



# The Journal of Indian Management & Strategy

*Indexed/Abstracted: J-Gate, EBSCO Discovery, Summon (Proquest), Google Scholar, Indian Science Abstracts, Indian Citation Index (RII-0.016), InfoBase Index (IB Factor 2016 - 2.6) Thomson Reuters, SJIF Impact Factor 2016-4.756, Cosmos Impact Factor, Approved by UGC vide S.No. 28603*

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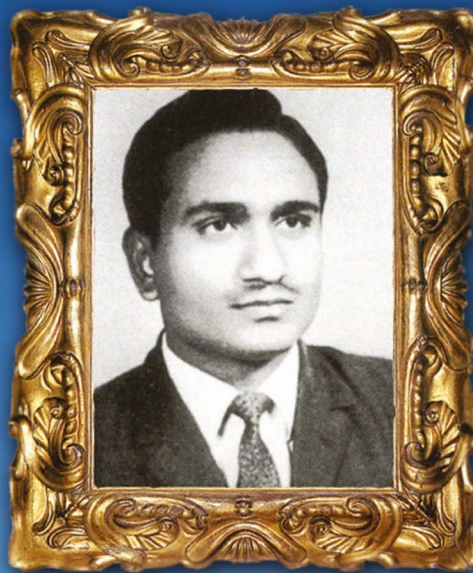
◀ Research

◀ Book Review

# A TRUE VISIONARY

*“You see things and you say **Why?** But I dream of things that never were and say **Why not?**”*

- George Bernard Shaw



Shri Jagannath Gupta  
(1950 - 1980)

*Also a true visionary...who dared to dream!  
He lives no more but his dreams live on....and on!*

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*And more dreams to come!*



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Available Online at www.indianjournals.com

RNI No. 64562/96

Online ISSN No: 0973-9343

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## Editor's Desk

At the click of the button we are able to buy products of our choice. The ease and delight of purchase in our comfort zone that e commerce provides is immense. In India the growth of business in online selling had been slow but the digital transformation boost given by Prime Minister Modi has brought about a rapid expansion in the number of mobile phone users from small cities and remote parts of India. For such people, e commerce became a boon as they are able to get branded products shipped to their home without having to travel anywhere. They are also experiencing the joys of ordering products at ease. This has brought about an escalated growth in the business of large companies like Amazon, Flipkart and Snapdeal. The Brand Equity Foundation of India has predicted a growth of the Indian e commerce business to be more than 50 billion in 2018.

This shows the popularity of the e commerce companies. But now it is time to look back and take a feedback. What have these companies gained? Surprisingly, the Business Standard Newspaper highlighted for the first time in 2016 that the ecommerce start-ups were actually losing money rather than making a gain and that the loss amounted to Rs. 7884/- crores in the financial year 2015. The Financial Express emphasised that the large giants like Amazon, Flipkart and Paytm were responsible for 70% of total loss of Rs. 10,670/- crores.

This is quite alarming! This turmoil brought about new energy in these companies to improve their sales. So a new strategy was adopted by them to minimize their losses. The companies began to compete with each other trying to gain from higher turnovers. They indulged in price wars. The Times of India reported that while the revenue of the e commerce companies has increased so have the costs of marketing, advertising and discounts, so the companies are working on very thin margins. The consumers gained but the companies began to have further losses. Amazon and Flipkart worked on customer satisfaction and trust in the brand. This gave them an edge over Snapdeal which was stated to rank as number one e commerce company but it had a downfall and is now ready to be sold.

So now what is the future of e commerce companies? Online purchases are bound to stay through secure payment gateways as consumers have now got a taste for it. The companies have to stay abreast with new strategies. Competition will continue, Social networks like facebook, twitter, linkedin, instagram will play a major role in creating an interest in the products and there will be a large number of mergers and amalgamations and partnerships. Flipkart bought Myntra and Jabong has been devalued and was bought over by Flipkart. Thus the big fish will buy the small fish or the devalued companies and the race will continue.

(Preeti Singh)

As an active practitioner and scholar in the field of management, you must have experienced the need for a journal with conceptual richness, which is normally missing in various business magazines. In response to this need, Strategic Consulting Group, a team of competent and dynamic professionals, publishes a management journal entitled **8M**.

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  - Conclusion
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# NEXUS BETWEEN HRM PRACTICES AND EMPLOYEE'S PERFORMANCE: CASE OF MICROFINANCE INSTITUTIONS

**Waqas Amin\* Abdul Rauf\*\* Zeeshan Fareed\*\*\* Qamar UZ Zaman\*\*\*\***

*The study is envisioned to emphasize the importance of Human Resource Management in business and commercial fields. The other significant intention for proceeding in this particular topic is the potential opportunities for the employees in the particular market regarding the analysis of their cerebral and scholarly administrative skills that can be enhanced and improvised according to the need of the hour in the competitive market for professionals. The organizations not proficient in withstanding the satisfaction graph of the employees are often left with fewer margins for error that in result becomes a question mark for the good will of the company and its reputation in the market. Consequently, the increasing importance of HRM and its involvement of practices in the organization to make employees engaged, retained and happy with the organization it is chosen for in-depth study and further understanding regarding its impact on the organization. The policies of HRM discussed in the study includes recruitment and selection, training and development, incentive compensation, performance appraisal and employee participation the dependent variable has been explained cautiously and scrupulously by reconnoitering the determinants, impact of its factors and the requirement of HRM policies in the organization for growth to perform on economic and financial levels.*

**Keywords:** Employees, Management, Economics, HRM, Institutions.

Human Resource Management is a crucial department in almost all organizations. The Human Resource Managers are specifically recruited for the sake of establishment and enforcement of HR policies in the organizations. The HR policies of an organization are cohesive with the strategic plans to accomplish the mission of the company. These policies include the efficient recruitment and selection of potential employees, training and introduction to the organizational procedures and policies, the involvement of employees, incentives and rewards for excellent performance, and team work growth (Wright & McMahan, 1992). The main objective of the study is the stimuli on performance and motivation elements of employee by human resource policies implementation (Boudreau, 1991). The implementation of HR policies is most effective and efficient in the services industry, where direct customer interaction is a mandate and with the expert level of skills and HR policies only the successful business can be run. The knowledge, competitiveness and skills of present and potential employees can be polished with customized HR policies. These policies help to gear up the motivational level of employees and retention of skilled and worthy staff in an organization (Kleiner, 1990). The implication of these HR polices increase and boosts the efficiency and effectiveness of the existing and potential employees (Jones & Wright, 1992). A squabble is recognized by a group of researchers stating that the most imperative asset of an organization is the

human assets. The strategic plan of an organization can be executed, developed and created by the use of HR policies (Begin, 1991; M. E. Porter, 1985). It is a most consented conclusion on the study based on human resource policies that if these policies are incorporated with the economic and competitive based polices of the organization in the optimistic and positive approach then the company or organization will be having a competitive advantage over the years in the market (Schuler, 1992).

### Objectives of the Study

1. To analyze how the HR polices can be implemented and executed in the respective organization via exploring and understanding.

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2. To study the impact of motivation and enactment on the employees via HR Policies.
3. To study the relation of employee performance and the HR practices.
4. To do an empirical analysis regarding the employee's performance and the HR policies and study their relationship.

### **Significance of the Study**

1. The benefit of this study will be specifically for the microfinance institutions in regards of the implication of HR policies in the organization and contribution towards the environment of work and in general for the HR professionals.
2. The study will assist the HR workforce to analyze themselves and get a guidance regarding their fortes and flaws in the organization.
3. The research is beneficial for the HR personnel to in order to analyze the lacking and the implication of the advanced and customized polices to make a better working environment.

## **I. Review of Literature**

### **HRM Practices and Employees' Performance**

The study based on theory, the opinions of the HR professional and the literature based on the researcher work used in this study is having a mutual consent and accentuate on a finding that if the HR policies are used in a proper way, that is they are executed and followed up in a proper manner then with no qualm it can be claimed that it will lead the company to financial and economic development and it will trigger the performance level of the organization (Huselid, 1995). With the evolution in time, believe and awareness has increased multiple times for the phenomenon that an individual performance leads to the enhancement in the overall performance of an organization (Huselid, 1995). It has been believed by many researchers that if the employees of an organization are integrated towards the enhancement of organizational performance then it will ultimately lead to idiosyncratic and unique base of the competitive advantage of the organization. And to achieve this unity of overall performance by the employees the HR policies are used. And this unity factor cannot be replicate by the competitors of organization in the market (Wright & McMahan, 1992).

### **Recruitment and Selection**

The policy of recruitment provides a fair opportunity to the qualified and eligible applicants to be a potential employee of an organization. These polices are based on the lawful, consistent and authentic procedures for

selection (Huselid, 1995; Macduffie, 1995). The test done regarding the trustworthiness and legitimacy of the procedures shows the findings of positive impact on the abilities and expertise of the potential employees of the firm (Terpstra & Rozell, 1993). There is a greater sense of reliability and being selected on merit in the employees when they are recruited through these procedures (Huselid, 1995). The basic purpose of selection and recruitment procedures is to hire the applicants with maximum potential and meet the standards of HR at the minimum cost. This process of selection and recruitment is based on the 4 levels. First the announcement of the new job via printed media and online portals. Second the applications of the interested candidates are received by the organization. Third with the help of screening some candidate's expected to meet the maximum criteria levels are short listed. Fourth is the further screening of the short listed candidates that ends up the process of selection and recruitment (Chapman & Webster, 2003).

### **Training and Development**

Different modes of training including, classroom, formal, informal, on the job and mentoring are utilized to enhance the motivational level and abilities of employees (Huselid, 1995). The HR uses the training methods to enhance the skills, knowledge, capabilities and the skills of the employees to react in a particular or complex situation. In other words, it can be interpreted that training enhances the skills and abilities of the employees in an organization (Delaney & Huselid, 1996). Training is an important phase or part of HR policies as it is used to enhance the performance of individuals or employees keeping in mind the objective of overall development of an organization (Gritz, 1993). The employees experience numerous trainings that are vital and consist of updated methods to increase the performance level required in their jobs (Blume, Ford, Baldwin, & Huang, 2010). Training now days used as a competitive tool in the market to gain edge over the contenders. Training is considered to be an essential tool of HR policies as it is considered as polishing the skills and identify the abilities of the employees (Ng & Siu, 2004).

### **Incentive Compensation**

Incentive compensations are used by the HR personnel to motivate the employees to excel in their performances and provide their best. Employees can also get attracted by the different promotion prospects in organization. This mode will make an employee work harder and perform outstanding for the sake of the organization they are working in (Masood, 2010). The promotion and

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incentive drill will make the employees more enthusiastic about the new opportunities ultimately resulting in the overall development and growing performance skills of an organization (Pfeffer, 2007). Compensation can be monetary or non-monetary depending on the organization and scenario that are paid to the employees in the recognition of their hard work, transparency and devotion towards the organization. As a result, the motivational level of the employees increase that leads to increase in the performance, efficiency and effectiveness of employees (Lawler & Worley, 2006; Milkovich & Newman, 1996).

There are multiple factors on the base of which it is decided that who should be rewarded and compensated. The factors may vary from organization to organization like, performance level, behavior with colleagues and managers and approach within the workplace environment (Masood, 2010).

The compensation practice can be done by the HR managers to retain the efficient and capable workforce within the organization, by increasing the level of job satisfaction of employees. With compensation method the employees will feel more responsible and devoted towards the organization, reducing the turnover ratio of employees and sense of responsibility increase making employees invest their maximum efforts for organization (Masood, 2010). The revenues of the company will increase due to enhanced performance. The compensation status can be varied depending on the nature of performance, knowledge, skills, trainings and experiences of the employees (Ortín-Ángel & Salas-Fumás, 2007).

### **Employee Participation**

One of the most common policy under the HR department is the involvement of employees in the organizational practice. The employees are more encouraged to participate in the decision making process via employee participation policy (Arthur, 1994). It has been mentioned by many researchers that contribution of employees is vital in the development of any organization. This policy ensures employees that they are a valuable asset of the organization and company want to retain its human capital asset within the organization and also expects the best possible results of the employees towards the individual and overall performance of the company (Arthur, 1994; Huselid, 1995). The point of employee involvement is defined by researchers in a number of ways like this process includes a little or moderate authorization is provided to the employees in the work to have control over it and also some includes the control on the work

circumstances and scenarios (Heller, Pusic, Strauss, & Wilpert, 1998).

There will be more effective and efficient organization when the employees are allowed to involve in the management process like decision making (Masood, 2010). The factor or process of involvement of the employee in the company is used as mode or way of increasing the loyalty level of the employees towards the organization, which consequently result in the improved and enhanced performance of the employees (Tesluk, Vance, & Mathieu, 1999; VanYperen, Berg, & Willering, 1999). It has been proved and focused in multiple studies and researches that the involvement of employees via the allocation of control and power leads to the high level of satisfaction and improved performances of employees.

### **Performance Appraisal**

The other important practice in HRM is the appraisal of the employee performance. This process is done aiming the evaluation of the employee performance on job based on some points like the comparison of the performance with the criterion that are established by the organization (Pfeffer, 1995). After the comparison is done, the results are arranged and points are taken from them to give feedback to the employee regarding the lacking and hoe the employee can rectify or improve his performance (Becker & Huselid, 2006). This mode of HR is basically used to identify the employees who should get promoted and also the termination of employees who failed to show improvement (Singh, 2000). The vital purpose of this policy is to identify the actual capabilities of the employees that how much potential he is having and also identifies the modes and ways to increase and enhance the competencies of employees (Masood, 2010). This practice depicts the base role of HR that how the employees to be managed so they can give their optimal results for the development of organization. It enables the employees to have a clear view of what is required by the organization from them and how they can perform in a way that is beneficial for them and for the organization as well (Singh, 2004).

### **Employee Performance and Organizational Success**

The satisfaction of employees is most important thing that is used to keep the best eligible employees in the organization and also motivates them to give their best performance for the development of an organization (Pfeiffer & Veiga, 1999). The factors of employee motivation and employee satisfaction are in direct proportional and in parallel relation of each other (Hoque, 1999). The greater the motivations level the

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increased level of employee performance and vice versa. If the employees of the organization are motivated, as a result there will be economic and financial growth of the company (Rathnaweera, 2010). The research study has the focus on the influence of the HRM practices on the performance of an employee. It has been discussed that after the HRM practices are implemented by the organization it is also important for the employees to abide by and practice them (Edgar & Geare, 2005).

With the use of competitive rewards and incentives and with the help of appraisal the organization can increase the level of satisfaction among employees by retaining them. When the employees are considered satisfied then they will be motivated to work for the company benefit and also try to achieve the goals and benefits of the organization (Syed & Yan, 2012). It has been discussed in many previous research studies the attitude of employees have a prominent impact on the performance of an organization. The HRM policies can affect the attitude of the employees as it is directly connected to the abilities, skills and motivation and behavior of the employees (Sujeewa, 2011). The positive attitude of the employees towards the organization leads to a positive impact on development of organization (Rathnaweera, 2010).

#### **Hypotheses (Recruitment and Selection Policies)**

H1: There is a significant and positive relationship between recruitment & selection procedures and employee performance

#### **Hypotheses (Training and Development)**

H2: There is a significant and positive relationship between employee performance and training and development programs.

#### **Hypotheses (Performance Appraisal)**

H3: There is a significant and positive relationship between performance appraisal and performance of employees.

#### **Hypotheses (Incentive Compensation)**

H4: There is a significant and positive relationship between incentive compensation and employee performance.

#### **Hypotheses (Employee Participation)**

H5: There is a significant and positive relationship between employee participation and employee performance.

## **II. Research Design & Methods**

### **Survey Instrument**

The data collection for this study is done via questionnaire extract from the earlier studies. The

questionnaire is composed of 65 questions that are divided among all the HRM practices discussed in the research paper and the dependent variable, employee performance is having 15 questions. The mode and the objects of the questionnaire are espoused by the work of (Masood, 2010). The questionnaire is structured based on the closed ended mode of questions and the instrument used for scaling is called the LIKERT scale.

### **Sample & Sampling techniques**

The target population for the study is the employees of the microfinance institutions. Sample size selected is of 400. The sample chosen for the data collection is with the help of the simple and convenient random technique of data sampling.

### **Subject**

The unit of study is the microfinance institutions and the precise concentration is on the microfinance institutions of Karachi, Pakistan. The subject is the member or the thing on which the study is based. In our study the employees of the microfinance institutions of Karachi are the subjects irrespective of the fact if they are officers, managers or other employees of the microfinance institutions. The education stream of the respondents is post-graduation, but there are also other education streams like graduates in commerce, banking and finance and other professional diplomas and degrees like ACCA, CMA, CA and ICMA.

### **Data Collection Procedures and Data Analysis Techniques**

The data used in the study was collected by visiting the microfinance institutions in person and distributing the questionnaires to the personnel of the microfinance institutions on all levels either employee is a manger or not and also assisted them in the proper and accurate understanding and filling of the instrument. The techniques used for the analysis of data in this study will be regression approach and Pearson correlation and the test of reliability will be done to conclude chronbach' Alpha. Later these techniques executed in the SPSS 20 for the findings, that will be interpreted for analysis and drawing the conclusions.

### **Data Screening**

The total sample of 400 questionnaires was used that was distributed in the microfinance institutions in Karachi and later these were collected through in person visits to the microfinance institutions. Out of the total sample of 400, only 380 were in good quality and filled properly with care. The other 20 were having incomplete values and around 8 were missing due to the casualness of the

respondents, the overall 20 samples were not in condition to be analyzed.

### III. Results and Analysis

Table 1 is depicting the demographical analysis of the respondents including the qualification, gender and the distribution in percentage in the research study. Out of the total 400 subjects the percentage for the male respondents was 296 i.e., 77.9 % and the percentage of the female respondents was 22.1% i.e., 84 respondents. Out of total 37 respondents were having the degree of graduation of 2 years i.e., 9.7% and 4 years' graduation i.e., 10.8%. The majority of the respondents were highly educated holding post-graduation degree i.e., 74% and the remaining 5.5% was holding the other professional degrees.

#### Reliability Analysis

Table 2 depicting the overall reliability factor of the instrument. The questionnaire is consisting of 65 items. After using the 380 samples for the analysis the chronbach's alpha is 0.941 for the questionnaire that is a good value from the view point of research. The chornabchs; alpha for the social sciences research studies should be 0.70. It means it should be equal or more than the benchmark value. In the respective study the value is more than 0.70 that is showing the high quality and reliability and internal consistency of the questionnaire.

#### Correlation Analysis

Table 3 is showing the correlation values among the independent and dependent variables of the study. The recruitment and selection (RS) and training and development (TD) are having 0.657 value as per the Pearson correlation, that depicts there is positive significant relation between TD and RS. The correlation values of recruitment and selection (RS) and performance appraisal (PA) is 0.613 at 1% significance level, depicting these both (PA and RS) practices of HRM are having a positive relationship with each other. The value is 0.493 for the Pearson correlation model at 1% significance level, showing the positive significant relation of RS and EPA. Like other HRM practices there is also positive and significant relation IC and RS considered highly significant with the value .530\*\*.

The relation between RS and EP is significant with the value of 0.522 at 1% significance level. The PA and TD are having the value of 0.576 at 1% significance level. The IC, EPA and TD are having positive significant relationship. The correlation values of the TD and EPA are .532\*\* and for TD and IC value is 0.602\*\*. The correlation values of TD and EP are also significant

positive at 0.559\*\*. The relation of EPA and PA is strongly positive; correlation value is .633\*\*. The value for IC and PA is 0.721\*\* equally and strongly positive. The correlation value for EP and PA is 0.542\*\*. The execution of the PA in a proper manner can increase the efficiency of employees and reduce the turnover as shown in the value -0.287\*\*. The correlation value of IC and EPA is 0.707\*\* positive and significant. The impact on EP of EPA is significant and evidenced with the value 0.623\*\*. The correlation value of EP and IC is 0.621\*\* positively significant.

#### Descriptive Statistics

Table 4 demonstrates Descriptive statistics analysis. Respondent's total number in the study and their responses in the study regarding the variables are included in the table. The max and min values of the variables, their standard deviation and mean result are also shown in the table.

#### Regression Analysis

Table 5 shows Regression analysis that has been done SPSS. With the independent variable of employee performance, the analysis shows that the RS, IC, TD and EPA are having the significant relationship with EP. These 4 independent variables are prognosticators of the dependent variable EP. The column of R2 in the table depicts the change in the dependent variable due to the independent variable. The R2 value for the study is 51.2%. The adjusted R2 is considered more accurate that is 50.3%. The table of mode summary is having the significant value 0.000. The value is also predicted as p value and it depicts the goodness of the fit test of the study model. The value should be < 0.05 for the significant result. In this study the result is 0.00 < 0.05 that concludes that the model used is fit or good.

Table 6 describes the regression coefficients. Column with heading coefficients is having the beta values and coefficients of the regression. The other column consists of significance level or value. The p- value for each variable (independent) is shown in this column. The interpretation for the p value is that if the value < 0.05, then variable is having the significant positive relationship with each other. As per the table and the results given above the p value for the TD, RS, EPA and IC < 0.05 depicts that there is significant relation of them with EP.

### IV. Conclusion

The study is aimed to lead for the investigation of the impact of HRM department in the organization and the use of the HRM policies and practices (independent

variable) on the performance of the employees (Dependent Variable). The theme of the study was to study the impact on the services a based sector, which is why the microfinance institutions located in Karachi were, chose as the target for the study. It is studied and proved in the previous researches that the understanding and implication of the HRM policies in an organization are vital for the development and improvement of the organization. It has been revealed in combination of the previous and the current study that the major voluntary cause of the employee turnover are the three basic practices of the HRM including training and development, incentive compensation and employee participation. The successful management of any organization has to take care of the needs of their employees by providing them incentives and induce bonus and rewards along with the salary to keep them retain in the organization. This is more beneficial for the organization that they can retain the most efficient and effective workforce for the future enhancement and development of the company.

The instrument was adopted in order to obtain and consider the views of the participants to reconnoiter theories that either upkeep development in the subject of human resources management practices or not. The 65 items were developed in the instrument to cover all the variables. The SPSS was used for the application of the data collected from the instruments. The values and findings were interpreted and it was found that most of the interpretation depicts the support of the earlier study. The findings showed a clear interpretation of the significant and positive relationship of the independent variables with the dependent variable.

## References

Arthur, J. B. (1994). Effects of human resource systems on manufacturing performance and turnover. *Academy of Management journal*, 37(3), 670-687.

Barney, J. B. (1995). Looking inside for competitive advantage. *The Academy of Management Executive*, 9(4), 49-61.

Becker, B. E., & Huselid, M. A. (2006). Strategic human resources management: where do we go from here? *Journal of management*, 32(6), 898-925.

Begin, J. P. 1991. Strategic employment policy: An organizational systems perspective. En-glewood cliffs, Nj; Prentice Hall.

Blume, B. D., Ford, J. K., Baldwin, T. T., & Huang, J. L. (2010). Transfer of training: A meta-analytic

review. *Journal of Management*, 36(4), 1065-1105.

Boudeau, J. W. 1991. Utility analysis in human resource management decisions. In M. D. Dunnette & L. M. Hough (Eds.). *Handbook of Industrial and organizational psychology* (2d ed.). vol. 2: 621-745. P: alo Alto Ca: Consulting Psychologists Press.

Chapman, D. S., & Webster, J. (2003). The use of technologies in the recruiting, screening, and selection processes for job candidates. *International Journal of Selection and Assessment*, 11(2-3), 113-120.

Delaney, J. T., & Huselid, M. A. (1996). The impact of human resource management practices on perceptions of organizational performance. *Academy of Management journal*, 39(4), 949-969.

Edgar, F., & Geare, A. J. (2005). Employee voice on human resource management. *Asia Pacific Journal of Human Resources*, 43(3), 361-380.

Gritz, R. M. (1993). The impact of training on the frequency and duration of employment. *Journal of Econometrics*, 57(1-3), 21-51.

Heller, F. (1998). Playing the devil's advocate: Limits to influence sharing in theory and practice. *Heller, F., Pusic, E., Strauss, G. & Wilpert, B. Organizational participation: Myth and reality*, 144-189.

Hoque, K. (1999). Human resource management and performance in the UK hotel industry. *British Journal of Industrial Relations*, 37(3), 419-443.

Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of management journal*, 38(3), 635-672.

Jones, G. R., & Wright, P. M. (1992). An economic approach to conceptualizing the utility of human resource management practices. *Research in personnel and human resources management*, 10, 271-299.

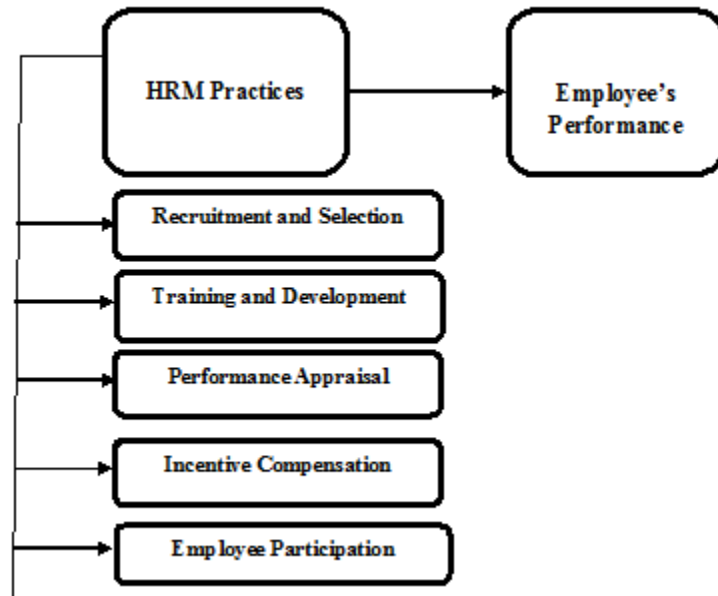
Lawler, E. E. (2005). From human resource management to organizational effectiveness. *Human resource management*, 44(2), 165-169.

Klelner, M. M. 1990. The role of Industrial relations in firm performance. In J. A. Fossum & J. Mattson (Eds.). *Employee and Labor relations: 4.23-4.43*. Washington, DC: BNA Press.

MacDuffie, J. P. (1995). Human resource bundles and manufacturing performance: Organizational logic and flexible production systems in the world auto industry. *Industrial & labor relations review*, 48(2), 197-221.

- Masood, T. (2010). *Impact of human resource management (HRM) practices on organizational performance: a mediating role of employee performance* (Doctoral dissertation, MOHAMMAD ALI JINNAH UNIVERSITY ISLAMABAD).
- Ng, Ying Chu, and Noel YM Siu. "Training and enterprise performance in transition: evidence from China." *The international journal of human resource management* 15.4-5 (2004): 878-894.
- Ortín-Ángel, P., & Salas-Fumás, V. (2007). Compensation dispersion between and within hierarchical levels. *Journal of Economics & Management Strategy*, 16(1), 53-79.
- Pfeffer, J., & Veiga, J. F. (1999). Putting people first for organizational success. *The Academy of Management Executive*, 13(2), 37-48.
- Pfeffer, J. (2007). Human resources from an organizational behavior perspective: Some paradoxes explained. *The Journal of Economic Perspectives*, 21(4), 115-134.
- Porter, M. E. (1985). *Competitive advantage: creating and sustaining superior performance*. 1985. New York: FreePress.
- Rathnaweera, R. R. N. T. (2010). Do HRM practices impact employee satisfaction, commitment or retention? :(empirical studies of Sri Lankan public sector banks).
- Schuler, R. S. (1992). Strategic human resources management: Linking the people with the strategic needs of the business. *Organizational Dynamics*, 21(1), 18-32.
- Sujeewa, W. W. A. N. (2011). Relationship between Human Resource Management Practices, Non-Managerial Employee Intention to Turnover in Garment Industry in Sri Lanka. In *International Conference on Management, Economics and Social Sciences (ICMESS'2011)*, Bangkok: December.
- Syed, N., & Yan, L. X. (2012). Interdisciplinary journal of contemporary research in business.
- Terpstra, D. E., & Rozell, E. J. (1993). The relationship of staffing practices to organizational level measures of performance. *Personnel psychology*, 46(1), 27-48.
- Tesluk, P. E., Vance, R. J., & Mathieu, J. E. (1999). Examining employee involvement in the context of participative work environments. *Group & Organization Management*, 24(3), 271-299.
- VanYperen, N. W., Berg, A. E., & Willering, M. C. (1999). Towards a better understanding of the link between participation in decision-making and organizational citizenship behaviour: A multilevel analysis. *Journal of Occupational and Organizational Psychology*, 72(3), 377-392.
- Wright, P. M., & McMahan, G. C. (1992). Theoretical perspectives for strategic human resource management. *Journal of management*, 18(2), 295-320.
- Yanadori, Y., Sturman, M. C., Milkovich, G. T., & Marler, J. H. (2002). Organizational Pay Mix: The implications of various theoretical perspectives for the conceptualization and measurement of individual pay components.

**Figure 1: Theoretical framework and hypothesis development.**



**Table 1: Respondents' Profile.**

Demographics	Category	Frequency	Percentage
Gender	Male	296	77.9
	Female	84	22.1
Qualification	Graduation (2 years)	37	9.7
	Graduation (4 years)	41	10.8
	Masters	281	74
	Others	21	5.5

**Table 2: Overall Reliability of Instrument.**

Chronbach's Alpha	No. of Items
.941	65

**Table 3: Correlation Matrix.**

Variables	RS	TD	PA	EPA	IC	EP
1: RS	1					
2: TD	0.657**	1				
3: PA	0.613**	0.576**	1			
4: EPA	0.493**	.532**	.633**	1		
5: IC	.530**	0.602**	0.721**	0.707**	1	
6: EP	0.554**	0.557**	0.542**	0.623**	0.621**	1

\* Significant at 0.05 level of significance  
 \*\* Significant at 0.01 level of significance

**Table 4: Descriptive Analysis.**

Variables	N	Minimum	Maximum	Mean	St. Deviation
1: RS	380	14	52	35.63	6.83616
2: TD	380	13	45	34.3321	6.78386
3: PA	380	17	44	34.38	5.61415
4: EPA	380	15	45	31.3258	7.13216
5: IC	380	12	46	31.6741	7.62472
6: EP	380	10	45	35.2176	5.56681

**Table 5: Model Summary.**

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	R <sup>2</sup> Change	F	Sig.
1	.716	.512	.503	.007	76.841	.000

**Table 6: Coefficients.**

Model	Independent Variables	Coefficient	Std. Error	t-value	Sig.
1	EPA	.228	.046	4.696	.000
2	RS	.197	.047	4.065	.001
3	IC	.225	.048	4.636	.000
4	TD	.136	.053	2.703	.031
	PA	.197	.056	3.434	.002

**Table 7: Testing Hypothesis.**

Hypothesis	P value	Results
There is a significant and positive relationship between recruitment & selection procedures and employee performance.	.001	Accepted
There is a significant and positive relationship between employee performance and training and development programs.	.000	Accepted
There is a significant and positive relationship between performance appraisal and performance of employees.	.002	Accepted
There is a significant and positive relationship between incentive compensation and employee performance.	.000	Accepted
There is a significant and positive relationship between employee participation and employee performance.	.000	Accepted

**Table 8: List of Microfinance institutions included in the sample of the study.**

Advans Pakistan Microfinance Bank	AMFB	Akhuwat
AMFB	AMRDO	ASA Pakistan
Asasah	Baldarie	BEDF
BRAC - PAK	Buksh Foundation	CSC
DAMEN	DEEP Foundation	FFO
FINCA Pakistan	FMFB - Pakistan	GBTI

# STUDY OF IMPACT OF UNRELATED PRODUCT DIVERSIFICATION ON FINANCIAL PERFORMANCE OF FIRMS IN INDIAN PERSPECTIVE

**Dina Nath Jha Dinker\***

*The present paper analyzes top five diversified firms in terms of revenue that entered into unrelated businesses between FY 2000-01 and FY 2009-10, from each of the top five industries in terms of revenue. The financial performance is measured in terms of liquidity, profitability, efficiency, and solvency risk. Current ratio is used as a measure of liquidity position, Return on Equity (ROE) is used as a measure of profitability, Total Asset Turnover is used as a measure of efficiency, and Debt-to-Equity (D/E) ratio is used as a measure of solvency risk. To study the impact of unrelated diversification on financial performance, average of post-diversification five years value of financial measures are used. This study was conducted on small size of sample. This study could not find any conclusive evidence that unrelated diversification improves liquidity position, profitability, efficiency or solvency risk level of the firms.*

**Keywords:** Conglomerate, Corporate Performance, Financial Performance, Product Diversification, Unrelated Diversification.

Diversification has been a popular strategy to create competitive advantage and improve financial performance. A firm may choose to diversify in related fields or in unrelated fields. By relationship of different operating products, diversification strategy of a firm can be of four types:

1. Horizontal diversification
2. Vertical diversification
3. Concentric diversification
4. Lateral or Conglomerate or Unrelated Diversification

The four digit SIC code determines if a business is diversifying in related industry segments or in unrelated industry segments. Related product diversification improves financial performance of a firm. But, there is no conclusive evidence that unrelated diversification improves financial performance and corporate performance. In unrelated diversification, a firm enters in a business unrelated to current operation. The new business has no connection with current markets, products, and technologies. Around the world, several successful companies diversified in unrelated businesses and became successful. General Motor, Panasonic, Samsung, TATA, Reliance, Ruia Group, Birla Group are some examples of conglomerates.

Most of the studies established negative relationship between unrelated diversification and corporate performance. However, there are many successful companies who diversified in unrelated product portfolio and created competitive advantage. Unrelated diversification is more prominent in developing countries.

Most of the studies on this subject are conducted in developed countries. The BRICS countries (Brazil, Russia, India, China, and South Africa) are growing rapidly, and they are likely to become economic superpowers in coming days. China has already become world's second largest economy. The social, political, and business environment of India is quite different from developed countries. Thus, the findings of studies conducted in developed countries may not hold true in Indian perspective. The growing importance Indian economy makes it important that studies are conducted in Indian perspective.

Post-independence, India adopted planned economy model where production and distribution of goods were directed by the government. Government imposed licenses and quotas on businesses. A firm could not produce more than assigned quota even though there were demand. In such environment, businesses diversified in related or unrelated businesses to achieve growth and earn higher profit. Post-liberalization in 1991, need to diversify in unrelated businesses to make profit reduced. Now, businesses could focus on core businesses to create competitive advantage.

Diversification mitigates unsystematic risk. But, diversification also increases agency cost. Unrelated product diversification does not create synergy, which limits the benefits of diversification. Majority of

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\* **Manager, Indian Oil Corporation Ltd, Noida, U. P.**

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researchers found negative relationship between unrelated diversification and corporate performance. The related diversification may generate synergy that improves financial performance and corporate performance of the firms. But, unrelated diversification does not generate such benefits. In spite of that, firms tend to diversify in unrelated business. There is need to study the impact of unrelated diversification on financial performance and corporate performance in emerging markets.

The study of impact of unrelated product diversification on financial performance of firms will be useful in strategy development. A firm can assess the pros and cons of diversification and what a firm need to do to improve profitability through diversification.

## I. Review of Literature

Many studies were conducted to understand the impact of diversification on corporate performance. Majority of the studies found negative relationship between diversification and corporate performance. (Agrawal et al., 1992; Lang & Stulz, 1994; Dmitry & Comes, 2002). There are evidences that performance of some firms improved after diversification. The studies argue that improvement in corporate performance of diversified firms is not because of diversification per se. (Graham, Lemmon & Wolf, 2002). Very few studies found that unrelated diversification led to improvement in corporate performance of the firms.

Majority of studied in this field are conducted in developed countries. Very few studies were conducted in developing countries, and they could not conclusively establish negative relationship between unrelated diversification and corporate performance. Lins & Servaes (2002) found that in developed markets, cost of diversification exceeds benefits. But, same may not be true for emerging markets. The developing markets have less developed capital market, lack of availability of perfect information, less transparency, inadequate and less effective legal and regulatory bodies. Some researchers argue that in developing markets, diversification may be beneficial. (Khanna & Pelepu, 1997)

A research conducted by Lins & Servaes (1999) in several emerging markets including Hong Kong, Malaysia, Indonesia and South Korea concluded that diversified firms trade at 7% discount as compared to undiversified firms. Another study by Zhang et al. (2002) on 72 diversified firms in China found negative relationship between diversification and corporate

performance. However, similar study conducted by Li (2004) on larger sample did not find negative relationship.

An important study was conducted by Kakani (2002) on a sample of 240 publicly traded Indian companies between 1987 to 1999. This study found that shareholder value creation was negatively related to product diversification level. However, positive relationship between international diversification and financial performance was observed during early days of diversification. The positive relation was not clear in longer period. This study also found that large sized group's growth was higher than that of small sized groups during same period.

The empirical evidences could not conclusively establish positive or negative relation between diversification and corporate performance in emerging markets. Each emerging market has different business and regulatory environment. Hence, results of a study conducted in one emerging market may not be correct in another emerging market.

Conglomerate diversification strategy may fail because of managerial complexity. Executives may not be able to manage complex conglomerate firms. Misallocation of resources is another factor which may lead to failure of diversification strategy. There is negative relationship between unrelated diversification and innovation. (Picone, 2011)

## II. Research Design & Methods

This study aims to determine impact of diversification on corporate financial performance with respect to profitability. As existing literatures propose that diversification and corporate performance are negatively related, in this study we assume that diversification has negative impact on profitability. To assess the impact of diversification on financial performance, following hypotheses are developed:

**Hypothesis 1:** In Indian market, diversification has negative impact on liquidity of the firms.

**Hypothesis 2:** In Indian market, diversification has negative impact on profitability of the firms.

**Hypothesis 3:** In Indian market, diversification has negative impact on efficiency of the firms.

**Hypothesis 4:** In Indian market, diversification has negative impact on solvency risk of the firms.

In order to test these hypotheses, average of post-diversification five years value of financial measures are

calculated. The hypothesis test will test if post-diversification five years average of financial measures deteriorated as compared to base year financial measures. Base year is considered as the year of diversification.

To test these hypotheses, one-tailed test is used. Null hypothesis assumes that financial performance of diversified firms deteriorated post-diversification. Hence, alternate hypothesis will be, financial performance of diversified firms improved post-diversification. We are interested in one side of probability distribution only. In this hypothesis test, there are two sample means: base year sample means and post-diversification five years average sample means. In this hypothesis test, t-test will be used to compare two sample means. Formula of t is given by:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

The number of degrees of freedom is computed using the formula.

$$d.o.f. = \frac{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}\right)^2}{\left(\frac{s_1^4}{n_1^2(n_1-1)} + \frac{s_2^4}{n_2^2(n_2-1)}\right)}$$

If degree of freedom value is in fraction, result is rounded to the nearest whole number. The hypotheses will be tested with 95% confidence level.

### Testing Hypothesis 1.

This hypothesis assumes that in Indian market, diversification has negative impact on liquidity of the firms. Liquidity is measured in terms of current ratio and quick ratio. Quick ratio has focus on cash and cash equivalents which can be easily converted to cash. Current ratio is better measure of liquidity as it includes all current assets and current liabilities. In this hypothesis testing, current ratio will be taken as measure of liquidity. Higher the value of current ratio, better the liquidity position. The null hypothesis assumes that current ratio has deteriorated post-diversification.

Hence, null hypothesis can be expressed as:

$$H_0: \mu_1 \leq \mu_2$$

Where,  $\mu_1$  = mean of post-diversification five-year average of current ratio of firms.

$\mu_2$  = mean of base year current ratio of firms.

We define alternate hypothesis as:

$$H_1: \mu_1 > \mu_2$$

This hypothesis test is one-tailed test.

### Testing Hypothesis 2.

This hypothesis assumes that in Indian market, diversification has negative impact on profitability of the firms. There are several measures of profitability viz. operating profit margin, net profit margin, ROA, ROE. Ultimate goal of a firm is to maximize long-term value for shareholders. ROE measures return on shareholder's equity. In this hypothesis test, ROE will be taken as measure of profitability. Operating profit margin and net profit margin ignores a company's strategy. For example, if a company aims to earn profit from volume, company can operate on lower profit margin. ROA is not considered as a measure of profitability in this test because industries vary on utilization of assets. Higher the value of ROE, better the profitability of the firm. The null hypothesis assumes that ROE has deteriorated post-diversification. Hence, null hypothesis can be expressed as:

$$H_0: \mu_1 \leq \mu_2$$

Where,  $\mu_1$  = mean of post-diversification five-year average of ROE of firms.

$\mu_2$  = mean of base year ROE of firms.

We define alternate hypothesis as:

$$H_1: \mu_1 > \mu_2$$

This hypothesis test is one-tailed test.

### Testing Hypothesis 3.

This hypothesis assumes that in Indian market, diversification has negative impact on efficiency of the firms. Popular measures of efficiency are: fixed asset turnover, total asset turnover, and inventory turnover. In this test, inventory turnover is not considered as a measure of efficiency as some industries operate at lower inventory while in some industry inventory level is high. Inventory turnover is not a true measure of efficiency for service industry. Similarly, fixed asset turnover is not considered as true measure of efficiency in this case because some industries use fixed asset extensively. Total asset turnover is used as a measure of efficiency in this test. Total asset represents use of total capital (debt and equity). Hence, total asset turnover is true representative of efficiency across industries. Higher the value of total asset turnover, more efficient a firm in utilizing its assets. The null hypothesis assumes that total asset turnover has deteriorated post-diversification. Hence, null hypothesis can be expressed as:

$$H_0: \mu_1 \leq \mu_2$$

Where,  $\mu_1$  = mean of post-diversification five-year average of total asset turnover of firms.  
 $\mu_2$  = mean of base year total asset turnover of firms.

We define alternate hypothesis as:  
 $H_1: \mu_1 > \mu_2$

This hypothesis test is one-tailed test.

#### Testing Hypothesis 4.

This hypothesis assumes that in Indian market, diversification has negative impact on solvency risk of the firms. Popular measures of solvency risk are debt-to-equity ratio and debt-to-asset ratio. Debt-to-equity (D/E) ratio is widely used as a measure of solvency risk. In this hypothesis test, D/E ratio will be used as a measure of solvency risk. Higher the value of D/E ratio, greater the solvency risk. The null hypothesis assumes debt-to-equity ratio has deteriorated post-diversification. Hence, null hypothesis can be expressed as:

$H_0: \mu_1 \geq \mu_2$

Where,  $\mu_1$  = mean of post-diversification five-year average of D/E of firms.  
 $\mu_2$  = mean of base year D/E of firms.

We define alternate hypothesis as:  
 $H_1: \mu_1 < \mu_2$

This hypothesis test is one-tailed test.

### III. Results & Analysis

For the purpose of study, secondary source of data is used. Annual report of the companies will act as major source of data. The financial data and annual report will be obtained from public domain. The financial data will also be obtained from database maintained by Center for Monitoring the Indian Economy (CMIE). Other important sources of information are: SEBI website, Exchange (NSE/BSE) website, Press releases issued by company, and exchange information published in leading financial newspapers.

#### Criteria for Selection of a Company for Study:

The companies chosen for study must satisfy all of the following criteria:

1. Turnover of company should be at least 500 Crores in the reporting year company is diversifying.
2. Firm should report sales in two or more unrelated businesses.
3. The company must be listed on NSE/BSE.

4. The event of diversification must have been occurred between FY 2000-01 to FY 2009-10.
5. Company should have been remaining listed at least for 4 years after diversification.

#### Sample and Size

For the purpose of this study, stratified sampling technique will be used. The population is divided into various industries. According to resource based theory, firms can deploy resources exploit its resources to achieve its goals and create sustainable competitive advantage over competitors. (Wernerfelt, 1984; Barney et. al., 2001) Large companies have access to large resources that enable them to deploy resources in new businesses to achieve competitive advantage. So, this study will be limited to large companies from leading industries. Top 5 industries in terms of turnover will be chosen for study. From each chosen industry, five largest diversified firms in terms of turnover fulfilling set criteria who have unrelated business interests will be chosen for study.

#### Hypothesis Testing

##### Hypothesis 1.

The null hypothesis assumes that current ratio has deteriorated post-diversification. The alternative hypothesis assumes that current ratio improved post-diversification. To test this hypothesis, one-tailed t-test is used at significance level of 0.05.

*Post Diversification five year average of current ratio of firms*

$N_1: 25$

$df_1 = N - 1 = 25 - 1 = 24$

$M_1: 0.86$

$SS_1: 4.28$

$s^2_1 = SS_1/(N - 1) = 4.28/(25-1) = 0.18$

*Base year current ratio of firms*

$N_2: 25$

$df_2 = N - 1 = 25 - 1 = 24$

$M_2: 1.08$

$SS_2: 14.93$

$s^2_2 = SS_2/(N - 1) = 14.93/(25-1) = 0.62$

t-value Calculation

$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_1 + df_2)) * s^2_2) = ((24/48) * 0.18) + ((24/48) * 0.62) = 0.4$

$s^2_{M1} = s^2_p/N_1 = 0.4/25 = 0.02$

$s^2_{M2} = s^2_p/N_2 = 0.4/25 = 0.02$

$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})} = -0.22/\sqrt{0.03} = -1.245$

t- value = -1.245

p- value = 0.1096

Significance level  $\alpha = 0.05$

p-value  $> \alpha$ , so we fail to reject the null hypothesis. i.e. the result is not significant.

Result: There is not enough evidence to prove that unrelated diversification improved liquidity position of the firms.

### Hypothesis 2

The null hypothesis assumes that ROE has deteriorated post-diversification. The alternative hypothesis assumes that ROE improved post-diversification. To test this hypothesis, one-tailed t-test is used at significance level of 0.05.

*Post Diversification five year average of ROE of firms*

$N_1: 25$

$df_1 = N - 1 = 25 - 1 = 24$

$M_1: 0.14$

$SS_1: 0.35$

$s^2_1 = SS_1/(N - 1) = 0.35/(25-1) = 0.01$

*Base year ROE of firms*

$N_2: 25$

$df_2 = N - 1 = 25 - 1 = 24$

$M_2: 0.18$

$SS_2: 0.26$

$s^2_2 = SS_2/(N - 1) = 0.26/(25-1) = 0.01$

t-value Calculation

$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_2 + df_1)) * s^2_2) = ((24/48) * 0.01) + ((24/48) * 0.01) = 0.01$

$s^2_{M1} = s^2_p/N_1 = 0.01/25 = 0$

$s^2_{M2} = s^2_p/N_2 = 0.01/25 = 0$

$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})} = -0.04/\sqrt{0} = -1.3$

t- value = -1.3

p- value = 0.10007

Significance level  $\alpha = 0.05$

p-value  $> \alpha$ , so we fail to reject the null hypothesis. i.e. the result is not significant.

Result: There is not enough evidence to prove that unrelated diversification improved profitability position of the firms.

### Hypothesis 3

The null hypothesis assumes that *total asset turnover* has deteriorated post-diversification. The alternative hypothesis assumes that *total asset turnover* improved post-diversification. To test this hypothesis, one-tailed t-test is used at significance level of 0.05.

*Post Diversification five-year average of total asset turnover of firms*

$N_1: 25$

$df_1 = N - 1 = 25 - 1 = 24$

$M_1: 1.79$

$SS_1: 56.16$

$s^2_1 = SS_1/(N - 1) = 56.16/(25-1) = 2.34$

*Base year total asset turnover of firms*

$N_2: 25$

$df_2 = N - 1 = 25 - 1 = 24$

$M_2: 2.06$

$SS_2: 150.95$

$s^2_2 = SS_2/(N - 1) = 150.95/(25-1) = 6.29$

t-value Calculation

$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_2 + df_1)) * s^2_2) = ((24/48) * 2.34) + ((24/48) * 6.29) = 4.31$

$s^2_{M1} = s^2_p/N_1 = 4.31/25 = 0.17$

$s^2_{M2} = s^2_p/N_2 = 4.31/25 = 0.17$

$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})} = -0.27/\sqrt{0.35} = -0.462$

t- value = -0.462

p- value = 0.3232

Significance level  $\alpha = 0.05$

p-value  $> \alpha$ , so we fail to reject the null hypothesis. i.e. the result is not significant.

Result: There is not enough evidence to prove that unrelated diversification improved efficiency of the firms.

### Hypothesis 4

The null hypothesis assumes that solvency risk has increased post-diversification. It means, debt-to-equity ratio has increased post-diversification. The alternative hypothesis assumes that *debt-to-equity ratio decreased* post-diversification. To test this hypothesis, one-tailed t-test is used at significance level of 0.05.

*Post Diversification five-year average of debt-to-equity ratio of firms*

$N_2: 25$

$df_2 = N - 1 = 25 - 1 = 24$

$M_2: 2.07$

$SS_2: 56.09$

$s^2_2 = SS_2/(N - 1) = 56.09/(25-1) = 2.34$

*Base year debt-to-equity ratio of firms*

$N_1: 25$

$df_1 = N - 1 = 25 - 1 = 24$

$M_1: 1.74$

$SS_1: 11.31$

$s^2_1 = SS_1/(N - 1) = 11.31/(25-1) = 0.47$

t-value Calculation

$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_2 + df_1)) * s^2_2) = ((24/48) * 2.34) + ((24/48) * 0.47) = 1.4$

$s^2_{M1} = s^2_p/N_1 = 1.4/25 = 0.06$

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$$s^2M2 = s^2p/N2 = 1.4/25 = 0.06$$

$$t = (M1 - M2)/\sqrt{(s^2M1 + s^2M2)} = 0.33/\sqrt{0.11} = 0.99$$

$$t\text{-value} = 0.99$$

$$p\text{-value} = 0.16345$$

$$\text{Significance level } \alpha = 0.05$$

$p\text{-value} > \alpha$ , so we fail to reject the null hypothesis. i.e.

the result is not significant.

Result: There is not enough evidence to prove that unrelated diversification improves level of solvency risk of the firms.

#### IV. Conclusion

The study shows that there is not enough evidence to prove that unrelated diversification improved liquidity position, profitability, efficiency and level of solvency risk of the firms. Thus, unrelated product diversification does not have positive impact on the financial performance of firms in India.

#### References

- Agrawal A, Jaffe JF, Mandelker GN. The Post-Merger Performance of Acquiring Firms: A Re-Examination of an Anomaly. *The Journal of Finance*. 1992; Vol. 47, No. 4: 1605-1621.
- Anil MP, Narendar VR. Diversification and Firm Performance: An Empirical Evaluation. *Journal of Financial and Strategic Decisions*. 1998; Vol. 11 No. 2 Fall.
- Barney J, Wright MK, David J. The Resource-based View of the Firm: Ten Years after 1991. *Journal of Management*. 2001; Vol. 27 Issue 6, p625.
- Dmitry L, Joao G. The Performance of Optimally Diversified Firms: Reconciling Theory and Evidence. No 3546 in CEPR Discussion Papers from C.E.P.R. Discussion Papers. 2002.
- Graham JR., Lemmon ML, Wolf, JG. Does Corporate Diversification Destroy Value? *The Journal of Finance*. 2002; Vol. LVII, No.2.
- Kakani RK. Financial Performance and Diversification Strategy of Indian Business Groups. Doctoral Dissertation Work, Indian Institute of Management Calcutta; 2000.
- Khanna T, Palepu K. Why Focused Strategies May Be Wrong for Emerging Markets. *Harvard Business Review*. 1997; 75(4): 41-51.
- Lang LHP, Stulz RM. Tobin's q, Corporate Diversification, and Firm Performance. *Journal of Political Economy*. 1994; Vol. 102 (6): 1248-80.
- Li X. Diversification and Firm Performance--The Case of China. *Chinese Business Review*. 2004; Vol. 3, No. 5: 1-8.
- Lins K, Servaes H. International Evidence on the Value of Corporate Diversification. *The Journal of Finance*. 1999; Vol. LIV, No. 6, December.
- Picone PM. Conglomerate diversification strategy and corporate performance. PhD Thesis. University of Catania; 2011.
- Wernerfelt B. A Resource-based View of the Firm. 1984; *Strategic Management Journal* 5(2): 171-181.
- Zhang W, Yuan F, Chen, Y. An Empirical Study on the Relationship Between Diversification and Economic Performance of Listed Corporations of China. *Journal of Chongqing University*. 2002; Vol.25, No. 11.

# MARKET EFFICIENCY & DIVERSE ASYMMETRIC EFFECT OF SRI INDICES

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*The present study seeks to examine market efficiency & various asymmetric effects of the Dow-Jones Sustainability responsible indices (DJSI) during different periods by applying various econometric models. It is observed that volatility clustering presents in the indices returns. Significant asymmetric shocks and persistence of conditional volatilities also present in the daily returns of the SRI indices during the entire sub periods and the whole period based on various measures. Leverage effects exist in the indices' returns during different sub periods based on various measures. Here, GARCH measure is appropriate during the post-recession period for volatility forecasting. The SRI indices don't follow RWH and informationally inefficient at their weak forms.*

**Keywords:** RWH, DJSI, ARCH, GARCH, EGARCH, TARCH.

The nature and behaviour of stock market returns are of key interest to the researchers. Generally, the researchers deal with various aspects of stock market returns. Volatility is one of the important issues which occur due to the uncertainty in the stock market. Although, the variation of the stock prices is not vicious it may be a sign of market efficiency. The fluctuation of stock prices hampers market efficiency which generates excess volatility and finally leads to market crashes and or crisis. The relationship between stock prices and its volatility is a long standing issue to the financial researchers.

Financial time series such as stock price, exchange rate and inflation rate often exhibit volatility clustering that means there are periods of wide swings in prices for an extended time period followed by a period of relative calm. Information leads to various interpretations and sometime specific economic information may cause wide market fluctuation. This type of phenomenon is first observed by Mandelbrot (1963) and Fama (1965), and further described by Baillie et al., (1996) and Chou (1988). Various empirical models are employed to study the pattern of stock market volatility, leverage effect and market efficiency. The empirical application of the autoregressive conditional heteroscedasticity (ARCH) model introduced by Eagle (1982) or its extension generalised by Bollerslev (1986 a, b) in GARCH model and its various extensions (EGARCH, TARCH, PARCH etc) by Engle et al. (1987), Glosten et al. (1993), Nelson (1991) tries to forecast stock returns' volatility. Besides these, it is often observed in the stock returns that volatility is found to be higher after getting bad news (negative shocks) rather than getting good news (positive shocks) of the same magnitude. Hence, volatility is affected asymmetrically by both the shocks. This fact is called leverage effect which is first pointed out by Black

(1976) that means changes in stock prices tend to be negatively correlated with the changes in volatility which is also documented by Christie (1982) and Nelson (1991). Engle & Ng (1993) explain news impact curve (IMC) with asymmetric response to both good and bad news. To test the leverage effect (good and bad news), many nonlinear extensions of the GARCH model like EGARCH, Threshold ARCH (TARCH), Threshold GARCH (TGARCH) and PARCH which are independently developed by Nelson (1991), Zakoian (1994) and Glosten, Jagannathan and Runkle (1993). Beside these, large numbers of recent studies have examined different aspects of volatility forecasting by considering different markets (see. Longin 1997, Gazda & Vyrost 2003, Chen & Lian 2005, Brandt & Jones 2006, Engle, Focardi & Fabozzi 2007, Goudarzi 2011, Ameer & Senanedsch 2014 etc.) and explained various effects volatility. But this study exclusively deals with the various asymmetric effects of socially responsible stock indices (SRI stock Index) and their market efficiency. Most of the earlier studies have analysed the financial performance of socially responsible investments (SRI) and very few among them have empirically examined the performance of SRI indices (see. Statman 2000, Kurtz & DiBartolomeo 1996 & 1999, Garz, Volk & Gilles 2002, Schroder 2005, Consolandi et al 2008, Managi 2012 etc). The study is designed as follows: section 2 describes the objective. Section 3 deals with the data and study period. Section 4 provides methodology. Section 5 analyses and interprets the result and finally, section 6 ends with a conclusion and recommendation.

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## I. Review of Literature

The study is designed to achieve the following objectives:

1. To analyse the statistical properties of daily returns
2. To examine whether SRI indices follow RWH
3. To examine the diverse asymmetric effects of SRI indices returns
4. To evaluate the dynamic forecasts of the conditional mean and variance

### Data & Study Period

Daily closing index prices of 10 DJSI indices during the period from December 1998 to March 2015 are obtained from their official websites and reports. The whole period is divided into 3 sub periods (Before recession: up to December 2007, during recession: January 2008 to February 2009 and after recession: March 2009 to March 2015). All the indices follow best-in-class approaches and maintain long term economic, environmental and various social criteria.

## II. Research Design & Methods

The daily return of the SRI indices is computed as under:

$$R_{SRI,t} = \log(I_t/I_{t-1}) \quad (1)$$

Where,  $I_t$  is the current period price at time  $t$  and  $I_{t-1}$  is the price at the previous period.

To test the stationary and market efficiency, Phillips and Perron (1988) test is applied for non-augmented DF test equation that can be written as:

$$\Delta y_t = \alpha y_{t-1} + \chi_t \delta + e_t \quad (2)$$

It modifies the “t” ratio of the coefficient so that serial correlation doesn’t affect the asymptotic distribution of the test statistic. The P-P test is based on the following statistic:

$$\tilde{t}_\alpha = t_\alpha \left( \frac{\gamma_0}{f_0} \right)^2 - \frac{T(f_0 - \gamma_0)(se(\hat{\alpha}))}{2f_0^{1/2}s} \quad (3)$$

Where,  $\hat{\alpha}$  is the estimate and  $t_\alpha$  is the t ratio of  $\alpha$ ,  $se(\hat{\alpha})$  is the coefficient of standard error and  $s$  is the standard error of the test regression.  $\gamma_0$  is a consistent estimate of the error variance (computed as,  $(T-K) s^2/T$  where  $k$  is the number of regressors),  $f_0$  is an estimator of the residual spectrum at frequency 0. If p value is significant then there is no unit root problem.

### ARCH Measure

A great deal of macro econometric work examines the variability of the stock market. The investors are also likely to be affected by the volatility of stock prices that

means uncertainty may cause huge losses or gains. To model such varying variance so called Autoregressive Conditional Heteroscedasticity (ARCH) model developed by Engle (1982). ARCH model assumes that heteroscedasticity or unequal variance has no autoregressive structure that means heteroscedasticity observed over different periods is auto correlated that means presence of ARCH, i.e., volatility clustering in time series data.

To test the ARCH effect, the following regression equation (OLS) is estimated:

$$R_{SRI,t} = \beta_1 + \beta_2 R_{SRI,t-1} + \beta_3 R_{SRI,t-2} + \dots + \beta_p R_{SRI,t-p} + e_t \quad (4)$$

It is assumed that  $e_t \sim N(0, \alpha_0 + \alpha_1 e_{t-1}^2)$ , i.e.,  $e_t$  is normally distributed with 0 mean and variance  $\alpha_0 + \alpha_1 e_{t-1}^2$ . Here, the variance of  $e$  at time  $t$  depends on squared distributions at  $t-1$  that causes serial correlation problem. Hence, the variance of  $e$  at time  $t$  may depends not only on 1 lagged squared disturbance term but also on several lagged squared disturbance terms that may be written as under:

$$\text{Var}(\mu_t) = \sigma_t^2 = \alpha_0 + \alpha_1 e_{t-1}^2 + \alpha_2 e_{t-2}^2 + \dots + \alpha_p e_{t-p}^2 \quad (5)$$

Here, equation 5 represents the ARCH model of order  $p$ . The presence of ARCH is tested by examining the validity of the null hypothesis  $H_0: \alpha_1 = \alpha_2 = \dots = \alpha_p = 0$ . To test this hypothesis Engle proposed to run the auxiliary regression (Regressed Squared Standardized Residuals on a constant) at  $p$  lags.

$$e_t^2 = \alpha_0 + \alpha_1 e_{t-1}^2 + \alpha_2 e_{t-2}^2 + \dots + \alpha_p e_{t-p}^2 \quad (6)$$

Where,  $e_t = R_{SRI,t} - \hat{R}_{SRI,t}$  and it is obtained from OLS regression equation 4. The null hypothesis can be tested by applying the usual F-test or by Engle’s LM test statistic that asymptotically distributed as a  $\chi^2(p)$ . If F-statistic and LM statistic are found to be significant then reject  $H_0$  that means ARCH effect is present.

### GARCH Measure

The GARCH model is developed by Bollerslev in 1986 with the assumption that forecasts of variance changing in time which depends on the lagged variance of the capital assets. An unexpected up and down of returns at time  $t$  will generate more volatility in the periods to come. This model can be generalised to a GARCH (p,q) model where there will be  $p$  lagged terms of squared error and  $q$  terms of the lagged conditional variances as follows:

$$\sigma_t^2 = \alpha_0 + \sum_{i=1}^p \alpha_i e_{t-i}^2 + \sum_{i=1}^q \beta_i \sigma_{t-i}^2 + v_i \quad (7)$$

Where,  $\alpha_0$  is the mean.  $p$  is the degree of ARCH process and  $q$  is the degree of GARCH process.  $V_i$  is the random process with the properties of white noise. Since equation 7 expresses the dependence of the variability of returns in the current period data from previous periods that implies conditional variability. The degrees of  $p$  and  $q$  are determined based on the principles of ARIMA method (see Box-Jenkins, 1970). The simplest and most widespread GARCH (1,1) model can be written as:

$$\sigma^2_t = \alpha_0 + \alpha_1 e^2_{t-1} + \beta_1 \sigma^2_{t-1} + v_t \quad (8)$$

As the variance is expected to be positive then it is assumed that the regression coefficient  $\alpha_0$ ,  $\beta_1$  and  $\alpha_1$  will always be positive while the stationarity of the variance is preserved if the coefficients  $\beta_1$  and  $\alpha_1$  are smaller than 1. The conditional variability of SRI returns is defined in equation 5 that consists of 3 effects:

1. The constant part  $\alpha_0$
2. The part of volatility expressed by the relationship  $\alpha_1 e^2_{t-1}$  designated as ARCH effect.
3. The part given by the predicted variability from the previous period and expressed by the relationship  $\beta_1 \sigma^2_{t-1}$  that termed as GARCH effect.

Here, the sum of regression coefficients ( $\alpha_1 + \beta_1$ ) expresses the influence of the variability from the previous period on the current value of the variability and this value is usually close to 1, which is a sign of increased inertia in the effects of shocks on the variability of returns.

### EGARCH Measure

According to the martingale models, decrease and increase of returns can be interpreted as bad and good news respectively. If a decrease (negative shocks) in return is accompanied by an increase in volatility greater than the volatility induced by an increase in return termed as leverage effect. This asymmetric effect is measured by EGARCH and TGARCH model.

Let  $R_{SRI,t}$  is the return of SRI index at time  $t$ .

$$R_{SRI,t} = \sigma_{SRI,t} \epsilon_{SRI,t} + \xi_{SRI,t} \quad (9)$$

$$\xi_{SRI,t} = \sigma_{SRI,t} Z_{SRI,t} \quad (10)$$

$$Z_{SRI,t} / \Omega_{t-1} \sim \Psi(0,1,v) \quad (11)$$

The conditional variance may be expressed as under:

$$\log \sigma^2 = \omega + \sum_{i=1}^p \alpha_i \left| \frac{e_{t-1}}{\sigma_{t-1}} \right| + \sum_{j=1}^q \beta_j \log(\sigma^2_{t-1}) + \sum_{k=1}^r \gamma_k \frac{e_{t-1}}{\sigma_{t-1}} + v_t \quad (12)$$

Equation 9 indicates conditional variance is an exponential function of the SRI returns that automatically ensures its positive character. Where,  $\sigma^2_t$  is the conditional variance.  $Z_{SRI,t}$  is the standardized residual.

$\Psi(\cdot)$  marks a conditional density function and  $v$  denotes a vector of parameters that specifies the probability density function.  $\omega$ ,  $\alpha$ ,  $\beta$  and  $\gamma$  are the parameters to be estimated. Here, parameter  $\alpha$  represents the symmetric effect or ARCH effect.  $\beta$  measures the persistence in conditional volatility irrespective of anything happening in the market (GARCH Effect). An asymmetric effect is indicated by the non-zero value  $\gamma$  and the presence of leverage effect is given by its negative value. If  $\gamma = 0$ , the model is symmetric. When  $\gamma < 0$ , then positive shocks (good news) generate less volatility than negative shocks (bad news) and if  $\gamma > 0$ , then positive innovations are more destabilizing than negative innovations.

### TARCH or TGARCH or GJR Model

Positive and negative shocks have different effects on volatility, in the sense that negative shocks are followed by higher volatilities than the positive shocks of the same magnitude (Engle & Ng, 1993). To deal with this phenomenon, Glosten, Jagannathan and Runkle (1993) and Zakoian (1994) introduce independently the Threshold ARCH or TARCH model or TGARCH model that allows for asymmetric shocks to volatility by adding an additional term to capture for possible asymmetries. The TARCH (1,1) model is expressed by an equation for the modelling of a conditional variance:

$$\sigma^2_t = \alpha_0 + \sum_{i=1}^p \alpha_i e^2_{t-i} + \sum_{j=1}^q \beta_j \sigma^2_{t-j} + \sum_{k=1}^r \gamma_k e^2_{t-k} I_{t-k} \quad (13)$$

Where, (a)  $I_{t-1} = 1$ , if  $e_{t-1} < 0$  or negative (bad news)

(b)  $I_{t-1} = 0$ , if  $e_{t-1} > 0$  or positive (good news)

This model is based on the assumption that unexpected change in the returns of the SRI index may be expressed in terms of  $e_t$  which have various effects on the conditional variance. An unforeseen increase in volatility occurs with a bad news ( $e_{t-1} < 0$ ) and to fall with good news ( $e_{t-1} > 0$ ). Good news has an impact of  $\alpha_i$  while the bad news has an impact on  $\alpha_i + \gamma_k$ . This model also concerns with the leverage effect. If ( $\gamma > 0$ ) the gamma coefficient is greater than 0, then leverage effect exists. If  $\gamma \neq 0$ , then the shock is called asymmetric, and if  $\gamma = 0$ , the shock is symmetric. Moreover, the persistence of shocks to volatility is given by  $\alpha_i + \beta_j + \gamma_k/2$ .

## III. Results & Analysis

The descriptive statistics of the SRI indices are reported in table 1. A wide fluctuation in the daily returns of the SRI indices is observed. The mean returns of the indices are positive. The standard deviation of the DJSI Euro Zone Index is the highest (1.4755) as compared to the

other indices. Here, the negative skewness of seven SRI indices indicates that the data are skewed left (leptokurtic) as compared to the right one and positive excess kurtosis means that the returns distribution of the SRI indices have flatter tails than a normal distribution. Finally, the JB test statistic (Jarque-Bera) of the return distribution is very large and the probability of obtaining such statistics under the normality assumption is significantly 0 (at the 99% confidence interval) that confirms about rejection of null hypothesis ( $H_0$ : Normal distribution).

The stationarity problems and market efficiency of the SRI indices are tested by using the ADF and PP test statistics. It is observed (Table 2) that the computed ADF and PP test statistics of the SRI indices are statistically significant at all significance levels (1%, 5% & 10%) with their corresponding probabilities that confirms about rejection of null hypothesis ( $H_0$ :  $\delta = 0$  or  $\rho = 1$ ) that means the time series don't appear to have a unit root and thus the indices don't follow random walk and inefficient at their weak forms.

#### Estimation of ARCH Effect

The presence of ARCH effect is tested by applying the ARCH-LM test. It is found (Table 2) that the F-statistics of the SRI indices are highly significant with their p-values of 0.0000 with a confidence level of 1% that confirms about existence of ARCH effect. Finally, this result is confirmed by Q-statistics that is highly significant for all cases indicate the existence of ARCH effect. Hence, the study proceeds to test the GARCH models.

The necessary conditions of GARCH measure are variance and covariance stationary ( $\alpha_0 > 0$ ;  $\alpha_i \geq 0$ ,  $i=1, q$ ;  $\beta_i \geq 0$ ,  $i=1, \dots, p$ ; and  $\sum \alpha_i + \beta_i < 1$ ). It is observed (Table 3) that all the conditions ( $\alpha_0 > 0$ ;  $\alpha_i \geq 0$ ;  $\beta_i \geq 0$ ; and  $\sum \alpha_i + \beta_i < 1$ ) are fulfilled by the SRI indices during the pre-recession, post-recession and recession periods. Here, the summation of ARCH and GARCH effect measures the shock persistence. But, some of the SRI indices (DJSI World, DJSI World Ex All, DJSI World Enlarged, DJSI World Enlarged Ex All Ex AE & DJSI North America) have violated the last condition ( $\sum \alpha_i + \beta_i < 1$ ) during the recession period regarding shock persistence. Generally, higher shock persistence indicates periods of high (low) volatility in the process will last longer. It is found that the coefficients of the terms C (4) \*RESID (-1)<sup>2</sup> are significant (ARCH Effect) at 1% level that confirms about volatility of risk is affected significantly by the past squares residual terms of the indices during the 3 periods (pre-recession, post-recession & recession periods).

Similarly, the coefficients of the terms C(5)\*GARCH(-1) are also significant at 1% level of all the indices that means, past volatilities of the indices returns are significantly influence the current returns during the 3 periods and the whole period.

The persistence of conditional volatility (volatility clustering) (C (5)) presents in the returns (significant at 1% level) during all the periods. It is also found (Table 4) that the GARCH coefficients (C (6)) are statistically significant at 1% level during all the periods that confirms past shocks persistence of all the indices returns are significantly influence the current returns.

The presence of leverage effect is provided by the coefficient C (4). It is found that the gamma coefficients (Equation 12) of the indices are non-zero during all the periods that means asymmetric effect present in the volatilities of the SRI returns except for DJSI Korea (-0.040447) during the recession period. Here, the  $\gamma$  (EGARCH) coefficients (C (4)) of the indices are significant at 1% level during 2 periods (pre-recession & post-recession periods) but they are not negative that means leverage effect does not exist in the returns of the indices that means positive innovations are weaken than the negative innovations or negative shocks (bad news) generate more volatility than the positive shocks (good news). It is also observed that during the recession period the  $\gamma$  (EGARCH) coefficients (C (4)) of all the indices are not statistically significant but they are positive except DJSI Korea index which is found to be negative (-0.040447). Hence, leverage effect exists in the returns of the DJSI Korea index that means positive innovations are stronger than the negative innovations (negative shocks generate less volatility than the positive shocks).

It is also found (Table 4) that the GARCH coefficients (C (6)) of the indices are statistically significant at 1% level that indicates that past volatilities of the indices returns are significantly influence the current returns during all the sub periods. It is found that good news has an impact on conditional volatility ( $\alpha$ ) with a various magnitude during 3 sub periods while the bad news has the positive impact on ( $\alpha_i + \gamma_i$ ) during the pre- and post-recession periods. Moreover, the bad news has the negative impact on ( $\alpha_i + \gamma_i$ ) during the recession period (Except DJSI World index).

Therefore, it may be said that the bad news increases conditional volatilities of the indices during pre- and post-recession periods. Similarly, the good news has larger impact on volatility during the recession period as compared to the other periods except for DJSI World

index (0.188659). Moreover, it is also found that the  $\gamma$  (Equation 13) coefficients (C (5)) of the indices are not equal to 0 that means asymmetric shocks present in the indices returns during all the periods. Although, the volatility shock is positive during 3 periods and negative for DJSI US index during all the periods. If a fall in returns is accompanied by an increase in volatility greater than the volatility induced by an increase in returns, one may say leverage effect exist. Here, leverage effect exists in the SRI indices during pre-, post- and recession periods as  $\gamma$  coefficient is greater than 0 ( $\gamma > 0$ ) except DJSI US index ( $\gamma < 0$ ). The persistence of shocks to volatility ( $\alpha + \beta + \gamma/2$ ) is present in the indices during all the periods.

The study examines the dynamic return forecast of the SRI indices during the whole period. It is found that the RMSE values of the DJSI US, DJSI World, DJSI World Ex All, DJSI World Enlarged, DJSI Europe, DJSI Euro Zone and DJSI Asia Pacific are lowest based on TARCH measure that indicates efficiency regarding volatility forecasting. Similarly, the values of RMSE of the DJSI North America and DJSI Korea are found to be lowest based on EGARCH measure to forecast volatility. Here, the DJSI World Enlarged Ex All Ex AE index has the lowest RMSE based on GARCH measure. Therefore, it may be concluded that TARCH, EGARCH and GARCH measures are the best performing volatility forecasting models for the SRI indices during whole period.

#### IV. Conclusion

Volatility shocks present in the indices returns. GARCH coefficient indicates that past volatility affects the current returns during the entire sub period which is also followed by the EGARCH measure. Based on EGARCH measure the returns of the SRI indices are free from leverage effect during all the sub periods except for DJSI Korea index during the recession period. Asymmetric and persistence to volatility shocks present in the indices during all the periods when TARCH measure is applied. The bad news enhances conditional volatilities during pre and post-recession periods. On the contrary, good news has larger impact on volatility during the recession period. In TARCH measure leverage effects exist during all the periods except DJSI US index. It is found that a particular measure is not appropriate to forecast volatility based on various criterions. TARCH, EGARCH and GARCH measures are suitable when whole period is considered. The indices are informational inefficient at their weak forms and don't follow random walk. Finally, the study recommends regarding survival of SRI indices in future are the scopes of future research.

#### References

- Ameur, H. B., & Senanedsch, J. (2014). Socially Responsible Investments: An International Empirical Study of Time-Varying Risk Premiums. *30(5)*, 1513-1524.
- Black, F. (1976). Studies of Stock Price Volatility Changes. *Proceedings of the American Statistical Association, Business and Economic Statistics Section*, 177-181.
- Bollerslev, T. (1986a). Generalized Autoregressive Conditional Heteroscedasticity. *Journal of Econometrics*, 31, 307-327.
- Bollerslev, T. (1986b). A Conditional Heteroscedasticity Time Series Model for Speculative Prices and Rates of Returns. *Review of Economics and Statistics*, 69, 542-547.
- Bollerslev, T., Chou, R. Y., & Kroner, K.F. (1992). ARCH Modelling in Finance. *Journal of Econometrics*, 52, 5-59.
- Brandt, W. M., & Jones, S. C. (2006). Volatility Forecasting with Range-Based EGARCH Models. *Journal of Business & Economic Statistics*, 24(4), 470-486.
- Baillie, R. T. (1997), "Time Dependent Conditional Heteroscedasticity", Manuscript, Workshop of Time Series Analysis, Arrabida, Portugal.
- Christie, A. A. (1982). The Stochastic Behaviour of Common Stock Variances: Value, Leverage and Interest Rate Effect. *Journal of Financial Economics*, 10, 407-432.
- Chou, R. Y. (1998). Volatility Persistence and Stock Valuations: Some Empirical Evidence using GARCH. *Journal of Applied Econometrics*, 3, 279-294.
- Chen, Y. W., & Lian, K. K. (2005). A Comparison of Forecasting Models for Asean Equity Markets. *Sunway Academic Journal*, 2, 1-12.
- Consolandi, C., Jaiswal-Dale, A., Poggiani E., & Vercelli, A. (2008). Global Standards and Ethical Stock Indexes: The Case of the Dow Jones Sustainability Stoxx Index, *Journal of Business Ethics*, 87(1), 185-197.
- Engle, R. F. (1982). Autoregressive Conditional Heteroscedasticity with Estimates of the Variance of United Kingdom Inflation. *Econometrica*, 50, 987-1008.
- Engle, R. F., & Ng, V. K. (1993). Measuring and Testing the Impact of News on Volatility, *Journal of Finance*, 48, 1022-1082.
- Engle, R. F., Focardi., & Fabozzi, F. J. (2007). ARCH/GARCH Models in Applied Financial Econometrics. *JWPR026-Fabozzi c114-NP*, 1-14.

- Glosten, L. R., Jagannathan, R., & Runkle, D. E. (1993). On the Relation between the Expected Value and the Volatility of the National Excess Return on Stocks. *Journal of Finance*, 48, 1779-1801.
- Gazda, V., & Vyrost, T. (2003). Application of GARCH Models in Forecasting the Volatility of the Slovak Share index (SAX). *BIATEC*, XI, 17-20.
- Goudarzi, H., & Ramamarayanan, C. S. (2011). Modelling Asymmetric Volatility in the Indian Stock Market. *International Journal of Management*, 6(3), 221-231.
- Kendall, M. G. (1953). The Analysis of Economic Time Series, Part I: Prices, *Journal of the Royal Statistical Society*, 96, 11-25.
- Kurtz, L., & DiBartolomeo, D. (1996). Socially Screened Portfolios: An Attribution Analysis of Relative Performance. *Journal of Investing*, Fall, 35-41.
- Kurtz, L., & DiBartolomeo, D. (1999). Managing Risk Exposures of Socially Screened Portfolios. *Northfield Information Services*, Boston, www.northinfo.com.
- Longin, M. F. (1997). The Threshold Effect in Expected Volatility: A Model Based on Asymmetric Information. *The Review of Financial Studies*, 10(3), 837-869.
- Mandelbrot, B. (1963). The variation of Certain Speculative Prices. *Journal of Business*, 36, 394-419.
- Mackinnon, J. G. (1996). Numerical Distribution Functions for Unit Root and Cointegration Tests. *Journal of Applied Econometrics*, 11, 601-618.
- Managi, S., Okimoto, T., & Matsuda, A. (2012). Do Socially Responsible Investment Indexes Outperform Conventional Indexes? *Applied Financial Economics*, 22(18), 1511-1527
- Newey, W., & West, K. (1987). A Simple Positive Semi-Definite, Heteroscedasticity and Autocorrelation Consistent Covariance Matrix. *Econometrica*, 55, 700-708.
- Nelson, D. B. (1990). Stationarity and Persistence in the GARCH (1,1) Model. *Econometric Theory*, 59, 318-334.
- Nelson, D. B. (1991). Conditional Heteroscedasticity in Asset Returns: A New Approach. *Econometrica*, 59, 347-370.
- Poterba, J. M., & Summers, L. H. (1988). Mean Reversion in Stock Prices: Evidence and Implications. *NBER Working Paper No. 2343*, Cambridge, Massachusetts.
- Phillips, P. C. B., & Perron, P. (1988). Testing for a Unit Root in Time Series Regression. *Biometrika*, 75, 335-346.
- Poon, S. H., & Granger, C. (2003). Forecasting Volatility in Financial Markets: A Review. *Journal of Economic Literature*, 41(2), 478-539.
- Poon, S. H. (2005). A Practical Guide to Forecasting Financial Market Volatility. *West Sussex, John Wiley and Sons*.
- Sharma, J. L., & Kennedy, R. E. (1977). A Comparative Analysis of Stock Price Behaviour on the Bombay, London and New York Stock Exchanges. *Journal of Quantitative Analysis*, 12, 391-413.
- Statman, M. (2000). Socially responsible mutual funds. *Financial Analysts Journal*, 56, 73-82.
- Schroeder, M. (2005). The Performance of Socially Responsible Investments: Investment Funds and Indexes. *Financial Markets and Portfolio Management*, 18, 122-142.
- Zakoian, J. M. (1994). Threshold Heteroscedasticity Models. *Journal of Economic Dynamics and Control*, 18, 931-944.

**Table 1: Descriptive Statistics.**

SRI Index	OB	Mean	Median	Max	Min	Std. Dev	JB
DJSI US	5042	0.0146	0.0000	10.0770	-8.449	1.145	15393.35*
DJSI World	5040	0.0084	0.0000	9.2402	-7.480	1.029	18814.57*
DJSI World ex All	5040	0.0081	0.0000	9.2145	-7.349	1.024	18751.29*
DJSI World Enlarged	2477	0.0011	0.0085	1.4055	-1.059	0.1752	7530.41*
DJSI World Enlarged Ex All Ex AE	2477	0.0013	0.0088	1.4475	-1.0907	0.1762	7925.81*
DJSI North America	5065	0.0153	0.0000	9.9085	-8.6087	1.1341	15191.76*
DJSI Europe	3518	0.0170	0.0439	9.7391	-8.1707	1.2879	5443.86*
DJSI Euro Zone	3519	0.0175	0.0086	10.6122	-7.7717	1.4755	4096.67*
DJSI Korea	2428	0.0261	0.0079	11.9002	-9.1570	1.3779	4733.225*
DJSI Asia Pacific	2936	0.0226	0.0298	11.4488	-9.8099	1.3583	6638.75*

\*Significant at 5% level

**Table 2: ADF & PP Tests & ARCH-LM Test.**

SRI Index	ADF	PP Test	Remarks	F-Stat.	Prob.	Obs*R <sup>2</sup>
	ADF & PP Tests			ARCH-LM Test		
DJSI US	-25.63541*	-1447.595*	Reject H <sub>0</sub> for presence of unit root	186.8566**	0.0000	180.2443**
DJSI World	-20.81783*	-756.2363*	Reject H <sub>0</sub> for presence of unit root	69.3363**	0.0000	68.42165**
DJSI World Ex All	-26.12968*	-1017.207*	Reject H <sub>0</sub> for presence of unit root	72.2427**	0.0000	71.24897**
DJSI World Enlarged	-19.95511*	-411.6388*	Reject H <sub>0</sub> for presence of unit root	106.9230**	0.0000	102.5745**
DJSI World Enlarged Ex All Ex AE	-19.73638*	-415.1166*	Reject H <sub>0</sub> for presence of unit root	105.2177**	0.0000	101.0054**
DJSI North America	-25.70356*	-1396.535*	Reject H <sub>0</sub> for presence of unit root	235.2960**	0.0000	224.9315**
DJSI Europe	-21.16496*	-715.1434*	Reject H <sub>0</sub> for presence of unit root	202.1944**	0.0000	191.3020**
DJSI Euro Zone	-20.36969*	-683.0361*	Reject H <sub>0</sub> for presence of unit root	133.9341**	0.0000	129.0915**
DJSI Korea	-20.46824*	-1766.391*	Reject H <sub>0</sub> for presence of unit root	104.9032**	0.0000	100.6346**
DJSI Asia Pacific	-24.97069*	-1164.680*	Reject H <sub>0</sub> for presence of unit root	138.2270**	0.0000	132.0938**

\*Significant at 5% level &amp; significant at 1% level

**Table 3: Output of GARCH (1,1) Model.**

SRI Index	Pre-Recession		Recession		Post-Recession	
	C(4)	C(5)	C(4)	C(5)	C(4)	C(5)
DJSI US	0.0331* (11.9698)	0.9647* (349.6507)	0.1126* (3.5260)	0.8842* (28.3262)	0.1156* (8.4597)	0.8539* (54.5688)
DJSI World	0.0580* (5.4420)	0.9154* (55.5985)	0.1200* (5.1450)	0.8897* (45.4219)	0.0579* (8.6356)	0.9329* (124.2224)
DJSI World Ex All	0.0476* (11.1290)	0.9464* (197.6186)	0.1109* (5.4140)	0.9016* (51.1848)	0.0573* (8.5552)	0.9333* (124.3179)
DJSI World Enlarged	0.1205* (3.7371)	0.8355* (19.7479)	0.1647* (4.0534)	0.8524* (25.3071)	0.0605* (9.0243)	0.9101* (89.7660)
DJSI World Enlarged Ex All Ex AE	0.1162* (3.7052)	0.8410* (20.0558)	0.1651* (4.0003)	0.8519* (24.5260)	0.0409* (10.4547)	0.9432* (179.8945)
DJSI North America	0.0340* (12.0959)	0.9638* (344.4249)	0.1203* (3.4038)	0.8800* (26.7460)	0.1106* (8.3677)	0.8635* (59.3374)
DJSI Europe	0.0939* (7.3225)	0.8908* (62.7346)	0.1341* (3.1450)	0.8433* (19.4490)	0.0915* (8.5919)	0.8825* (65.0538)
DJSI Euro Zone	0.07819 (7.2165)	0.9088* (78.2277)	0.1494* (3.4461)	0.8353* (23.3867)	0.0809* (8.7321)	0.8939* (73.7347)
DJSI Korea	0.0989* (4.1171)	0.8847* (32.4530)	0.1127* (3.4976)	0.8686* (24.8984)	0.0495* (7.0367)	0.9394* (112.1656)
DJSI Asia Pacific	0.1059* (7.2796)	0.8104* (26.1915)	0.1374* (3.8121)	0.8381* (19.2995)	0.0818* (8.0597)	0.9040* (73.6122)

**Table 4: Output of EGARCH (1,1) Model & TARARCH (1,1) Model (Leverage Effect).**

SRI Index	Pre-Recession	Recession	Post-Recession	Pre-Recession	Recession	Post-Recession
	EGARCH			TARARCH		
	C(4)	C(4)	C(4)	C(5)	C(5)	C(5)
DJSI US	0.0567* (10.925)	0.0994* (2.0750)	0.1543* (6.7413)	-0.0696* (-16.6134)	-0.2396* (-4.2939)	-0.2121* (-9.3287)
DJSI World	0.0910* (4.3920)	0.0553* (1.9473)	0.0610* (5.8723)	0.1219* (6.4650)	0.2038* (5.6712)	0.0900* (10.0571)
DJSI World Ex All	0.0726* (8.7101)	0.0509* (2.0251)	0.0589* (5.7620)	0.0713* (13.6053)	0.2024* (6.0865)	0.0912* (10.0786)
DJSI World Enlarged	0.1395* (2.7028)	0.0981* (1.9183)	0.0595* (6.3503)	0.1892* (3.7042)	0.3063* (4.2813)	0.0975* (9.7136)
DJSI World Enlarged Ex All Ex AE	0.1347* (2.6880)	0.1005* (1.9096)	0.0442* (6.7334)	0.1869* (3.7216)	0.3072* (4.2848)	0.0867* (9.9754)
DJSI North America	0.0598* (10.927)	0.1164* (2.3682)	0.1470* (6.9333)	0.0698* (16.8615)	0.2472* (4.2286)	0.1912* (9.3293)
DJSI Europe	0.1057* (5.6548)	0.0628* (1.5644)	0.1048* (6.7563)	0.1588* (7.1576)	0.2667* (4.7328)	0.1774* (9.8526)
DJSI Euro Zone	0.0901* (5.1746)	0.0436* (1.0584)	0.0772* (6.0090)	0.1590* (7.7079)	0.2924* (5.6457)	0.1878* (9.7033)
DJSI Korea	0.2138* (4.6637)	-0.0404* (-2.1052)	0.0906* (6.5143)	0.1459* (3.7416)	0.2423* (5.1755)	0.0846* (6.9679)
DJSI Asia Pacific	0.1369* (2.9140)	0.1050* (2.2026)	0.1243* (6.9439)	0.3024* (6.1536)	0.2015* (3.7369)	0.0854* (5.7103)

\*Significant at 5% level; Coefficient of C (5) means volatility clustering & C (6) means GARCH effect in EGARCH model and C (4) and C (6) in TARARCH model is not present due to size restriction, only result is discussed.

# ORGANIZATIONAL JUSTICE, EMPLOYEE JOB SATISFACTION AND EMPLOYEE ENGAGEMENT: A CASE OF TELECOM INDUSTRY

Meenakshi Nargotra\* Jyoti Sharma\*\*

*Employees of an organization are the real asset to it as they are the key behind its success or failure in an industry. It therefore becomes vital for organizations to satisfy and engage their employees. Furthermore, employee judgment about distributive and procedural justice influences their satisfaction level. So the present study aims to investigate the influence of organizational justice on employee job satisfaction and impact of employee job satisfaction on employee engagement. Data was collected from employees of private telecom players in the state of J&K through self-administered questionnaire. Further, regression analysis is done to check the impact of the organizational justice on employee job satisfaction and employee job satisfaction on employee engagement. Finding support, the hypothesis that organizational justice has positive influence on job satisfaction and employee job satisfaction positively influences employee engagement. This paper contributes to existing knowledge by studying three different constructs in context of telecom sector within the state of J&K.*

**Keywords:** Organizational justice, Employee Job Satisfaction, Employee Engagement Telecom Sector.

In the present era, service industry has become a key to success in the fiscal progressions of countries worldwide. But on the same time service organizations are facing more competitive and rapidly shifting business environment. Globalization and privatization have led to an extensive increase in competition among organizations. Telecom sector is the most thriving sector within the service industry as it plays a catalytic role in socio economic development worldwide. But like many other service organizations Telecom organizations are facing like rapid innovation, new technologies, economic uncertainties, fierce competition, demanding customers and their expectations. Being a part of service industry, the customer focus and customer service is the distinctive factors for the telecom companies. To satisfy their customers, they must have customer oriented employees. So organizations need to work for the development of Human Resource. Human resource is the most strategic element of organization, so their satisfaction has been specially focused by management scientists. And the employee satisfaction influenced by employee judgment about distributive and procedural justice. Justice and its administration is one of the basic and intrinsic needs of human, whose existence has always provided a proper bed to develop human societies throughout the history. If employees perceive organizational consequence, procedures and interactions fairly, they will feel more secure and develop confidence in their superior and organization and outcomes such as increased job satisfaction, organizational commitment, and professional function will appear as a result. Past were the decades when satisfied employees, contented with their work

experience, were enough for success. But in today's, innovative and competitive business environment simply satisfied and stable employees are not sufficient to bring necessary business results. In order to compete effectively, employers need to go beyond satisfaction - employers must do their best to inspire their employees to apply their full potential and capabilities to their work. Therefore, modern organizations expect their employees to be full of enthusiasm and show initiative at work, they want them to be energetic and dedicated to what they do – in other words companies want them to be fully engaged. So it is imperative for service organizations to create such a culture of justice and fairness in which employees can satisfy their needs and can be engaged in their work /organization. So, the study aims to examine the impact of organizational justice on Employee job satisfaction and impact of employee job satisfaction on employee engagement in context of Telecom Industry.

## I. Review of Literature

### Organizational Justice

According to Greenberg (1990) organizational justice is the study of the question that whether fairness is being considered in the organization or not. Organizational justice comprises of three dimensions: distributive justice, procedural justice, interactional justice (Colquitt, Conlon

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et al., 2001). According to Landy and Conte (2004) the fairness in the allocation of resources, benefits and rewards of the organization among the members is known as distributive justice. Distributive justice relates to outcomes while the procedural justice relates to the methods and procedures through which these rewards and outcomes are divided (Landy and Conte, 2007). Leventhal (1980) opines Procedural justice level is high when members feel that they have a right to give opinion in the procedures or the processes includes the characteristics just like flexibility, correctness, ethicality, consistency and lack of biasness. Interactional justice is the third component of organizational justice which explains the types and way of explanations for the division of rewards and the method adopted thereof (Greenberg, 1990). According to Bies and Moag (1986) Interactional justice is the consciousness that persons shows to “the quality of the interpersonal treatment they receive during the enactment of organizational procedures”. (Colquitt et al., 2001). According to Colquitt et al., (2001) a review of organizational justice research found that justice perceptions are related to organizational outcomes such as job satisfaction, organizational commitment, organizational citizenship behavior, withdrawal, and performance.

### **Employee Job Satisfaction**

According to (Locke, 1976) Job satisfaction describes how much an employee likes/dislikes his/her job and various aspects of it. Job satisfaction reflects an employee’s feelings and beliefs, and develops through cognitive, emotional and affective reactions to the job itself and its dimensions (Locke, 1976; Organ and Near, 1985; Judge and Ilies, 2004; Rich et al., 2010).

LaLopa (1997) indicated that when employees felt satisfied with their work, they were more willing to be committed to their resorts and to stay longer in their jobs than those who were dissatisfied. Porter (1962) opined Job satisfaction as the degree to which job needs are fulfilled and how much of this fulfillment is perceived by an employee. According to (Weiss, 2002) Job satisfaction is a positive (or negative) evaluative judgment one makes about one’s job or job situation. Hence job satisfaction is not just an emotional state or an effective response but an evaluation of an emotional state. So, job satisfaction is a combination of both what an employee feels (affect) about his/her job and what he/she thinks (cognition) about the various aspects of his/her job.

### **Employee Engagement**

Kahn (1990) offers an empirically tested multidimensional motivational framework reflecting

latent conditions of an employee’s willingness to engage. He first introduced the concept of engagement in workplace settings and defines employee engagement as “the harnessing of organization members’ selves to their work roles. In engagement, people employ and express themselves physically, cognitively, and emotionally during role performances”. The cognitive aspect of employee engagement concerns employees’ beliefs about the organization, its leaders and working conditions. The emotional aspect concerns how employees feel about each of those three factors and whether they have positive or negative attitudes toward the organization and its leaders.

The physical aspect of employee engagement concerns the physical energies exerted by individuals to accomplish their roles. Thus according to Kahn (1990), engagement means to be psychologically as well as physically present when occupying and performing an organizational role. Rich et al. (2010) simply stated that engagement involves investing one’s hand, head, and heart (physical, cognitive, and emotional energy, respectively) during a role performance. Schaufeli et al. (2006) opined employee engagement is a work-related state of mind involving vigor, dedication, and absorption. Vigor refers to high level of energy and mental resilience while working; being ambitious enough to work hard, even in difficult situations (Taipale et al., 2011). Dedication is characterized by a sense of significance, enthusiasm, inspiration, pride, and challenge at work (Cole et al., 2011). Absorption is characterized by being fully concentrated and happily engrossed in one’s work, whereby time passes quickly and one has difficulties with detaching oneself from work. It also indicates that a person concentrates on his work and finds it rewarding (Maslach et al., 2001). According to Harter et al. (2002) employee engagement is defined as “the individual’s involvement and satisfaction as well as enthusiasm for work”

### **Organizational justice and job satisfaction**

The relevance of justice as being a strong organizational occurrence is not only the influence on perceptions of fairness, but also the influence on employee attitudes and behaviors. For instance, unjust and unfair practices by organizations often lead to a lack of effort and cooperation among employees, resulting in dissatisfied and alienated workers (Chelladurai 1999). Recent initial research gives credence to this proposition finding that organizational justice influences employee attitudes and job satisfaction in sport organizations (Smucker et al. 2003). Thus far, however, little research has been conducted to explore the relationships between

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organizational justice and job satisfaction in Telecom sector. Based upon the above mentioned literature the following hypothesis is developed:

**H1:** There is a significant positive impact of organizational justice on job satisfaction among employees.

### **Employee Job Satisfaction and Employee Engagement**

According to (Saks 2006; Simpson 2009) job satisfaction is one of the key attitudes related to work engagement. Simpson (2009), another cross-sectional study, suggests that overall job satisfaction is a significant predictor of work engagement. Further, Saks (2006) considers Job satisfaction is corner stone to employee engagement. Moreover studies conducted by Salanova, Llorens and Schaufeli (2011) and Yalabik et al. (2013) argue that job satisfaction is a predictor of work engagement. Further (Saks 2006; Simpson 2009; Yalabik et al., 2013) found a positive relationship between job satisfaction and engagement. It has been found that employees who are satisfied with their jobs become engaged in their work for several reasons. First, the view of job satisfaction as an antecedent of work engagement is supported by SET.

Employee satisfaction is continuously shaped by exchange relationships within the organization. High exchange employee–organization relationships result in high job satisfaction and organizational commitment (e.g. Conway and Briner, 2005; Zhao et al., 2007; Tekleab and Chiaburu, 2011). Second, work engagement was originally conceptualized as opposite to burnout construct including three-dimension namely exhaustion, cynicism and inefficacy (Bakker and Demerouti, 2008). So work engagement and burnout share similar antecedents. Various studies identify vigorous associations between job satisfaction and burnout, where low job satisfaction increases burnout (Bacharach, Bamberger and Conley, 1991; Lee and Ashforth, 1993; Lee and Ashforth, 1996; Maslach, Jackson and Leiter, 1996; Spector, 1997).

Thirdly, engagement is a motivational concept. It is related to how individuals physically, cognitively and emotionally connect to their jobs (Kahn, 1990; Rich et al., 2010). Satisfaction is the result of needs gratification and employees will be motivated in their jobs to the extent they fulfill their needs (Wolf, 1970). Hence, once the needs are fulfilled, i.e. the employees are satisfied with their jobs; employees are expected to become engaged with their work. On the basis of Current Literature review we hypothesize the following:

**H2:** There is a significant impact of employee job satisfaction on employee engagement in Telecom companies.

## **II. Research Design & Methods**

### **Objectives of the study**

- To study the impact of organizational justice on Employee job satisfaction in Telecom companies.
- To study the impact of Employee job satisfaction on Employee engagement in Telecom companies.

### **Questionnaire Design and Variable Measurement**

The research questionnaire used for primary data collection was designed on the basis of previous empirical literatures and secondary data is collected from review of literature. Structured questionnaire was used to collect the primary data. The questionnaire is divided into two sections. Section A shows the demographic profile of respondents which include employee gender, age, marital status, designation, educational qualification, monthly income, and work experience. Section B includes items related to organizational justice, employee satisfaction and employee engagement. Colquitt's (2001) seven-item scale was used to measure procedural justice and his four-item scale was used to measure distributive justice". 10 items for measuring Employee satisfaction were adopted from the study of Spector (1997) and Employee engagement was measured by 9-item taken from Schaufeli and Bakker's (2003) Work and Well-being Survey (UWES).

### **Sample and Response Rate**

As the reliability coefficients were statistically significant, the instrument was used for the main data collection. Simple random sampling was used to select the employees from private telecom players in the state of J & K. A total of 400 questionnaires were distributed and 310 valid responses were collected, resulting in a 77.5 per cent response rate. Data analysis was carried out using the regression technique.

## **III. Results & Analysis**

### **Reliability Analysis**

The reliability is the extent to which a variable or a set of variables is consistent in what it intends to measure (Hair et al., 2008). So, prior to analyzing the data, reliability of the scale is determined by computing its coefficient alpha. According to Sekaran (2003), the closer the reliability coefficient gets to 1.0, the better it is, and those values over .80 are considered as good. Those values in the .70 are considered as acceptable and that reliability value less than .60 is considered to be poor. The scores of the Cronbach's alpha for all the Constructs-Organizational justice, Employee job satisfaction, and Employee

engagement surpassed the threshold of 0.70 (see Table 1). So the scales used for measurement of each construct were stable and consistent.

### **Descriptive Statistics**

Descriptive statistic of means and standard deviations were obtained from the independent and dependent variables. Table 2. Show the summary of descriptive statistics. A 5- point Likert scale (1= strongly disagree to 5= strongly agree) is used to measure the variables of study. From the table 2, it is clear that the mean value for Organizational justice items ranges from 4.35 to 3.54. The item "The outcomes I receive reflect the effort I have put into my work." is having the highest mean value (4.35). This indicates that respondents are agreed with fairness in the allocation of resources, benefits and rewards of the organization among the members (distributive justice) within the organization.

Overall mean for Organizational justice statements is 4.07 showing that employees are satisfied with fairness in the allocation of resources, benefits and rewards of the organization among the member with regard to the Employee job satisfaction mean value ranges from 4.36 to 3.93 and overall mean for Employee job satisfaction items is 4.17, indicating that employees are also satisfied with their jobs. For the Employee engagement mean value ranges from 4.46 to 4.02 and the overall mean value for the average of Employee engagement items is 4.23 showing a higher engagement of employees within the organization. Table 3 provides correlations for all study variables (Organizational justice, Employee job satisfaction and Employee engagement) to find out the degree of association between these variables. As predicted, Organizational justice is positively correlated to Employee job satisfaction ( $r = .662, p, 0.01$ ) and Employee job satisfaction is positively correlated to Employee engagement ( $r = .703, p, 0.01$ ).

### **Regression Analysis**

The hypothesis testing is done through Simple regression analysis. For H1, (Table 4)  $R = 61.7$  percent;  $R$  Square = 38 percent; Adjusted  $R$  Square = 37.5 percent. This shows that the change of Employee Engagement is explained 38 percent ( $R$  square = 38 percent) by the Organizational justice. Therefore, H1 is accepted i.e. there is a significant positive impact of Organizational justice on employee engagement in telecom sector. Further for H2, (Table 5)  $R = 70.3$  percent;  $R$  Square = 49.4 percent; Adjusted  $R$  Square = 48.9 percent. This shows that the change of Employee engagement is explained 38 percent ( $R$  square = 38 percent) by the employee job satisfaction. Therefore, H2 is accepted i.e. there is a significant positive impact of

job satisfaction on employee engagement in telecom sector.

## **IV. Conclusion**

The present study intended to scrutinize the association between organizational justice, Employee job satisfaction and Employee engagement. The results of present study concluded that Organizational justice is positively associated with, Employee job satisfaction ( $r = .662, p, 0.01$ ) and Employee job satisfaction is positively correlated to Employee engagement ( $r = .703, p, 0.01$ ). Further, results show that organizational justice significantly impacts employee job satisfaction ( $R$  square = .380). The results are consistent with the results of previous studies that intention of organizations while implementing organizational justice is to motivate and satisfy employees. "Employees would feel satisfied by receiving organizational justice campaigns, as well as the related opportunities for self-actualization and self-development" (Berry, 1981; Rafiq & Pervaiz, 2000, Abdullah et al (2011); Khan et al., (2011).

Further analysis indicated that Employee job satisfaction has positive impact on Employee engagement ( $R$  Square = .494). The result of the study is similar to Gallup (2008), Scarborough (2008) and Koscec (2003). "If people feel positive about their job and various aspects of work, such as pay, supervision, or workload, that is, satisfy in their work, enable to be more motivated, and committed to help the company to achieve its objectives finally have a desire to be involved and engaged in the company" (Gallup, 2008; Scarborough, 2008 and Koscec, 2003). Further findings of the study suggest that distributive justice is significantly related to satisfaction with pay, satisfaction with promotion. It appears that both distributive and procedural justice seem to be very important in predicting employees' subsequent personal satisfaction. If managers apply rules fairly and consistently to all employees and reward employees based on performance and merit without personal bias, then employees will have a positive perception of procedural and distributive justice which may lead to a higher level of satisfaction. Besides procedural and distributive justice, "sensitivity to others" has been identified as one of the most important dimensions of interpersonal skills for managers (Hogan, 1995). That is, besides "what" information is provided to employees, more attention should be focused on "how" information is presented. Thereby, managers need to possess skills in understanding employees' intentions and their individual differences regarding values and attitudes, communicate

to employees clearly and respect their wishes, and project courtesy and Friendliness in the process.

Thus, all possible interactions between the supervisor, employees and the organizational culture should be examined closely in the future. Under such environment, managers should be concerned about revamping employee satisfaction. Further findings have revealed that Employee satisfaction is an antecedent to employee engagement, this entails the organizations to take measures to boost satisfaction among employees to engage the employees. So it is insinuation to organization that a culture of fairness and justice should be created in the organization to meet employees' demands and hence the organization goals. In the course of these intangible changes, employees will get satisfied and they will get engrossed in their jobs which will be beneficial for the organization operation and success. As the results (Table 2) indicates that employees are not greatly pleased with the organization's methods and procedures through which these rewards and outcomes are divided. So, it is suggested that organization should inform its employees about the standard for rewarding and should pay emphasis on linking it to their business goals which will aid in achieving higher level of overall job satisfaction. As the present research is limited to only state of J&K. So, for future research other geographical regions can also be considered to obtain a wide generalization of the study.

## References

Abdullah, R.B., Musa, M., Zahari, H., Rahman, R. and Khalid, K. (2011). The Study of Employee Satisfaction and its Effects towards Loyalty in Hotel Industry in Klang Valley, Malaysia. *International Journal of Business and Social Science*, 2 (3).

Ahmed, P. K. and Rafiq, M. (2003). Organizational justice issues and challenges. *European Journal of marketing*, 37(9), 1177-1186.

Awwad, M.S. and Agti, D. (2011). The impact of organizational justice on commercial organization s' market orientation. *International Journal of Organization Marketing*, 29(4), 308-332.

Bacharach, S.B., Bamberger, P. and Conley, S. (1991). Work-Home Conflict among Nurses and Engineers: Mediating the Impact of Role Stress on Burnout and Satisfaction at Work. *Journal of Organizational Behavior*, 12, 39-53.

Bakker, A. B., Schaufeli, W. B., Leiter, M. P. and Taris, T. W. (2008). Work engagement: An emerging

concept in occupational health psychology. *Work and Stress*, 22:3, 187-200.

Berry, L.L. (1981). The Employee as Customer. *Journal of Retail Telecom*, 3(1), 33-40.

Bies, R. J., and Moag, J. F. (1986). Interactional justice: Communication criteria of fairness. *Research on Negotiations in Organizations*, 1, 43-55.

Chelladurai, P. (1999). *Human resource management in sport and recreation*. Champaign, IL: Human Kinetics

Cohen-Charash, Y. and Spector, P. (2001). The role of justice in organizations: A meta-analysis. *Organizational Behavior and Human Decision Processes*, 86(2), 271 - 321.

Conway, N. and Briner, R.B. (2005). *Understanding Psychological Contracts at Work: A Critical Evaluation of Theory and Research*, Oxford, Oxford University Press.

Esfahani, A.N., Amirosadat, S.N., Rahimi, H.R. and Marandi, M.H. (2013). Investigating relationship between Organizational justice and Job Satisfaction with Using Structural Equation Modeling', *International Journal of Academic Research in Economics and Management Sciences*, 2(3)

Gallup. (2006). Gallup study: engaged employees inspire company innovation: national survey finds that passionate workers are most likely to drive organizations forward. *The Gallup Management Journal*.

Greenberg, J. (1990). Organizational justice: Yesterday, today, and tomorrow. *Journal of Management*, 16 (2), 399-432.

Hair, Jr., J.F., Black, W.C., Babin, B.J., Anderson, R.E. and Tatham, R.L. (2006). *Multivariate data analysis* (6th edn.), New Jersey, Pearson Education, Inc.

Hogan, J. (1995). Interpersonal skills at work. Paper presented at the 41st Annual Convention of the Southwestern Psychological Association, San Antonio, TX.

Judge, T.A. and Ilies, R. (2004). Affect and Job Satisfaction: A Study of their Relationship at Work and at Home. *Journal of Applied Psychology*, 89, 661-673

Kahn, W.A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33, 692-724.

Kameswari, V.A. and Rajyalakshmi, N. (2012). Role of Organizational justice in Job Satisfaction of Employees in State Organization of India. Paper

- presented at the Ninth AIMS International Conference on Management., Pune.
- Kazemzadeh, R.B. and Bashiri, M. (2005). Determination of critical factors on employee satisfaction – a case study on a financial institute. paper presented at IEEE International Engineering Management Conference 11-13 September, Canada.
- Koscec, M. (2003). A Word about Employee Satisfaction, [www.leadershipintelligence.com](http://www.leadershipintelligence.com).
- Landy, F. J., and Conte, J. M. (2004). *Work in the 21st century: An introduction to industrial and organizational psychology*. Boston: McGraw Hill.
- Lee, R.T. and Ashforth, B.E. (1996). A Meta-Analytic Examination of the Correlates of the Three Dimensions of Job Burnout. *Journal of Applied Psychology*, 81, 123–133.
- Leventhal, G. (1980). What should be done with equity theory? New approaches to the study of fairness in social relationships. In K. Gergen, M. Greenberg, and R. Willis (Eds.), *Social Exchange: Advances in theory and research*, (pp. 27-55). New York: Plenum Press.
- Maslach, C., Schaufelli, W. B. and Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52(1) 397-422.
- Mauno, S., Kinnunen, U. and Ruokolainen, M. (2007). Job Demands and Resources as Antecedents of Work Engagement: A Longitudinal Study. *Journal of Vocational Behavior*, 70(1) 149–171.
- Organ, D.W. and Near, J.P. (1985). Cognition vs. Affect in Measures of Job Satisfaction. *International Journal of Psychology*, 20, 241–253.
- Porter, L. W. (1962). Job attitudes in management: I. Perceived deficiencies in need fulfillment as a function of job level. *Journal of Applied Psychology*, 46(6) 375.
- Rafiq, M. and Ahmed, P. K. (2000). Advances in the organizational justice concept: definition, synthesis and extension. *Journal of services marketing*, 14(6) 449-462.
- Rich, B.L., Lepine, J.A. and Crawford, E.R. (2010). Job Engagement: Antecedents and Effects on Job Performance. *Academy of Management Journal*, 53, 617–635.
- Robbins, S. P. and Judge, T. A. (2006) *Organizational behavior* (12<sup>th</sup> edn), Englewood Cliffs, NJ, Prentice Hall.
- Saks, A.M. (2006). Antecedents and consequences of employee engagement. *Journal of Managerial Psychology*, 21(7), 600-619.
- Schaufeli, W. B. and Bakker, A. B. (2003). *UWES – Utrecht Work Engagement Scale: Test Manual*. Utrecht University, Department of Psychology. Retrieved from <http://www.schaufeli.com>
- Schaufeli, W.B., Bakker, A.B. and Salanova, M. (2006). The measurement of work engagement with a short questionnaire: a cross-national study. *Educational and Psychological Measurement*, 66(4) 701-16.
- Sekaran, U. (2003). *Research methods for business*, Hoboken, N J: John Wiley and sons (Eds).
- Simpson, M.R. (2009). Engagement at Work: A Review of the Literature. *International Journal of Nursing Studies*, 46, 1012–1024.
- Smucker, M. K., Whisenant, W. A., & Pedersen, P. M. (2003). An investigation of job satisfaction and female sports journalists.
- Staw, B. M., & Cohen-Charash, Y. (2005). The dispositional approach to job satisfaction: More than a mirage, but not yet an oasis. *Journal of Organizational Behavior*, 26, 59–78. doi:10.1002/job.299
- Taipale, S., Selander, K., Anttila, T. and Natti, A. (2011). Work engagement in eight European countries: the role of job demands, autonomy and social support. *Journal of Sociology and Social Policy*, 31(7), 486-504.
- Tekleab, A.G., Takeuchi, R. and Taylor, M.S. (2005). Extending the Chain of Relationships Among Organizational Justice, Social Exchange, and Employee Reaction: The Role of Contract Violations. *Academy of Management Journal*, 48, 146–157.
- Weiss, H.M. (2002). Deconstructing Job Satisfaction: Separating Evaluations, Beliefs and Affective Experiences. *Human Resource Management Review*, 12, 173–195.
- Wolf, M.G. (1970) 'Need Gratification Theory: A Theoretical Reformulation of Job Satisfaction/ Dissatisfaction and Job Motivation', *Journal of Applied Psychology*, 54, 87–94.
- Woodruffe, H. (1995) *Services Marketing*, London, Pitman Publishing.
- Yalabik, Z.Y., Popaitoon, P., Chowne, J.A. and Rayton, B.A. (2013). Work Engagement as a Mediator between Employee Attitudes and Outcomes. *International Journal of Human Resource Management*, 24, 2799–2823.
- Zhao, H., Wayne, S.J., Glibkowski, B.C. and Bravo, J. (2007). The Impact of Psychological Contract Breach on Work-Related Outcomes: A Meta-Analysis. *Personnel Psychology*, 60, 647–680.

Figure 1: Shows the proposed model of this paper and the hypothesized connections between its components.



Table 1: Reliability Statistics.

Factors	Cronbach's Alpha
Organizational justice	.875
Job satisfaction	0.89
Employee Engagement	.867
Overall Reliability	.927

Table 2: Summary of descriptive statistics.

S No.	Items	Mean	Mode	Std. Deviation
<b>ORGANIZATIONAL JUSTICE</b>				
OJ1	The outcomes I receive reflect the effort I have put into my work.	4.3525	5	.78121
OJ2	The outcomes I receive are appropriate for the work I have completed.	4.3443	5	.70148
OJ3	My outcomes reflect what I have contributed to the organization.	4.2459	4	.76398
OJ4	The outcomes of my work justify my performance.	4.2623	5	.79047
OJ5	I am able to express my views and feelings during those procedures.	3.8607	4	.92990
OJ6	I influence over the outcomes arrived by those procedures.	3.9590	4	.77904
OJ7	Those procedures have been applied consistently.	4.2787	5	.84657
OJ8	Those procedures are free of biasness.	3.6568	5	.91043
OJ9	Those procedures have been based on accurate information.	4.3335	4	.82364
OJ10	I have been able to appeal the outcomes arrived at by those procedures.	3.5460	4	.61217
OJ11	Those procedures upheld ethical and moral standards.	3.9745	5	.76478
Overall mean		4.0740	4.5	.78733
ES1	Financial incentives motivates me more than non-financial incentives.	4.1475	5	.87832
ES2	satisfied with the salary I draw at present	4.0656	5	1.00196
ES3	Superior always recognizes the work done by me.	4.1639	4	.79628
ES4	Satisfied with the responsibility and role that I have in my work	4.2131	5	.80525
ES5	Satisfied with the support from my superiors.	4.2541	4	.72227
ES6	Visibility with top management is important to me	4.1066	5	.86059
ES7	The medical benefits provided in my organization are satisfactory.	3.9344	5	1.16234
ES8	I feel that the job I do gives me a good status.	4.3689	5	.72955
ES9	I feel secured in my job.	4.3033	5	.82211
ES10	I am satisfied with the overall job.	4.2131	4	.82552
Overall mean		4.1770	5	.53239
EE1	At my work, I feel energetic.	4.0246	4	.94880
EE2	I find the work that I do full of meaning and purpose.	4.2295	4	.73616
EE3	Time flies when I'm working.	4.3607	5	.65638
EE4	I am enthusiastic about my job	4.1148	4	.86432
EE5	When I am working, I forget everything else around me.	4.4672	5	.67032
EE6	My job motivates me	4.1475	4	.76787
EE6	My job motivates me	4.1393	4	.80613
EE7	I feel happy when I am working intensely.	4.2869	5	.80781
EE8	I am proud of the work that I do.	4.3033	4	.70288
EE9	At my job, I feel strong and vigorous.	4.2304	4	.48656
Overall mean		4.0246	4	.94880

**Table 3: Correlations between Organizational justice, Employee Job Satisfaction and Employee Engagement.**

VARIABLES		Organizational justice	Employee job satisfaction	Employee engagement
Organizational justice	Pearson Correlation	1	.662**	.617**
	Sig. (2-tailed)		.000	.000
	N	325	325	325
Employee job satisfaction	Pearson Correlation	.662**	1	.703**
	Sig. (2-tailed)	.000		.000
	N	325	325	325
Employee engagement	Pearson Correlation	.617**	.703**	1
	Sig. (2-tailed)	.000	.000	
	N	325	325	325
**. Correlation is significant at the 0.01 level (2-tailed).				

**Table 4: Impact of organizational justice on Employee Engagement.**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.617 <sup>a</sup>	.380	.375	.38463
Predictors: (Constant), Internal marketing				

**Table 5: Impact of Employee Job satisfaction on Employee Engagement.**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.703 <sup>a</sup>	.494	.489	.34766
Predictors: (Constant), Employee satisfaction				

# ILLITERACY & POPULATION GROWTH - A STUDY OF KERALA & BIHAR

Abha Mathur\*

*Indian economy bags the seventh position among the largest economies of the world. Being one of the top listed countries among the developing countries in terms of industrialization and economic growth, India holds a robust stand with an average growth rate of approx 7%, but there are still fair opportunities for better & faster growth. The irony is that its Population is growing and Literacy is not growing at the same rate. The purpose of this research is to identify the causes of rapid increase in population rate, by considering data and establishing special causes, if any, associated with Kerala & Bihar, the two states which are being studied. The next phase of the research involves a study of the literacy rate in stated states of Kerala & Bihar, wherein one is a developed state & the other a backward state. A comparison is proposed to be made between the two states and with the various countries world over and correlate the findings to establish any correlation between increasing population and stagnating or slow growth in literacy rate. India's literacy rate is at 74.04%. Kerala is the most literate state in India, with 93.91% literacy. Bihar is the least literate state in India, with a literacy of 63.82%. Bihar is the only Indian state in the 2011 census where less than 65% of the population was literate. Population is a great menace to our economic growth. Advances in medical science and health measures have reduced the death-rate. But the birth rate has continued to remain more or less stationary. The population increases between 100-120 lakhs per year. The literacy by now should have been 100%.*

**Keyword:** Illiteracy, Population, economic growth, Kerala & Bihar.

In some underdeveloped economies of the world, the increased population may help in the economic progress of the country by providing cheap and abundant labour. It may also expand market which necessitates effective demand. But this is not true in case of the over-populated and developing country like India, where rapid population growth can be attributed, to a large extent, to illiteracy amongst people.

That literacy being the basic requirement of economic development, had been recognized throughout the world and hence literacy reached around 99% in countries of Japan, South Korea, USA, UK, Germany, France, etc. But in India the literacy is still hovering around 74% on an average reaching above 90% in Kerala and below 75% in Bihar, Arunachal Pradesh, Jharkhand, etc. All efforts and success in literacy have become obliterated by huge rise in population. Women population constitutes a larger portion of total illiterate population. In India, the female literacy rate is around 65 percent as against the male literacy rate of around 82 percent. Illiteracy deprives people not only of economic development but also of all benefits of education, reading, writing, etc. remaining within the darkness of ignorance, poverty and impoverishes. There is a need for Government of India to rise up to the occasion and take all possible steps to set up thousands of primary school all around the country making literacy and compulsory obligation of every citizen without which he will be penalized. For this the primary education has to be made free of tuition fees, all

books and papers and instruments including computer to be supplied free.

## I. Review of Literature

Manoranjan Mohanty (2004), studied Class, caste and gender & concluded that Dalits did not send their children to the regular school because they were humiliated. Even when there is no overt social discrimination, people were unable to afford books and stationery, they could not afford the bribes, without which it is impossible to be offered a job. B. G. Verghese wrote "Stinking evidence is coming to light in Kerala. Over the past decade the birth rate in Kerala has fallen from 37 to 27 [per 1,000] or less." Over the last 20 years, however, India's birth rate has fallen only from 41 to 37.2 per thousand. He added: "The women are educated and particularly active in the community. Its infant mortality rate is the lowest in the country. Alas, Kerala is not India."

The study led by Pratham, an education NGO, Cornell University and the Abdul Latif Jameel Poverty Action Lab (J-PAL) at the Massachusetts Institute of Technology. During the one-year study, conducted in 480 villages of Rajasthan and Bihar states, with the lowest female literacy levels, concluded that mothers with

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children between ages five and eight were exposed to three kinds of interventions: Home learning, participation programmes in their children's education, and a combination of both.

### **Rationale /Justification for Choice of the Topic of the Research**

Before data was collected, presented and collated for drawing conclusions, it was important to establish as to why this topic was selected for study. There were two very important factors which influenced the growth of any economy, namely- Population and Literacy rate, as both parameters impact the development process. Before starting the research, it was important to point out the impact of Population and Literacy on Economic Development of India. The high rate of growth of population on the top of existing massive population hampers the economic development in India in the following ways:

- a. In India food supply is inadequate, and one-third of the populations was underfed.
- b. The explosive rate of growth of population had also greatly aggravated the unemployment problem in India. In India about 45 million people were registered unemployed.
- c. One of the far-reaching results of the ever increasing population was that it reduced the saving and investment of the country
- d. There was also high proportion of unproductive population. In 1961, 57 percent of the population were unproductive consumers. In 1991 this percentage has gone up to 62.4 percent.
- e. The growth of population also affected the standard of living of the people. In India one-third of the people live below the subsistence level.
- f. Women in India did not participate in the productive activity for a long time due to frequent maternity.
- g. The Literacy rate further declined because poverty was a by-product of large family and due to poverty, educating a child is last on the mind of such a BPL family, which led to a stagnating Literacy rate.

It was felt by the author that establishing a correlation between illiteracy and population would be very interesting as well as meaningful & all the above factors motivated the author to carry out the research on two states which are opposites of each other in terms of population growth and literacy.

### **Objectives**

- To explore causes for growth in population in Bihar

- To study the reasons for low literacy rate in India even after more than seven decades of independence in Bihar
- To identify reasons for high literacy and low population in Kerala
- To compare two contrasting States of the country in terms of population growth rate and literacy rate
- To find out correlation, if any, between growing population and low literacy rate of the chosen States
- To make recommendations for improving the current scenario

## **II. Research Design & Methods**

The study was based on secondary sources of data. The data were collected from Census of India, and official websites of Bihar. The major advantages of the census data were that they are based on complete enumeration and are, therefore reliable than projections and estimates. Further, they provide an opportunity to observe trends over a period of time and draw meaningful conclusion to facilitate planning. Method of Simple percentage was used for the analysis of data. The data were shown on multiple bar diagram, Simple line graph. For comparative study line graphs were used to show the trend of literacy rate. This line graph and bar graph also helped in giving legitimate references to the past trends and to elucidate variation and change.

- a. Data with respect to population growth and literacy rate was collected for selected two states for drawing a conclusion, after independence period and the same shall be put to analysis
- b. Data analysis also included collating data collected on both the stated factors and for both the stated States namely Kerala and Bihar, for the research purpose.
- c. Conclusion, then, arrived at and
- d. Concrete suggestions were made on the basis of findings.

## **III. Results & Analysis**

### **Facts & figures for two States considered -Kerala and Bihar**

#### **1. Kerala Population & literacy**

##### **Kerala- a bird's eye view**

Kerala, a state in India, was a bizarre anomaly among developing nations, a place that offers real hope for the future of the Third World. Though not much larger than Maryland, Kerala has a population as big as California's

and a per capita annual income of less than \$300. But its infant mortality rate is very low, its literacy rate among the highest on Earth, and its birth-rate below America's and falling faster. Kerala's residents live nearly as long as Americans or Europeans.

A pilot project began in the Ernakulam region, an area of 3 million people that includes the city of Kochi. In late 1988, 50,000 volunteers fanned out around the district, tracking down 175,000 illiterates between the ages of 5 and 60, two-thirds of them women. Within a year, it was hoped, the illiterates would read Malayalam at 30 words a minute, copy a text at 7 words a minute, count and write from 1 to 100, and add and subtract three-digit numbers. On 4 February 1990, 13 months after the initial canvass, Indian Prime Minister V. P. Singh marked the start of World Literacy Year with a trip to Ernakulam, declaring it the country's first totally literate district. In 2001, Kerala's literacy rate was 91% almost as high as that of China (93%) and Thailand (93.9%). In 2011, it went up to 94%.

As per details from Census 2011, Kerala had population of 3.34 Crores, an increase from figure of 3.18 Crore in 2001 census. Total population of Kerala as per 2011 census was 33,406,061 of which male and female are 16,027,412 and 17,378,649 respectively. In 2001, total population was 31,841,374 in which males were 15,468,614 while females were 16,372,760. The total population growth in this decade was 4.91 percent while in previous decade it was 9.42 percent. The population of Kerala forms 2.76 percent of India in 2011. In 2001, the figure was 3.10 percent.

## **2. Bihar population & literacy data [last decade 2001-2011] [source of data census figures collected from Government sites]**

### **Bihar - a bird's eye view**

It is the 13th-largest state of India, with an area of 94,163 km<sup>2</sup> (36,357 sq mi) & The third-largest state of India by population. Bihar with a total population 119 million people is the most densely populated state among all states forming Eastern India. With an annual growth rate of 2.5% in its population, Bihar is the third largest state of India after UP. Since the late 1970s, Bihar has lagged far behind other Indian states in terms of social and economic development.

As per details from Census 2011, Bihar has population of 10.41 Crores, an increase from figure of 8.30 Crore in 2001 census. Total population of Bihar as per 2011

census was 104,099,452 of which male and female were 54,278,157 and 49,821,295 respectively. In 2001, total population was 82,998,509 in which males were 43,243,795 while females were 39,754,714.

As per the report, literacy rates for women in Bihar have soared from 33.12 per cent in 2001 to 53.33 per cent this census year. The State's overall literacy rate has also shot up during the past decade, and now stands at 63.82 per cent marking a 17 per cent jump from the 47 per cent in 2001; 21 of the 38 districts in the State have clocked up a female literacy rate higher than the State average, with the Naxal-affected Munger district topping the female literacy chart, recording an impressive 65.53 per cent.

**Sex ratio-** However, the overall sex ratio had dropped to 916 females per 1,000 males from 919 in 2001, with a sharp fall in the child population (aged 0-6 years) from 942 girl children in 2001 to 933. In the comparatively urban Patna, Bihar's most populous district, the girl child (0-6 years) ratio had dropped to an alarming 899 girls per 1,000 boys from the erstwhile 923 in 2001.

The total population growth in this decade was 25.42 percent while in previous decade it was 28.43 percent. The population of Bihar forms 8.60 percent of India in 2011. In 2001, the figure was 8.07 percent. A decade wise graphical representation showed the population growth of Bihar, UP and India as a whole. It was interesting to note that Bihar had shown a downward trend in population growth in the decade 2001-2011, as compared to the growth recorded in the decade 1991-2001. The collected data made the proposed study more interesting as the state Bihar, although, at the lowest, had a possibility for emerging as a strong progressive state in the next decade.

### **A glance over the literacy rate of select countries world over**

This is a list of countries by literacy rate. The figures represented are almost entirely collected by the UNESCO Institute for Statistics (UIS) on behalf of UNESCO with 2015 estimates based on people aged 15 or over who can read and write. Though the study is related to comparing the two States chosen for the research, but this data taken from various countries establishes a fact that a big country like China with world's largest population can also have high literacy rate. On the other hand, some small Countries with less population have a much higher literacy rate than India. In fact, the chosen countries present a ray of hope for India, as Indian States which have more population than some of these countries, have the possibility of improving the literacy rate.

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## Data Outcomes

### For Kerala- Reasons for high literacy rate in Kerala

Like any other state in India during the 19th century, socio-economic segregation was prevalent in Kerala too. The temples were accessible only to the upper castes. The dalits were seen unworthy of education and was a powerful strategy of the upper-castes to establish superiority over them. However, following were the reasons attributed to high literacy rate in the state.

- The change in the education scenario came about as a part of a social revolution that moved towards equal treatment of the lower castes. This social reform movement was an aftermath of the actions of visionaries like Sree Narayana Guru, Chattampi etc. This in turn led to NSS (Nair Service Society) Schools and Sree Narayana schools which are still a strong presence in the current education scenario of Kerala.
- Another big factor that influenced the Kerala-education sector is the introduction of Christian Missionaries in the late 19th century. The concept of 'Pallikudam'-which has become a synonym for schools in Kerala now, were brought about by the CSI/CMI missionaries. Pallikudam means starting of a school adjacent to the church. The introduction of local schooling further augmented the education sector.
- Another reason which greatly influenced Kerala, was the status of woman in the province during the pre-colonial era. Education was made available to women also, contrary to other areas of the country which faced a patriarchal society.
- Modern policies adopted by the governments also played a key role in the aggravation of the already accelerating literacy rate. The aided-school policy adopted by the Govt paved way for private entrepreneurs to start up schools with govt. aiding. It also normalized remuneration for the school staff including teachers.
- In short, the high literacy rate of Kerala is a result of the continuous efforts taken by pioneers/social reformers/kings/rulers/elected governments working towards an educational revolution.

### Reasons for Low population rate in Kerala

- Kerala had the highest literacy rate of all Indian states, especially for women, who had the qualifications and the ability to develop a career means that they can hold off marriage until later in their lives, which reduces the number of children

that they can have [fertility rate of 1.77, which is below replacement].

- Keralan families had one of the smallest family sizes of India [with an average of 4.3 people, which was most likely to be a couple and 2 children, with maybe grandparents included as well
- With Kerala registering the lowest growth rate of population in the last one decade, the state was all set to achieve "zero population growth" in the coming years.
- Family planning initiatives had been highly successful: people were educated and realised the advantages of having a smaller family, much before the rest of the country did.
- Women had a high status in both the society and in the family, the educational standards of women in Kerala was higher than in the rest of the country (female literacy rate of 93.9%). All this led to empowerment of women and they had a prominent voice when it came to family planning.
- As indicated by the sex ratio (1084 women per 1000 men), there was no preference for males over women.
- Cause of low literacy rate in Bihar
- Poverty and rising population (28% rise 1991-01)
- Illiterate parents and parental attitudes
- Rampant corruption in Bihar's Political and governmental setup.
- Political interests to sustain reign by keeping the public illiterate and unaware.
- Fewer industries due to poor infrastructure. For example, there is acute lack of power supply in the state: Per capita consumption of electricity in Bihar is only 140.8 Kwh, compared to the all-India average of 354.72 5.
- Poor schools and further initiatives Bihar's non-progress is a cycle, starting at poverty and compounded by Population.

### Causes of high population in Bihar

- The chief reason was extreme social and educational backwardness in the state of Bihar is the lowest literacy rates in India @ 61%.
- Educational backwardness was the key factor responsible for social and cultural ills plaguing the state.
- If people were asked for a reason of having lot of children, they said, "It is God's will".
- People there did not know much about the use of various contraceptives. Even if they knew, they were reluctant to use them. A lot of rumours floated in villages regarding usage of such contraceptives.

- Patriarchy was deeply entrenched in these two states. Women had to accept decisions that were imposed upon them by their male counterparts. Even in the matters pertaining to their life such as number of children, sex and use contraceptives, sex determination etc, they had very little contribution.
- There was a strong preference for male child. The families did not stop producing babies unless they have got a male child.
- More children mean more manpower to work in the fields. As agriculture is the main source of livelihood for majority of population in these two states; people perceive that having more children will help them extract more benefits from their land.
- The trend of the states with low work participation of women and their high population growth rate is clear, as these states have more poverty and less development, which meant that they had less people earning [so lower household income] and also were more prone to archaic cultures [women should stay at home and not work].

#### **Problems in spreading education in Bihar**

- High drop-out rates
- Low levels of learning achievement
- Low participation of girl students
- Inadequate school infrastructure
- Teacher absenteeism rate high
- Large-scale teacher vacancies
- Inadequate teaching/learning material
- Lack of public involvement in provisioning of educational services
- Variation in the literacy rates for the Special Groups of citizens
- Variation in inter-state literacy rates

#### **Brief reference of UP**

Literacy rate in Uttar Pradesh showed upward trend as it was 67.68 percent as per 2011 population census. Of that, male literacy stood at 77.28 percent while female literacy stood at 57.18 percent. Based on details of Census 2011, Uttar Pradesh had population of 19.98 Crores, an increase from figure of 16.62 Crores in 2001 census.

Total population of Uttar Pradesh as per 2011 census was 199,812,341 of which male and female were 104,480,510 and 95,331,831 respectively. In 2001, total population was 166,197,921 in which males were 87,565,369 while females were 78,632,552. The total population growth in this decade was 20.23 percent while in previous decade it was 25.80 percent. The population of Uttar Pradesh forms

16.50 percent of India in 2011. In 2001, the figure was 16.16 %.

#### **UP Data**

It is very evident from the UP brief details that even when a moderate State was selected to reconfirm the outcomes of the chosen states, the results more or less showed the same result that when female literacy increased then it did have an impact on lowering the population.

## **IV. Conclusion**

#### **Recommendations & suggestions**

Based on the comparison of chosen two states and a brief reference of UP, which ranked somewhere between the chosen two states, some recommendations and suggestions are as follows:

It is suggested that the Government must implement all the schemes announced, to increase Literacy and reduce the problem of Growing Population in Bihar.

#### **The direct-impact schemes by the Govt.**

- National Literacy Mission Programme: Introduced in 1988, it's a flagship programme that aims to educate about 80 million people. A separate National Literacy Mission was set up to fund this programme.
- Saakshar Bharat: This is another programme that aims at educating the girl child. Co-ordinated by the DSEL, launched in September 2009, primarily focuses on Adult education- for those who have crossed the formal age of education and yet were unable to complete it.
- Right of Children to Free and Compulsory Education Act: This is an act passed by the Parliament in 2009 which ensures compulsory education for children of age between 6- 14 years. A good way to attack child labour.
- Rashtriya Uchchatar Shiksha Abhiyan (RUSA) - Aims at funding higher-education thereby helping Central Universities and Government aided colleges adhere to the norms and maintain necessary infrastructure.

#### **Programmes that indirectly improve literacy**

- Midday Meal Scheme: There are no proper facilities for the kids to avail food in the schools especially in villages. When there is no proper nutrition, the kids cannot concentrate. Thus the Mid-Day meal programmes to ensure that kids eat healthy nutritious

food. This has been a huge hit- especially in TN and Bihar.

- Free Bicycles Program: travelling to school and back is a huge problem, especially in remote areas. This program targets at this transportation problem, to save time and be able to attend school.
- Swachh Bharat Abhiyan: Which in general aims at curbing Open Defecation, it also focuses on toilets for the girls in schools. When proper infrastructure (sanitation) is not in place, then girl kids won't go for studying and that is a huge loss.

### **Measures for Population control in Bihar**

- Social Measure- Population explosion is a social evil and it is deeply rooted in the society. So efforts should be made to remove this social evil from the country.
- Minimum age of Marriage to be raised from 21 years for men and 18 years for women, which has been fixed by law and should be firmly implemented and people should be made aware of this, through publicity endeavour by Government.
- Raising the Status of Women in Bihar may also help as they are confined to four walls of house & confined to rearing and bearing of children. Free education should be given to them.
- Spreading of Education is required to change the outlook of people. The educated men prefer to delay marriage and adopt small family norms. Educated women are health conscious and avoid frequent pregnancies and thus help in lowering birth rate.
- Adoption be encouraged for parents do not have any children, despite costly medical treatment. It will be beneficial to orphan children and childless couples.
- Change in Social Outlook in terms of considering marriage a social binding. Issueless women should not be looked down upon.
- Social Security must be provided So that old & issueless do not depend upon others in the event of old age, sickness, unemployment etc. with these facilities they will have no desire for more children.

### **Economic Measures- The following are the recommended economic measures:**

- More employment opportunities be provided. This step can check the population growth.
- Development of Agriculture and Industry will help large number of people to get employment. When their income is increased they would improve their standard of living and adopt small family norms.

- Raising Standard of Living- Improved standard of living acts as a deterrent to large family norm. In order to maintain their higher standard of living people prefer to have a small family.
- Urbanisation would always help as it is on record that people in urban areas of Bihar have low birth rate than those living in rural areas.

### **Other Measures- The following are the other recommended measures:**

- Late Marriage- As far as possible, marriage should be solemnized at the age of 30 years. This will reduce the period of reproduction among the females bringing down the birth rate.
- Self Control- According to some experts, self control is one of the powerful methods to control the population. It helps in reducing birth rate.
- Family Planning- This method implies family by choice and not by chance. By applying preventive measures, people can regulate birth rate.
- According to Chander Shekher, "Hurry for the first child, Delay the second child and avoid the third.", should be popularised in Bihar
- Recreational Facilities- Birth rate will likely to fall if there are different recreational facilities like cinema; theatre, sports and dance etc. are available to the people of Bihar residing in rural areas.
- Publicity- The communication media like T.V., radio and newspaper are the good means to propagate the benefits of the planned family to the uneducated and illiterate persons especially in the rural and backward areas of the state.
- Incentives- The State govt. can give various types of incentives to the people to adopt birth control measures.

### **Recent Measures to bring about growth in Bihar**

The government of Bihar, one of India's poorest states, had recently undertaken several policy initiatives to make education more affordable and accessible to children. These initiatives had focused on reducing the "opportunity cost" of schooling and providing incentives for enrolment and performance. Recent policy initiatives and improvements in primary school enrolment showed that Bihar was making progress in improving its education levels. Focus has been on lowering the cost of schooling through subsidizing or providing textbooks, uniforms, bicycles and cash transfers for attendance. At the end of the paper, it is concluded that low literacy contributes to the ever increasing population rate. If menace of population is to be combated, then first,

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education has to be imparted to every citizen of the country. Higher literacy will definitely contribute to lowering the population rate. Therefore, High population rate in Bihar is a by-product of Low Literacy Rate in Bihar & conversely, high literacy rate is a significant reason of low population growth in Kerala.

## References

Vinze, Medha Dubashi. (1987). Women Empowerment of Indian: A Socio Economic study of Delhi. Mittal Publications, Delhi

Pimentel, D. et al, (1999)"Will Limits of the Earth's Resources Control Human Numbers?" (Environment, Development and Sustainability 1: 19-39, 1999).

Parayil, Govindan (2000). "Introduction: Is Kerala's Development Experience a Model?"

Malthus, T.R., (2004) An Essay on the Principle of Population (1798). (Norton Critical Edition, edited by P. Appleman, 2nd ed., New York: W.W. Norton, 2004).

K.R. Nayar; Anant Kumar (July 2005), "Health Analysis – Kerala and Bihar: A Comparison",

Vanlalchhawna (2006), Higher education in North-East India: unit cost analysis, Mittal Publications, ISBN 81-8324-056-9,

Geeta Gandhi Kingdon (March 2007), The progress of school education in India

Basu, Kaushik (25 July 2007). "India's demographic dividend". BBC News. Retrieved 2011-09-24.

"Bihar teachers under attendance watch (2010)", Bihar Times, 10 September 2009, archived from the original on 3 January 2010, retrieved 2009-11-30,

Pandey, Geeta (23 May 2011). "India's unwanted girls". BBC News. Retrieved 23 May 2011.

"Population" Government of India (2011). Census of India.

"List of states with Population, Sex Ratio and Literacy Census 2011". 2011 Census of India. Retrieved 23 January 2013

Nagaraja, B. (2013). Empowerment of Women in India: A Critical Analysis. Journal of Humanities and Social Science (IOSR-JHSS), 9(2), pp. 45-52. Available on- URL [http: www.iosrjournals.org/empowerment.html](http://www.iosrjournals.org/empowerment.html).

Baruah, B. (2013). Role of Electronic Media in Empowering Rural Women Education of N.E. India. ABHIBYAKTI: Annual Journal, 1, pp. 23-26.

**Table 1: Kerala Data.**

Description	Year 2001	Year 2011
Approximate Population	3.18 Crore	3.34 Crore
Actual Population	31,841,374	33,406,061
Male	15,468,614	16,027,412
Female	16,372,760	17,378,649
Population Growth	9.42%	4.91%
Percentage of total Population	3.10%	2.76%
Sex Ratio	1058	1084
Child Sex Ratio	960	964
Male Population (0-6 Age)	1,935,027	1,768,244
Female Population (0-6 Age)	1,858,119	1,704,711
Literacy	90.86 %	94%
Male Literacy	94.24 %	96.11%
Female Literacy	87.72 %	92.07%

Source: 2011 census &amp; 2001 census

**Table 2: Bihar Data.**

Description	Year 2001	Year 2011
Approximate Population	10.41 crores	8.30 crore
Actual Population	104,099,452	82,998,509
Male	54,278,157	43,243,795
Female	49,821,295	39,754,714
Population Growth	25.42%	28.43%
Percentage of total Population	8.60%	8.07%
Sex Ratio	918	919
Child Sex Ratio	935	942
Male Population (0-6 Age)	9,887,239	8,652,705
Female Population (0-6 Age)	9,246,725	8,153,358
Literacy	61.80%	47%
Male Literacy	71.20%	59.68%
Female Literacy	51.50%	33.12%

Source: census 2001 &amp; 2011

**Table 3: Literacy Rate in Bihar from 1951~2011**

Year	Total literacy rate %	Male literacy rate %	Female literacy rate %
1951	13.49%	22.68 %	4.22 %
1961	21.95%	35.85 %	8.11 %
1971	23.17%	35.86 %	9.86 %
1981	32.32%	47.11 %	16.61 %
1991	37.49%	51.37 %	21.99 %
2001	47.53%	60.32 %	33.57 %
2011	71.82%	75.79 %	68.33 %

Source: Central Statistical Organization for FY 1951- FY 2011.

**Table-4**

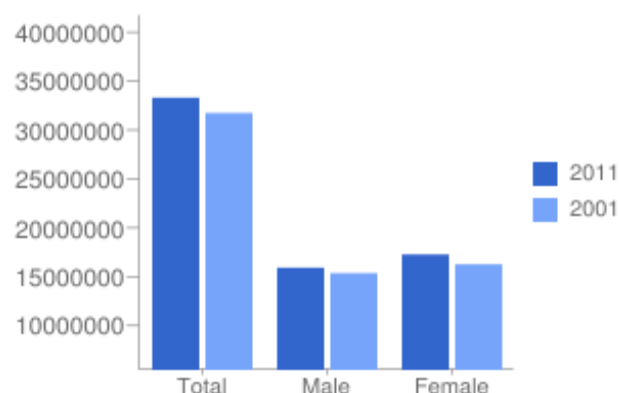
S.No.	Country	Total LR	Male LR	Female LR	Gender diff.
1	India	72.1%	80.9%	62.8%	18.1%
2	China	96.4%	98.2%	94.5%	3.7%
3	Estonia	99.8%	99.8%	99.8%	0.0%
4	Costa Rica	97.8%	97.7%	97.8%	-0.1%
5	Italy	99.2%	99.4%	99.0%	0.4%
6	Kuwait	96.2%	96.9%	95.0%	1.9%
7	Hungary	99.1%	99.1%	99.0%	0.2%
8	Afghanistan	38.2%	52.0%	24.2%	27.8%
9	Bhutan	64.9%	73.1%	55.0%	18.1%
10	World Average	86.3%	90.0%	82.7%	7.3%

Source: UNESCO Institute for Statistics Report 2014

**Table-5**

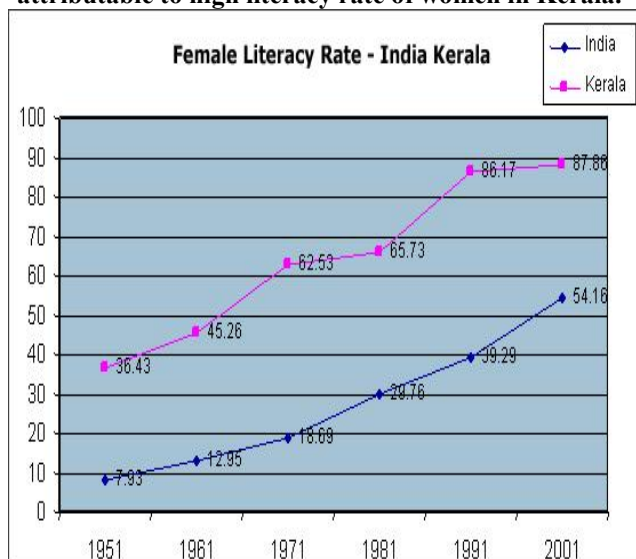
Description	Year 2001	Year 2011
Approximate Population	16.62 Crore	19.98 Crores
Actual Population	166,197,921	199,812,341
Male	87,565,369	104,480,510
Female	78,632,552	95,331,831
Population Growth	25.80%	20.23%
Percentage of total Population	16.16%	16.50%
Sex Ratio	898	912
Child Sex Ratio	916	902
Male Population (0-6 Age)	16,509,033	16,185,581
Female Population (0-6 Age)	15,115,595	14,605,750
Literacy	56.27%	67.68 %
Male Literacy	68.82%	77.28%
Female Literacy	42.22%	57.18%

Source: census 2001 &amp; 2011

**Figure 1: Figure Showing Kerala Population Chart. Population of Kerala**

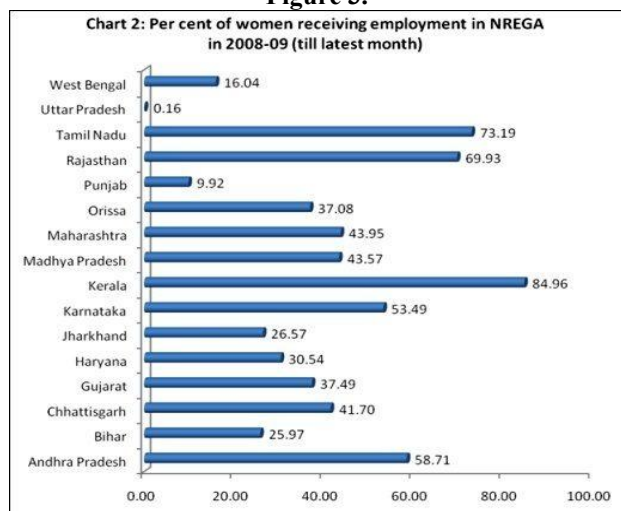
Source - 2011 census &amp; 2001 census

**Figure 2: Low population rate in Kerala is attributable to high literacy rate of women in Kerala.**



Source: 1951,1961,1971,1981,1991, & 2001 census

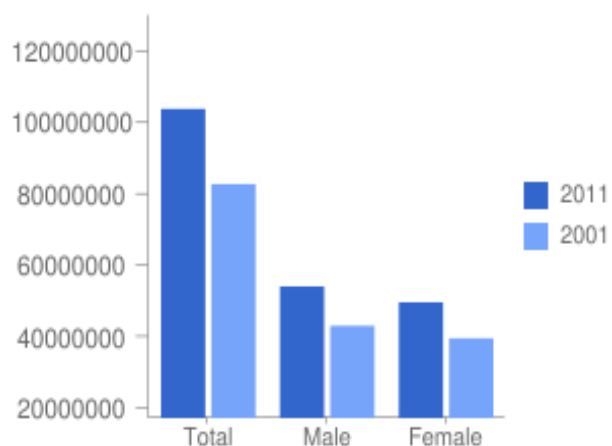
**Figure 3.**



Source: Ministry of Women and Child Development, Government of India (2009)

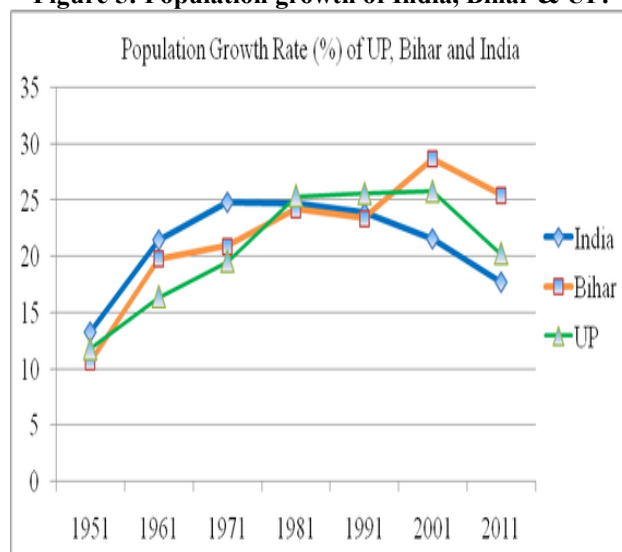
**Figure 4: Figure showing Bihar population chart.**

**Population of Bihar**



Source: census 2001 & 2011

**Figure 5: Population growth of India, Bihar & UP.**



Source: Ministry of Women and Child Development, Government of India (2009)

# THE EFFECT OF CONSUMER EMOTIONAL ATTACHMENT INTERACTIONS ON LOYALTY TO GREEN CHAIN STORE OF SANANDAJ

Fereydoun Zarei\* Abdonaser Shojai\*\*

*The purpose of this study was to investigate the effect of consumer emotional attachment interactions on loyalty to green chain stores in Sanandaj. In this study, a questionnaire was used to collect data and measure variables. The current research is applied in terms of target and in terms of information gathering, a descriptive survey is a survey type. Customers in the chain stores in Sanandaj city have been considered as a statistical society in this study, whose number is unlimited. The random available sampling method was used for sampling. 461 questionnaires were distributed among the distribution community, of which 356 questionnaires were returned. Finally, 350 questionnaires were used for statistical analysis and analysis. To analyze the statistical data, various descriptive and inferential statistics were used. The results show that green practices affect the green shop attachment, the Green Store's attachment to green shops loyalty, the Green Store's attachment to green product loyalty and the Green Store loyalty to green product loyalty.*

**Keywords:** Green Practices, Green Shop Attachment, Green Shop Loyalty, Green Product.

In the decade that passed, it became clear that the world was moving from an industrial economy, which machines were the main element, to a human-centered economy that is centered on a customer's center of gravity (Haghighi and Akbari, 2011). In a highly competitive market, businesses that offer similar products and services are struggling to design new strategies to create competitive advantages and keep consumers loyal. This competition has forced organizations to engage in lasting relationships with consumers. By increasing awareness of the seriousness of environmental problems, consumers prefer to buy products that are environmentally friendly or services that reduce environmental negative impacts (Jung Jang et al, 2015). Green practices can lead to a better competitive advantage than competitors and create a favorable attitude towards the company and thus increase long-term relationships with customers (Di Pietro et al, 2013). According to the relationship marketing theories, maintaining customer loyalty is crucial for a stable relationship. Researchers pay particular attention to the affective links of consumers with brands, companies, or stores. The emotional bond between the consumer and the brand, product, or store is an "attachment". Researchers believe that consumers who are emotionally dependent on a brand, product, or storefront are more committed to it, and are likely to maintain a long-standing relationship with it. These findings indicate that managers are interested in establishing emotional links with consumers (Thomson et al, 2005; Carroll and Ahuvia, 2006). Today, only happy, joyful customers and customers with a sense of belonging

to the organizations and organizations of affiliations are considered as capital that has long profits and longevity (Khairi et al, 2013).

According to the previous theoretical perspectives, consumers who care about environmental issues are more likely to identify environmentally friendly stores which presents a self-image or their value, with which they experience a higher degree of fit, which results in a greater affective affinity (Fedorikhin et al, 2008). Dependency is a factor that leads to commitment and loyalty. Previous studies have shown that consumers who are emotionally affiliated with a brand or a store have a more stable and committed relationship with that store or brand (Kim et al, 2013). Dependency on the store may make the consumer close to that location, so positive emotional links with a location may affect consumer loyalty to that location (Lopez & Sanchez, 2013). Recent marketing studies support the application of emotional attachment in marketing. Despite the fact that more than 30 years of continuous work on brand knowledge enrichment in Europe and the United States, this concept has not been taken into consideration in Iran. The lack of

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brand knowledge and proper brand management in Iran has not resulted in an increase in the sales of foreign brands and the isolation of domestic products (Ghorbani Ghavidel and Shabgomonsef, 2014). Therefore, this research attempts to answer the question of how far the emotional attachment interactions of consumers affect loyalty to chain stores.

## I. Review of Literature

Although several studies have shown that consumers' perception of the green practices of a store may be significantly correlated with their perception of green brand images as well as green behaviors (Hu et al, 2010), but the effects of green shops on emotional reactions of consumers (for example, affective affinity) have not been studied. Previous studies on green practices or corporate social responsibility behaviors also confirm that such socially responsible behaviors and behaviors can be an important factor in creating affective affection for consumers in the firm or store. McEwen (2010) showed that consumers meet some of their needs with firms that demonstrate social responsibility that reflects their values or self-reflection, thereby creating a sense of more connected with the stores and gradually becoming more emotionally dependent on them. This is consistent with the research of Bhattacharya et al (2009), which explained that consumers support green brands and companies, who are personally happy to participate in green efforts. Valchos (2012) also showed that positive consumers' perceptions of corporate social activities create stronger emotional affiliations. Also, in a recent study on the hotel sector, Kang et al (2012) claimed that consumers who are more self-identifying with hotels that do green activities show positive attitudes toward these hotels. Tumanan & Lansangan (2012) add an environmental pattern (for example, nature-friendly materials) as a source that affects the affective affinity of the consumer, and they discover meaningful relationships between them. Therefore, it is reasonable to expect that green shops can enhance the emotional dependence of the store. Therefore, the following hypothesis is proposed:

- ✓ Green practices affect the green shop's attachment.

A person who relies heavily on a particular object tends to be related to it and wants to continue to interact with it. This study first states that store affiliation will increase consumer loyalty to green shops. Yuksel et al (2010) showed that emotional links to a place are created through experiences, positively affecting the assessment of individuals and their future behavioral intentions relative to that location. Kim et al. (2013) also emphasize the importance of emotions in understanding the

environmental behaviors of consumers. They show that emotion significantly affects the intent of consumer revisits, suggesting that emotions are important factors in understanding customer loyalty to the environmentally friendly store environment. The study also claims that affiliation with the store boosts loyalty to the product and the store, as consumers feel strong and value the brand Green Shop. When consumers experience emotional dependencies on the green shop, they will then be loyal to that particular green shop, which will increase the sales of the store for the green products of the same brand (Yim et al, 2008). According to Bowen & Shoemaker (1988), emotional dependencies among consumers often trigger regular purchases and informal advice to peers. Therefore, it is anticipated that a strong customer dependency on the store will lead to product loyalty and encourage the purchase of the same products. Finally, consumers who are loyal to the firm or store are likely to make duplicate purchases or to buy other products and services from the same firm or store (Sui & Baloglu, 2003). Therefore, a strong commitment to a store promotes consumer positive assessments of its products and increases the likelihood of future loyalty to the product. Therefore, the following assumptions have been made:

- ✓ Green shop attachment affects the loyalty of the green shop.
- ✓ Green shop attachment affects green product loyalty.

Environmental concerns by individuals indicate their willingness to support green efforts and personally help solve environmental problems. Green or environmental awareness of consumers refers to the degree of consumer concern about environmental issues and their willingness to try to solve these issues (for example, purchasing green products). Several researchers have examined the role of green or environmental awareness about supporting green shops. Ho et al (2010), for example, have reported that environmental concerns predict the most important predictor of consumer environmental behavioral goals, and they show that more informed environmental consumers are likely to show more intense support for the green shop. On the other hand, Jang et al (2010) identified healthy or environmentally conscious groups of consumers using a food-related lifestyle scale, used to assess their health and environmental attitudes. Researchers have shown that consumers are more likely to be worried about their health and the environment, and they are more likely to react more positively to green stores' attitudes. Also, Kang and Jang (2013) also showed that environmentally conscious consumers (those who have more environmental awareness than the average self-report) respond more positively to green shops than

to other customers. Therefore, consumers with stronger environmental awareness have more comments about green brand images and show more positive future behaviors. To identify ecologically conscious consumers, Jeong and Jang (2010) used a consumer-based observation scale that measured environmental attitudes / beliefs and identified those who had a high level of effectiveness, that is, those who have a perceptual self-perception above the mean for an effective scale. These findings reveal that a more informed group of green issues, with a high level of effectiveness, is more strongly associated with green structure, green brand image, and ecological behavior intention than the less aware ones about green issues. According to this argument, the following hypothesis is proposed:

- ✓ The green shop loyalty affects green product loyalty

## II. Research Design and Methods

This research primarily focuses on quantitative approach using a questionnaire to collect information about research hypotheses. Also, from the perspective of the method, a variety of "descriptive" researches from the "scroll" branch, from the perspective of the goal, is "applied" and temporally, "single-sectional" research. Meanwhile, due to the fact that in this research, "Structural Equation Modeling" method has been used to test the research hypotheses, among the various types of correlation research is "correlation matrix or covariance analysis" type. The statistical population of this research includes customers of chain stores in Sanandaj. Therefore, based on the Cochran formula for the limited population, 384 people were sampled and 20 percent were added to the number of statistical samples in order to eliminate the effects of incomplete and missing questionnaires. Accordingly, the number of distributed questionnaires was 461, out of which 357 questionnaires were returned, of which 7 were incomplete, and therefore 350 questionnaires were analyzed. In this research, the main version of Jang Wang et al. (2015) questionnaire has been used to measure all variables of research. Since both of the standard questionnaires are used, their validity has been confirmed in numerous internal and external studies. In the design of the questionnaire, the 5-degree Likert scale has been used. In general, the questionnaire questions are designed in 3 sections. The first section includes demographic questions (age, gender, and degree of education), the second part of the question is about independent variables and mediators, which consists of 11 questions. The third part of the questions relates to the dependent variable, with 6 questions confirmed by the views of professors and experts in this field. To determine the reliability of the test, Cronbach's alpha method was

used. As the alpha be higher, the reliability of the scale gets greater. According to the alpha empirical rule, it should be 0.7 or more so that the scale can be considered as reliable. The results of the reliability test of the research variables showed that the questionnaire has a high reliability.

## III. Results & Analysis

### Descriptive results

The results of the research on the distribution of gender are shown in Table (2) that 350 individuals, 163 (46.57%) were male and 187 (53.43%) were female. Accordingly, respondents with female gender have a higher percentage in the sample. Also, analysis of the age variable among the research community shows that out of 350 persons (clients in chain stores in Sanandaj city), 62 subjects (17.71%) were under 25 years old, 153 persons (43.71%) were 25-25 years old, 91 persons (26.00%) were 36-45 years old; 38 (10.86%) were 55-46 years old and 6 persons (1.714%) were 55 years and over. Therefore, the age group of 25-35 people has the smallest number among the sample of the highest number in the age group above 55 years. The findings of the research on the frequency distribution of the last degree of customers in chain stores in Sanandaj city in the studied population (Table 3-4) that of the 350 people, 71 (20.29%) had undergraduate education; 62 (17.71%) had diplomas; 54 (15.43%) had associate professors; 128 (36.57%) had undergraduate and 35 (10.00%) had graduate and postgraduate degrees which the highest percentage based on the results attributed to customers in chain stores in Sanandaj with a bachelor's degree and the lowest percentage is allocated to customers in chain stores in Sanandaj, with a master's degree or higher.

### The results of descriptive analysis of questionnaire questions

In the descriptive analysis of questions using the standard and average indexes, we arrive at these results. What are the characteristics of the green practices of the "Beta" index? How many stores do they provide environmentally friendly materials? (For example: recyclable ones)". With an average of 3.7514, it devotes the highest score to itself and index "To what extent stores can provide their products in recycled bags, boxes and ...?" With an average of 3.4600 is the lowest. Among the green index attachment indicators, "How much do you feel this store is your part?" with an average score of 3.6657 has the highest score and the indicator "How much do you feel about belonging to the stores you buy from them?" with the average score of 2.5971 has the lowest score. Among the indicators related to the loyalty of the green shop, the

indicator: "To what extent are stores that are environmentally friendly, will your first choice be compared to other stores?" with an average score of 3.7771 has the highest score and the indicator: "How do you recommend stores that are environmentally friendly to your friends or others?" with the average score of 3.6429 has the lowest score. Also, among the indicators of green product loyalty, "How important is it to shop for eco-friendly stores?" with an average score of 3.3714 has the highest score and the indicator: "How much more attention to supermarket stores than other stores?" with the average score of 2.5743 has the lowest score.

### The Average Test a statistical society

Before testing the conceptual model, it is necessary to address the status of the four main variables of research, green practices, green shop attachment, green shop loyalty and green product loyalty. For this purpose, the average test of One-Sample-T-Test has been used to determine whether the variables in the research model are appropriate or not. Given that the scale of the questions is five, the number 3 is chosen as the mean and all numbers are smaller than or equal to 3, and all numbers greater than 3 are chosen as inappropriate. Using T-test, a meaningful value has been calculated which, after comparing with the value of 0.05 if Sig be  $>0.05$ , then the condition of the relevant variable is not moderate and the research hypothesis is accepted. To determine the desirable or undesirable condition of the variable, the T statistics are also considered. If the T value is smaller than -1.96, the status of the variable is inappropriate and if the value is greater than + 1/96, the variable status is appropriate. Table 3 describes the status of the variables. Based on the results of the tests, it seems that the customers are well positioned in all four variables.

### Path Analysis Results

Chart (1) presents the conceptual and initial pattern of research. Graph 2 illustrates the structural equation model, which shows the impact of consumer-affective attachment interactions and loyalty to chain stores in Sanandaj. Structural Equation Modeling is a multivariate analysis method of relationships presented in the form of a linear cause-effect model for an empirical investigation set (Joreskog and Sorbom, 2001).

### Model of fitting indices

In addition to estimating the coefficients of the model, in the LISREL software, there are indicators that can be used to test the overall fitness of the model. The indexes for the research model, along with other applicable indicators.

The identified models with more observations than parameters do not fully fit data (Klein, 2004). The estimated model of the interactions between the marketing information system, organizational innovation, external knowledge and organizational performance in Figures (2) and (3) shows that  $\chi^2 = 221.76$  and degree of freedom  $df = 115$ , P-value = 0.00000 and RMSEA = 0.052. Other well-fitting indicators include NFI = 0.96, NNFI = 0.97, GFI = 0.87 and CFI = 0.97 that all of which represent the fit of the model. The rule is general, if  $RMSEA \leq 0.05$  shows the good model fit and  $0.05 \leq RMSEA \leq 0.08$  shows acceptability fit of the model.

## IV. Conclusion

All hypotheses under study are also confirmed in this study. Since the coefficient of path T of all variables is greater than 1.96, all the assumptions are confirmed. The results show that green practices affect the green shop attachment with coefficient of 0.79 and coefficient T (10.45). Also, green shop affiliation affects green shop loyalty with coefficient of 0.85 and coefficient T (10.75). The green shop attachment with a coefficient of 0.54 and T coefficient (2.45) affects the loyalty of the green product. Finally, the loyalty of the green shop with a coefficient of 0.43 and the coefficient T (12.49) affects the green product loyalty. Due to the lack of similar research in this regard, it is therefore not possible to check the comparison between the results of this research with the results of previous studies in particular (hypothesis to hypothesis). Therefore, in general, the results of this study are consistent with the research results of Motani (2004), Kafash et al (2010), Haj-Karimi et al (2009), Varzeshkar (2003) and Chayawat (1998). According to the results of the research, the following suggestions are proposed based on research hypotheses.

- One of the ways to create customer satisfaction and stay loyal to the company is to use less thick packaging.
- It is also recommended that chain store managers in Sanandaj city sell products with signs and symptoms of recyclable packaging products that are in line with the needs of real and green customers.
- It is suggested that the managers of this company pay more attention to the competitive and green pricing and consider the issues of visual attraction and environmental issues in pricing their products.
- It is suggested to chain stores in the city of Sanandaj that the customer group identifies its purpose and taking into account the needs of customer groups by creating creativity in the field of advertising and information through a brochure and a catalog of

- green products and processes, the company tries to maintain and expand its competitive market share.
- Therefore, it is recommended that managers of chain store in the city of Sanandaj be recommended which despite of using the transport system for products with the least pollution, they will increase the awareness of the people responsible for transporting products, and this will also strengthen the green mix after the mix.
  - More use of TV advertising and promotion of green products.
  - Efforts to collect and recycle products and information in this area.
  - Advertising and distribution of products.
  - Promoting quality and efforts to increase product lifespan.
  - Use of ISO 14000 guidelines and other environmental ISOs.
  - An unceasing effort to reduce the price of products and improve its quality.
  - Use the latest scientific achievements in green distribution for the supply of green goods.
  - Carry out research on green marketing and its benefits to suppliers of green goods and services.
  - Use all the efforts and facilities and technology of the day to design, produce, pricing, promotion and distribution.
  - Identify the target market and make good use of the green marketing mix to attract the target market.
  - Organizations' attention to the environment and creation of the Green Marketing Department and designing the structure and mobilizing the resources and facilities for it.

In line with the above suggestions, research suggestions for future studies are presented as follows:

- Study other factors affecting product loyalty and green shop;
- Do research with this title among consumers of other goods;
- Testing this model among different gender groups and comparing results;
- Investigating the relationship between green marketing and the attitudes of consumers and customers of industrial and non-industrial goods and comparing them based on the results.

During the research, problems occurred and caused limitations, mostly researches performed at any location and time are not far from the limit. The problems and limitations of this research are:

- Limited desire of some customers to answer questions.
- Although the variables of research were studied independently with other variables, but lack of adequate research background in relation to the theoretical framework of this study in internal and external sources, to some, the theoretical explanation of the discussion was limited and banned the possibility of comparing the results of this research with the results of similar investigations by the researcher.
- The present research is limited to a specific area of Iran. It is clear that the study and evaluation of customers' views of chain stores in the city of Sanandaj cannot represent a complete representative of all customers throughout the country; and this posed a limited spatial distribution of research; Therefore, this research needs to be carried out in a wider range of countries and by conducting a sampling of clusters or clusters to consider all chains of the country as a statistical society and to eliminate this spatial constraint.
- One of these limitations was the high volume of the community and the statistical sample which led to a prolonged collection of questionnaires.

## References

- Haghighi, Kafash, Mehdi and Akbari, Masoud (2011). Prioritizing the Factors Affecting Customer Loyalty Using the Model (ECSI). *Marketing Management*, Volume 6, Issue 10.
- Khayri, Bahram; Samiye Nasr, Mahmoud and Pour Khojin, Mohammad Azim. (2013). Affective affiliation of consumers to the brand: prerequisites and outcomes. *Marketing Management*, No. 20.
- Ghorbani, Ghavidel, Soheil and Shabgo Monsef, Seyed Mahmoud (2014). The effect of brand credibility on customer loyalty from the point of view of home appliances buyers. *Marketing Management*, No. 23.
- Bhattacharya, C.B., Korschun, D., & Sen, S. (2009). Strengthening stakeholder-company relationships through mutually beneficial corporate social responsibility initiatives. *J. Bus. Ethics* 85, 257–272.
- Bowen, J.T., & Shoemaker, S. (1998). Loyalty: a strategic commitment. *Cornell Hotel Restaur. Admin. Q.* 39, 12–25.
- Carroll, B., & Ahuvia, A. (2006). Some antecedents and outcomes of brand love *Market.* 17 (2), 79–89.

- DiPietro, R.B., Cao, Y., & Partlow, C. (2013). Green practices in upscale foodservice operations: customer perceptions and purchase intentions. *Int. J. Contemp. Hospital Manage.* 25, 779–796.
- Fedorikhin, A., Park, C.W., & Thomson, M. (2008). Beyond fit and attitude: the effect of emotional attachment on consumer responses to brand extensions. *J. Consumer Psychol.* 18, 281–291.
- Hu, H., Parsa, H.G., & Self, J. (2010). The dynamics of green restaurant patronage. *Cornell Hospital. Q.* 51 (3), 344–362.
- Jeong, E.H., & Jang, S.C. (2010). Effects of restaurant green practices: which practices are important and effective? In: *Caesars Hospitality Research Summit, Paper13*, Retrieved from: <http://digitalscholarship.unlv.edu/cgi/viewcontent.cgi?article=1019&context=hhrc> (accessed 02.01.13)
- Jung Janga, Y., Woo, G. K., & Young Lee, H. (2015). Coffee shop consumers' emotional attachment and loyalty to green stores: The moderating role of green consciousness. *International Journal of Hospitality Management*, 44, 146–156.
- Kang, K.H., Stein, L., Heo, C.Y., & Lee, S. (2012). Consumers' willingness to pay for green initiatives of the hotel industry. *IJHM* 31, 564–572.
- Kim, Y.J., Njite, D., & Hancer, M. (2013). Anticipated emotion in consumers' intention store select eco-friendly restaurants: augmenting the theory of planned behavior *IJHM* 34, 255–262.
- Lopez, L., & Sanchez, M. (2013). Direct and indirect effects of received benefits and place attachment in willingness to pay and loyalty in suburban natural areas. *J. Environ. Psychol.* 34, 27–35.
- McEwen, W.J. (2010). Does corporate social responsibility matter? Retrieved from <http://gmj.gallup.com/content/125351/corporate-social-responsibility-matter.aspx#1> (accessed 02.03.13).
- Namkung, Y., & Jang, S. (2013). Effects of restaurant green practices on brand equity formation: do green practices really matter? *IJHM* 33, 85–95.
- Sui, J.J., & Baloglu, S. (2003). The role of emotional commitment in relationship marketing: an empirical investigation of a loyalty model for casinos. *J. Hospital. Tourism Res.* 27 (4), 470–489.
- Thomson, M., MacInnis, D.J., & Park, W. (2005). The ties that bind: measuring the strength of consumers' emotional attachments to brands. *J. Consumer. Psychol.* 15, 77–91.
- Vlachos, P.A. (2012). Corporate social performance and consumer-retailer emotional attachment: the moderating role of individual traits. *Eur. J. Mark.* 46 (11/12), 1559–1580.
- Yim, C.K., Tse, D.K., & Chan, K.W. (2008). Strengthening consumer loyalty through intimacy and passion: roles of consumers' firm affection and consumers' staff relationships in services. *J. Mark. Res.* 45 (6), 741–756.
- Yuksel, A., Yuksel, F., & Filim, Y. (2010). Destination attachment: effects on consumer satisfaction and cognitive, affective and conative loyalty. *Tourism Manage.* 31, 274–284.

**Table 1: Results of the Test of Items Reliability.**

Concept	Cronbach's alpha coefficients
Green practices (methods)	0.837
Green Store Attachment	0.851
Green Store Loyalty	0.799
Green product loyalty	0.886

Reference: Research data

**Table 2: Analysis of Demographic Questions.**

Demographic indicators	Abundance	
Gender	Male	163 (46.57%)
	Female	187 (53.43%)
	Total	350
Age	Less than 25 years old	62 (17.71%)
	25 to 35 years old	153 (43.71%)
	36 to 45 years old	91 (26.00%)
	46 to 55 years old	38 (10.86%)
	Being over 55 years old	6 (1.714%)
	Total	350
Degrees of education	Under the diploma	71 (20.29%)
	Diploma	62 (17.71%)
	Assistant	54 (15.43%)
	B.A	128 (36.57%)
	M.A and higher	35 (10.00%)
	Total	350

**Table 3: Status of the Main Research Variables Among Sample Customers in The Chain Stores in Sanandaj.**

Variable	Average calculated value	calculated significant amount (Sig)	Amount of t Statistics	Result
Green practices (methods)	3.6295	0/000	32.607	Greater than +1.96 and desirable
Green Store Attachment	3.1867	0/000	50.862	Greater than +1.96 and desirable
Green Store Loyalty	3.3933	0/000	18.315	Greater than +1.96 and desirable
Green product Loyalty	3.1021	0/000	45.934	Greater than +1.96 and desirable

**Table 4: Test Results of Hypotheses Through Structural Equation Model.**

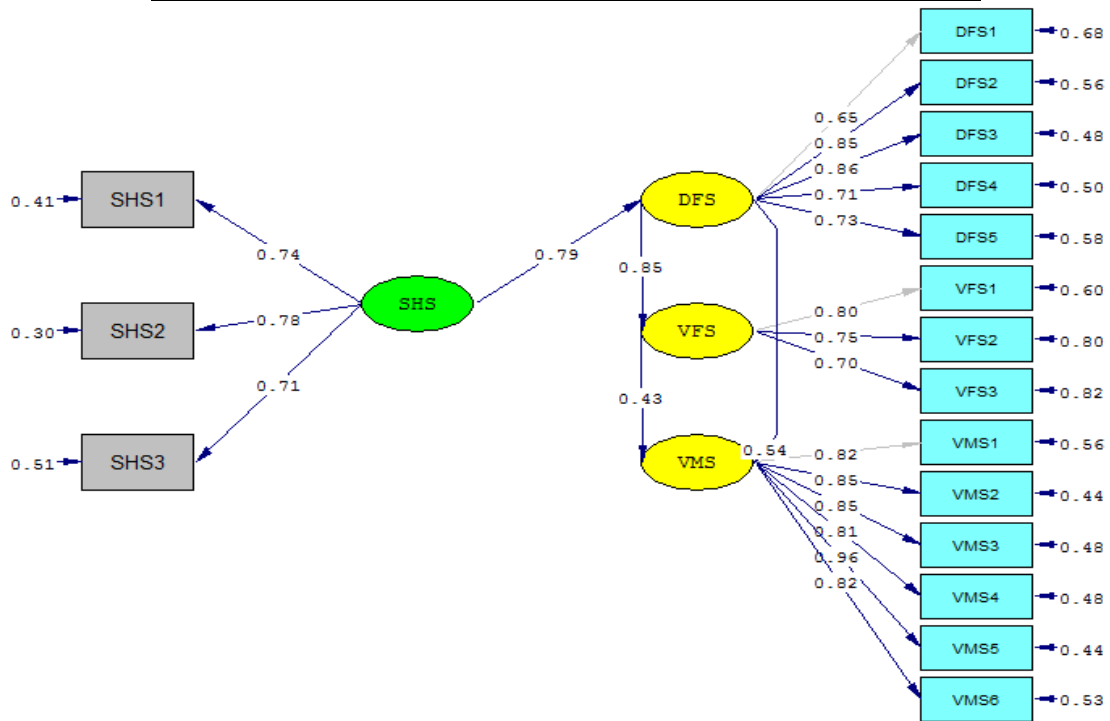
Direct effect	Hypothesis 1	Hypothesis 2	Hypothesis 3	Hypothesis 4
Path coefficient	**0.79	**0.85	**0.54	**0.43
Standard error	0.07	0.08	0.22	0.03
t Statistics	10.45	10.57	2.45	12.49

\*\* 1% significance level (N= 350)

**Table 5: Model of Fitting Indices.**

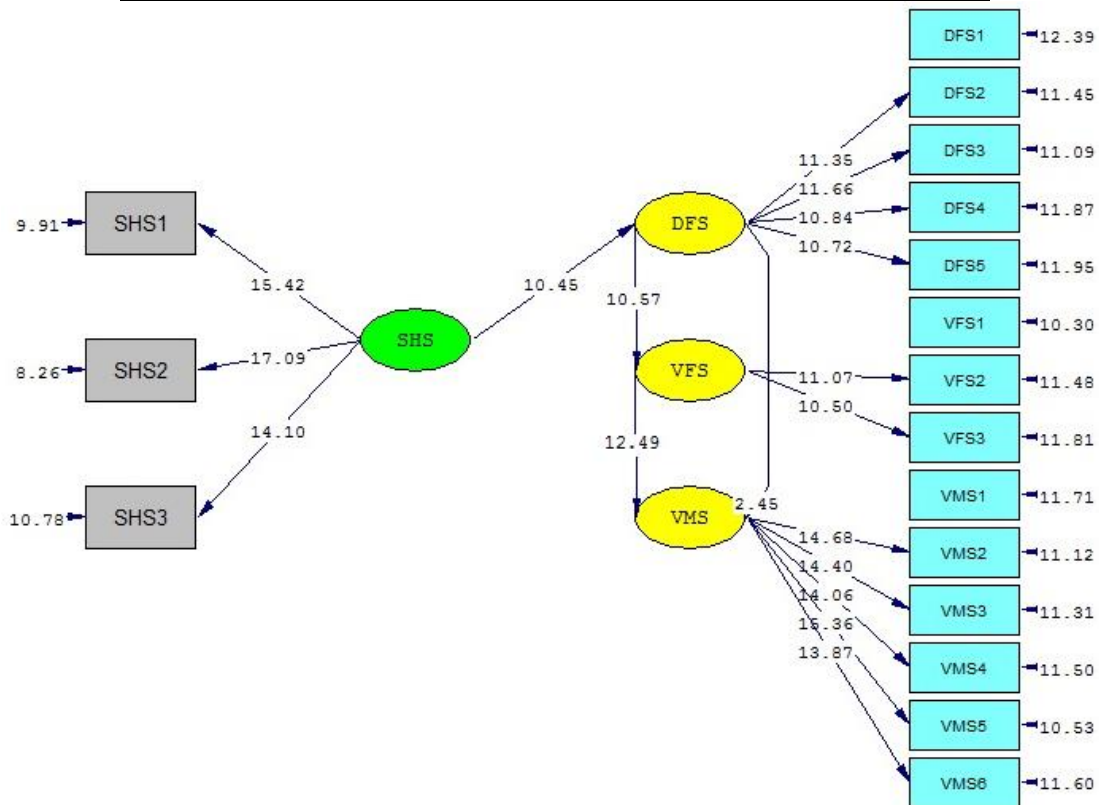
Df	P-value	GFI	NFI	NNFI	CFI	RMSEA	X <sup>2</sup>
115	0/00000	0/87	0/96	0/97	0/97	0/052	221/76

**Chart 1: Structural Equation Modeling (SEM) in the Standard Estimate.**



Chi-Square=221.76, df=115, P-value=0.00000, RMSEA=0.052

**Chart 2: Structural Equation Modeling (SEM) in a significant number state.**



Chi-Square=221.76, df=115, P-value=0.00000, RMSEA=0.052

# PLANNING OF REWA ULTRA MEGA SOLAR POWER PROJECT (750 MW) AT REWA, MADHYA PRADESH

Sanjay Kumar Verma\* Girbal Singh Lodhi\*\* V. K. Sethi\*\*\*

*MNRE has set up an ambitious national target for solar power, hence it is important that the States take initiative and relocate liabilities like RPO, etc behind the development of large scale solar projects. Rewa Ultra Mega Solar Limited (RUMSL) has been incorporated as a joint venture company with equal shareholding between MPUVNL (Madhya Pradesh Urja Vikas Nigam Limited), Bhopal Govt. of MP undertaking and SECI (Solar Energy Corporation of India), Delhi, Govt of India undertaking. The 750 MW Rewa Ultra Mega Solar (RUMS) project in the Gurh Tehsil, Rewa District is one such example of a State taking a proactive and leadership role in structuring the solar power project working in collaboration with the Government of India (Govt. India) and multilateral institutions such as World Bank and IFC. Planning of such Mega Project/Solar Park play a vital role in enhancing the renewable power. (MNRE, Akshay Urja Magazine(s) February 2011 (Vol 4), August 2016 (Vol 10), June 2014 (Vol 7)). The power produced from 750 MW Rewa project would be inject into the national grid at its onsite periphery which would be utilized by Delhi Metro Rail Cooperation for meeting its day load and MP Power Management Company Ltd for complying to its Renewable Purchase Obligation. (IREDA, Energy Next Magazine(s), May 2017, April 2017, June 2017); (MNRE Scheme / Documents).*

**Keywords:** Renewable Energy, Solar Park, Planning, Ultra-Mega Solar Power Projects, Land availability, Power Evacuation, Payment Security Mechanism.

Madhya Pradesh being prominent central state of India has shown a big heart in providing investor friendly policies for development of large scale solar power projects in the country. Till now only CPSU's like NTPC and SECI had taken such initiative where States largely played a supportive role of providing land and developing the infrastructure in the solar park. (IREDA, Energy Next Magazine(s), May 2017, April 2017, June 2017) To provide a boost to renewable energy development in the state of Madhya Pradesh and to meet the objective of large scale Solar Park development in the state, GoMP has designated RUMSL as the solar power park/project developer.

Under umbrella of RUMSL, first project of 750 MW at Rewa (MP) has been planned at Gurh Tehsil, Rewa District of Madhya Pradesh. (Refer Figure 1). The nearest highway is the National Highway – 75, connects Gwalior in Madhya Pradesh with Parsora in Odisha (formerly known as Orissa) and runs across the site. The rail and air connectivity to the site is through Rewa Railway station and Allahabad Airport at a distance of 30 km and 130 km respectively. (IREDA, Energy Next Magazine(s), May 2017, April 2017, June 2017) (World Bank: ESA Report, 2016).

## Regional Climate Characteristics

Rewa district has humid sub-tropical climate, i.e. during **summer** season (March to mid of June) the temperature ranges between 30°C to 45°C and during winters

(October to February) the average temperature remains about 25°C. Also during monsoons, due to south west monsoon area received the moderate annual rainfall of 860 mm. (IREDA, Energy Next Magazine(s), May 2017, April 2017, June 2017); (World Bank: ESA Report, 2016)

## I. Review of Literature

The literature review of paper extensive involved study of Guidelines of Solar Parks issued (time to time) by MNRE, Madhya Pradesh Solar power policy for implementation of Solar PV project, Environmental and Social Assessment report for assessing and resolving environmental issue, Sale of power generated was studied from power purchase agreement between parties. Requirement was assessed based on applicable provisions of Madhya Pradesh Mutual Consent Land Sale Policy which was required for purchasing land. Land Use Permission Agreement was studied to assess the requirement for land development for development of Unit Land, PGCIL substation land. The infrastructure development was monitored through Coordination and

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Implementation Support Agreement. Hydraulic Study was conducted to analyze flood control measures at Gurh, Rewa Sites. (CA:RUMSL, MPPMCL, DMRC and SPDs, 2017); (ISA:RUMSL and SPDs, 2017); (MAIN LUPA: MP-NRED and RUMSL, 2017); (PGCIL LUPA:MP-NRED and RUMSL and PGCIL, 2017); (Unit LUPA: MP-NRED, RUMSL and SPDs, 2017); (PPA- MPPMCL, 2017); (PPA- DMRC, 2017); (World Bank: ESA Report, 2016); ( Flood control Hydraulic Study, 2017).

## II. Research Design & Methods

Methodology adopted for securing better tariffs and paving the way for other National and International projects, ensuring Assessment of Solar Resource, Availability and Proper Management of Land, Water Availability, Pre-identification of Power Off-taker and Payment Security Management, Power Evacuation System, Responsibilities and roles of all associated partner, Flood Control study, Stake holder consultation and ESA, etc.

### Assessment of Solar Resource

Solar radiation varies through the day and it's important to have precise measurements for design, development, and performance analysis of solar power plants. For a continuous spatial coverage of wide region, satellite-based irradiation estimates, etc Solar Radiation Resource Assessment (SRRA) Stations launched by MNRE C-WET, Chennai was referred. (Refer Figure 2) (MNRE, Akshay Urja Magazine(s), February 2011 (Vol 4), August 2016 (Vol 10), June 2014 (Vol 7)). Rewa project site at Gurh (Tehsil) is endowed with high solar radiation with around 300 days of clear sun, GoMP is sincerely working to promote Renewable Energy. The site having potential of more than 5.5 kWh/ sq. m/per day for installation of Solar based power projects. (IREDA, Energy Next Magazine(s), May 2017, April 2017, June 2017); (World Bank: ESA Report, 2016)

### Availability and Proper Management of Land

The Biggest Challenge was to identify the land parcels which could accommodate the Mega Capacity of Solar Project. The project area is characterized by undulating rocky topography and had mean elevation of 430 to 450 m and positive slope in major area, which would help in laying of PV panels for optimum generation.

### Available Land Area

The site was suited best for setting up of 750 MW Solar project because, initially 1,255 hectares (approx) of barren Govt. revenue land was available in Badwar, Barseta, Itar Pahad, Baresta Pahar and Ram Nagar Pahar

villages which were adjoining to each other, thus ensuring land contiguity requirements for solar park development. As per the policies of the Government of Madhya Pradesh, in case of land owned by the Revenue Department, GoMP or any other GoMP department, such land may be transferred to GoMP-NRE, and GoMP-NRE is further entitled to subsequently give permission for use of land to a developer of a solar power project. Approximately 1,612 hectares of land (Revenue and Private) was identified for setting up of the proposed 750 MW solar power project, which could accommodate three solar panels units of 250 MW each along with three 33/220 kV unit specific pooling sub-stations and One 400/220 kV Substation for ISTS. Post identification potential site had 1,277 hectares revenue land and 335 hectares of private land was coming in between revenue land. To make the land contiguous it was necessary to include private land parcels. RUMSL purchased private land from private land owners, who had willingly sold their barren land under 'Consent Land Purchase Policy'. This policy has provision of not only paying cost of land (at collector rate) but also an equal amount as soletium to the land owner. (RUMS: Information Memorandum, 2016); (MP Solar Power Projects Policy, 2012); (MP:Mutual Consent Land Sale Policy, 2014)

### Water Availability

MNRE draft Water consumption guidelines for Solar PV Power Plants, 1m<sup>3</sup>/MW/ day would be required for PV panel cleaning. Drinking water and process water will also be supplied by boreholes and may require treatment for domestic use. Post site survey it was found that project site had sufficient availability of water resources. (Tender Document:750 MW RUMS Project, 2016); (MNRE- Draft SPV Water Consumption Guidelines)

### Power Evacuation System

Based on the Land availability, topography of site and Sizing of the project. Rewa Solar Project has been divided into three units of 250 MW capacity each. These Units would evacuate the generated power through 220/33 kV Internal sub-station developed by MPPTCL (the state TransCo), project management company in project, further connecting project to national grid through a 400/220 kV External PGCIL substation. (IREDA, Energy Next Magazine(s), May 2017, April 2017, June 2017); (World Bank: ESA Report, 2016); (RUMS: Information Memorandum, 2016)

### Internal Pooling Sub-station

Internal Evacuation Infrastructure would be constructed and commissioned by RUMSL. It comprises of following: -

- Outdoor 33 x 220 kV Substation for dedicated for the Unit.
- Each Unit of 33 x 220 kV substations consists of 3 x 100 MVA transformers.
- 18 (Number) 33kV circuit terminals are provided to enable connections to the Unit.
- Double circuit (DC) 220 kV transmission line connects the 33 x 220 kV substation to the PGCIL Sub-Station Tender Document:750 MW RUMS Project, 2016); (ISA: RUMSL and SPDs, 2017; (Unit LUPA: MP-NRED, RUMSL and SPDs, 2017)

#### External Sub-station

Considering RUMS as special, Ministry of Power (MoP), Govt. India has approved Rewa project as an Inter State Generating Station (ISGS) and PGCIL is constructing 220 x 400 kV substations along with associated 400 kV transmission line within the project boundary itself. A New Double Circuit line (LILO) breaking into one of the existing Vindhychal- Jabalpur 400 kV DC Line at distance of 32 km was considered and 220 x 400 kV substation consisting of 3 x 500 MVA transformers. (World Bank: ESA Report, 2016); (IREDA, Energy Next Magazine(s), May 2017, April 2017, June 2017); (Tender Document: 750 MW RUMS Project, 2016); (ISA: RUMSL and SPDs, 2017).

#### Unit Construction

The SPD shall remain solely responsible for ensuring that the construction of the Unit and all associated infrastructure does not create any hindrance or obstruction to any neighboring Unit(s) at the Rewa Solar Project Site. Further, the SPD shall be responsible for obtaining the charging permission from the Central Electricity Authority and acquire required approvals from local electricity distribution companies at its own cost in accordance with Applicable Law. If SPD requires additional land it should request in writing to RUMSL, RUMSL may procure and handover possession of such additional land to the SPD on a best endeavors basis. (Tender Document: 750 MW RUMS Project, 2016); (Unit LUPA: MP-NRED, RUMSL and SPDs, 2017)

#### Responsibilities and roles of all associated partners

To ensure that the roles and responsibilities is equally distributed among all stakeholders, RUMSL along IFC and World bank had extensively worked on drafting the agreements and contracts for Procurers, generators, SPD etc. Details of roles and responsibilities of associated partner has been highlighted below in Table 1. The responsibilities of all associated partners are as following: -

- a) **GoMP-NRED & RUMSL:** GoMP-NRED being the Nodal Department of the GoMP has been vested with

the responsibility to deal with all the matters connected with implementation of solar power based projects developed under the MP Solar Policy. GoMP-NRE has granted RUMSL the right to use the land for the Rewa Solar Project and RUMSL would execute a separate land use permission agreement with both unit developer for an individual area totaling to 500 hectares and also using some part of land for PGCIL substation construction. (Clause-D, MAIN LUPA: MP-NRED and RUMSL, 2017); (CA: RUMSL, MPPMCL, DMRC and SPDs, 2017)

- b) **Rewa Ultra Mega Solar Limited (RUMSL):** RUMSL shall pay all required charges for the permission to use the Rewa Solar Project Land to GoMP, inclusive of all Taxes, from the Effective Date of the Agreement, in accordance with the policies of the Government of Madhya Pradesh. Even if one or more of the Unit LUPA(s) or the PGCIL LUPA is/are terminated, RUMSL will continue to be liable to pay the Land Use Charges to GoMP-NRE.Land shall remain in the ownership of GoMP-NRE and the Solar Project Developer for the Agreement Period. (Clause-3.1; Unit LUPA: MP-NRED, RUMSL and SPDs, 2017); (MAIN LUPA: MP-NRED and RUMSL, 2017); (PGCIL LUPA:MP-NRED and RUMSL and PGCIL, 2017)
- c) **Power Grid Corporation of India Limited (PGCIL):** GoMP-NRE agreement with PGCIL to use of land for the development of Sub-station, which will be valid for 40 years from substation commissioning date. (Clause-3.2, PGCIL LUPA:MP-NRED and RUMSL and PGCIL, 2017). Post expiry or termination of the Agreement, GoMP-NRE will have the right to transfer the PGCIL Sub-station to the MPPTCL (or its successor and permitted assigns), upon the payment of compensation to PGCIL which shall be for an amount equal to the then value of the PGCIL Sub-station. (MAIN LUPA: MP-NRED and RUMSL, 2017); (PGCIL LUPA:MP-NRED and RUMSL and PGCIL, 2017); (Unit LUPA: MP-NRED, RUMSL and SPDs, 2017)
- d) **Solar Project Developer (SPD):** RUMSL has made sufficient provision in its agreement with Unit Developer(s), to develop individual unit of 250 MW each that would be valid for 25 years from the scheduled commissioning of each unit. (Clause-3.2,

MAIN LUPA: MP-NRED and RUMSL, 2017); (PPA- DMRC, 2017); (PPA- MPPMCL, 2017). For Sale of solar power generated the SPDs proposes to sign separate Power purchase agreement with both MPPMCL (MPPMCL-PPA) and DMRC (DMRC-PPA). Besides this, RUMSL, MPPMCL, DMRC would also sign Coordination Agreement with the project developers of the remaining/other two units. (PGCIL LUPA:MP-NRED and RUMSL and PGCIL, 2017); (MAIN LUPA: MP-NRED and RUMSL, 2017); (Unit LUPA: MP-NRED, RUMSL and SPDs, 2017)

e) **Common Roles and Responsibilities of Unit developer & PGCIL:** The allotted land shall not be used for any purpose other than for the development of the Unit. Both PGCIL and Unit Developer cannot use of more than 5% of the Unit Land(s) for the Permanent Ancillary Structures and would operate each 250 MW unit as per the Prudent Utility Practices throughout the Agreement Period. PGCIL and Unit Developer may construct roads, bridges, culverts, and other infrastructure required for the Unit and substation Land in consultation with the relevant Governmental Instrumentality at the cost and risk. (PGCIL LUPA:MP-NRED and RUMSL and PGCIL, 2017); [ (CA: RUMSL, MPPMCL, DMRC and SPDs), 2017]; (ISA: RUMSL and SPDs, 2017); (PPA- DMRC, 2017); (PPA- MPPMCL, 2017)

**The details of document along with Roles of various stakeholder is tabled below: -**

- **Project Bidding Mechanism:** In March 2016, RUMSL had invited National & International developers through Request for Proposal (RFP) with an objective to select power project developer(s) to develop, operate and maintain grid-connected solar photovoltaic power plants with an aggregate capacity of 750 MW (3 x 250MW). The Bid had to be submitted online through TCIL portal, which is a Govt. India undertaking (E-bidding Portal). (Tender Document:750 MW RUMS Project, 2016). In an open competitive bidding process total bid of 7500 MW was received, International investors like, Softbank (Japan), Enel (Italy), Engie (France), SembCorp (Singapore), Solenergi (backed by pension funds from USA, UK and Asia) and Canadian Solar which had never participated in other

State-led bids. Several features like three tiered payment security mechanism, a Co-ordination Agreement that effectively addresses operation and scheduling related risks, Implementation Agreement and Land Use Permission Agreements, whose provisions were made consistent with Power Purchase Agreements, etc. invoked enthusiasm in the bidders regarding online auction that started on 9<sup>th</sup> February at 10 am, continued non-stop for 33 hours and finished only on 10<sup>th</sup> February at 7 pm.(IREDA, Energy Next Magazine(s), May 2017, April 2017, June 2017); (Tender Document:750 MW RUMS Project, 2016),

- **Bidder Eligibility:** RUMS bidding document allowed both a single Company, Limited liability partnership (LLP), Limited liability companies (LLC) and a Consortium as eligible bidder. It also has option to form Special Purpose Vehicle (SPV) to execute the Project Agreements. (Tender Document:750 MW RUMS Project, 2016).
- **Financial Proposal:** International Finance Corporation (IFC) member of the World Bank Group was designated as lead transaction advisor to enable RUMSL and GoMP to mobilize the entire private investment for the Rewa Solar Project. IFC's facilitated in advising on a robust project structure, identifying, recommending and assisting in solutions for key commercial, legal, regulatory, technical and system operations issues and designing a transparent tariff based e-auction process to help select private entity (ies) to develop the units in the Rewa Solar Project. (IREDA, Energy Next Magazine(s), May 2017, April 2017, June 2017); (Tender Document:750 MW RUMS Project, 2016)
- **Comprehensive Charges:** In accordance with the policies of the Government of Madhya Pradesh (Land Use Charges), RUMSL shall pay all required charges for the permission to use the Rewa Solar Project Land, inclusive of all Taxes, from the Agreement signing date. (PGCIL LUPA:MP-NRED and RUMSL and PGCIL, 2017); (CA: RUMSL, MPPMCL, DMRC and SPDs, 2017); (ISA: RUMSL and SPDs, 2017); (PPA- DMRC, 2017); (PPA-MPPMCL, 2017). RUMSL would collect comprehensive charges from the Solar Project Developers for RUMSL's administration charges and

local area development charges, development of internal infrastructure, etc. being carried by RUMSL, and other services. (Tender Document:750 MW RUMS Project, 2016).

- **Project Commissioning schedule:** In compliance to RfP, since each unit of 250 MW among the 750 MW has been allocated to 3 separate bidders, hence each SPD has to commission minimum 100 MW and achieve full commissioning of 250 MW. (MAIN LUPA: MP-NRED and RUMSL, 2017); (PGCIL LUPA:MP-NRED and RUMSL and PGCIL, 2017); (CA: RUMSL, MPPMCL, DMRC and SPDs, 2017).
- **Stake holder consultation on following Issues:** All comments/suggestions related to project development, internal and external infrastructure, PPA, payment mechanism, environment and social impact study etc. were carefully studied and amicably resolved. So that PGCIL, MPPTCL, RUMSL, SPD, MPPMCL and DMRC could mutually work in synergy for successful implementation of RUMS project. (Unit LUPA: MP-NRED, RUMSL and SPD s, 2017); (Tender Document:750 MW RUMS Project, 2016); (Flood control Hydraulic Study, 2017).

### III. Results & Analysis

To ensure that planning of Solar park remains unhindered due to interdepartmental issues. RUMSL volunteered to analyzed the various problems and provided expeditious resolution of following issues within stipulate time period. Thus resulting in compliance of project timelines, avoiding delays and achieving lowest bid at Rewa Solar Park of INR.3.30 (~\$0.494)/kWh (levellised over 25 years). (Refer Table 2).

1. **Resolving Forest Munnare Issues:** Revenue Villages shares their boundaries with forest compartment, during demarcation of project boundary it was found that some of the forest munaras had been grouted on revenue land in Badwar village on the northern side, Badwar, Barseta-Pahar, Itar Pahar in South East & South West side of site. This was mainly because earlier forest maps were on manual maps (4-inch scale-1 mile) while presently the forest department is using digitized 1:15000 scale. This issue was resolved amicably of MP Forest Dept.

2. **Flood Control:** Pre-historical records suggest that the project site has drainage nallahs (Aahri Nallah and Devdeh Nallah) which during monsoons shows dendritic pattern. Hence water gets drains into Bichiya River at the North West of the site. Within site the Aahri Nallah in the downstream reaches has a wider channel and undulated terrain with high and low patches of land which might suffer from local ponding in these local depressions. (Refer Figure 3) (World Bank: ESA Report, 2016); (RUMS: Information Memorandum, 2016). Rewa Solar project situated at Kamore hillock highlighted some low levels (depressions) so to determine probability of flood in these local patches a Hydraulic study was conducted RUMSL in collaboration with MP Water Resource Dept. The purpose of study was to assess and overcome flooding issue in downstream side where numerous of watersheds from hillock meet the Nallah that carries the run-off of the catchment. The Study/DPR suggested various measures to pass the flood water safely through a stream channel. (Flood control Hydraulic Study, 2017).
3. **Three Tiered Payment Security Mechanism:** This Mechanism had been developed to ensure timely payment between the project developers and power off takers wherein both the off taker DMRC or MPPMCL would provide Letter of Credit based on average monthly billing. Further, MPPMCL would also have payment obligations through Payment Security Fund through a Nationalized bank or state guarantee of Govt. of MP. (CA: RUMSL, MPPMCL, DMRC and SPD s, 2017); (ISA: RUMSL and SPD s, 2017).

### IV. Conclusion

Conceptualization of 750 MW Rewa Solar project by RUMSL under aegis of NRED included proactively inter-organizations coordination, possession of 97% of land, Unit-wise and infrastructure wise details, Serious consideration to Pre-bid meetings, Appropriate redressal on comments on transaction structure through Three Tiered Payment Security Mechanism, Involvement of MPPTCL and PGCIL in load flow studies along with finalization of design of 220/33kV internal evacuation infrastructure and synchronization of 400/220 kV substation as a part of External evacuation by PGCIL substation from the RUMS project site to the Regional Grid, Environmental and Social Management Plan (ESMP),

Hydraulic study, Resolving forest boundaries issues, etc. (IREDA, Energy Next Magazine(s), May 2017, April 2017, June 2017) (ISA:RUMSL and SPD s, 2017); (MNRE, Akshay Urja Magazine(s), February 2011 (Vol 4), August 2016 (Vol 10), June 2014 (Vol 7)); (MNRE Scheme / Documents); (Tender Document:750 MW RUMS Project, 2016). In other words, all the above factors played a pivotal role in designing and strategizing the RUMS on principles 'Plug & Play Model'. These interventions instilled confidence in high credit rated power procurers like DMRC and MPPMCL to analyze their Day load requirement load profile and provide consent to procure power from 750 MW project. Moreover, it also encouraged bidders, lenders and large power conglomerates with strong balance sheets to participate in competitive reverse auctions, which contributed to the reduction in tariff. (World Bank: ESA Report, 2016); (Tender Document: 750 MW RUMS Project, 2016); (RUMS: Information Memorandum, 2016)

## References

Energy Next Magazine; Monthly Magazine published by IREDA, New Delhi ([www.energynext.in](http://www.energynext.in)), Volume 7; Issue 6; April 2017, Volume 7; Issue 7; May 2017, Volume 7; Issue 8; June 2017.

Akshay Urja Magazine, Quarterly Magazine published by MNRE (Govt of India), New Delhi ([www.mnre.gov.in](http://www.mnre.gov.in)), Volume 10; August 2016, Volume 4; February 2011, Solar Radiation Resource Assessment Study; Volume 7; June 2014.

Ministry of New and Renewable Energy, Government of India, MNRE Scheme/Documents (<http://mnre.gov.in/related-links/jnsm/introduction-2/>), MNRE Draft Water Consumption Guidelines for Solar PV Power Plants (<http://mnre.gov.in/file-manager/UserFiles/comments-on-draft-water-consumption-guidelines-for-SPV-plants.pdf>).

750 MW Solar Power Project, Rewa District, Madhya Pradesh; Environmental and Social Assessment Final Report; May 2016, (<http://documents.worldbank.org/curated/en/707731472800875793/pdf/SFG2423-EA-P154283-Box396305B-PUBLIC-Disclosed-9-1-2016.pdf>).

Request for Proposal for "Development of 750mw (3 X 250mw) Grid- Connected Ground Mounted Solar Photo Voltaic Project" Tender Search Code: RUMS-2016-TN000001 IFB Number: RUMSL/2016-17/345/010 Bhopal dated 16/03/2016

Land Use Permission Agreement (MAIN LUPA) for Development of the Rewa Ultra Mega Solar Power Project to be Set Up at Rewa District in the State of Madhya Pradesh between MP-NRED and RUMSL.

Land Use Permission Agreement (Unit LUPA) for Development of Unit (1/2/3) for the Rewa Ultra Mega Solar Power Project to be Set Up at Rewa District in the State of Madhya Pradesh between MP-NRED, RUMSL and SPD's of Unit-1, Unit-2, Unit-3.

Land Use Permission Agreement (PGCIL LUPA) for Development of the PGCIL substation for the Rewa Ultra Mega Solar Power Project to be Set Up at Rewa District in the State of Madhya Pradesh between MP-NRED RUMSL and PGCIL.

Coordination Agreement (CA) for the 750 Mw (3 X 250 Mw) Grid Connected Ground Mounted Solar Photo Voltaic Project in Rewa, Madhya Pradesh between RUMSL, MPPMCL, DMRC and SPD's of Unit-1, Unit-2, Unit-3.

Implementation Support Agreement (ISA) for Development of a Grid - Connected Ground Mounted Solar Photo Voltaic Unit [1/2/3] at Gurh, Tehsil Rewa District, Madhya Pradesh between RUMSL and SPD's of Unit-1, Unit-2, Unit-3.

Power Purchase Agreement (PPA) for Procurement of Solar Power from Unit [1/2/3] Located in the Rewa Solar Project at Gurh Tehsil, District: Rewa State: Madhya Pradesh On Long Term basis between Delhi Metro Rail Corporation and SPD's of Unit-1, Unit-2, Unit-3.

Power Purchase Agreement (PPA) for Procurement of Solar Power from Unit [1/2/3] Located in the Rewa Solar Project at Gurh Tehsil, District: Rewa State: Madhya Pradesh On Long Term basis between M.P. Power Management Company Limited and SPD's of Unit-1, Unit-2, Unit-3.

Hydraulic Study conducted to analyze flood control measures of proposed Rewa Ultra Mega Solar Power Project at Gurh, Rewa Sites.

Information Memorandum on Rewa Ultra Mega Solar Power Project Issued with IFB No: [RUMSL/2016-17/345/010 Bhopal dtd. 16/03/2016 Tender Search Code: [RUMS-2016-TN00001].

Policy for Implementation of Solar Power Based Projects in Madhya Pradesh, 2012.

Madhya Pradesh Mutual Consent Land Sale Policy dated 12<sup>th</sup> November 2014.

Abbreviation		
C	C-WET	Centre for Wind Energy Technology
	CPSU's	Central Public Sector Undertakings
	COD	Commercial operation Date
D	Dept.	Department
	DMRC	Delhi Metro Rail Corporation
	DISCOM	Distribution Companies(Primarily under flagship of State Government's)
	°C	Degree Celsius
	DC	Direct Current
E	ESA	Environment and Social Assessment
G	GoI / Govt. India	Government of India
	GoMP/ Govt MP	Government of Madhya Pradesh
I	INR	Indian National Rupees (Official Indian Currency)
	IREDA	Indian Renewable Energy Development Agency Limited (Under of GoI)
	ISGS	Inter State Generating Station
	ISTS	Inter State Transmission System
	IFC	International Finance Corporation
J	JNNSM or NSM	Jawaharlal Nehru National Solar Mission or National Solar Mission
K	kWh	Kilo Watt Hours
	kV	Kilo Volts
L	LUPA	Land Use Permission Agreement
	LLP	Limited Liability Partnership
	LLC	Limited Liability Companies
	LILO	Loop In Loop out
M	MP	Madhya Pradesh
	MPUVNL	Madhya Pradesh Urja Vikas Nigam Limited
	MPPMCL	Madhya Pradesh Power Management Company Limited
	MPPTCL	Madhya Pradesh Power Transmission Company Limited, state TransCo
	MW	Mega Watt
	MNRE	Ministry of New and Renewable Energy (GoI)
	MoP	Ministry of Power (Undertaking of GoI)
N	NTPC	National Thermal Power Cooperation Limited (Undertaking of GoI)
	NRED	New and Renewable Energy Dept, under GoMP
P	PSM	Payment Security Mechanism
	%	Percentage
	PV	Photo Voltaic
	PGCIL	Power Grid Corporation of India (Undertaking of GoI)
	PPA	Power Purchase Agreement
	PSA	Power Supply Agreement
	PSU	Public Sector Undertakings
	PIB	Press Information Bureau
PMU	Project management Unit	
R	RfP	Request for Proposal
	RE	Renewable Energy
	RPO	Renewable Purchase Obligations
	RUMSL or RUMS	Rewa Ultra Mega Solar Ltd or Rewa Ultra Mega Solar
S	SCOD	Scheduled Commercial Operations Date of the Unit
	SECI	Solar Energy Corporation of India (under GoI)
	SPV	Solar Photo Voltaic
	SPD	Solar Project Developers
	SPPD	Solar Power Park Developer
	SRRA	Solar Radiation Resource Assessment
	SPV	Special Purpose Vehicle
SNA	State Nodal Agency	
T	T&D	Transmission & Distribution
	TCIL	Telecommunications Consultants India Limited E-bidding Portal of Government of India <a href="https://www.tcil-indiaelectronicstender.com">https://www.tcil-indiaelectronicstender.com</a>
W	WB	World Bank

# IMPACT OF WORK STRESS ON JOB PERFORMANCE AMONG IT PROFESSIONALS

Ravinarayana K. S. \* Ramakrishna\*\*

*The empirical studies show that Job stress and job performance are negatively correlated. In other words, lower the stress higher the performance and vice-versa. The stress comes from many sources and it is prevailing in every industry. IT sector is one of the industry which is always treated as stressful. The nature of work in today's competitive world is changing at rapid speed. The objective of the study is to examine the job stress in IT company. The data is collected from structured questionnaire. The student t test is used for statistical significance. A sample of 150 respondents were selected from various IT firms of Bangalore based on random sampling method.*

**Keywords:** Job Stress, Job Performance, It Sector, Student T Test.

The elements of job stress badly affect psychological and physical health of employees. In the modern day society because of the increasing number and size of the organizations they face the problem of employing specialist professionals for ensuring effectiveness in the work. This is all the truer in the case of IT companies. One of the most common problems faced across occupations is job stress. Job stress affects job performance. Even though most of the studies so far done reveal the harmful effect of stress on job performance, there are studies that have proved that mild stress brings better job performance. The existence of stress has increased over the years, thus affecting the mental health and wellbeing of employees.

The World Health Organization (WHO) terms health as a 'state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'. In more recent years, this statement has been modified to include the ability to lead a 'socially and economically productive life'. A condition of tension experienced by individuals confronting with extraordinary demands, constraints or opportunities may be termed as stress. The extraordinary demands of a job, coupled with pressures of modern life can lead to imbalances in emotions which leads to stress. But, however some amount of stress is needed to escape from the dull, monotonous and spiritless life. So stress can be both positive and negative. It is positive when one can gain something as an opportunity is offered by a situation. It is negative, when it leads to alcoholism, drug abuse, marital breakdowns, absenteeism, heart-disease and a number of other social, psychological and physical problems. The presence of stress has to be identified in any organization for better job performance. Therefore, this study focuses on examining the job stress and employee performance in IT employees in Bengaluru.

## I. Review of Literature

Liu, Wang, Zhan and Shi (2009) studied the effect of stress level on alcohol addiction and the findings of their study suggest that work stress is significantly correlated to alcohol addiction. Ceylan and Sulu (2010) verified association of procedural injustice to work stress and as to whether work alienation has got a mediating relationship and the study found that there is an association between the two. Wu, Y., & Shih, K. (2010) examined whether perceived job stress is affected by gender roles and found that gender role is a more suitable one than sex role. Barney and Elias (2010) examined the effect of stress on intrinsic and extrinsic motivation with reference to flex-time, and country of residence and observed that there is no significant interaction. Kutcher, Bragger, Rodriguez and Masco (2010) verified the relationship between religious faith of an employee with that of reactions to stress and job attitudes and found that there is a relationship. Mei-yung, Yee Shan and Dongyu (2011) examined whether stress has an impact on the project managers' stress in construction industry and the results showed that job stress results in burnout whereas burnout can further lead to physiological stress. Kuo and Sun (2011) empirically tested how recreational constraints, leisure benefits and job stress are related. The study revealed that leisure benefits and job stress are affected by recreational constraints for kindergarten teachers. Lin, Lin and Lin (2011) examined the leader-member relationship and job stress with that of the mediating

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effect of organizational socialization. It was found that leader-member relationship and physical health are positively affected by the organizational socialization. El-Kot and Burke (2011) examined the association between job satisfaction and loyalty with that of role stressors, role ambiguity and role conflict. The researcher found that two role stressors predicted job satisfaction. Atteya (2012) explored role stress effects and the various methods of adjusting with job performance stress. The study found there is a correlation among role stress and distress measure methods of coping with stress and they have an impact on job performance. Shen (2014) investigated as to whether there exists any association between gender roles and job stress. It was revealed from the study that gender roles and job stress are moderately affected by Adversity Quotient. Koçoglu (2014) examined the work alienation in an organization is effected by job stress and cynicism. The job stress, cynicism and work alienation are significantly related to each other. Further, it was observed that these variables are differing in accordance with the seniority in the organization. Rajan (2015) studied various sources of stress and their influence of job performance. It was found that job performance is moderately affected by stress. Enshassi, El-Rayyes and Alkilani (2015) observed the job stress and job burnout from the point of view of construction project professionals. The study revealed that the major contributor to physical stress is behavioral stress and job burnout. Sofoluwe, Olatoun, and Charity (2015) examined the association between gender, stress and academic job performance. The study revealed that gender has significant influence on stress in tertiary institutions. Sameera and Firoz (2016) investigated management of stress among employees of BPO industry in Chennai. It was found the presence of work stress which resulted in decreased job performance. Hung and Huang (2016) examined the influence of job stress on job performance and found that moderate stress promotes job performance but high level of stress results in a declined performance.

## II. Research Design & Methods

The study explores the impact of work stress on job performance among IT professionals. The study used workload, role conflict and role ambiguity as study dimensions. The data is collected from structured questionnaire among the sample respondents. The study population consists of IT professionals working in Bangalore and we restricted our respondents to entry level professionals. The questionnaire was distributed to 247 respondents working in various IT companies out of which 178 respondents positively responded. The

questionnaire has 22 items of each dimension such as workload, role ambiguity, and role conflict and job performance. Likert-5-point scale used to measure each dimension in the questionnaire. We use descriptive statistics and correlation coefficient techniques to analyze the data.

## III. Results and Analysis

The impact of job stress on job performance is analysed and the demographic variables are presented in table 1. The study shows that 67.15% of sample respondents are male. Majority of the respondents come from the age group of less than 35 and less than one year of experience as we focused on entry level professionals. If we observe the marital status, 78% are single and substantial numbers of the respondents are graduates.

Table 2 presents the results of descriptive statistics and correlation coefficients. The mean and standard deviation are calculated. It is observed that the mean of Workload, Role Conflict, Role Ambiguity and Job Performance are 3.352, 2.727, 2.607 and 3.656 respectively. As per the results, the mean of workload dimension has got first rank, i.e., 3.352. From this, it can be understood that the most affecting factor in workload was reaching the target within the time bound period. The mean score of role conflict is 2.727 and is in the second rank which means pressure put on professionals by two imposing and unmatchable demands competing against each other in the job profile. From the mean of role ambiguity (2.607) it is clear that the IT professionals are clear about their roles in the work environment. In role ambiguity, the standard deviation is highest in Role Ambiguity and it is lesser in Role Conflict. In order to understand the relationship between four dimensions of job stress, we used correlation of coefficient. The coefficients of correlation of role conflict and work load are positive and statistically significant at 5% level of significance. Role ambiguity and role stress is positively related to each other and statistically significant at 5% level of significance. The job performance variable is positively associated with workload and role conflict. There is a negative association between role ambiguity and job performance and statistically insignificant.

The multiple regression is applied where job performance is dependent variable and Workload. The independent variables are Role Conflict and Role Ambiguity. The results from table 3 showed that workload and role conflict are statistically significant whereas role ambiguity is statistically insignificant effect on job performance. The Beta coefficient showed that work load

has more effect than role conflict on job performance. The explanatory power of the model is 21%.

#### IV. Conclusion

Analyzing the impact of job stress on job performance is the purpose of this study. As per results, role conflict has a significant effect on job performance, while role ambiguity does not significantly affect Job performance. In this study the employees do their job regularly but due to workloads and time constraints their performance got reduced. The time constraint among IT professionals is very high as they carry work late night to complete the given task within the scheduled time frame. In company policy, there is no time limit for employees to work for longer hours.

#### References

Liu, S., Wang, M., Zhan, Y., & Shi, J. (2009). Daily Work Stress and Alcohol Use: Testing The Cross-Level Moderation Effects of Neuroticism and Job Involvement. *Personnel Psychology*, 62(3), 575-597.

Ceylan, A., & Sulu, S. (2010). Work alienation as a mediator of the relationship of procedural injustice to job stress. *South East European Journal of Economics and Business*, 5(2), 65-74.

Wu, Y., & Shih, K. (2010). The effects of gender role on perceived job stress. *The Journal of Human Resource and Adult Learning*, 6(2), 74-79.

Barney, C. E., & Elias, S. M. (2010). Flex-time as a moderator of the job stress-work motivation relationship. *Personnel Review*, 39(4), 487-502. doi:http://dx.doi.org/10.1108/00483481011045434

Kutcher, E. J., Bragger, J. D., Rodriguez-srednicki, O., & Masco, J. L. (2010). The role of religiosity in stress, job attitudes, and organizational citizenship behavior. *Journal of Business Ethics*, 95(2), 319-337. doi:http://dx.doi.org/10.1007/s10551-009-0362-z

Mei-yung Leung, Yee Shan, I. C., & Dongyu, C. (2011). Structural linear relationships between job stress, burnout, physiological stress, and performance of construction project managers. *Engineering, Construction and Architectural Management*, 18(3), 312-328.

doi:http://dx.doi.org/10.1108/09699981111126205

Kuo, C., & Sun, M. (2011). Study on the Recreational Constraints, Leisure Benefits, Job Stress, and Quality of Life for Kindergarten Teachers. *International Journal of Organizational Innovation (Online)*, 3(3), 155-171.

Lin, J. S., Lin, S., & Lin, Y. (2011). The mediating effect of the organizational socialization on leader-member relationship and job stress. *African Journal of Business Management*, 5(24), 10144-10155. doi:http://dx.doi.org/10.5897/AJBM11.721

El-Kot, G., & Burke, R. J. (2011). Job stressors, supervisory support and work outcomes among Egyptian managers. *Review of Management*, 1(4), 10-24

Atteya, N. M. (2012). Role stress measure, methods of coping with stress, and job performance: An exploratory study. *Journal of Organizational Psychology*, 12(2), 30-51.

Shen, C. (2014). The relative study of gender roles, and job stress and adversity quotient. *Journal of Global Business Management*, 10(1), 19-32.

Koçoglu, M. (2014). Cynicism as a mediator of relations between job stress and work alienation: A study from a developing country - turkey. *Global Business and Management Research*, 6(1), 24-36.

Rajan, D. (2015). Stress and job performance: Among nurses. *SCMS Journal of Indian Management*, 12(1), 66-87.

Enshassi, A., El-Rayyes, Y., & Alkilani, S. (2015). Job stress, job burnout and safety performance in the palestinian construction industry. *Journal of Financial Management of Property and Construction*, 20(2), 170-187.

Sofoluwe, A. O., Olatoun, A. A., & Charity, O. I. (2015). The Relationship between Gender, Stress and Job Performance among Academic Staff in Tertiary Institutions in Anambra State, Nigeria. *European Scientific Journal*, 11(34)

Hung, T. K., & Huang, Y. (2016). Does a toy a day keep the stress away? *International Journal of Business and Information*, 11(1), 111-124.

Sameera, Shaik, S., & Firoz, S. C. (2016). A study on stress management among the BPO employees in chennai city. *The International Journal of Business & Management*, 4(1), 12-15

**Table 1: Demographic Variables.**

Variables	Elements	Frequency	Percentage
Gender	Male	116	65.17%
	Female	62	34.83%
	Total	178	100.00%
Age (years)	less than 35	128	71.91%
	from 35 to less than 40	26	14.61%
	From 40 to less than 45	14	7.87%
	From 45 to less than 50	10	5.62%
	50 and above	0	0%
	Total	178	100.00%
Experience	less than 1 year	174	97.75%
	from 1 to less than 3	3	2.17%
	from 3 to less than 5	1	2.50%
	5 and above	0	0.00%
	Total	178	106.59%
Marital Status	Single	138	78%
	Married	40	24%
	Total	178	100%
Education Qualification	Graduate	167	93.82%
	Post Graduate	11	6.18%
	Others (Specify)	0	0.00%
		178	100.00%

**Table 2: Descriptive Statistics and Correlation Coefficients.**

S. No.	Variables	M	S.D	Items No	Correlation Coefficients			
					1	2	3	4
1	Workload	3.352	0.772	5	-0.685			
2	Role Conflict	2.727	0.786	6	0.332**	(0.741)		
3	Role Ambiguity	2.607	0.989	5	0.293**	0.523**	-0.872	
4	Job Performance	3.656	0.606	6	0.371*	-0.294*	-0.060	-0.703

\*\*Correlation is significant at the 0.01 level.

\*Correlation is significant at the 0.05 level.

**Table 3: Regression Analysis**

Variables	$\alpha$	$\beta$	t	Sig.	R <sup>2</sup>	F	Sig
Workload	0.094	0.119	2.108	0.026	0.21	70.71	0.049
Role Conflict	-0.089	-0.116	-2.958	0.033			
Role Ambiguity	-0.021	-0.034	-0.284	0.777			

## **SAMVEDANA (EMPATHY) & SRIJANSHEELTA (CREATIVITY) – A BOOK REVIEW ON GRASSROOTS INNOVATION: MINDS ON THE MARGIN ARE NOT MARGINAL MINDS**

**Author:** Anil K. Gupta

**Publisher:** Penguin Books India Pvt. Ltd., India

**ISBN:** 9788184005875

**Year of Publication:** 2016

**Price:** Rs.599/-

**Piyush Chadarava\***

The exploratory walks (Shodhyatra) an initiative taken by Professor Anil Gupta a renowned faculty of IIM Ahmedabad written a book on Grassroots Innovation. A journey of a thousand miles begins with the first steps and these exploratory walks are the contribution to identify India's Grassroots Innovation. Professor Anil Gupta highlighted the importance of equality towards humanity. Grassroots initiatives are innovative networks of activists and organizations that lead bottom-up solutions for sustainable development; solutions that respond to the local situation and the interests and values of the communities involved. In contrast to conventional, incremental green reforms, grassroots initiatives seek to practice deeper, alternative forms of sustainable development. Innovation is not only frugal, but should be sustainable. The impact of innovation is higher at low-cost. It requires patient and respectful attention to solve unmet needs.

Honeybee cross – pollinate flowers, people – to – people communication a concept based on learning to contribute towards society. When we gain the knowledge from common people, generally without reciprocity, we can't claim that people don't mind. The bees don't keep all the honey themselves and that triggered and became a life mission of Professor Anil Gupta. The innovation journey started in four levels Artifactual, Metaphorical, and Heuristic and Gestalt. Culture can be a culprit when it sows the seeds of compliance, conformity and much congruence. The focus of innovation should be on less disorder and zero waste. The innovation should focus on affordability, accessibility and availability. Fortitude is the capacity to say no, when the world wants to hear yes. He talked about fatigued mind, a degree of dilution of desire, humility, dependency of the relationship, seeds

of doubts, absence of assurance and challenge to Maslow's Hierarchy Theory. The book focuses on redefining the thoughts of "Minds on the Margin are not Marginal Minds". It covered a number of innovations created by rural people of India with their understanding of problems. The approach towards grassroots innovations is collaborative problem-solving as co-creation. The innovation journey which emphasizes on social uplifting is very important in this century. The journey towards unmet needs cannot be started without the consideration socialization of impact. To find the empathetic innovation, interaction between eternal knowledge and material life required. Knowledge, feeling and action bring harmony of innovation. A person's desire to doing something for society brings grassroots innovations in unexpected constraints and unutilized resources. The seeds of impatience have to sprout in the soil of subtle expectation.

The focus of the book is on bringing humanities in the society and self – development. Don't expect less, do more, deliver more that culture brings new thoughts in the society. The thought of frugality can be fostered in the society; don't focus on short-term frugality. Frugality focused on four things accessibility, affordability, adaptability and availability. A journey of frugality starts from perfectionism to virtue to. The ecosystems of inclusive innovation, build upon empathy, respect for frugality, and circularity to foster creativity & collaboration. Let, we hear a sound of creativity.

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# INVESTMENT MANAGEMENT: SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT

**Author:** Dr. Preeti Singh  
**Publisher:** Himalaya Publishing House  
**ISBN:** 978-93-5273-908-0  
**Year of Publication:** 2018 (20<sup>th</sup> Edition)  
**Price:** Rs.475/-

**Rupali Vashisht\***

The markets around the globe are becoming progressively volatile and to be focused on a long term investment management strategy is not easy. Markets are largely unpredictable and chaotic, an attempt to time them essentially means investors must get two important decisions right: when to take an exit and when to get back in. Diversification can help scale down the impact of volatility and smooth out returns over a period of time. This usually starts by investing across asset classes and also by investing in different companies, industries and countries.

The chief weapon in an investor's armory is time. The earlier an investor starts to save for retirement, constructs an emergency fund, set aside an amount for investment purpose the more likely they are to actualize their financial goals. Investment management is the skill that every individual must acquire in order to maximize one's wealth. The book highlights the modern, analytical approach to making decisions pertaining to investment. This book is the 20<sup>th</sup> revised edition, it has been divided into eighteen chapters which are organized and presented in a style such that the content is comprehensible to an abecedarian. The objective of the book is to equip the readers with the understanding of various channels and sources available to an investor to invest in a manner such that their investments are in line with their expectations. In addition to providing an insight into evaluation of investment opportunities, this book also thoroughly explains, in a systematic manner the alternatives available to an investor to safeguard themselves against downside risk of losses. Judicious use of diagrams, charts and tables has been made which entirely absorbs the reader's thoughts. The book is a masterpiece of writing that deliberates on how to be more effective and efficient in handling one's financial assets.

The focal point of the book is that it introduces cumbersome concepts relating to decision making regarding analysis of securities and management of portfolio in a comprehensive, reader-friendly and interesting fashion. Also, theoretical topics have been presented in an organized and crisp form to enable the reader to gain conceptual clarity with ease. Moreover, the latest developments in stock markets have been incorporated to impart up-to-date and fresh knowledge. For the benefit of the reader, the highlights of each chapter have been put together in the summary section at the end of the chapter and chapter plan has been laid out at the beginning of each chapter. In addition to this, the book provides step-wise solutions to variety of questions from each topic in the illustrations segment at the end of every chapter. In some sections where the concept has evolved over time, empirical analysis has also been contained therein to make the reader understand the evolution process of the concept. It precisely sets itself apart from other textbooks in terms of presentment of content, coverage, inclusion of latest developments and amendments and maintenance of balance between theory and practice. Special focus has been laid on the explanation of the concepts in Indian context. To sum up, this is a well-planned and well-executed writing. The author has explained the concepts exceptionally well and framed the book with profound research and utmost care. The book has been written in simple yet creative style keeping in mind the latest trends and needs of the readers. It is reasonably priced and a must read for all those who aspire to understand the mechanics of investment and also who are acquainted with the investment management for further enhancement of their knowledge.

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{ **Nurturing talent**      **Re-defining excellence**      **Setting new standards...** }



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