelopment Analysis Model to improve efficiency in the implementation of healthcare scheme.

The RSBY scheme is targeted to the poor and workers of unorganised sector of the economy (Swarup and Jain, 2010), the beneficiaries are mostly poor and illiterate having high health risk (Amicus, 2010). The success of the scheme may be judged from the fact that 90 percent of the beneficiaries did not have to incur out-of-pocket payment for hospitalised health care (Giz, 2012). At the same time, the main problem facing the scheme is the problem of preparing Below Poverty Line (BPL) List and low quality of information among the target population (Ghosh, 2014).

By evaluating the contributory state health schemes like Central Government Health Scheme (CGHS) and Employees Central Health Scheme (ECHS), Vellakkal et. al (2010) and Grover (2014) showed that beneficiaries were willing to contribute more for better quality care. Lastly, it was observed that there are some states in India which have expanded the scope of the RSBY by implementing their own health care scheme. Gothoskar (2014) showed the decision of the state government of Maharashtra to scrap RSBY by implementing their own scheme named Rajiv Gandhi Jeevandayee Arogya Yojana (RGJAY). Meanwhile, the state of Mizoram has linked its own scheme, named Mizoram State Health Care Scheme, with the RSBY on top up basis to enhance the coverage and benefits of public healthcare scheme (Thanga, 2013).

Objective of the Study

The objective of the paper is to study the coverage and impact of the two health care schemes that is being implemented in Mizoram.

Methodology

To make the study more focused and specific, one Rural Development (RD) Block, i.e., Aibawk RD Block, has been selected as case. Aibawk RD Block is located in the central part of the state and is around 50 km south of the state capital, Aizawl. It is comprised of 22 villages and the total number of household is 3,507 with a population of 17,128 as per 2011 Population Census. In addition to State Referral Hospital at Falkawn village, there are two Primary Health Centres (PHC), 14 Health Sub-Centres and 3 Sub-Centre Clinics within this RD Block.

The study analyses the impact of health care schemes in Mizoram based on both primary and secondary data. Primary data is obtained by conducting sample survey from the selected villages. Selection of samples is made in two stages, (i) selection of villages and (ii) selection of households (families). A total number of 100 households were covered in the study. Secondary data are obtained from various published and un-published sources of the departments of Mizoram Government; publication by state and central governments in their official websites; personal records; individual researches, etc.

Public Health Care Schemes in Mizoram

The Government of Mizoram is committed to providing health insurance cover to its population and had implemented for all its population, except government servants and their dependents, a Health Insurance Scheme called the Mizoram State Health Care Scheme (MSHCS) since April 2008. In addition to MSHCS, the central scheme of Rashtriya Swasthya Bima Yojana (RSBY) is also implemented by the state government. The latter is made convergent with the former on top up basis. The general features of these schemes are given as follows:

1) Mizoram State Health Care Scheme (MSHCS)

Any person who is a bonafide citizen of India and residing in Mizoram, with the head of his family being in the voters list and who is out of the medical attendance rules of Central and State Government, is eligible to be covered under MSHCS, irrespective of age. The scheme covers hospitalised medical

expenses on any government hospital and empanelled private hospitals on reimbursement basis. The assured amount and premium payment requirement is made on family floater basis which range from Rs.500 per family of 5 members for insurance cover of Rs.1 lakh and Rs.1000 per family for Rs.3 lakhs. The members over and above 5 persons in the family have to pay additional premium amount ranging from Rs.100-300.

A registered society named Mizoram State Health Care Society was formed to oversee and undertake the implementation of the scheme. The Chief Minister was the Chairman of this Governing Body. Initially the scheme was implemented by this society with Reliance General Insurance Company Limited (RGICL) as service provider and the insurance premium was heavily subsidised by the former. However, the modus operandi of the scheme was changed since 2011 and it was implemented on self-finance basis by the state finance and the implementing Society.

2) Rashtriya Swasthya Bima Yojana (RSBY)

This scheme cover all BPL households, MGNREGA Job Card holders; unorganised sector workers like Domestic Workers, Beedi Workers, Building and other Construction Workers, Street Vendors, Postmen, Licensed Railway Porters-Vendors-Hawkers, Cycle Rickshaw Pullers, Mine Workers, Rag Pickers, Safai Karmacharis, Auto and Taxi Drivers; and any other category of households notified by the Ministry of Labour and Employment from the fiscal year of 2013-14. The beneficiaries are issued Smart Card and through this they can avail cashless hospitalisation treatment up to Rs. 30,000 on a family floater basis by just paying Rs.30 per annum as registration/renewal fee. The RSBY facility is enhanced by the state government of Mizoram by providing MSHCS reimbursement facility to all BPL families up to Rs.70,000 once RSBY cover of Rs.30,000 is exhausted without paying additional premium. The non-BPL RSBY card holders can also enrol under MSHCS by paying the required premium and this is taken as top up to the RSBY limit of Rs.30,000. In an attempt to increase the breadth of health care coverage, the RSBY facility was extended to all Job Card Holders of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) since January 2013. During April 2014 to March 2015, enrolment reached 13,794 families and 1,52,983 families under MSHCS and RSBY respectively.

Enrolment Under Health Care Scheme

A year-wise enrolment data of Health Care Schemes in Mizoram is presented in Table 1. There are 11,591 families enrolled under RSBY in 2010-2011. The enrolment figure has consistently increased in the subsequent years and that it had reached 1,52,983 in 2014-2015 which is more than 13 times it was in the initial years. The enrolment in the health care scheme of the state shows that it decreases in 2011-12 with 5398 families enrolled in the scheme. Later on, this scheme showed an increasing trend and reached 13,794 enrolment during 2014-2015. It can be found that there is progressive growth of enrolment under health care schemes in Mizoram that enrolment under RSBY has increased from 11,591 families in 2010-11 to 1,52,983 families in 2014-15; while enrolment under MSHCS has also seen significant improvement in terms of enrolment, especially after it was implemented by the state finance department and the health care society on self-finance basis in 2011.

Table: 1. Enrolment of Health Care Schemes: Year-wise

Schemes	2010-2011	2011-2012	2013-2014	2014-2015
RSBY	11591	46789	103547	152983
MSHCS	28811	5398	8030	13794

Source: Mizoram State Health Care Society, 2015.

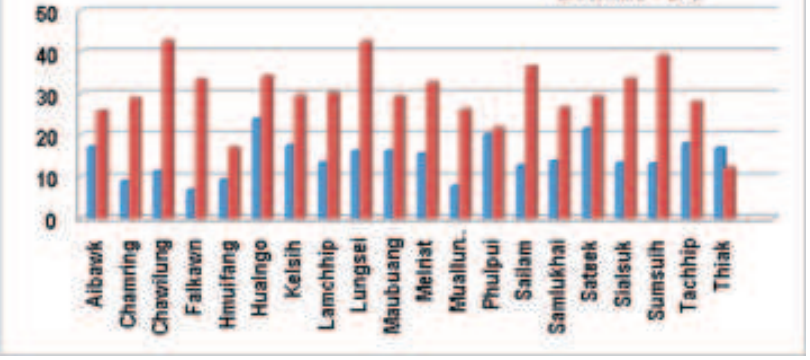
It can also be observed that 15.29 percent of the total population are enrolled under health care schemes (RSBY and MSHCS) in Mizoram presently. At the same time, the total enrolment ratio for the study area, i.e. Aibawk RD Block, worked out to be 14.72 percent which is approximately equal to the total enrolment in the state. Thus, we can see that a large majority of the population are yet to be covered under the scheme. Moreover, a closer look of the enrolment profile shows that there is higher coverage of RSBY, with more than 90 percent, than the state own health care scheme (8.27 percent).

Thus, there is better scope of RSBY coverage in rural areas if there is an increasing awareness among the target population and increasing efficiency in its administration of enrolment and service delivery.

Health Care Coverage of the Poor

The target population of the RSBY scheme and the MSHCS is the poor who are working in the unorganised sector and are out of the purview of the state and central government medical attendance rule. Since this is the case, it is assumed that the schemes should result in an increasing coverage of poor families. Health care schemes are meant to increase health care access of the poor, and in particular, the BPL families. To have clear view on the health care penetration of the poor families, poverty incidence and enrolments under the health care scheme have been analysed in the different villages of Aibawk RD Block, Mizoram. The result is presented in Figure 1.

Figure 1. Enrolment under Health Care Scheme and BPL Population (percent)



Despite the fact that the existing health care schemes are primarily meant to increase health care access of the poor and vulnerable section of the society and who are out of the medical attendance rule of the central and state government employees, its coverage as implicated by enrolment percentage does not suggest clear relationship with the incidence of poverty. This is shown by the weak and insignificant correlation (i.e. 0.07) of enrolment percentage and the percentage of poor households (BPL families) in the study area. There is no clear relationship between poverty incidence and enrolment under public health care schemes. Thus, it can be presumed that a substantial number of poor families are not covered by the existing health care schemes in Mizoram.

Household Health Expenditure

The monthly household (family) health expenditure, as presented in Figure 2 and Table 2, show that the average monthly health expenditure of the respondents amounts to Rs 932.56. The monthly health care expenditure is found to be less than Rs.1000 in majority of the households (i.e. 61 percent), while it is below Rs.500 for 23 percent of the households. It is also observed from Table 2 that, on the average, the respondent households spent 11.46 percent of their monthly income on health expenditure. Interestingly, the average percentage of health care expenditure on family income consistently declined from the lowest income bracket to the top income bracket from 32.83 percent to 6.15 percent respectively. This clearly points out the fact that the health expenditure has been one of the biggest burdens for the family who are in the lower income bracket, while it costs only 6.15 percent of the income for those in the highest income group.

The consistently declining percentage of health care expenses on family income from lowest to highest income group may be construed as the sensitivity of the poor family to health care shock. It would also be reasonable to conclude that it is the poor family who would be most benefitted from the facilities of the public health care schemes. The observation is justified by more or less stable average health expenditure that ranges between Rs.792.92 among the lowest income group to Rs.1325.41 in the highest

Figure 2: Health Care Expenses on Monthly Family Income among the different income groups - percent

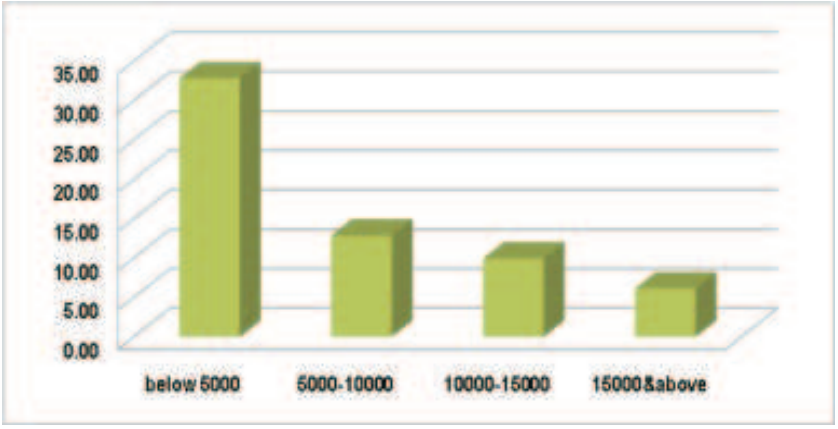


Table 2: Average Monthly Income and Household Health Care Expenditure in Aibawk RD Block - by different income groups

Income Group (Rs)	Ave. Monthly Health Care Expenditure (Rs)	Ave. Monthly Income (Rs)	Percentage of Monthly Health Expenditure
Below 5000	792.92	2415.33	32.83
5000-10000	796.15	6179.5	12.88
10000-15000	1061.11	10666.67	9.95
15000&above	1325.41	21568.65	6.15
All Classes	932.56	8135.32	11.46

Source: Field Survey, 2015

group, while the average income of the latter is more than 8 times the former. Further, the average requirement of Out of Pocket (OoP) health care expenditure of the 22 selected families who have availed cashless facility during last one year could be increased by 78.85 percent from Rs.949.2 to Rs.1697.64 by including the cashless facility from RSBY. Moreover, the calculated t-statistic for mean difference is found to be significant at 1 percent level. Thus, it is concluded that the public health care scheme being implemented in Mizoram has significantly reduced the requirement for OoP health care expenditure.

Conclusion

The Government of Mizoram is implementing two public health care schemes – RSBY and MSHCS successfully in terms of significantly growing enrolment. It is observed that the health care access of the beneficiaries have been expanded by significantly reducing the requirement for out-of-pocket payment for hospitalised treatments. Thus, the schemes have significant impact on health care access of those who are enrolled. However, the enrolment ratio is well below expected to a low of around 15 percent of the total population implying unsatisfactory coverage by these schemes. Even though the poor are the real target of the scheme, the progress of enrolment is not found to have significant bearing on the poverty incidence in rural areas. This implicates the situation where many poor households (BPL families) are excluded from the benefit of public health care scheme.

Better strategy that ensures increased enrolment is the immediate requirement in Mizoram. Effort may be taken to increase awareness levels of the target population on the nature and coverage of the scheme. Moreover, the enrolment period should be decided taking into consideration the peak and lean working seasons in rural areas. Enrolment must be done during the lean working season of the rural work force. To ensure enrolment of BPL families, it is necessary to institute automatic enrolment route

of all BPL families in the village. They may give their fingerprint and submit their photo later on in their convenient time.

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Analysis of Labour Welfare Schemes and Its Impact on Job Satisfaction: An Empirical Study

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Abstract

The aim of this research is to examine the impact of labour welfare measures on job satisfaction. This study will help the management to know that Labour welfare measures play a significant role in influencing the level of job satisfaction of employees. So it is some kind of investment for the success and the progress of the organization. For this study, the research design chosen is descriptive in nature and the sampling technique chosen is convenient sampling. The universe of the study includes Small Scale Industries (SSIs) within the Dehradun. A sample of 153 respondents was collected from the universe. The collected data after being coded were analyzed using Statistical Package for Social sciences Research (SPSS) and various statistical tests were applied based on hypotheses and matching variables. Results indicated that there is a significant impact of labour welfare measures on job satisfaction.

Keywords : Statutory measures, non-statutory measures, job satisfaction, employee efficiency etc.

Introduction

In the present fast changing work environment the human resource is considered as the most important asset for every organization. In spite of technological advancement, the role of human resource cannot be under estimated as success of any organization or work environment directly depends on efficient use of human resources. Maintaining the quality of such human inputs rises from proper organization and administration of welfare facilities can play a vital role in promoting better working conditions and living standards for industrial workers, and also increasing their productivity.

The concept of labour welfare is necessarily dynamic and has been interpreted in different ways from country to country and from time to time and even in the same country, according to social institutions, degree of industrialization and general level of social and economic development. Welfare includes provision of various facilities and amenities in and around the work-place for the better life of the employees .Labour Welfare includes under it "Such services, facilities and amenities as adequate canteens, rest and recreational facilities, sanitary and medical facilities, arrangements for the travel to and from and for the accommodation of workers employed at a distance from their homes, and such other services, amenities and social facilities including security measures as contributing to conditions under which workers are employed" Welfare activities influence the sentiments of the workers. When workers feel that the employers and the state are interested in their happiness, his tendency to grouse and grumble will steadily disappear.

Organizations provide welfare facilities to their employees to keep their motivation levels high. The employee welfare schemes can be classified into two categories viz., statutory and non-statutory welfare schemes. The statutory schemes are those schemes that are compulsory to provide by an organization as compliance to the laws governing employee health and safety. These include: canteen

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facilities, drinking water, proper and sufficient lighting , facilities for sitting , changing rooms , first aid appliances, latrines and urinals , washing places, spittoons, rest rooms. Non statutory welfare schemes may include: personal health care, flexi-time, employee assistance programs, harassment policy, employee referral scheme, medi-claim insurance scheme. The non statutory schemes differ from organization to organization and from industry to industry.

Welfare measures promote the efficiency of employee. The various welfare measures provided by the employer will have immediate impact on the health, physical and mental efficiency alertness, morale and overall efficiency of the worker and thereby contributing to the higher productivity. The International Labour Organisation (ILO) report refers to labour welfare as, "Such services, facilities and amenities as may be established in or in the vicinity of undertakings to enable the persons employed in them to perform their work in healthy, congenial surroundings and provided with amenities conducive to good health and high morale."

The Encyclopedia of Social Sciences has defined labour welfare work as, "The voluntary efforts of the employers to establish, within the existing industrial system, working and sometimes living and cultural conditions of the employees beyond what is required by law, the custom of the country and the conditions of the market."

Review of Literature

Various studies have explored the labour welfare facilities provided by organizations and determined its influence on employee motivation , job satisfaction and employee efficiency.

Khan (1981) declares that the lot of the worker is the mirror of the prosperity of a country. If industrial worker is sick, the industrial unit will be sick. To neglect the labour class is to neglect productivity because ultimately country's welfare lies in their welfare. In India, labour welfare measures become all the more important because of the reasons like low level of wages, irregular working hours, inability of trade union to undertake welfare work, to build up a stable labour force, to create a committed labour force, for creating a genuine welfare state, to create good psychological feelings and to create good moral habits.

Souza (2009) explained labour welfare and job satisfaction relationship in pharmaceutical companies and multinational pharmaceutical companies that all the eight labour welfare dimensions (education/ training, recreation, medical, subsidized loan, canteen, housing, safety and others) are positively and significantly correlated with job satisfaction at the 0.01 level. This implies that an increase in any of the labour welfare dimensions is likely to significantly increase job satisfaction of employees (N=201) in the pharmaceutical companies in Goa.

Laddha (2012) advocated that employee welfare facilities enable workers to live a richer and more satisfactory life. After employees have been hired, trained and remunerated they need to be retained and maintained to serve the organization better. Welfare facilities are designed to take care of the well being of the employees, they do not generally result in any monitory benefits to the employees nor are these facilities provided by employers alone, government and nongovernmental agencies and trade unions too contribute towards employee's benefits.

Sailesh (2012), in his research found that employee welfare measures increase the productivity of organization and promote healthy industrial relations there by maintaining industrial peace. Organizations provide welfare facilities to their employees to keep their motivation levels high. Business houses provide many such statutory and non statutory things policies to maintain satisfactory level of their employee. When they get better canteen facilities, good water to drink, clean restrooms, clean and hygiene wash rooms and bathrooms, regular medical checkups, health insurances, Employee assistance programme, grievance handling department, better facilities to sit or good work place gives employee a high level of satisfactory level. This gives an organisation to grow much faster.

Jegadeesan (2009) focused on the importance of improvement of labour welfare for increasing productivity of the organization. After Globalization as the working condition of employees have been continuously changing due to various factors, the organization are planning to implement various welfare and social security program to minimized the social, physical, psychological problems and mitigate the risk encountered by the employee in their work and social life. Welfare not only motivate employees but also influence the sentiments of workers when an employee feel that the management are interested in their wellness and happiness, his tendency to grumble will gradually disappear. Thus Welfare activities develop the physique, morality, intelligence and the standard of living of the worker and thus it improves the efficiency and productivity.

Singh (2008) observed that there is a positive relation between the welfare measures and man power productivity i.e. if the proper welfare measures are taken the productivity of the employees will increase and ultimately the profit of the organization as well as it enhances the morale and motivation of the employees which gives a positive impact on the efficiency level of the organization.

According to Khademi (2014), Organizational welfare has a positive impact on organizational performance including happiness, security, motivation and job satisfaction.

Objectives

Present research work has been taken up with the following objectives;

- To analyse the different labor welfare measures initiated by SSIs to motivate the employees engaged with SSIs in Dehradun
- To analyse the labour welfare measures of Small Scale Industries (SSIs) and its relationship with job satisfaction of workers associated with the SSIs in Dehradun.

Hypotheses

H_0: The various welfare measures (statutory and non statutory) have no significant impact on employee's job satisfaction.

H_1: The various welfare measures (statutory and non statutory) have significant impact on employee's job satisfaction.

Ressearch Methodology

Present research is a descriptive study based on primary as well as secondary data. To achieve the stated objective, and prove the hypothesis, a survey of 153 employees were conveniently selected from various Small Scale Industries(SSIs) in Dehradun. The secondary data were collected through various books, magazines, research journals and other relevant academic and other sources. Primary information was collected from various respondents of various Small Scale Industries located in Dehradun using survey method. A structured questionnaire was designed covering various aspects of labour welfare measures and employee perception towards its outcomes. The questionnaires comprised of two sections. The first section which focuses on the demographic data of the subjects includes age, gender educational qualification, tenure, income level and is measured on a nominal scale. The second section contains questions based on statutory and non statutory measures, their outcome and their influence on job satisfaction of employees. One hundred ninety questionnaires were circulated to employees of various Small Scale Industries located in Dehradun. 165 filled questionnaires were returned. After editing 153 questionnaires were found suitable and were taken for the study. After collection of data it was edited, coded, fed into SPSS software. Data was processed using SPSS 20 software and then systematically arranged, tabulated and appropriate analysis was carried out.Some of the statistical techniques and tools like mean, standard deviation, regression analysis and ANOVA test was carried out to check the significance of relationship among the variables under consideration. Table 1 indicates the demographic characteristics of the respondents.

Table 1. Demographic Characteristics of Respondents

	Categories	Frequency	Percentage
Age wise classification	20 -30 years	49	32
	30-40 years	71	46.4
	40- 50 years	12	7.8
	50-60 years	9	5.9
	60 years and above	12	7.8
Gender wise	Male	85	55.6
classification	Female	68	44.4
Marital status	Married	96	62.7
	Unmarried	57	37.3
Educational Qualification	Metric and below	13	8.5
	Under-graduate	27	17.6
	Graduate	47	30.7
	Post-graduate	55	35.9
	Professional qualification	7	4.6
	Other qualification	4	2.6
Income wise classification	Below 15000 pm	25	16.3
	Rs.15000 to Rs 25000 pm	48	31.4
	Rs.25000 to Rs 35000 pm	36	23.5
	Rs.35000 to Rs 45000 pm	16	10.5
	Rs 45000 to Rs 55000 pm	18	11.8
	Rs 60000 and above	10	6.5
Period of association	0-1 years	38	24.8
	1-5 years	43	28.1
	5-10 years	40	26.1
	10-15years	28	18.3

Source : Field survey

The analysis presented in the table 1 reveals that sample is dominated by the young respondents ranging in the age group of 30-40 years as it contributes 46.4 percent in the sample. Majority of the respondent are male and married. The sample is composed of educated person earning monthly income of Rs15000 to Rs.35000 per month. Most of the respondents are post-graduates. It has been found that majority of the employees are associated with the organization from 1-5 years. Study also reveals that there are very few employees who are associated with their present organization for more than 15 years.

Table 2. Awareness of Welfare Facilities Provided by Organization

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	147	96.1	96.1	96.1
No	6	3.9	3.9	100.0
Total	153	100.0	100.0	

Source : Field survey

The information presented in the above table indicates the respondent's awareness towards different welfare facilities provided to them from the organisation. It is observed that most of the respondents (96.1%) are aware of the welfare facilities provided by the organization. Very few respondents (3.9%) indicated that they are not aware with the different welfare measures and facilities provided by organization.

Table 3. Organization Getting Feedback From Employees Towards Welfare Measures

	Frequency	Percent	Valid Percent	Cumulative Percent
Often	32	20.9	20.9	20.9
Occasionally	115	75.2	75.2	96.1
Never	6	3.9	3.9	100.0
Total	153	100.0	100.0	

Source : Field survey

The information presented in the table 3 indicates the frequency of getting the feedback about labour welfare measure fro the employee working with SSIs in Dehradun. It is seen from the table 3 that maximum employees (75.2%) are of the opinion that organization gets feedback from employees, occasionally towards welfare measures. In comparison to this, 20.9% respondent are of the opinion that organization often gets feedback from employees towards welfare measures. It is significant to note that 3.9 percent respondent are of the opinion that organization never gets feedback from employees towards welfare measures.

Table 4. Method Of Determining Employee Welfare Requirement

	Frequency	Percent	Valid Percent	Cumulative Percent
Through observation	29	19.0	19.0	19.0
Through suggestion	9	5.9	5.9	24.8
Through performance	81	52.9	52.9	77.8
Through interviews	34	22.2	22.2	100.0
Total	153	100.0	100.0	

Source : Field survey

The information presented in the table 4 indicates the method of determining employee welfare requirement that management uses for getting the feedback about the labour welfare schemes and its effectiveness in generating the employees' job satisfaction. Study revealed that 52.9 percent employees are of the opinion that organization monitor labour welfare schemes and their effectiveness through employee performance standard. In comparison to these 22.2 percent employees feels that organization determines labour welfare measure by interviewing the employees. Little less than one fifth (19%) employees revealed that organization determines labour welfare through observation and only 5.9% employees are of the opinion that organization determines labour welfare measure on the basis of suggestions received from the employees associated with them.

Table 5. Welfare Measure and its Perceived Impact on Employees Motivation and Productivity

	Frequency	Percent	Valid Percent	Cumulative Percent
To a great extent	3	2.0	2.0	2.0
To a considerable extent	47	30.7	30.7	32.7
To some extent	69	45.1	45.1	77.8
To a little extent	34	22.2	22.2	100.0
Total	153	100.0	100.0	

Source : Field survey

Worker's productivity is a crucial factor for the development of the business organizations. Employee motivation and productivity may be enhanced with the help of labour welfare measures if implemented sincerely .Thus, an attempt was made to know the extent to which welfare facilities implementation increase motivation and productivity. Study revealed that 45.1 percent employees are of the opinion that welfare facilities implementation increase motivation and productivity to some extent. 30.7 percent employees feels that welfare facilities implementation increase motivation and productivity to a

considerable extent. 22.2 percent indicated to a little extent and only 2 percent employees are of the opinion that welfare facilities implementation increase motivation and productivity to a great extent.

Table 6: Mean, Standard Deviation and Reliability of Labour Welfare measures (Statutory and Non Statutory)

	N	Mean	Std. Deviation	Reliability
Non Statutory Welfare Measures				
Housing/quarters facilities	153	2.93	1.617	
Transportation facilities.	153	2.80	1.264	
Educational facilities	153	3.09	1.411	.652
Employees Co-operative Credit Societies facilities	153	3.12	1.328	
Medical facilities	153	3.01	1.288	
Maternity benefits	153	2.97	1.337	
Recreational facilities	153	2.71	1.281	
Social insurance facilities(gratuity, PF etc)	153	2.66	1.456	
Benevolent fund facilities	153	2.85	1.385	
Canteen facilities	153	2.94	1.304	
Creche facilities	153	3.15	1.356	
Insurance coverage against accidents on work place	153	3.14	1.310	
Clean urinals	153	2.87	1.296	.724
Statutory welfare Measures				
Clean and safe drinking water	153	3.06	1.354	
Availability of dustbin at workplace	153	2.86	1.254	
First aid facilities	153	2.84	1.280	
Measures to prevent the accident.	153	2.91	1.402	
Hygienic and subsidized food at canteen	153	3.37	1.385	
Shelter & rest room facilities	153	3.28	1.233	
Proper ventilation & lighting facilities	153	3.25	1.249	
Valid N (listwise)	153			

A descriptive statistics was carried out to know the relative importance of statutory welfare measure and non-statutory measure for motivating the employees and enhancing their job satisfaction. The above table shows the mean, standard deviation and reliability of the various statutory and non-statutory welfare measures. Non statutory welfare measures include Housing/quarters facilities, transportation facilities ,educational facilities, employees Co-operative Credit Societies facilities, medical facilities, maternity benefits, recreational facilities, social insurance facilities(gratuity, PF etc), benevolent fund facilities. Statutory welfare measures include Canteen facilities, creche facilities, insurance coverage against accidents on work place, clean urinals, clean and safe drinking water, availability of dustbin at workplace, first aid facilities, measures to prevent the accident., hygienic and subsidized food at canteen, shelter & rest room facilities, proper ventilation & lighting facilities. Reliability statistics was calculated of each statutory and non statutory welfare measure and found to be .724 and .652 respectively. Further it is observed that statutory welfare measure has scored higher mean of 3.37 as compared to mean of non statutory welfare measure of 3.12 that indicates that statutory welfare are more effective in generating employee job satisfaction and their motivation towards work.

Table 7:Employee Perception Towards Output of Labour Welfare Measures

	N	Mean	Std. Deviation
Creates efficiency towards work	153	4.35	.845
Improves physical &Mental health	153	3.6471	.67347
Improves morale	153	2.4248	1.31135
Increases Commitment towards work	153	3.9869	1.06984
Increases my work motivation	153	4.2288	.93539
Increases loyalty towards the work	153	3.8431	1.17046
Increases the standard of living	153	3.9542	1.37334
Valid N (listwise)	153		

An attempt was made to know the impact of labour welfare schemes on the different aspect of employee's performances and motivations. Outcome constructs includes: Creates efficiency towards work, Improves physical & mental health, Improves morale, Increases Commitments towards work, Increases my work motivation, Increases loyalty towards the work and Increases the standard of living. Descriptive statistics (Mean and SD) of each outcome was calculated using SPSS software. The information presented in the table 7 shows the mean of output of labour welfare measures. It is found that highest mean (4.35) is scored by first factor which states that labour welfare measures create efficiency towards work. It was followed by the variable like Increases my work motivation (mean=4.2288) and Increases Commitment towards work (mean=3.9869) higher standard deviation of the variable like Increases the standard of living (S.D=1.37334) indicates that respondents view on this is heterogeneous.

Table 8: Influence of Overall Welfare Measures on Employee Job Satisfaction

	Frequency	Percent	Valid Percent	Cumulative Percent
To A little extent	1	.7	.7	.7
To some extent	20	13.1	13.1	13.7
To a considerable extent	100	65.4	65.4	79.1
To a great extent	32	20.9	20.9	100.0
Total	153	100.0	100.0	

In any organisation, worker welfare measures are initiated by the organisation with the intention to increase their job satisfaction, enhance their motivation and commitment toward organisation. The information presented in the above table 8 revealed that 65.4 percent employees are of the opinion that there is an influence of overall welfare measures on employee job satisfaction to a considerable extent. 20.9 percent employees are of the opinion that there is an influence of overall welfare measures on employee job satisfaction to a great extent. 13.1 percent employees are of the opinion that there is a influence of overall welfare measures on employee job satisfaction to some extent.7 percent employees are of the opinion that there is an influence of overall welfare measures on employee job satisfaction to a little extent. Thus from the study, it is clear that majority of respondents are of the opinion that there is an influence of overall welfare measures on employee job satisfaction to a considerable extent.

Regression Analysis

Regression analysis was carried out to impact of labour welfare measure in generating the job satisfaction of the employees. In this study the simple linear regression analyses was used to assess the combine impact of welfare measure (ST and NST) on the job satisfaction of the employees. .

Table 9. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.888a	.789	.786	.27916

a. Predictors: (Constant), non statutory, statutory

The information presented in table 9 shows the R, R-Squared, Adjusted R Square and Std Error.R denotes the correlation between observed and predicted values of the dependent variable. The value of R ranges from -1 and 1. Small values indicate that the model does not fit the data well. In this case, R = .888. The above table shows the model summary and overall fit statistics. We find that the adjusted R^2 of our model is 0.786 with the R^2 = .789 that means that the linear regression explains 78.9 percent of the variance in the data.

Table 10. ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	43.657	2	21.828	280.092	.000b
	Residual	11.690	150	.078		
	Total	55.346	152			

a. Dependent Variable: job satisfaction

b. Predictors: (Constant), non statutory, statutory

The above table 10 shows the F-test .The F-test statistic is the regression mean square divided by the residual mean square. The linear regression's F-test has the null hypothesis that there is no linear relationship between the two variables With F = 280.092 and 152 degrees of freedom the test is highly significant, thus we can assume that there is a linear relationship between the variables in our model.

Table 11. Regression Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.346	.157		8.555	.000
	Statutory	.862	.037	.885	23.361	.000
	Non statutory	.023	.036	.025	.649	.517

a. Dependent Variable: job satisfaction

According to the Table 11 regression equation of job satisfaction is:
Job satisfaction= 1.346+.862(statutory welfare measures) +0.23 (Non statutory welfare measures)

Discussion

According to the results of descriptive statistics and regression analysis, it was found that welfare facilities positively correlated with job satisfaction of the employees. The findings of this research study shall be very important on the theoretical as well as practical scenario. The findings of the study are important to improve job satisfaction of the employees in the SSIs. The perceived output of labour welfare measures are as follows: Creates efficiency towards work, Improves physical & mental health, Improves morale, Increases Commitment towards work, Increases work motivation, Increases loyalty towards the work, Increases the standard of living. From the study on labour welfare measures certain points have been identified that organization gets feedback from employees, occasionally towards welfare measures and also monitor labour welfare schemes and their effectiveness through employee performance standard in SSIs. Majority of respondents believed that welfare facilities implementation increase motivation and productivity. Accordingly to our study welfare facilities positively correlated

with job satisfaction of the employees. The perceived output of labour welfare measures (Statuary and Non statuary welfare scheme) has different impact on employee's job satisfaction.

Conclusions and Suggestions

With the advent of industrial revolution in India, the migration of rural population to the urban centres and the industrial belts caused socio-economic problems for thousands of persons having been uprooted from the rural moorings. The industrial workers needed welfare services to be provided to them in their surroundings, so as to enable them to adapt themselves to the fast changing economic environments. Employee welfare measures are initiated to strengthen manpower both physically and mentally. The study of various welfare measures brings into light that the present measures taken by the Small Scale Industries. The improvement in working condition and basic amenities that come under statutory welfare means such as Canteen facilities, creche facilities, insurance coverage against accidents on work place, clean urinals, clean and safe drinking water, availability of dustbin at workplace, first aid facilities, measures to prevent the accident, hygienic and subsidized food at canteen, shelter & rest room facilities, proper ventilation & lighting facilities are more effective in building the morale and increase the job satisfaction of the employees. Therefore, to improve the level of the job satisfaction of employees, researcher suggests that organization must often get feedback from employees, towards welfare measures as employee welfare facilities enable workers to live a richer and more satisfactory life, increase the productivity of organization and promote healthy industrial relations.

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