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ANALYSIS THE EFFECTS OF TRAINING AND DEVELOPMENT ON EMPLOYEE PERFORMANCE IN PAMIR INSTITUTE OF HIGHER EDUCATION, AFGHANISTAN

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ABSTRACT

This study was conducted to determine the effects of training and development on employee performance in Pamir Institute of Higher Education, Khost Province Afghanistan. The objective of the study was to analyze the effect of training and development on employee's performance in the organization. The researcher used interview and questionnaires to collect data. Data were collected from 156 randomly selected employees from three staff of the organization: namely, Researchers staff Management staff and administrative staff of PIHE. The researcher used Descriptive as well as inferential statistics (regression and correlation tools) to analyze the data. The correlation analysis result clarified that all relationship between the dependent and independent variables are positively and significantly correlated. Additionally, it was found that training and development has higher effects on employee performance. In the binary logistic regression model a total of four explanatory variables were included in the model and all of them were statistically significant. In general, the empirical analysis, like many other similar studies, confirms that training and development would have positive effect on employee performance. Thus, concerned organization should have provided training and development for the employee in the organization to improve their performance.

Keywords: Competency, Employees Performance, Public Sector, Training and Development

INTRODUCTION

Pamir Institute of Higher Education (PIHE) is in the southeast provinces of Afghanistan. It is an independent and leading private institution established in Khost province in 2011 dedicated to the training and development of local and foreign students. Institution aim is to encourage and inspire learners who are keen on gaining knowledge in internationally recognized university programs, leading to Bachelor degrees (4-year) in the faculties of Business Administration (BBA), Computer Science (BCS), Law & Political science, Languages and Literature, English Department (BEL).

It was evident from the previous researches that the labor markets where competition is low companies squeeze the labor wages and also spends less on their training. Researcher is working as a senior instructor in PIHE and being here since 10 years. Researcher observed the gap of training and development among the employees. This problem leads to the unskilled and demotivated worker and finally high costs to Organisation. The main objective of the research is to analyze the effects of training and development on employee performance of PIHE. The specific objectives of this study were to examine how the different types of training and development of employees contribute to achieve PIHE goals, to identify constraints of training and development in the PIHE, to investigate how training and development needs of employees are determined and by whom and to identify the methods of training and development activity undertaken by PIHE.

METHODOLOGY**Research design**

This thesis used descriptive as well as explanatory research design because of the nature of the variables that was conducted to produce data, required for quantitative and qualitative analysis. The aim of this thesis was to identify the extent to which PIHE using planned and systematic training and development to motivate and improve the performance of its employees.

DATA COLLECTION PROCEDURES

The study used questionnaires and interview to collect data. PIHE staff members were interviewed using structured survey schedule that was administered by two enumerators. In addition to the structured survey schedule personal observation, group discussion and informal discussion with the key informants that was administered by the researcher to obtain additional information.

Sampling Technique: To select sample respondents from PIHE (Pamir institution of higher education), first the employee in the PIHE were identified and stratified in to three strata: researcher staff, management staff and administrative staff. In this sampling technique the strata are formed on the bases of the centers' attributes or characteristics.

Sample Size and Sampling: The total population in PIHE is 255(two hundred fifty-five) at 2017, (source human resource management department) staff members. From this target population a sample size of 156(one

hundred fifty-six) staff members within PIHE will be selected by using the formula of Yamane (1967:886). At 5% significance Levels the sample size will be calculated as follow.

$$N = \frac{N}{1 + N(e)^2}$$

$$n = \frac{255}{1 + 255(0.05)^2}$$

$$n = 155.725 \approx 156$$

After identifying the sample size using the above equation the researcher need to allocate the estimated sample size to the strata under the study .One method is proportional allocation. It is used when the size of the sample from a given strata will be proportional to the size of the strata. That is in the proportional allocation, a small sample taken from a small strata and large sample taken from a large strata and the sample size in each strata is fixed.

Table-1: Respondents strata

Sr. no	Staff Members	Population size	Strata
1	Teachers	76	47
2	Managements'	35	21
3	Non- teaching staffs	144	88
	Total	255	156

Source of Data: Both primary and secondary data was employed to conduct this study. Both closed and open ended questions were used in this study. Primary data were collected from the center human resource managers and other professional practitioners. Secondary data were collected from all relevant materials, reports, books, journals and internet. The researcher gathered all the required data from sample respondents and relevant materials available.

Results: Following are the some major results of questionnaire and interview in the form of table which allow researcher to drawn conclusion on research questions.

Table-1: Respondents department

Respondents Department					
		Frequency	Percent	Percent Valid	Cumulative percent
Valid	Teacher’s staffs	50	32.1	32.1	32.1
	Management staffs	18	11.5	11.5	43.6
	Non-teaching staffs	88	56.4	56.4	100.0
	Total	156	100.0	100.0	

Source: Own survey result

The above table shows the response received from the employees regarding the types of departments they belong. This implies that a higher percentage of the employee population worked at the administrative staff.

Table-2: Employees selected criteria for training and development

Table-2: Means of selection

Means of selection					
		Frequency	Percent	Percent Valid	Cumulative percent
Valid	On joining company	7	4.5	4.5	4.5
	Supervisors recommendation	2	1.3	1.3	5.8
	Compulsory for all employees	15	9.6	9.6	15.4
	Upon employee request	11	7.1	7.1	22.4
	Performance appraisal	119	76.3	76.3	98.7
	Don’t know	2	1.3	1.3	100.0
	Total	156	100.0	100.0	

Source: Own survey result

The data in the above table shows that 76.3 percent of the respondents said that the selection of training and development was based on the performance appraisal of the employee in the organization.

Table-3: Frequency of training and development

Table-3: Frequency of training and development

		Frequency	Percent	Percent Valid	Cumulative percent
Valid	Quarterly	4	2.6	2.6	2.6
	Every six months	4	2.6	2.6	5.1
	Once in a year	30	19.2	19.2	24.4
	Every two years	17	10.9	10.9	35.3
	Others	101	64.7	64.7	100.0
	Total	156	100.0	100.0	

Source: Own survey result

According to the above table, 64.7 percent of the respondents said that there was no regular schedule for training and development in the organization. The other respondent which represents 19.2% out of the population said that the training and development was given to us once in a year.

Table-4: Quality of training and development

		Frequency	Percent	Percent Valid	Cumulative percent
Valid	Very poor	21	13.5	13.5	13.5
	Poor	86	55.1	55.1	68.6
	Average	24	15.4	15.4	84.0
	Good	16	10.3	10.3	94.2
	Very good	9	5.8	5.8	100.0
	Total	156	100.0	100.0	

Source: own survey result

The data in the above table shows that 55.1 percent of the respondents said that the quality of the training and development given was poor, which represents 86 out of the total sampled respondents in the organization. The frequency table above shows that the quality of the training and development given in the organization was poor.

Table-5: Types of competence

Table-5: Types of competence

		Frequency	Percent	Percent Valid	Cumulative percent
Valid	Technical competencies	30	19.2	19.2	19.2
	Personality competencies	102	65.4	65.4	84.6
	Managerial competencies	21	13.5	13.5	98.1
	If Two or more	3	1.9	1.9	100.0
	Total	156	100.0	100.0	

Source: own survey result

The data in the above table shows that 102 respondents representing 65.4 percent of the total respondents said that the organization was applied personality types of competency for training and development needs. According to the responses of other respondents of the organization, 30 respondents representing 19.2% of the population said that technical types were applied by the organization.

6. Types of benefits in related with training and development participation

Table-6: Benefits of training and development

		Frequency	Percent	Percent Valid	Cumulative percent
Valid	Gaining performance improvement	126	80.8	80.8	80.8
	Gaining perdiam	1	.6	.6	81.4
	Experience sharing with others	9	5.8	5.8	87.2
	Non- monetary benefit	19	12.2	12.2	99.4
	Others	1	.6	.6	100.0
	Total	156	100.0	100.0	

Source: own survey result

The frequency table above shows most of the participants were believed that gaining of performance improvement were the main benefits of training and development participation

7. Competence of training and development

Table-7: Competence of training

		Frequency	Percent	Percent Valid	Cumulative percent
Valid	Yes	146	93.6	93.6	93.
	No	10	6.4	6.4	100.0
	Total	156	100.0	100.0	

Source: own survey result

Above Table shows analysis on whether training and development at PIHE would contribute to improve organizational competence. Out of total, 146 respondents representing 93.6% indicated that training and development would contribute to achieving effectiveness and efficiency of PIHE goals. While the rest 10 respondents representing 6.4% revealed that they do not believe that organizational competence would improve as a result of training and development.

4.34. Correlation analysis

Correlation refers to synonym for association or the relationship between variables. It measures the degree to which two sets of data are related. Higher correlation value indicates stronger relationship between both sets of data (Coetzee, 2003).

Table-8: Correlation analysis of training variables with employee performance

	Employee perf.	Moral	competence	delivery	Feed back
Employee perf.	1	0.457**	0.720**	0.359**	0.254**
Pearson correlation(r)					
Sig.(2-tailed)		0.000	0.000	0.000	0.001
N	156	156	156	156	156
Moral	0.457**	1	0.426**	0.242**	0.098
Pearson correlation					
Sig.(2-tailed)	0.000		0.000	0.002	0.225
N	156	156	156	156	156
Competence	0.720**	0.426**	1	0.177*	0.188*
Pearson correlation					
Sig.(2-tailed)	0.000	0.000		0.027	.019
N	156	156	156	156	156
Delivery	0.359**	0.242**	0.177*	1	0.033
Pearson correlation					
Sig.(2-tailed)	0.000	0.002	0.027		0.681
N	156	156	156	156	156
Feedback	0.254**	0.098	0.188*	0.033	1
Pearson correlation					
Sig.(2-tailed)	0.001	0.225	0.019	0.681	
N	156	156	156	156	156

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

Above table present the inter-correlations among the variables being explored. In other words above table represents the correlation matrix between the independent variable and the dependent variables which is employee performance. All relationship between the dependent and independent variables are positively and significantly correlated. From the analysis, it is noted that employee morale is positively correlated ($r = 0.46$, $p < 0.01$) with employee performance. On the other hand, competence of training and delivery style of training was positively and highly correlated with employee performance ($r = 0.72$ and $r = 0.36$, $p < 0.01$) respectively.

The most significantly correlated and strong relationship of all the variables of training is competence of training ($r = 0.72$, $p < 0.01$) with employee performance. Hence, Table presents positive relationship between all the variables of employee training and employee performance. However, all employee training and development variables were correlated with the mean value of employee performance and the following relationship was observed.

Table 9 below shows a correlation between the effect of employee training and combined of all variables, i.e. moral, competence, delivery methods and feedback into one variable (employee performance) resulted into positive relation with $r = 0.4475$, $p < 0.01$. This value of correlation indicates a stronger relationship and significant at p-value less than 0.01.

Table-9: Correlation analysis of training and employee performance

	Training and development	Employee performance
Training and development		
Pearson correlation	1	0.4475**
Sig.(2-tailed)	0.000	
N	156	156
Employee Performance		
Pearson correlation	0.4475**	1
Sig.(2-tailed)	0.000	
N	156	156

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

10. REGRESSION ANALYSIS

The following table below shows the regression analysis of the effects of training on employee performance. The beta value is a measure of how strongly predictor variable influences the criterion variable. According to the binary logit model analysis, all the independent variables (moral, competence, delivery style and feedback) entered in to the model were significantly influence the dependent variable at 1%, 1%, 1% and 5% probability level.

All the independent variables are positively related with the dependent variable. So that the beta value of this study as indicated in table 11 below is 0.693 which indicates that a change of one standard deviation in the predictor variable i.e. training resulted in a change of 69.3 standard deviations in the criterion variable i.e. employee performance. Thus, there is a higher effect of training and development on employee performance. Since the higher the beta value the greater the effects of the predictor variable on the criterion variable.

Table-10: The maximum likelihood Estimates of binary logit model

	B	S.E.	Sig.
MORALE	1.935	0.727	0.008***
COMPTENCE	3.718	0.638	0.000***
DELIVSTY STYLE	2.374	0.749	0.002***
FEEDBACK	2.240	0.896	0.012**

Pearson chi-square 111.699***

-2 log likelihood ratio 86.893

Correctly predicted (count R^2) 71%

*** and ** indicate statistically significant at 1%, 5% and 10% probability level respectively.

Source: Model out put

Table-11: Beta coefficient

Model	Standardized coefficient
	Beta
1(Constant) Employee training	0.693

Table 12 can also clearly show the value of R and R^2 . In this analysis the value of R is 0.84 which is a measure of the correlation between the observed value and the predicted value of the dependent variable (employee performance). Whereas R Square (R^2) is the square of this measure of correlation and indicates the proportion of the variance of employee performance with the existence of training. Hence, R Square = 0.71 implies that only 71.0% of performance is explained by training. In essence, this is a measure of how good a prediction of the dependent variable we can make by knowing independent variables.

Table-12: Analyses and model summary of R and R^2

Model	R	R square
1(constant) Employee training	0.84	0.71

CONCLUSIONS AND RECOMMENDATION

Based on the findings of the study, the following suggestions are forwarded: The HRM department in PIHERC should request sufficient budget for employee training purpose and in order to get this budget it should try to convince and persuade those who allocate the budget. After that, they should utilize this budget effectively and efficiently. Moreover, the study recommends that the HRM department should give great attention when the training plan and policies are first developed and designed so that it will help to duly follow the training processes.

Furthermore, it should be developed in line with the corporate plan and employees should be aware and know what it looks like in order to understand the intention of employees and to create self-confidence among employees. Lastly, the management in HRM should continuously improve and follow up systematically the training plan and policy in operation. This can help the organization to have planned and systematic training. Feedbacks from employees on training should be collected before and after training like that of the organization received feedback during training. This will enable the organization to improve their current and future training programs and to gauge its effect. The organization should allow enough time for their training program in order to utilize different training opportunities in the country and abroad on time so that trainers will have sufficient time to equip the trainees with the required knowledge and skills. Besides, it can reduce as well as avoid program mismatch that happened in the organization and ultimately will have quality training. Hence, HRM should see learning, training as well as training objectives, plan, implementation and evaluation as a continuous process for organizational development and survival.

The other recommendation is the department as well as the organization should give a chance for employees to participate in the designing and development of the organization training. This can help the organization to easily understand the need and want of employees regarding the training that the organization will deliver and give awareness for them about the types of training and development that will be provided. Like that of employee competence which indicated a strong correlation with training, the management of PIHE should exert their effort towards better employee performance. In general, to provide effective training and to improve employee performance public organization should allocate enough budgets, develop clear performance measurement system before and after training, properly follow the training process, design and accordingly follow the policy and give a chance for employees to involve in decision making regarding training and development and other related issues.

FUTURE RESEARCH

This study directly focuses on the effect of training and development on worker performance. However, commitment, efficiency and other issues are not studied. Therefore, this study can be further enhanced to explore that how training programs can be strategically designed to improve efficiency and commitment of employee and aligned with organizational goals to meet the desired performance. According to Abbas and Yaqoob (2009), employee training is a form of investment towards the employees to improve productivity; therefore this study can also be performed keeping in view the details of some variables. In other words, future research should also attempt to investigate the effect of employee training on other types of employee performance such as loyalty, trust, motivation and others. Employee perception of training facilities and its effect on employee performance can be measured. Organizations can also understand the importance of employee training and development by developing a feedback system as well.

Future research could also investigate factors that may mediate the relationship between training and employee performance. Another aspect of future study is that this study can be performed in terms of the role of training to create successful public organizations in Kabul. In general this research can pave the way to study other related issues regarding public organizations.

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A STUDY ON VIEWERS' PREFERENCES AND SATISFACTION TOWARDS TAMIL NEWS CHANNELS AT VELLORE DISTRICT, TAMILNADU

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ABSTRACT

The purpose of the study is to identify the preferences and satisfaction of the viewers' towards Tamil news channels at Vellore district, Tamilnadu namely Thanthi, Sun, Kalaingar, Jaya, Polimer, Puthiya Thalaimurai, News 7, Sathyam, Raj news and Cauvery news channel. The factors considered to find out the preferences of audience towards Tamil news channels are reliability, quality, accuracy, timely information, entertainment, presentation, coverage, anchoring, sensational and interesting and variety. The research design was exploratory in nature. Purposive sampling technique was used to collect data from 100 viewers. Data was collected using questionnaire and personal interview method. The statistical tools namely frequencies, descriptive statistics, MANOVA and Friedman test was done to examine the true and impartial Tamil news channel preferred by the audience. Based on the findings, it is found that Fair, quality, reliability, accuracy are the most significant factor that influences the viewers' to prefer particular Tamil news channel and Thanthi News, Puthiya Thalaimurai, Polimer News and News Tamilnadu are the most preferred Tamil news channel by the viewers. The study concluded that viewers' have average level of preference and satisfaction towards Tamil news channels.

Keywords: Viewers' Preferences and Satisfaction, Tamil News Channel, Vellore District, Tamilnadu

I. INTRODUCTION

Television is a mass media that has an impact on audience all over the world in a shortest period of time. It has become one among the basic need of households used to entertain people through various channels with different programs. Due to its tremendous growth, the programs offered through television is categorized into different channels namely movies, music, news, sports, share market, comedy, devotional, agriculture, cartoon etc. In particular, it serves as a major vehicle for news channels to broadcast lively 24*7 world wide information regarding various fields in a simplified colloquial language to the general public. The information provided in both visual and audio mode aid the people to gain greater knowledge about the subject matter of the news than provided by other traditional media namely newspaper, magazines, radio etc. Considering this, many news channels has been entered the market and competing with each other to provide news in a strategic approach. Instead reading the news by facing the viewers in a formal way, they uses new tactics to communicate the news by segregating it into various programs to entertain and to arose interest among the audience to watch the news. The major mission of the news channels is to provide the news in such a way to reach audience irrespective of their geographic area, language, age, education and knowledge. By using latest technological know-how they are competing with each other to disseminate the world news creatively and sensationally to enhance the social concern among the people of the society. Hence, the study has been chosen to identify the preferences and satisfaction of the viewers' towards Tamil news channels at Vellore district, Tamilnadu. It also finds out the major sensational program which has a greater impact on the welfare of the society.

II. PROBLEM DEFINITION

Television news channels are considered as a most powerful media to broadcast information all over the world rapidly in an entertaining way. As few years back, Doordarshan, a public service broadcaster founded by Government of India provides news in an unbiased and neutral way. Due to the development of technology, private channels started entering the market with their massive corporate image. They started offering news in a creative and fascinating way through various programs namely talk shows, debate, serials, movie reviews, celebrity news, agriculture, education, sports, youth oriented programs, health tips, women oriented programs, world news, weather live programs etc. On the other hand, to enhance their TRB rating and to favoritism their political party, they disseminate impartial news, sensationalizing minor issues beyond personal interest of the affected people, making all news as breaking news with irritating music which indirectly affects the societal ethics. In addition, majority of the political party have their own news channels to broadcast news in such a way to improve their image in the society. They even started fighting with each other through their channels which confuses the audience to confess the truth about the politics. Distinctively, Tamil news channels namely Thanthi, Sun, Kalaingar, Puthiya Thalaimurai, Zee, Polimer, Caption, Cauvery, Vasanth, Tamilnadu, Raj and Jaya news plays a major role in broadcasting their own political party news in a positive way. It is also difficult for the audience to prefer news channel which offers true and unbiased news about the society. Consequently,

the study has been undertaken to examine the true and impartial Tamil news channel preferred by the audience and to get their suggestions regarding modifications or addition of programs to enhance the quality of the channel and societal interests.

III. LITERATURE REVIEW

Reena Malik (2016) focused on the factors affecting the viewership of the television news channels and preference for watching the particular one which they prefer among the school teachers with a sample size of 42 teachers of Kendriya Vidyalaya in Sirsa district with the help of a semi- structured questionnaire. The study found that each and every viewer is different, behaves differently and having his own preferences, likes and dislikes. It established that the programs that a station airs highly influence the choice and preference of television stations by public primary school teachers. It also found that majority of viewers watched programs of the same general type regardless of the station that they aired. The study suggested that to enhance the brand equity and the value of the news station the broadcasters need to focus all the factors affecting preferences of viewers' towards news channel namely coverage, interactivity, current affairs, entertainment, spiritual, etc.

Ninikala, K. (2016) identifies the viewers' perception towards Malayalam news channels in Kerala. 60 samples were drawn from the viewers of Malayalam news channels using convenient sampling method. A well structured questionnaire was developed to collect information from the viewers of Malayalam news channels. Data was analyzed by using statistical tools namely percentage and chi-square test. The study found that Asianet news and Manorama news is the most preferred news channel and the viewers are interested to watch detailed news and live news. It also revealed that according to the changes in the age group time spend by them also varies. The study concluded that concluded that the viewers' opinion about the motives of the channels varies according to the channels.

Rao., et al (2015) attempt to explore the impact of viewer's satisfaction and their preference on various news channels and the overall satisfaction on the viewership, the effect of repositioning efforts, and preference for news channels based on various factors. The sample size of the study was 150 and the sampling method adopted to collect data was convenient sampling technique. Both primary and secondary data were collected. Primary data was collected by using questionnaire and personal interview method. Secondary data was collected from magazines, Internet, Books, and various marketing journals. Information of the news channels is collected through various websites. Data was analysed with the help of tables, charts and graphs using percentage analysis. The study concluded that TV is the most convenient source of getting NEWS and AAJ TAK is the most popular TV News channel compared with other Hindi news channels.

Vishnu, S. Kurup and Vilas Nair (2015) conducted a study to find out the viewership analysis of news channels with special reference to Asianet News. Primary data were obtained by methods of direct interviews, by telephonic interviews, and also by mail using a well-designed and structured questionnaire from 253 respondents. Random and convenience sampling techniques were used for the data collection procedure. The results of the study ultimately suggested that Asianet News is preferred by majority of the viewers, followed by Manorama News which leads in certain attributes such as credibility of news content, accuracy of reports, unbiased reporting of news, deep analysis and detailing, presentation styles, and latest news updates. Certain key factors such the attitude and presentation style of the news reader, unbiased analysis of the news content, and strong preference toward political satires are also found to be influential in driving higher rating and viewership for the channels.

Dr. Shankar, P (2015) attempts to explore the impact of viewer's satisfaction and their preference on various Tamil news channels at Chennai city and the overall satisfaction on the viewership, the effect of repositioning efforts, and preference for news channels based on various factors. The study is descriptive and exploratory in nature. A sample of 150 viewers has been chosen conveniently for collecting primary data using questionnaire method. The study found that Puthiya Thalaimurai is the most familiar channel and viewers depend mostly on the channel for the current affairs. The study concluded that News channels should try to broaden the coverage of the contents such as current affairs, education, sports, business, cinema, health care and social security so that the viewers do not shift the preference

Mohana Krishnan P.C (2014) has undertaken a study to examine the viewer's perception towards watching national English news channels with special reference to Malabar region of Kerala. The sample size of the study was 50 and the sampling method adopted to collect data was convenient sampling technique. Both primary and secondary data were collected. Data was analyzed using percentage analysis. The study found that majority of the respondents are keenly observing English news channels and Times Now is the most preferred national English news channel in the Malabar region of Kerala. The study conducted on the viewer's perception

towards watching national English news channels with special reference to Malabar region of Kerala could identify and understand the preference of the viewers towards various aspects of news channels.

Sachin Sinha (2013) attempts to explore the impact of news anchors on the viewership, the effect of repositioning efforts, and preference for interview based news programmes. IT IS based on the identification of viewership preference patterns of news channels with special reference to Zee news. The study is descriptive and analytical in nature. Simple random sampling was used to collect the responses from 150 respondents. The study found that Zee News, which was the pioneer among the news channels in the cable and the satellite TV industry, has gradually slipped to the fourth position. The study concluded that viewers of news channels are not hungry for news alone. They would like their news to be served to them with all the possible garnishing and topping.

IV. OBJECTIVES OF THE STUDY

1. To examine the level of viewers' preference and satisfaction towards Tamil news channels at Vellore district, Tamilnadu.
2. To identify the major factors affecting the viewers' to prefer particular Tamil news channel.
3. To study the significant differences in demographic variables on the preference of Tamil news channel.
4. To identify the Tamil news channel that focuses on political patronage of its own party.
5. To give suggestions to enhance the quality of unbiased news and programs to reach all demographic audiences.

V. SCOPE OF THE STUDY

The study is confined to the viewers' preferences towards Tamil news channels at Vellore district, Tamilnadu namely Thanthi, Sun, Kalaingar, Jaya, Polimer, Puthiya Thalaimurai, News 7, Sathyam, Raj news and Cauvery news channel. The factors considered to find out the preferences of audience towards Tamil news channels are reliability, quality, accuracy, timely information, entertainment, presentation, coverage, anchoring, sensational and interesting and variety. The findings and suggestions are based on the viewer's behavior and attitude towards Tamil news channels.

VI. SIGNIFICANCE OF THE STUDY

The study provides the thorough analysis of preferences of viewers' towards Tamil news channel at Vellore district. It provides information regarding major factor affecting the viewers' to prefer particular Tamil news channel and their satisfaction towards programs offered by Tamil news channel. In addition, it identifies the perception of audience towards Tamil news channel which focuses on political patronage of their party. It also supports the news channel to enhance their quality in news and programs offered by them.

VII. LIMITATIONS OF THE STUDY

1. The study is limited to Vellore district.
2. The sample size has been restricted to 100.
3. The findings and suggestions are subjected to personal bias of the respondents.

VIII. RESEARCH METHODOLOGY

Research design: The study is exploratory in nature.

Questionnaire: Both open ended and closed ended questions were framed using nominal, ordinal, Likert and ratio scales.

Data collection method: Primary and secondary data were used to collect data from the respondents.

Sampling technique: The population of the study consists of viewers' of Tamil news channel at Vellore district, Tamilnadu. The sample size chosen for the study was 100 respondents. Purposive sampling technique was used to collect data from the respondents.

Statistical tools: Analyses such as reliability, frequency chart, descriptive statistics, MANOVA and Friedman test were used to analyze the factors influencing viewers' preference and satisfaction towards Tamil news channels at Vellore district, Tamilnadu.

IX. HYPOTHESIS SETTING

H₁₁: There is a significant difference between viewers' demographic variables and their preferences and satisfaction towards Tamil news channel.

H₁₂: There is a significant difference in the mean rank of factors affecting viewers’ preferences towards Tamil news channel.

H₁₃: There is a significant difference in the mean rank of viewers’ most preferred Tamil news channel.

X. DATA ANALYSIS AND INTERPRETATION

a. Cronbach’s Alpha Reliability Test

In order to find out the internal consistency of the data, Cornbach’s Alpha test is applied.

Table-10.1

Sl. No.	Scale	No. of Items	Cronbach’s Alpha (α)
1.	Viewers’ Preferences towards Tamil News Channel	8	0.932
3.	Viewers’ Satisfaction towards Tamil News Channel	8	0.951

[Source: Primary data]

From the table 10.1, it is inferred that the value of Cornbach’s Alpha for the variables viewers’ preference and satisfaction towards Tamil news channel are above 90% which means that the items in the variables have excellent internal consistency within the group.

b. Descriptive Statistics

In order to measure the level of viewers’ preference and satisfaction towards Tamil news channels, descriptive statistical tool is applied.

Table-10.2: Level of Viewers’ Preference and Satisfaction towards Tamil News Channels

Sl. No.	Scale	Mean	Standard Deviation
1.	Viewers’ Preferences towards Tamil News Channel	3.34	1.027
2.	Viewers’ Satisfaction towards Tamil News Channel	3.26	0.919

[Source: Primary data]

It is inferred from the above table that the mean value of viewers’ preference towards Tamil news channels is 3.34, which means that the viewers’ have average level of preference towards Tamil news channels. The mean value of viewers’ satisfaction towards Tamil news channels is 3.26, which indicates that the viewers’ have average level of satisfaction towards Tamil news channels.

c. Multivariate Analysis Of Variance (MANOVA)

In order to identify the significant difference between viewers’ demographic variables and their preferences and satisfaction towards Tamil news channel, MANOVA test is applied.

H₀₁: There is no significant difference between viewers’ demographic variables and their preferences and satisfaction towards Tamil news channel.

H₁₁: There is a significant difference between viewers’ demographic variables and their preferences and satisfaction towards Tamil news channel.

Table-10.3: Viewers’ Demographic Factors with their Preferences and Satisfaction towards Tamil News Channel

Demographic Factors	Variables	F	P value
Gender	Viewers’ Preferences towards Tamil News Channel	9.678	0.001**
	Viewers’ Satisfaction towards Tamil News Channel	6.145	0.001**
Age	Viewers’ Preferences towards Tamil News Channel	21.234	0.005**
	Viewers’ Satisfaction towards Tamil News Channel	26.806	0.008**
Educational Qualification	Viewers’ Preferences towards Tamil News Channel	30.164	0.003**
	Viewers’ Satisfaction towards Tamil News Channel	28.517	0.004**
Occupation	Viewers’ Preferences towards Tamil News Channel	23.642	0.007**
	Viewers’ Satisfaction towards Tamil News Channel	22.719	0.007**
Marital Status	Viewers’ Preferences towards Tamil News Channel	4.274	0.001**
	Viewers’ Satisfaction towards Tamil News Channel	6.135	0.001**

[Source: Primary data]

Note: ** Denotes significant at 1% level.

Since P value is less than 0.010, the alternate hypothesis is accepted at 1 percent level of significance. Hence it is concluded that there is a significant differences among viewers’ demographic variables and their preferences and satisfaction towards Tamil news channel.

d. Friedman Test

In order to find out the factors affecting viewers’ preferences towards Tamil news channel and the most preferable channel of them, Friedman test is applied. Based on mean rank, the most influencing factor that insist the viewers’ to prefer particular Tamil news channel and the most preferable channel of them is identified.

Factors affecting Viewers’ Preferences towards Tamil News Channel

H₀₂: There is no significant difference in the mean rank of factors affecting viewers’ to preferences towards Tamil news channel.

H₁₂: There is a significant difference in the mean rank of factors affecting viewers’ to preferences towards Tamil news channel.

Table-10.4: Factors affecting Viewers’ Preferences towards Tamil News Channel

Tamil News Channel	Mean Rank	Chi-square value	P value
• Reliability	2.31	57.934	0.001**
• Fair and Quality	1.75		
• Accuracy	3.34		
• Timely and Updated Information	4.65		
• Full Coverage	5.60		
• Clarity in Anchoring	7.43		
• Sensational and Interesting	9.07		
• Presentation	8.94		
• Entertainment	10.70		
• Variety	6.91		

[Source: Primary data] Note: ** Denotes significant at 1% level.

Since P value is less than 0.010, the null hypothesis is rejected at 1 percent level of significance. Hence it is concluded that there is a significant difference among factors affecting viewers’ to prefer particular Tamil news channel. Based on mean rank, the most significant factor influences the viewers’ to prefer particular Tamil news channel is fair and quality (1.75), followed by reliability (2.31), accuracy (3.34), timely and updated information (4.65), full coverage (5.60), variety (6.91), clarity in anchoring (7.43), presentation (8.94), sensational and interesting (9.07) and entertainment (10.70).

Viewers’ Most Preferred Tamil News Channel

H₀₃: There is no significant difference in the mean rank of viewers’ most preferred Tamil news channel.

H₁₃: There is a significant difference in the mean rank of viewers’ most preferred Tamil news channel.

Table-10.5: Viewers’ Most Preferred Tamil News Channel

Tamil News Channel	Mean Rank	Chi-square value	P value
• Puthiya Thalaimurai	2.25	63.741	0.001**
• Sun News	6.63		
• Kalaingar News	10.36		
• Thanthi News	1.94		
• Jaya News	11.32		
• News 7	5.41		
• Cauvery News	7.99		
• Polimer News	3.27		
• News Tamilnadu	4.16		
• Raj news	9.78		
• Sathiyam News	8.60		

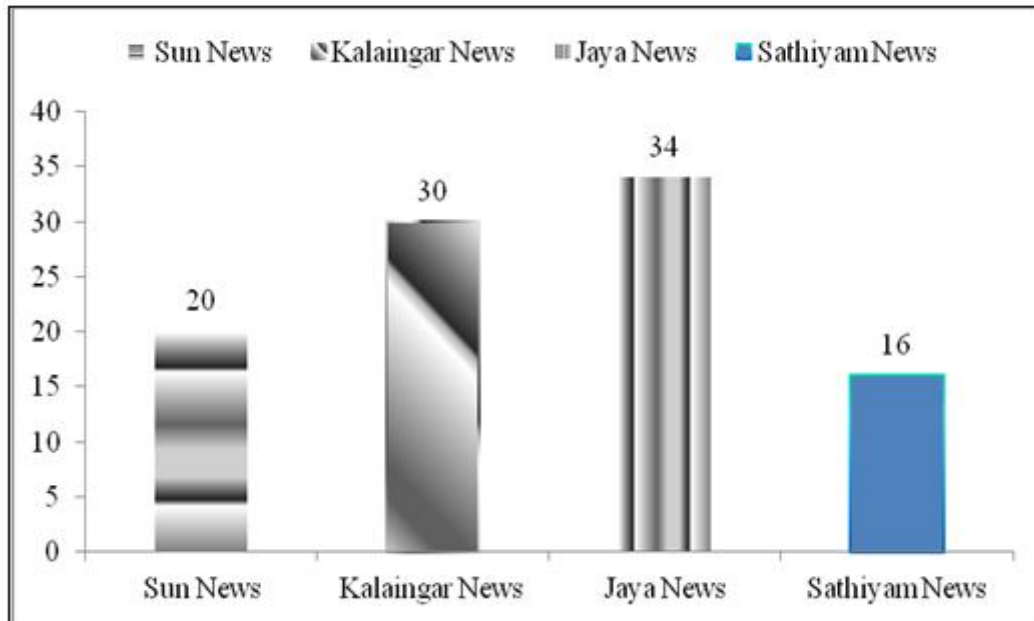
[Source: Primary data] Note: ** Denotes significant at 1% level.

Since P value is less than 0.010, the null hypothesis is rejected at 1 percent level of significance. Hence it is concluded that there is a significant difference among the viewers’ most preferred particular Tamil news channel. Based on mean rank, the most preferred Tamil news channel by the viewers is Thanthi News (1.94), followed by Puthiya Thalaimurai (2.25), Polimer News (3.27), News Tamilnadu (4.16), News 7 (5.41), Sun

News (6.63), Cauvery News (7.99), Sathiyam News (8.60), Raj news (9.78), Kalaingar News (10.36) and Jaya News (11.32).

e. Frequency Chart

In order to make out the Tamil news channel which focuses on political patronage of its own party, frequency analysis is applied.



[Source: Primary data]

From the above table, it can be inferred that 34% of the viewers' said that Jaya news is the primary channel which shows political patronage of its own party, followed by Kalaingar news (30%), Sun news (20%) and Sathiyam news (16%).

XI. FINDINGS

Based on Descriptive analysis, it is found that viewers' have average level of preference and satisfaction towards Tamil news channels. The MANOVA test revealed that there is a significant difference among viewers' demographic variables and their preferences and satisfaction towards Tamil news channel. From the Friedman test, it is understood that Fair, quality, reliability, accuracy are the most significant factor that influences the viewers' to prefer particular Tamil news channel. In addition, it is found that Thanthi News, Puthiya Thalaimurai, Polimer News and News Tamilnadu are the most preferred Tamil news channel by the viewers. Based on the frequency chart, it has been found that Jaya news is the primary channel which shows political patronage of its own party, followed by Kalaingar news, Sun news and Sathiyam news.

XII. SUGGESTIONS

News channel is considered as a magnificent tool which has a greater impact on the revolution of politics and wellbeing of the society. The basic feature of news channel is to broadcast fair, impartial, reliable news to the audience. Based on the study, it is found that people have average satisfaction towards Tamil news channel. Being a primary tool for nation's welfare, it is suggested for the news channel to relay neutral, true and accurate news to the audience in a trustworthy approach. It is also suggested to offer various programs covering all fields all over the world to get resourceful information by watching one particular channel. Irrespective of TRB rating, it is accountable for news channel to insist the political party and others to resolve the problems faced by people in the society.

XIII. CONCLUSION

Currently, in spite of ruling party the political power of Tamilnadu is in the hands of many parties which confuse the people to trust among the one. Besides, majority of the parties have their own news channel to portray their own pros and opposite party's cons. From the study, it is found that popular news channels by using their goodwill presenting partial news, sensationalizing tiny issues of opposite party which leads to blemish the image of our state. It concludes that viewers' have average level of preference and satisfaction towards Tamil news channels. The study made suggestions to the Tamilnews channel to present true, factual and realistic news to enhance their goodwill and nation's well-being.

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A STUDY ON DETERMINANTS OF PURCHASE INTENTION OF CONSUMERS IN SOCIAL MEDIA ENVIRONMENT IN MADURAI DISTRICT

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ABSTRACT

In present day marketing environment, as social media is highly prevalent through linking consumers and assisting efficient sharing of information, purchasing behaviour of consumers is completely transformed in to new standards. Perceived usefulness, perceived risk, trust, dependency and ease of access are determinants of purchase intention of consumers in social media environment. Significant difference is there among socio-economic profile of consumers and determinants of their purchase intention in social media environment. Perceived usefulness, dependency and ease of access have positive and significant influence on purchasing behaviour of consumers, while, perceived risk has negative and significant influence on purchasing behaviour of consumers in social media environment. To improve purchase intention of consumers, social media should give accurate, reliable, detailed information about price, quality products very quickly to consumers. Besides, increasing perceived usefulness, building trust, creating dependency, improving ease of access and minimizing risk will increase purchasing behaviour of consumers in social media environment.

Keywords: Consumers, Determinants, Purchase Intention, Social Media Environment

1. INTRODUCTION

New and modern information and communication technologies provide social media based exchanging and discussing and creating atmospheres where consumers can communicate their views, product information and experiences. Nowadays, social media is one of the most preferring internet applications and is the most efficient communication channel (Kozinets, 1999). Social media gives a new and online based marketing channel to obtain and use information on product through online communities and social influential group (Chaturvedi and Barbar, 2014).

In present day marketing environment, as social media is highly prevalent through linking consumers and assisting efficient sharing of information, purchasing behaviour of consumers is completely transformed in to new standards (Hanna et al 2011). Present day consumers regularly use various social media platforms namely, Facebook, Twitter, YouTube, blogs, micro blogs, podcasts and wikis to put their opinions and share information about products, brands and connect with social media users (Dryer, 2010).

Product or brand communications and users of social media generate positive or negative image of others who use information placed and taking in to consideration in purchasing by consumers. Consumers perceive contents and messages in social media about products or brands differently based on their usefulness and trustworthy (Shin, 2008). In addition, features of social media influence intention and purchasing behaviour of consumers largely from getting information to post purchase behaviour namely satisfaction or repurchase intention towards products and or brands (Mangold and Faulds, 2009). Thus, it is essential to study determinants of purchase intention of consumers in social media environment.

2. REVIEW OF LITERATURE

Pookulangaran and Koesler (2011) found that consumer generated contents, reviews, messages and sharing product information and personal experiences were positively influencing purchasing intention of consumers. Sin et al (2012) concluded that perceived usefulness was the most significant factor followed by subjective norm and perceived easiness of use that influenced purchase intention of youngsters in social media platforms.

Leeraphong and Mardjo (2013) revealed that trust, perceived risk, previous experience and subjective norm were the factors that affected purchasing intention of consumers in social media commerce. Ioanas and Stoica (2014) indicated that information from social media forums, reviews, messages, type of information and degree of risk influenced purchasing behaviour of consumers in social media environment.

Liang and Dang (2015) found that experience in social media, ease of use, information about products and social influence were most significant influencers of purchasing behaviour of consumers. Lu et al (2016) concluded trust, ease of usefulness, risk and social influence were influencing purchase intention of consumers in social commerce atmosphere. Sangi et al (2017) revealed that access, trust, user generated contents and risk were affecting buying intention of users of social media networks.

3. RESEARCH METHODOLOGY

The present study is carried out in Madurai district. The consumers of social media are chosen through convenience sampling method. The structured questionnaire is admitted to gather data from 250 consumers of social media. Percentages are worked out to examine socio-economic profile of consumers of social media. An exploratory factor analysis is done to find out determinants of purchase intention of consumers in social media environment. The t-test and F-test(ANOVA) are used to scrutinize difference among socio-economic profile of consumers and determinants of their purchase intention in social media environment. The multiple regression analysis is carried out to analyze influence of determinants of purchase intention on purchasing behaviour of consumers in social media environment.

4. RESULTS AND DISCUSSION

4.1. Socio-Economic Profile of Consumers

The socio-economic profile of consumers of social media is given in Table-1. The findings disclose 56.40 per cent of consumers are males, while, 43.60 per cent of them are females and 31.20 per cent of them are in the age category of 31 – 40 years, while, 9.60 per cent of them are in the age category of more than 50 years.

The findings display 28.80 per cent of consumers are possessing under graduation, while, 13.60 per cent of them are possessing secondary education and 34.00 per cent of consumers are earning monthly income of Rs.20,001 – Rs.30,000, while, 19.20 per cent of them are earning monthly income of more than Rs.40,000 and 68.40 per cent of them are married, while, 31.60 per cent of them are unmarried.

Table-1: Socio-Economic Profile of Consumers

Socio-Economic Profile	Number of Consumers (n = 250)	Percentage
Gender		
Male	141	56.40
Female	109	43.60
Age Category		
Less than 20 Years	37	14.80
21– 30 Years	70	28.00
31 – 40 Years	78	31.20
41 – 50 Years	41	16.40
More than 50 Years	24	9.60
Education		
Secondary	34	13.60
Higher Secondary	39	15.60
Diploma	45	18.00
Under Graduation	72	28.80
Post Graduation	60	24.00
Monthly Income		
Less than Rs.20,000	51	20.40
Rs.20,001 – Rs.30,000	85	34.00
Rs.30,001 – Rs.40,000	66	26.40
More than Rs.40,000	48	19.20
Marital Status		
Married	171	68.40
Unmarried	79	31.60

4.2. Determinants of Purchase Intention of Consumers in Social Media Environment

To find out determinants of purchase intention of consumers in social media environment, an exploratory factor analysis is carried out and the results are given in Table-2. Value of KMO test (Kaiser-Meyer-Olkin) for measuring adequacy of sampling is 0.892 and Chi-Square value of Bartlett's test for Sphericity is 0.0048 which is significant at one per cent level. Both measures make clear the method of factor analysis is appropriate.

Five determinants obtained has 73.57 per cent variation on variables under consideration and each of them has variation of 20.96 per cent, 17.85 per cent, 14.20 per cent, 11.62 per cent and 9.14 per cent separately.

Table-2: Determinants of Purchase Intention of Consumers in Social Media Environment

Determinant	Variables	Rotated Factor Loadings	Eigen Value	% of Variation	Determinant Name
I	Social media helps me to get information about products quickly	0.69	2.84	20.96	Perceived Usefulness
	Social media is useful to me for communicating with others about product features	0.65			
	Social media reduces waste of time for searching product information	0.68			
	Social media is highly helpful to purchase products easily	0.66			
	Social media is helpful to obtain information from other consumers	0.61			
	Social media improves my product knowledge	0.63			
II	Purchasing products through social media has low financial risk	0.67	1.57	17.85	Perceived Risk
	Chances for receiving poor quality products through social media is very low	0.60			
	Possibilities of purchasing low priced products through social media is high	0.62			
	Leakage of my personal information during purchase of products through social media is low	0.61			
	Chances of social pressure on me in purchasing products through social media is low	0.64			
III	Social media provides reliable information about products	0.65	1.21	14.20	Trust
	Social media information is trustable	0.64			
	Social media gives realistic information about products	0.66			
	I exchange my purchasing experiences in social media	0.60			
IV	I use various social media formats for searching information for products	0.66	1.10	11.62	Dependency
	I spend lot time on social media platforms compared to other online sources	0.61			
	Social media is my prime option for getting product information	0.62			
V	I need not have advanced technical skills for using social media	0.61	1.03	9.14	Ease of Access
	I join social media group in which I am interested easily	0.64			
	Cumulative Variation(%)	-	-	73.77	-
	Cronbach's Alpha Value	-	-	-	0.87

Principal Component Analysis

Varimax Rotation

Rotation converged in 9th iterations

Determinant-I: includes social media helps me to get information about products quickly, social media is useful to me for communicating with others about product features, social media reduces waste of time for searching product information, social media is highly helpful to purchase products easily, social media is helpful to obtain information from other consumers and social media improves my product knowledge. Hence, it is named as **Perceived Usefulness**.

Determinant-II: comprises of purchasing products through social media has low financial risk, chances for receiving poor quality products through social media is very low. possibilities of purchasing low priced products through social media is high, leakage of my personal information during purchase of products through social media is low and chances of social pressure on me in purchasing products through social media is low. Therefore, it is labeled as **Perceived Risk**.

Determinant-III: consists of social media provides reliable information about products, social media information is trustable, social media gives realistic information about products and I exchange my purchasing experiences in social media. So, it is described as **Trust**.

Determinant-IV: covers I use various social media formats for searching information for products, I spend lot time on social media platforms compared to other online sources and social media is my prime option for getting product information. Thus, it is stated as **Dependency**.

Determinant-V: contains I need not have advanced technical skills for using social media and I join social media group in which I am interested easily. Consequently, it is denoted as **Ease of Access**.

Cronbach’s Alpha value of the scale is 0.87, it clarifies each measure at acceptable level of internal consistency. Perceived usefulness, perceived risk, trust, dependency and ease of access are determinants of purchase intention of consumers in social media environment.

4.3. Socio-Economic Profile of Consumers and Determinants of their Purchase Intention in Social Media Environment

To scrutinize difference among socio-economic profile of consumers and determinants of their purchase intention in social media environment, t-test and F-test (ANOVA) are done and the results are given in Table-3.

Table-3: Difference among Socio-Economic Profile of Consumers and Determinants of Their Purchase Intention in Social Media Environment

Particulars	t-Value / F-Value	Sig.
Gender and Determinants of Purchase Intention in Social Media Environment	4.276** (t-value)	.000
Age Category and Determinants of Purchase Intention in Social Media Environment	4.564**	.000
Education and Determinants of Purchase Intention in Social Media Environment	3.995**	.004
Monthly Income and Determinants of Purchase Intention in Social Media Environment	4.782**	.000
Marital Status and Determinants of Purchase Intention in Social Media Environment	4.180** (t-value)	.000

** Significant at 1 % level

The t-values and F-values are explaining that significant difference is prevailing in determinants of purchase intention of consumers in social media environment among their socio-economic profile. As a result, the null hypothesis of no significant difference among determinants of purchase intention in social media environment and socio-economic profile of consumers is not accepted.

4.4 Influence of Determinants of Purchase Intention on Purchasing Behaviour of Consumers in Social Media Environment

To analyze influence of determinants of purchase intention on purchasing behaviour of consumers in social media environment, multiple regression analysis is carried out and the results are given in Table-4. The R² and adjusted R² are 0.57 and 0.55 respectively elucidating the regression model has good fit and it is explicating 55 per cent of variation in dependent variable is shared by independent variables. The F-value of 21.935 is illustrating the model is significant at one per cent level of significance.

Table-4: Influence of Determinants of Purchase Intention on Purchasing Behaviour of Consumers in Social Media Environment

Determinants of Purchase Intention	Regression Co-efficients	t-Value	Sig.
Intercept	1.025**	9.514	.000
Perceived Usefulness (X ₁)	.421**	7.018	.000
Perceived Risk (X ₂)	-.448**	7.750	.000
Trust (X ₃)	.460**	7.935	.000
Dependency (X ₄)	.396**	6.842	.000
Ease of Access (X ₅)	.352**	6.176	.000
R ²	0.57	-	-
Adjusted R ²	0.55	-	-
F	21.935	-	.000

** Significant at 1 % level

The findings demonstrate that trust, perceived usefulness, dependency and ease of access are positively and significantly influencing purchasing behaviour of consumers at one per cent level, while, perceived risk is negatively and significantly influencing purchasing behaviour of consumers at one per cent level in social media environment. As an outcome, the null hypothesis of no significant influence of determinants of purchase intention on purchasing behaviour of consumers in social media environment is not accepted.

5. CONCLUSION

The above findings clarify that perceived usefulness, perceived risk, trust, dependency and ease of access are determinants of purchase intention of consumers in social media environment. Significant difference is there among socio-economic profile of consumers and determinants of their purchase intention in social media environment. Perceived usefulness, dependency and ease of access have positive and significant influence on purchasing behaviour of consumers, while, perceived risk has negative and significant influence on purchasing behaviour of consumers in social media environment. To improve purchase intention of consumers, social media should give accurate, reliable, detailed information about price, quality products very quickly to consumers. Besides, increasing perceived usefulness, building trust, creating dependency, improving ease of access and minimizing risk will increase purchasing behaviour of consumers in social media environment.

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A STUDY ON PERCEPTION OF WOMEN EMPLOYEES TOWARDS SERVICES OF DISTANCE EDUCATION PROGRAMMES OF UNIVERSITIES IN TAMIL NADU

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ABSTRACT

Distance education is highly popular and its growth is phenomenal in India and also in Tamil Nadu. Services to students are regarded as backbone and success of distance education programmes and an array of services are provided by traditional and open universities and distance educational institutions all over India including Tamil Nadu for imparting knowledge and improving academic performance of students. More than two fifth of women employees have moderate level of perception towards services of distance education programmes. Significant difference is there among perception towards services of distance education programmes and profile of women employees. Perception of women employees towards services of distance education programmes has significant, positive and moderate relation with their academic performance. In order to improve perception towards services of distance education programmes among women employees, distance education programmes should give efficient enquiry services and they must provide technological services.

Keywords: Distance Education, Perception, Services, Women Employees

1. INTRODUCTION

Distance education is the provision of useful learning chances at suitable place and time for students and they need not be present physically in the universities or institutions. The terminology of distance education gets recognition formally in the year 1982 by International Council for Correspondence Education. Distance education is a format of study not guided by teachers present in class room atmosphere, supported by professionals and universities at a distance from the students (Prasad, 2001).

Presently, when distance, open and non rigid type of education system is growing rapidly across the world, analytical and evidence based real time based learning is slowly gaining momentum among students and it requires very good and efficient services and supportive learning practices to them. In order to improve retention rate of students or diminish drop outs in college education, distance education programmes play a very significant role (Gil-Jaurena, 2014).

Distance education is highly popular and its growth is phenomenal in India and also in Tamil Nadu because it gives life learning experiences, professional development, creation of skilled human resources, educational upgradation and education to both working and non working women and marginalized groups (Roy, 2015). Service supports to students are regarded as backbone and success of distance education programmes and an array of services are provided by traditional and open universities and distance educational institutions all over India for imparting knowledge and improving academic performance of students (Pathak, 2007). Essential and supportive services of distance education programmes are highly useful and giving meaningful learning experiences to all of their students (Dillon and Gunavardana, 2003). Thus, it is important to study perception of women employees towards services of distance education programmes of universities.

2. REVIEW OF LITERATURE

Amareswaran and Singh (2011) concluded that distance learning provided a lot of benefits and supportive services namely study materials, contact classes and interactive learning methods to learners for efficient learning. Babu (2012) found that open universities gave study materials, contact classes, communication services, support for assignment preparation, guidance and enquiry services to their students of distance education programmes.

Yener (2013) revealed that distance learning programmes gave face to face and online teaching services, study materials, financial support services, technical support services and counseling services to their students. Mirja and Singh (2014) indicated that open university provided printed study materials, weekend contact programmes, counseling services and library services to students for their effective leaning.

Chokwe (2015) found that open and distance learning gave feedback and evaluation report on essays, guidance services and counseling services to their students. Nsamba (2016) revealed that support services given by distance learning were not expected by students and it had to improve support services of counseling, technology and enquiries. Nsamba and Makoe (2017) concluded that distance learning programmes offered

online interactions, resource materials, guidance, lectures and counseling services to students of distance educational programmes.

3. OBJECTIVES OF THE STUDY

1. To study perception of women employees towards services of distance education programmes.
2. To scrutinize difference among profile of women employees and their perception towards services of distance education programmes.
3. To study relation among perception towards services of distance education programmes and academic performance of women employees.

4. HYPOTHESES OF THE STUDY

1. There is no significant difference in perception towards services of distance education programmes among profile of women employees.
2. There is no significant relation among perception towards services of distance education programmes and academic performance of women employees.

5. METHODOLOGY

The present research is done in Tamil Nadu state. Women employees are chosen by using convenience sampling method and questionnaire method is used to collect data from 300 women employees. Percentages are worked out to understand profile of women employees and mean and standard deviation are computed to know perception of women employees towards services of distance education programmes. t-test and F-test are used to scrutinize difference among profile of women employees and their perception towards services of distance education programmes. Correlation analysis is carried out to study relation among perception towards services of distance education programmes and academic performance of women employees.

6. RESULTS AND DISCUSSION

6.1. Profile of Women Employees

The profile of women employees is shown in Table-1. The findings explain that 33.00 per cent of women employees are falling under age category of 31– 35 years, while, 8.67 per cent of them are falling under age category of 21– 25 years and 66.00 per cent of women employees are working in private sector, while, 34.00 per cent of them are working in Government sector.

The findings elucidate that 39.67 per cent of women employees are earning monthly income of Rs.30,001 – Rs.40,000, while, 11.67 per cent of them are earning monthly income of above Rs.40,000 and 67.67 per cent of women employees are married, while, 32.33 per cent of them are unmarried. And 42.67 per cent of women employees are studying under graduation, while, 23.66 per cent of them are studying diploma in post graduation.

Table-1: Profile of Women Employees

Profile	Number of Women Employees	Percentage
Age Category		
21 – 25 Years	26	8.67
26 – 30 Years	88	29.33
31– 35 Years	99	33.00
36 – 40 Years	56	18.67
More than 40 Years	31	10.33
Employment		
Government Sector	102	34.00
Private Sector	198	66.00
Monthly Income		
Below Rs.20,000	40	13.33
Rs.20,001 – Rs.30,000	106	35.33
Rs.30,001 – Rs.40,000	119	39.67
Above Rs.40,000	35	11.67
Marital Status		
Married	203	67.67
Unmarried	97	32.33
Course Studying		

Under Graduation	128	42.67
Post Graduation	101	33.67
Diploma in Post Graduation	71	23.66

6.2. Perception of Women Employees Towards Services of Distance Education Programmes

The perception of women employees towards services of distance education programmes was studied and the results are shown in Table-2.

Table-2: Perception of Women Employees towards Services of Distance Education Programmes

Perception towards Services of Distance Education Programmes	Mean	Standard Deviation
Distance education programmes provide all important information clearly about different courses offered prior to admission	3.96	0.92
Distance education programmes give proper study materials in time	3.90	0.97
Distance education programmes conduct personal contact programmes regularly	3.97	0.91
Distance education programmes has efficient enquiry services	3.36	1.07
Distance education programmes provide adequate library services	3.85	0.99
Distance education programmes give interactive teaching through audio-visual aids	3.87	0.94
Distance education programmes provide counseling services	3.82	1.04
Distance education programmes give technological services	3.34	1.01
Distance education programmes has systematic examination and evaluation services	3.94	0.93
Distance education programmes has media services	3.33	1.03

The women employees are agreed with distance education programmes provide all important information clearly about different courses offered prior to admission, distance education programmes give proper study materials in time, distance education programmes give proper study materials in time, distance education programmes conduct personal contact programmes regularly, distance education programmes provide adequate library services, distance education programmes give interactive teaching through audio-visual aids, distance education programmes provide counseling services and distance education programmes has systematic examination and evaluation services, while, they are neutral with distance education programmes has efficient enquiry services, distance education programmes give technological services and distance education programmes has media services.

6.3. Profile of Women Employees and their Perception towards Services of Distance Education Programmes

The distribution of women employees based on perception towards services of distance education programmes is shown in Table-3. The perception of women employees towards services of distance education programmes is segmented into low, moderate and high levels on the basis of Mean \pm SD. The mean and SD are 37.32 and 2.84 respectively.

Table-3: Distribution of Women Employees Based on Perception towards Services of Distance Education Programmes

Level of Perception towards Services of Distance Education Programmes	Number of Women Employees	Percentage
Low	79	26.33
Moderate	131	43.67
High	90	30.00
Total	300	100.00

Among 300 women employees, 43.67 per cent of women employees have moderate level of perception towards services of distance education programmes following by high level (30.00 per cent) and low level (26.33 per cent).

6.3.1. Age Category and Perception Towards Services of Distance Education Programmes

The relation among age category of women employees and perception towards services of distance education programmes was studied and the results are shown in Table-4.

Table-4: Age Category and Perception towards Services of Distance Education Programmes

Age Category	Level of Perception towards Services of Distance Education Programmes			Total	F-Value	Sig.
	Low	Moderate	High			
21 – 25 Years	5 (19.23)	14 (53.85)	7 (26.92)	26 (8.67)	6.440	.000
26 – 30 Years	24 (27.27)	39 (44.32)	25 (28.41)	88 (29.33)		
31– 35 Years	28 (28.28)	54 (54.55)	17 (17.17)	99 (33.00)		
36 – 40 Years	11 (19.64)	20 (35.72)	25 (44.64)	56 (18.67)		
More than 40 Years	11 (35.49)	4 (12.90)	16 (51.61)	31 (10.33)		
Total	79 (26.33)	131 (43.67)	90 (30.00)	300 (100.00)	-	-

(The figures in the parentheses are per cent to total)

Among 26 women employees falling under age category of 21 – 25 years, 26.92 per cent of them have high level of perception towards services of distance education programmes, while, 19.23 per cent of them have low level of it. Among 88 women employees falling under age category of 26 – 30 years, 28.41 per cent of them have high level of perception towards services of distance education programmes, while, 27.27 per cent of them have low level of it.

Among 99 women employees falling under age category of 31 – 35 years, 17.17 per cent of them have high level of perception towards services of distance education programmes, while, 28.28 per cent of them have low level of it. Among 56 women employees falling under age category of 36 – 40 years, 44.64 per cent of them have high level of perception towards services of distance education programmes, while, 19.64 per cent of them have low level of it. Among 31 women employees falling under age category of more than 40 years, 51.61 per cent of them have high level of perception towards services of distance education programmes, while, 35.49 per cent of them have low level of it.

The F-value of 6.440 is demonstrating that significant difference is prevailing in perception towards services of distance education programmes among age category of women employees at one per cent level. As a result, the null hypothesis is not accepted.

6.3.2. Employment and Perception Towards Services of Distance Education Programmes

The relation among employment of women employees and perception towards services of distance education programmes was studied and the results are shown in Table-5.

Table-5: Employment and Perception towards Services of Distance Education Programmes

Employment	Level of Perception towards Services of Distance Education Programmes			Total	t-Value	Sig.
	Low	Moderate	High			
Government Sector	19 (18.63)	46 (45.10)	37 (36.27)	102 (34.00)	4.065	.000
Private Sector	60 (30.30)	85 (42.93)	53 (26.77)	198 (66.00)		
Total	79 (26.33)	131 (43.67)	90 (30.00)	300 (100.00)	-	-

(The figures in the parentheses are per cent to total)

Among 102 women employees working in Government sector, 36.27 per cent of them have high level of perception towards services of distance education programmes, while, 18.63 per cent of them have low level of it. Among 198 women employees working in private sector, 26.77 per cent of them have high level of perception towards services of distance education programmes, while, 30.30 per cent of them have low level of it.

The t-value of 4.065 is demonstrating that significant difference is prevailing in perception towards services of distance education programmes among employment of women employees at one per cent level. As a result, the null hypothesis is not accepted.

6.3.3. Monthly Income and Perception Towards Services of Distance Education Programmes

The relation among monthly income of women employees and perception towards services of distance education programmes was studied and the results are shown in Table-6.

Table-6: Monthly Income and Perception towards Services of Distance Education Programmes

Monthly Income	Level of Perception towards Services of Distance Education Programmes			Total	F-Value	Sig.
	Low	Moderate	High			
Below Rs.20,000	13 (32.50)	16 (40.00)	11 (27.50)	40 (13.33)	5.952	.000
Rs.20,001 – Rs.30,000	28 (26.41)	46 (43.40)	32 (30.19)	106 (35.33)		
Rs.30,001 – Rs.40,000	27 (22.69)	51 (42.86)	41 (34.45)	119 (39.67)		
Above Rs.40,000	11 (31.43)	18 (51.43)	6 (17.14)	35 (11.67)		
Total	79 (26.33)	131 (43.67)	90 (30.00)	300 (100.00)	-	-

(The figures in the parentheses are per cent to total)

Among 40 women employees earning monthly income of below Rs.20,000, 27.50 per cent of them have high level of perception towards services of distance education programmes, while, 32.50 per cent of them have low level of it. Among 106 women employees earning monthly income of Rs.20,001 – Rs.30,000, 30.19 per cent of them have high level of perception towards services of distance education programmes, while, 26.41 per cent of them have low level of it.

Among 119 women employees earning monthly income of Rs.30,001 – Rs.40,000, 34.45 per cent of them have high level of perception towards services of distance education programmes, while, 22.69 per cent of them have low level of it. Among 35 women employees earning monthly income of above Rs.40,000, 17.14 per cent of them have high level of perception towards services of distance education programmes, while, 31.43 per cent of them have low level of it.

The F-value of 5.952 is demonstrating that significant difference is prevailing in perception towards services of distance education programmes among monthly income of women employees at one per cent level. As a result, the null hypothesis is not accepted.

6.3.4. Marital Status and Perception Towards Services of Distance Education Programmes

The relation among marital status of women employees and perception towards services of distance education programmes was studied and the results are shown in Table-7.

Table-7: Marital Status and Perception towards Services of Distance Education Programmes

Marital Status	Level of Perception towards Services of Distance Education Programmes			Total	t-Value	Sig.
	Low	Moderate	High			
Married	60 (29.56)	90 (44.33)	53 (26.11)	203 (67.67)	4.328	.000
Unmarried	19 (19.59)	41 (42.27)	37 (38.14)	97 (32.33)		
Total	79 (26.33)	131 (43.67)	90 (30.00)	300 (100.00)	-	-

(The figures in the parentheses are per cent to total)

Among 203 married women employees, 26.11 per cent of them have high level of perception towards services of distance education programmes, while, 29.56 per cent of them have low level of it. Among 97 unmarried women employees, 38.14 per cent of them have high level of perception towards services of distance education programmes, while, 19.59 per cent of them have low level of it.

The t-value of 4.328 is demonstrating that significant difference is prevailing in perception towards services of distance education programmes among marital status of women employees at one per cent level. As a result, the null hypothesis is not accepted.

6.3.5. Course Studying and Perception Towards Services of Distance Education Programmes

The relation among course studying by women employees and perception towards services of distance education programmes was studied and the results are shown in Table-8.

Table-8: Course Studying and Perception towards Services of Distance Education Programmes

Course Studying	Level of Perception towards Services of Distance Education Programmes			Total	F-Value	Sig.
	Low	Moderate	High			
Under Graduation	41 (32.03)	55 (42.97)	32 (25.00)	128 (42.67)	5.716	.000
Post Graduation	22 (21.78)	43 (42.58)	36 (35.64)	101 (33.67)		
Diploma in Post Graduation	16 (22.54)	33 (46.48)	22 (30.98)	71 (23.66)		
Total	79 (26.33)	131 (43.67)	90 (30.00)	300 (100.00)	-	-

(The figures in the parentheses are per cent to total)

Among 128 women employees studying under graduation, 25.00 per cent of them have high level of perception towards services of distance education programmes, while, 32.03 per cent of them have low level of it. Among 101 women employees studying post graduation, 35.64 per cent of them have high level of perception towards services of distance education programmes, while, 21.78 per cent of them have low level of it. Among 71 women employees studying diploma in post graduation, 30.98 per cent of them have high level of perception towards services of distance education programmes, while, 22.54 per cent of them have low level of it.

The F-value of 5.716 is demonstrating that significant difference is prevailing in perception towards services of distance education programmes among course studying by women employees at one per cent level. As a result, the null hypothesis is not accepted.

6.4. Relation among Perception Towards Services Of Distance Education Programmes And Academic Performance Of Women Employees

The relation among perception towards services of distance education programmes and academic performance of women employees was studied by using correlation analysis and the results are shown in Table-9.

Table-9: Relation among Perception towards Services of Distance Education Programmes and Academic Performance of Women Employees

Particulars	Correlation Coefficient
Perception towards Services of Distance Education Programmes and Academic Performance of Women Employees	0.55**

** significant at one per cent level

The correlation coefficient between perception towards services of distance education programmes and academic performance of women employees is 0.55; it is positively and moderately related with each other at one per cent level of significance. Accordingly, the null hypothesis is rejected.

7. CONCLUSION

The above findings expose that more than two fifth of women employees have moderate level of perception towards services of distance education programmes. Significant difference is there among perception towards services of distance education programmes and profile of women employees. Perception of women employees towards services of distance education programmes has significant, positive and moderate relation with their academic performance. In order to improve perception towards services of distance education programmes among women employees, distance education programmes should give efficient enquiry services and they must provide technological services. In addition, distance education programmes should offer media services.

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STOCHASTIC PROCESS FOR FORECASTING MODELS USING THE PATIENTS ARRIVAL AT HOSPITAL EMERGENCY SERVICE**S. Poyyamozhi¹ and A. Kachi Mohideen²**Assistant Professor and Head¹, Department of Statistics, Government Arts College (Autonomous), Kumbakonam
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ABSTRACT

The hospital logistics must be adjusted to the everyday needs of new patients' number of beds, work teams, medications, food, etc. The unpredictability of arrivals to the Emergency Block (EB) of a hospital is the main motivation of this work it is crucial to the hospital's management team have a forecasting mechanism of these arrivals. The randomness of arrivals to the Emergency Block (EB) of a hospital is a great concern of the organization. The existence of more complex pathologies and the increase in life expectancy originate a higher rate of hospitalization. In this paper, more than 350,000 arrivals to the EB of the Government Raja Mirasdar Hospital, were collected and analyzed, and some efficient methods for their prediction based on time series are studied. This is the innovative approach of this work: to forecast the EB arrivals of the Government Raja Mirasdar Hospital, helping the Production Management team, to reach an optimum level of service. is the subject of this work. Data for EB arrivals in 2 years (2016–017), the test period, was studied and forecasting models based on time series were built. The models were then tested against the real data from the evaluation period (2018). These models are of ARIMA (AutoRegressive-Integrated-Moving Average) type, used software was the Forecast Pro.

Keywords: Emergency Block, National Health System, Government Raja Mirasdar Hospital, The randomness of arrivals, forecasting models, ARIMA model.

1. INTRODUCTION

In all societies, health resources are evaluated according to the populations' apparent added value of the services they provide as discussed by Bemstein et.al(2009). One of the main features of the National Health System is the Hospital, which is a complex system of services divided in medical specialties relying on proficient practitioners and advanced technological equipment. The Emergency Block (EB) of public hospitals is an essential part of the Health System. Its primary objective is to provide immediate and accurate health care. Situations involving long-term care are forwarded for hospitalization or for follow-up in outpatient regimen. The growing demand for urgent consultations spring from the gradual aging of the population and the lack of accessibility to primary health care, within the framework of the National Health Service.

Overcapacity of emergency services is an international phenomenon that, if not correctly solved, impacts negatively on the quality of care provided, on clinical outcomes and on users' satisfaction has discussed by Boyle et. al (2010). Several researchers have been working in this subject studying forecasting strategies to preview the arrivals to EB discussed by Billings et.al (2013). The influence of some environmental variables like temperature or precipitation is also the focus of some works discussed by C. Linares, J. Daz, (2008). Improper use of ED services is one of the most serious problems threatening their capacity to respond to acute situations, those that require an intervention of assessment and correction in a short period of time.

According to data collected in 2017 by the reassessment of the National Network of Emergency Relatrio [CRRNEU] only 54% of the cases addressed in the emergency services of Government hospitals were cataloged as urgent, very urgent or emergent, so yearly estimation is that 6 million episodes can be derived from due to excess of Hospital Emergency Services. This ratio fluctuates on a regional basis, and the South region presents the lowest ratio of use of Emergency Services, about 547 episodes per thousand inhabitants. ED admissions represent more than 50% of the admissions in hospital wards, 9% of patients coming to ED will need to stay in hospital care.

The in-hospital logistics must be adjusted to the everyday needs of new patients number of beds, work teams, medications, food, etc. The unpredictability of arrivals to the EB of a hospital is the main motivation of this work it is crucial to the hospital's management team have a forecasting mechanism of these arrivals. From all the scientific articles reviewed, none of them uses data from a real production system as in this work. In this paper, more than 350,000 arrivals to the EB of the Government Raja Mirasdar Hospital, were collected and analyzed, and some efficient methods for their prediction based on time series are studied. This is the innovative approach of this work: to forecast the EB arrivals of the Government Raja Mirasdar Hospital, helping the Production Management team, to reach an optimum level of service.

The paper is organized as following a description of the Emergency Block of the Government Raja Mirasdar Hospital, describing how the actual system for arrivals is done, and some definitions, information about the data are presented. The statistical experiments are reported in synthesizes the forecasting methods, commonly used in this type of situation. The main motivation of this work is the best forecasting model and its results are presented, being compared the reliability of resulting short term estimates to the real inflow to the EB of the Government Raja Mirasdar Hospital. This arrival can be for reasons associated with epidemiological factors (aging population, chronicity of diseases), environmental factors cold or heat weather peaks, economical factors economic crisis, circumvention on payment of user fees, a decreasing use of private services or social factors systematic recourse to emergency services on certain days of the week and hours of the day. Studies show that the turnout to the EB is not a random process is discussed by Abraham et. al (2009).and very often peaks in demand are related with seasonality of pathologies, to public or school holidays, or to the time of day or day of the week. The occupation of hospital beds is broken down between elective admissions, planned in advance, and admissions through the EB (about 56% of the total hospitalizations). It is accepted as good practice that patients are admitted within 6 h from arrival at the EB (about 9% of the total patients that come through the EB).

2. STUDY AREA

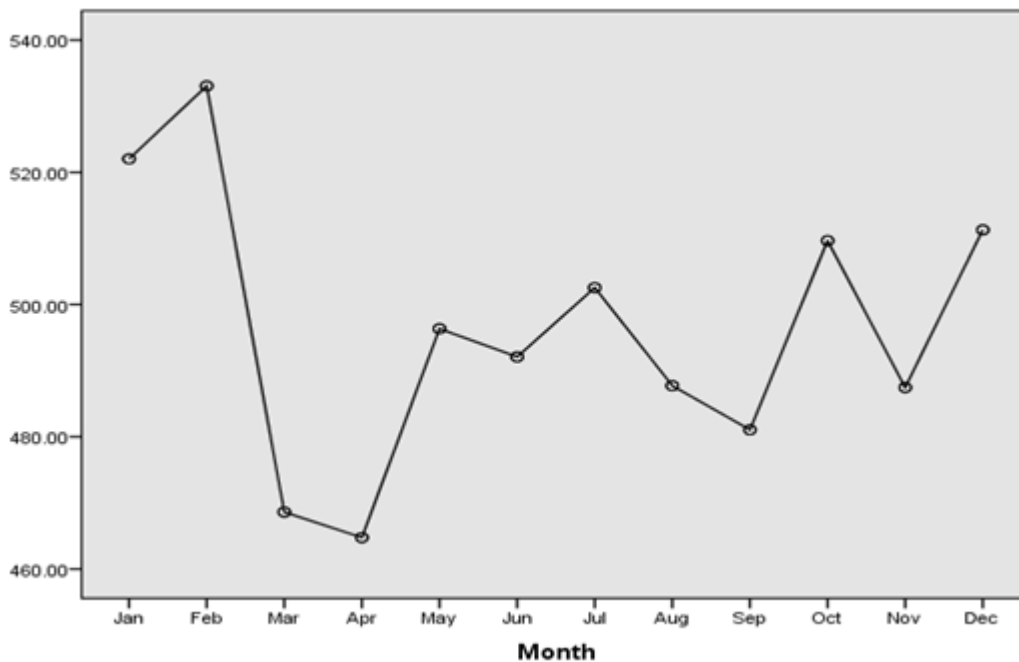
The Government Raja Mirasdar Hospital, Thanjavur, is situated in the heart of the Thanjavur Town in an area of 40 Acres of land. The Foundation Stone for this Hospital was first laid in March 1877, The whole Hospital site was presented by Her Highness the princess of Thanjavur, which was originally called the 'RANEE GARDENS', The reason why this hospital is called the 'RAJA MIRASDAR HOSPITAL' is due to the late king serfoji's family and Mirada's(Land Lords)of Thanjavur district added to the Government's share from time to time .

The Raja Mirasdar Hospital now has abed strength of 640 with the following facilities, available for both inpatients and out patients. Obstetrics & Gynaecology, Family welfare, Pediatrics medicine, Paediatrics Surgery, Ophthalmology, Dental Surgery, Leprosy, Infective Diseases, Radiology, Voluntary Counseling and Testing Centre, Blood Bank. The Hospital operates in its new facilities, directly covering a population of 275,000 and acting as second line response to the 1,100,000 inhabitants of south region.

It features a multi-purpose emergency service that develops into three autonomous units, namely, general emergency, pediatric emergency and gynecological emergency, 65% of The Hospital admissions are either very urgent or urgent, but there is a slight increase in 2017 and 2018, comparing to 2016, of admissions due to matters of little urgency as can be seen in Fig. 3. The arrival of patients to the hospital can be done in two ways: elective, an activity programmed days or weeks in advance, or emerging, when a patient arrives at the EB in an unplanned manner.

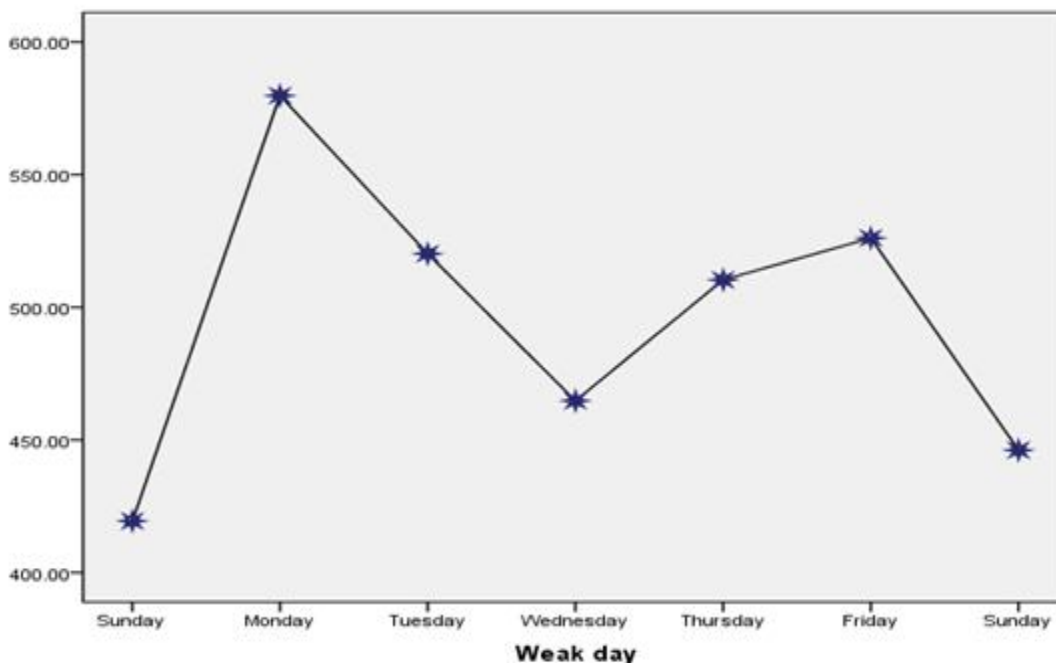
We consider arrivals all episodes in which the patient goes through the administrative registration process, regardless of when he leaves. Upon arrival to the EB, the patient is examined by a nurse in the triage process, and is headed for a medical specialist to start the diagnosis and handling of complaints. The expectation is that his stay in the hospital will be less than 24 hours, except in more complex situations that require a more prolonged clinical approach, in which case he will be forwarded to the inpatient admission. The reasons for a patient to be disqualified without completing the process are, when the patient is treated and sent back home with indications of continuity addressed to the family doctor in outpatient regimen programmed; transferred to another hospital, when the clinical situation is stabilized and the patient should return to the hospital source, in his area of residence; referenced for internment in the hospital; and, very rarely, when the patient is deceased during the episode. All episodes of leaving behind, after having been administratively registered, account to the metric of arrivals to the urgency.

Average Arrivals per Month



Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Avg	522.4	533.7	468.61	64.75	496.34	492.9	502.55	487.71	481.71	509.66	487.45	511.24

Average Arrivals for Week day

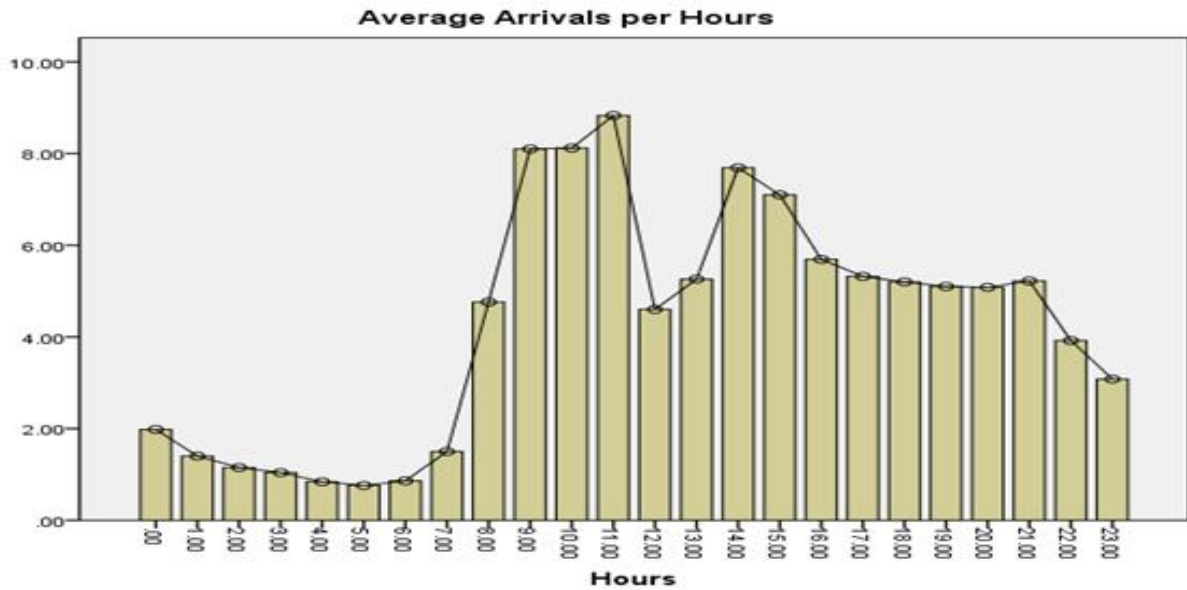


Week	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Avg	417.79	587.59	515.59	511.01	506.58	514.15	440.29

24 Hours Arrival at patients in Emergency Block

Hours	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00
Avg	1.98	1.40	1.15	1.04	0.84	0.76	0.86	1.50	4.76	8.18	8.12	8.83

12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00
4.60	5.26	7.69	7.10	5.69	5.32	5.20	5.10	5.08	5.22	3.92	3.08



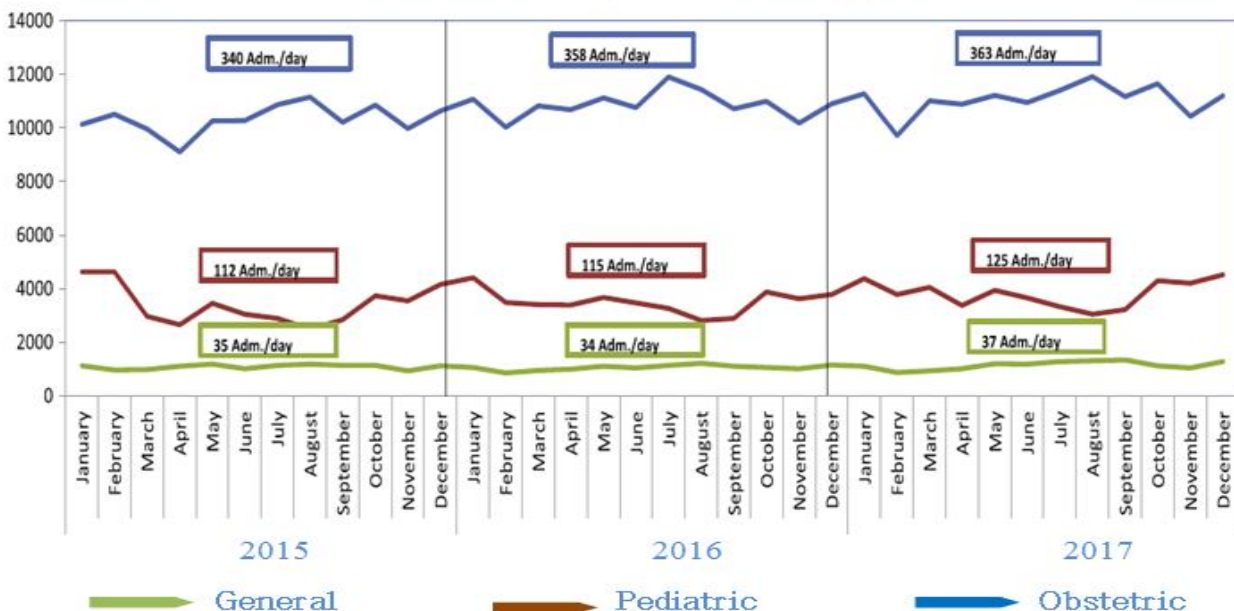
The Statistical experiments for the variable under study is the arrival of users to the EB. The data from 2016 and 2017, more than 350,000 records, was treated and statistical tests were performed. Users’ arrival to the EB was analyzed regarding the month of the year, the day of the week and the time of the day. To give an idea about the magnitude of the data, Fig. 1,2 and 3 shows the day-average arrivals distribution per month , per week day and along the day (considering data from January 2016 to December 2017).

This figure shows that the greatest demand is in February (533.7 arrivals per day), on Monday (567.6 arrivals per day) and during the day there are two peaks for increased demand which are at the start of the morning and early afternoon

3. STUDY DESIGN

From January 2016 there is reliable data for arrivals to the EB of the Government Raja Mirasdar Hospital in Thanjavur. This information includes the patient’s name, age, gender, date and time of arrival, triage sorting, destination after triage, date and time of release, and release justification. The first phase of this work consisted in the collection and processing of the data. The predictive model will work on data collected from January 2016 to December 2017 (test period), with 177,769 arrivals on 2016 and 185,132 arrivals on 2017; the results thus obtained will be compared to the data from 2018 (evaluation period), in order to determine the accuracy of the estimates obtained by prediction of the number of arrivals. with seasonality of pathologies, to public or school holidays, or to the time of day or day of the week.

Admissions to the general, pediatric and obstetric emergency (2015–2017), at Government Raja Mirasdar Hospital.



The occupation of hospital beds is broken down between elective admissions, planned in advance, and admissions through the EB (about 56% of the total hospitalizations). It is accepted as good practice that patients are admitted within 6 hours from arrival at the EB (about 9% of the total patients that come through the EB). The affluence of patients through the EB raises the level of uncertainty for the need of beds to a point that frequently same day surgical activities have to be canceled and the typology of operative plans have to be changed, favoring outpatient surgeries instead of surgical patients due to beds unavailability. As there are funding restrictions, a balance between cost and effectiveness must be obtained in resources allocation. The ability to predict the volume of demand in the EB would, in the short term, enable the correct allocation of clinical teams for emergency service assuring suitable waiting times for care, and adjusting the availability of beds in the hospital for the appropriate response to the influx of severe and urgent clinical pictures.

4. FORECASTING METHODS

Forecasting a health condition or situation for a population aggregate of a particular problem, or for groups of the same family, presents a lesser challenge than doing so for an individual case. This is because by pooling the variances of the population-related factors (which are usually broad and well known), the behavior of the aggregated data can have very stable characteristics, even when the individuals within exhibit high degrees of randomness is discussed by van et. al (2009). It is therefore easier to obtain a higher degree of accuracy in forecasting specific health events when using pooled population data versus data for specific individuals

Statistical tests having been carried out, the next step would be the definition of a forecasting model for the number of arrivals to the EB. There are several types of models, such as the Moving Average, the Exponential Smoothing, the Holt-Winters, the ARIMA, among others. ARIMA models provide an approach to time series and forecasting and are one the most widely-used methodologies to time series forecasting, providing complementary approaches to the problem. ARIMA models aim to describe the autocorrelations in the data and use the following notation: ARIMA(p, d, q)

Where, p is the order of the autoregression process (AR), d is the degree of differentiation involved (I) and q is the order of the Moving Average process (MA). To make the time series stationary (trend removal), it is previously made d differences between the data. The mathematical expression for this kind of models is

$$Y_t = \phi_1 Y_{t-1} + \phi_2 Y_{t-2} + \dots + \phi_p Y_{t-p} + e_t - \theta_1 e_{t-1} - \theta_2 e_{t-2} - \dots - \theta_q e_{t-q}$$

Where,

Y_t is the variable value at time t, ϕ and θ are the model parameters for the autoregressive and moving average terms, respectively, and e_t are the residual term representing random is turbaned that cannot be predicted is refer to Makridakis (1989). Although there is no limit to the variety of ARIMA models, in practice it is seldom necessary to use values of p, d and q above 2. It is worth noting that only three values 0, 1 or 2, to the parameters p, d and q, are sufficient to represent the wide range of time series, from the most diverse contexts.

ARIMA models are also capable of modeling a wide range of seasonal data. The seasonal ARIMA model is formed by including additional seasonal parameters and is written as follows:

ARIMA(p, d, q)(P, D, Q)_s where P, D and Q represent the same as p, d and q for the seasonal

part of the model, and s is the number of periods in a seasonal cycle. These models have the following characteristics: theoretically they are suitable for most data series; they are able to model variations, trends, autoregressiveness and seasonally moving average; an univariate approach method, it requires no external data; also, the statistical software is widely available.

5. RESULTS

In this study, accuracy was used as the main criterion for selecting a forecasting method, and our assessment of forecast accuracy is based on the Mean Absolute Percentage Error (MAPE) metric:

$$MAPE = \frac{1}{n} \sum_{i=1}^n \left| \frac{Y_t - \hat{Y}_t}{Y_t} \right| \times 100 \quad \dots(1)$$

Where,

Y_t and \hat{Y}_t are the real arrivals and the forecasted arrivals in time t, respectively and n is the number of time units. This measure was used to evaluate and compare the performance of the studied models in the test period. An independent scale statistic as the MAPE enables the direct comparison of a model forecast over multiple time series.

The MAPE values for some of these models, using test period arrivals (2016–2017).The best model for the test period was the ARIMA (1, 1, 1)(1, 0, 1)⁷ with MAPE = 5.92%

$$Y_t = 0.4316 Y_{t-1} - 0.9750 e_{t-1} + 0.9861Y_{t-7} - 0.8549e_{t-7} + e_t \quad \dots (2)$$

Model	MAPE
ARIMA(1,1,1) (1,1,1) ⁷	5.92
ARIMA(0,0,1) (1,0,0)	8.28
Moving Average	9.82
Multiplicative winters	10.09
Holt-winters	10.63
Exponential Smoothing	10.23

Forecasting the arrivals for the second, third and fourth weeks of January 2018, this time including the data from the first week of 2018 in addition to the data from the test period, the model already adjusted its behavior based on the knowledge of the first week data. In this situation MAPE = 5.22% for the first four weeks of January 2018 against MAPE = 6.84%. This is a very important achievement of this work. Considering the MAPE values only for the second week, we obtain MAPE = 5.72% against MAPE = 9.29%.

followed by ARIMA (0, 0, 1)(1, 0, 0) with MAPE = 8.28%: As already identified in the autocorrelation test, the s value, number of periods in a seasonal cycle, is 7 days. The report provided by the software Forecast Pro for ARIMA (1, 1, 1)(1, 0, 1)⁷ model (2) is

Forecast Model for Arrivals ARIMA (1,1,1)*(1,0,1)

Term	Co-efficient	Standard Error	t-Statistic	Significant
a[1]	0.4436	0.0337	13.1500	1.0000
b[1]	0.9870	0.0036	272.3696	1.0000
A[7]	0.9970	0.00039	255.1895	1.0000
B[7]	0.8891	0.0266	33.3737	1.0000

With-Sample Statistics

Sample size 731	Number of parameters 4
Mean 496.4	Standard deviation 64.99
R-square 0.6467	Adjusted R-square 0.6453
Durbin-Watson 2.115	**Ljung--Box(18)=105.9 P=1
Forecast error 38.71	BIC 39.31
MAPE 0.05922	RMSE 38.6, MAD 28.75

6. CONCLUSION

In this paper to the high difficulty of resources associated with the operation of the Emergency Block in Government Raja Mirasdar Hospital in Thanjavur , The statistical experiments are reported in synthesizes the forecasting methods, commonly used in this type of situation, the importance of forecasting models of arrivals is absolutely critical for resource planning in the hospital. The obtained model allows predictions for a week or a month with a very good quality level. Accurate forecasting of EB arrivals decreases the cancellations of planned admissions and optimizes the beds allocation to the real demand. The human resources allocation is also adjusted according to the needs of beds and the number of work stations to patient care in the ED.

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STUDY ON IMPACT ASSESSMENT OF CLIMATE CHANGE ON WATERSHED USING HYDROLOGICAL MODEL (SWAT)

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ABSTRACT

Water being most basic necessity for sustainability of the life on globe due to intensification in the population the distribution and sharing of water resources have become added problematical issue. The rapid growth in industrialization, agricultural practices and domestic need increase the water demand for various activities which in turn need to manage water resources in an optimum way. In this context, hydrological models plays a vital role in assessment of water resources at the basin scale. Hence, the present paper discussed on assessment of impact of climate change on Malaprabha sub basin using Soil and Water Assessment Tool (SWAT). Once the model is simulated by using spatial and non-spatial data, and is calibrated from the year 1988-1998 and validated from 1999-2002 using observed discharge data. The calibration and validation of the model carried out with SWAT-CUP (SUFI-2). The performance results are evaluated with R^2 and NSE values. This study provides an ideology of extent of variation that may be caused in the forthcoming years in study area and these data can be employed in designing the water structures, watershed management, and crop pattern adaptability.

Keywords: SWAT-CUP, Climate change, watershed management, crop pattern adaptability, Malaprabha sub-basin.

1. INTRODUCTION

Water plays significant part in shaping the ecosystem and is a prime requirement for the sustainability of the human on the earth. Water is a very noteworthy natural resources and its management has become the crucial challenge facing today (Nagraj et al. 2016). The Global warming is increasing all over the world due to various human induced actions resulting increase in mean-temperature and sea level rise globally (Chen et al. 2014; Kusangaya et al. 2014). This leads to uneven rainfall, increase in frequency of floods and scarcities. With this consequences, it is necessary to examine the impact of climate change on hydrology at basin scale (Thompson et al. 2013; Zhang et al. 2014). Whereas in Asia-Pacific province experienced an extreme alteration in climate which is described that the upsurge in sea level with 8 of the 10 countries with a highest extent of people habitating in low-lying coastal areas get submerged (Loo et al. 2014). Several countries in Asia are facing impact of climate change and its consequences over the few decades resulting more frequent floods and severe droughts (Hansson et al. 2008). The main aim of this study is to evaluate the impact or change of surface water availability in the upcoming years with respect to the climate change.

2. STUDY AREA AND DESCRIPTION

Malaprabha sub-basin (shown in figure 1) arises at the Western Ghats of Belagavi District, Karnataka at an attitude of 792.4m at kanakumbi village which of 16 kms away from the jamboti village, khangpur taluk, Belagavi district of Karnataka and the sub-basin entirely lies in Karnataka. It is a tributary of the Krishna basin and accounts 5% of Krishna basin. Study Region lies between 15° 45' N and 16° 25' N and 74° 00' E and 75° 55' E and receives average of 766mm rainfall annually. Malaprabha sub-basin has total of 11,549km² catchment area and located in semi-arid region in India, rainfall of this area is seasonal (Monsoon) resulting need for reservoir to meet the agricultural and drinking demands of the area Malaprabha sub-basin is the major source for the Renuka Sagara dam which is located at the navilatirtha of Belagavi district and dam facilitates the agricultural water demand for about 2,000km² and drinking water demand for about 3 million people and more in four districts.



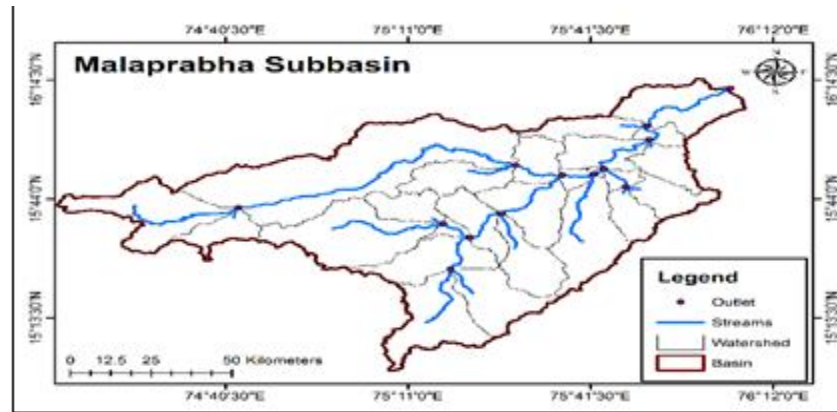


Figure-1: Map of Malaprabha Sub-basin

3. METHODOLOGY

3.1 Hydrological modelling

In this study, Soil and Water Assessment Tool (SWAT) is used to assess the impact of climate change at watershed level. The SWAT is a semi-distributed watershed model developed by Dr. Jeff Arnold for the Agricultural Research Service of the United States Department of Agriculture (USDA). SWAT requires a substantial amount of information and parameters for execution and calibration. The foremost use of SWAT is the identification of runoff (Williams and Arnold 1993; Arnold et al. 1998). Due to highly documentation it is easy in understanding and application. Usually SWAT runs by opting a single watershed, and the isolating it into various sub-basins. These sub-basins are then broken into various unique land use, soil and slope combinations which is known as Hydrological Response unit (HRUs). In detail about the SWAT model can be referred from SWAT Theoretical document by Neitsch et al. 2011.

3.2 Data Required

The various kinds of datasets and its source are used in this study (shown in below table 1) are Digital Elevation Model (DEM), Land use land cover, Soil, meteorological data, RCM data and Observed data. To setup and execute SWAT model these data are prepared accordingly. Firstly, the DEM data is used to generate streams, outlets and to delineate the watershed, and it is obtained from Cartosat 1 Ver. 3R1 which is of 32m resolution, the maximum and minimum elevation ranges from 360m to 680m in the Malaprabha sub basin. The Land use land cover data for the study area obtained from Global land use land cover facility, soil data obtained from Food and Agricultural Organization, land use land cover and soil data are used for Hydrologic Response Unit (HRU) analysis during modelling. The precipitation (0.5x0.5deg.) and temperature (1x1deg.) gridded data are obtained from IMD, Pune. Impact assessment for the study area carried out using RCM data which is of 0.5x0.5deg resolution.

Table-1: Data and its sources

Sl. No.	Data	Source
1.	Digital Elevation Model (DEM)	Cartosat 1 Ver. 3R1 (32m resolution)
2.	Land use land cover	Global land use land cover
3.	Soil map	Food and agricultural organization (FAO)
4.	Meteorological data (Precipitation, Temperature)	India Meteorological Department (IMD, Pune)
5.	Regional Climate Model (RCM) data	Indian Institute of Tropical Meteorology (IITM, Pune)
6.	Observed discharge data	Water Resource Information System, India

3.2.1 Weather data

WCRP developed Coordinated Regional Climate Downscaling Experiment (CORDEX) for the regions of south Asia is delivered to enhance studies concerning climate variation impacts at regional scale. The dataset comprises dynamically downscaled projections of 10 scenarios and models for which day-to-day scenarios were formed and spread under CMIP5. CORDEX dataset contains downscaled climate scenarios which is been derived from the Atmosphere-Ocean coupled General Circulation Model (AOGCM).CORDEX RCM outputs of South Asia are being shared by modelling partners and published by IITM (Indian Institute of Tropical Meteorology).Future projection data are been taken from the IITM website from the year 2041 to 2060. RCM Grid have been laid over study area. The precipitation and temperature data have been extracted from datasets using ArcMap 10.1. Fig 5 shows the CORDEX RCM grid, the grid points inside the Sub-basin are opted for the extraction purpose.

4. RESULTS AND DISCUSSIONS

4.1 SWAT Calibration and Validation

The monthly discharge output from the model (Simulated) have been compared with the monthly observed discharge of study area and found to be not satisfactory. Hence the calibration is required. The variance among the simulated and observed discharge observed by coefficient determination R^2 . Desirable limits of R^2 (>0.6 & <1.0) & NSE (>0.5 & <1.0). Before calibration correlation coefficient (R^2) and Nash Sutcliffe Coefficient (NSE) value are found to be 0.5352 and 0.7383 respectively. As R^2 value doesn't fit into desirable limit hence calibration and validation is carried out.

4.1.2 Calibration and Validation

In this study model calibration and validation achieved through SWAT_CUP (SUFI-2) Calibration is an art of matching up stimulated and observed discharge data. Calibration has been carried out from the year 1988 to 1998(11 years). Initially 4 basic parameters are preloaded in the SWAT_CUP. Based on literature and understanding parameters are added up. The Parameters used for the calibration and its ranges are given in the table 2. With the parameters added, software is run for various number of iteration with 300 simulations for each iteration. The parameter values will be fitted and further these parameter ranges are imported for the next iteration until the desired limits of R^2 and NSE is obtained. The performance results during calibration period shows R^2 value is found to be 0.67 and NSE values is found to be 0.87. The desirable values of R^2 and NSE are achieved and model is initiate to be satisfactory. Once the calibration results shows satisfactory, then validation of the model carried out with next set of observed data. During validation the same set of parameters and their ranges are used while during the calibration. The number of simulation given during the calibration period should be same during the validation process. The values of R^2 and NSE are found to be 0.71 and 0.93 respectively and as the values fit into the desirable limit the model is satisfactory and the further analysis can be carried out. Figure 2, 4 shows the comparison of simulated and observed discharge during calibration and validation period. Figure 3, 5 shows the scattered plot observed and simulated during calibration and validation.

Table-2: Parameters Ranges during Calibration

Sl. No.	Parameter	Fitted value	Min. value	Max. value
1	R_CN2.mgt	-0.252	-0.3216	0.0840
2	V_ALPHA-BF.gw	1.014	0.8000	1.2760
3	V_GW_DELAY.gw	28.015	12.6310	33.7056
4	V_GWQMN.gw	1759.000	1300.0000	3000.0000
5	R_CH_K2.rte	3.792	2.6025	3.804069
6	R_CH_N2.rte	0.0021	-0.0033	0.006259
7	R_EPCO.bsn	0.944	0.87733	1.242
8	R_ESCO.bsn	0.2599	0.12059	0.3206
9	R_GW_REVAP.gw	1.1279	0.8690	1.2442
10	R_RCHRG_DP.gw	0.1372	0.07190	0.3831
11	R_REVAPMN.gw	43.0000	40.0000	100.0000
12	R_SOL_AWC.sol	-0.3458	-0.5563	-0.1435
13	R_SOL_K.sol	0.25	0.2500	0.2500
14	R_SURLAG.bsn	6.3904	5.4125	7.6867

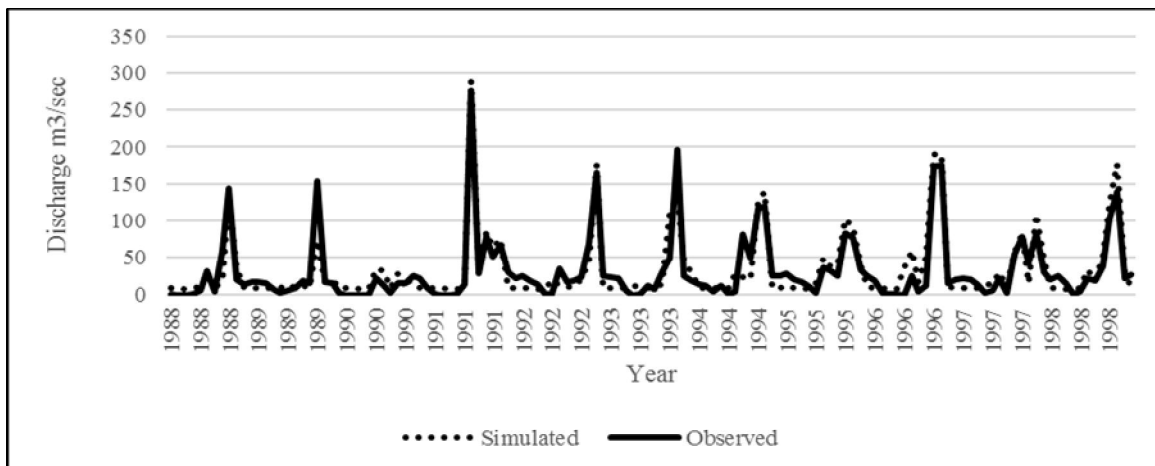


Figure-2: Comparison of simulated and observed discharge during calibration

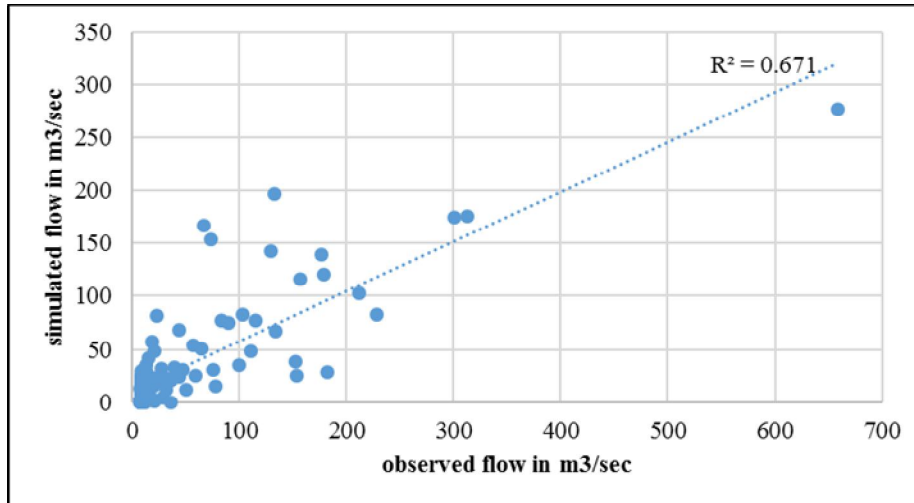


Figure-3: Scattered graph of simulated and observed discharge during Calibration

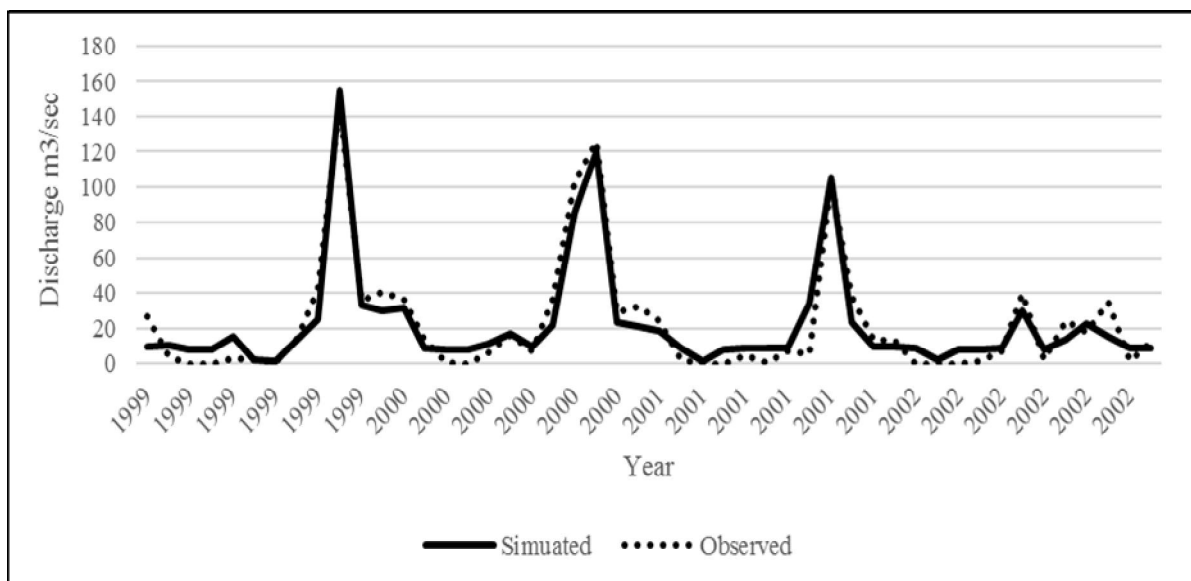


Figure-4: Comparison of simulated and observed discharge during Validation

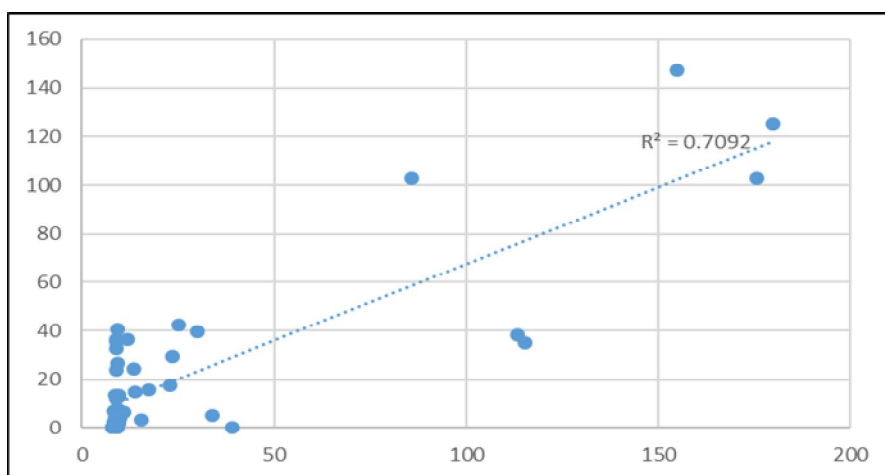


Figure-5: Scattered graph of simulated and observed discharge during validation

4.2 Climate Change Analysis

The SWAT model was simulated from the year 1985 to 2005. As 3 years have been given as warmup period during the execution. The output is obtained from the year 1988 to 2005 (18years). From the year 1988 to 2002 (15 years) results are considered as baseline scenario for the evaluation of future predicted surface runoff, Temperature and Precipitation. For the future prediction as revealed earlier CORDEX data been extracted from the year 2041 to 2060 (20 years) as each dataset are of 10 years. For the analysis of impact, future predicted data from year 2046 to 2060 (15 years) have been employed as future scenario.

4.2.1 Precipitation

Precipitation plays a vital role and has direct influence on the surface runoff. Surface runoff is accommodated by the subsurface which is the main reason for the flow of surface runoff when the rainfall is less observed in the region. Increase in precipitation increases surface runoff and vice versa. The results table 3 shows that in the year 2047 highest precipitation of 3614.9mm maybe be observed and lowest precipitation of 1464.3 mm may be observed in the year 2058.

Table-3: Comparison of Baseline scenario and future scenario for Precipitation

Baseline Scenario		Future Scenario		Change In mm
Year	Precipitation(mm)	Year	Precipitation(mm)	
1988	472.6	2046	1592.2	1119.6
1989	380.6	2047	3614.9	3234.3
1990	436.8	2048	3495.1	3058.3
1991	1051.3	2049	2196.4	1145.1
1992	417.7	2050	2396.3	1978.6
1993	629.9	2051	1898.3	1268.4
1994	538.1	2052	1884	1345.9
1995	738.4	2053	2291.8	1553.4
1996	821.5	2054	2649.4	1827.9
1997	667.4	2055	1740.1	1072.7
1998	803.5	2056	2734.1	1930.6
1999	572.6	2057	2318.2	1745.6
2000	554.1	2058	1464.3	910.2
2001	541.5	2059	2402.3	1860.8
2002	454.9	2060	2568	2113.1
AVG	605.3	AVG	2349.6	1744.3

4.2.2 Temperature

Temperature also influence as an important part in surface runoff and it has direct relationship. As the temperature increases the Evapo-transpiration process will also tend to increase causing the decrease in the surface runoff as the losses by the evapotranspiration happens but warmer atmosphere can grasp additional moisture producing higher precipitation. From the given table 4 below in the forthcoming years there maybe increase of the atmosphere temperature by an average of 1. 67⁰C. From the future predicted data, we would come to know that the highest average temperature is observed in the year 2050 of 28.03⁰C and lowest in the year 2052 of 27.14⁰C.

Table-4: Comparison of Baseline scenario and future scenario for average Temperature

Baseline Scenario		Future Scenario		Change (degrees Celsius)
Year	Average Temperature (degrees Celsius)	Year	Average Temperature (degrees Celsius)	
1988	26.09	2046	27.46	1.37
1989	25.91	2047	27.98	2.07
1990	25.69	2048	27.87	2.19
1991	26.02	2049	27.79	1.77
1992	25.85	2050	28.03	2.18
1993	25.66	2051	27.63	1.97
1994	25.92	2052	27.41	1.49
1995	26.21	2053	27.71	1.50
1996	26.02	2054	27.79	1.77
1997	26.03	2055	27.63	1.59
1998	26.52	2056	27.78	1.26
1999	25.93	2057	27.68	1.74
2000	25.94	2058	27.60	1.67
2001	26.12	2059	27.88	1.76
2002	26.55	2060	27.28	0.73
Average	26.03	Average	27.70	1.67

4.2.3 Surface Runoff

Surface Runoff can be termed as the “portion of the water cycle that runs over land as surface water without being percolated into groundwater. Runoff is that quantity of the precipitation that appears in unrestrained surface streams, rivers, lakes and ponds”. The estimation of the flow that occurs in the upcoming years helps in designing the water structures. From the future scenario highest surface Runoff can be experienced in the year 2047 with 11600.51 m³/sec and lowest among is observed in the year 2058 with 4233.989 m³/sec. The table 5 shows an average change in surface flow for Baseline scenario and Future Scenario is observed to be 6456.78 m³/sec.

Table-5: Comparison of Baseline scenario and future scenario for Surface Runoff

Baseline Scenario		Future Scenario		Change
Year	Surface Runoff In m ³ /sec	Year	Surface Runoff In m ³ /sec	
1988	280.85	2046	880.038	599.188
1989	296.96	2047	2040.51	1743.55
1990	241.84	2048	1972.61	1730.77
1991	620.89	2049	1262.62	641.73
1992	417.46	2050	1320.29	902.83
1993	408.17	2051	1060.79	652.62
1994	468.18	2052	1027.88	559.7
1995	343.09	2053	1348.78	1005.69
1996	498.94	2054	1580.9	1081.96
1997	383.75	2055	690.96	307.21
1998	472.43	2056	1508.85	1036.42
1999	331.81	2057	1297.64	965.83
2000	431.54	2058	780.98	349.44
2001	223.49	2059	1328.46	1104.97
2002	151.08	2060	1392.01	1240.93
Avg	371.365	Avg	1299.55	928.67

5. CONCLUSION

Global warming and climate change is a critical issue all over the world as it comprises a negative impact on the ecology and human life. This study was conducted to understand the modification that may happen on surface runoff, temperature and precipitation in the forthcoming years at Malaprabha Sub-Basin. The model was executed for the year 1985 to 2005 and output from the year 1988 to 2002 have utilised for the analysis and is considered as Baseline Scenario. CORDEX Dataset have been adopted for the future forecast data from the 2046 to 2060 as Future scenario. The results found from the Model states that there an average increase of 1.67^oC temperature for the future period of time. The highest Average temperature in future scenario is observed in the year 2050 of 28.03^oc and highest temperature observed during baseline period is 22.55^oc. There is a significant increase in precipitation during future scenario compared to Baseline scenario. The highest precipitation in the future scenario is observed to be 3614.9 mm in the year 2047 and during the baseline period 1051.3 mm in the year 1991 is observed. There is a drastic variation in the surface runoff during future scenario when matched to the Baseline scenario. The highest surface runoff during future scenario is witnessed in the year 2047 with 11600.51 m³/sec and lowest among is detected in the year 2058 with 4233.989 m³/sec. This study gives an ideology and extent of changes that may cause on the watershed due to climate change. The analysis done can be utilized in the designing and construction of the water structures in the Sub-basin, watershed management programs, adoption of alternate crop patterns.

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PERCEIVED VALUE ON DIFFERENT TYPES OF ACCOMMODATION: AN EMPIRICAL STUDY AMONG INTERNATIONAL TOURISTS

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ABSTRACT

There are many studies which have highlighted the significance of exploring how perceived value can be applied with regards to the tourism products. Accommodation is one such sector which directly contribute towards attracting tourists to a destination. The goal of this study is to explore the impact of tourist experience during the stay in different types of accommodations such as hotels, homestays, resorts, apartments on perceived value. Data was collected from 400 international tourist who had visited Kerala, India using Tour-PERVAL scale. The findings of the study indicate that the tourist experience during their stay in homestays has increased their perceived non- monetary cost value and emotional value towards the destination. Whereas, the experience given by the resorts during their stay has increased their perceived monetary cost value and social value. Perceived quality was given due importance by the tourist irrespective of their stay in different types of accommodation. The research highlights the significance of considering various dimensions of perceived value by marketers for making effective promotional strategies.

Keywords: Perceived value, Accommodation, Social value, Emotional value, International tourists

1.1 INTRODUCTION

Despite any sort of economic crisis, tourism has grown tremendously worldwide and has become the most prominent and fastest growing sector, fostering local development and creating employment opportunities (UNWTO, 2012). Accommodation is the vital and major part in the supply of tourism. The type, character and classification of hotels determines the importance of the destinations (Nuntsu, Tassiopoulos & Haydam, 2003).

According to the predictions of government of Kerala, India as a tourism destination will be having an increased growth and has a solid potential to pull in tourists to the destination (GOK, 2012). This growth in the number of tourist arrival can be achieved only by enhancing the perceived value of the different destinations. Choosing a destination to travel is considered as a high value purchase by the tourists. The tourists are therefore becoming more careful in spending their money on such high value purchase like choosing an accommodation, transportation, travel circuit and so on (Brady & Cronin, 2001; Cronin et. al, 2000).

Generally, in the hotel sector the products are homogenous in nature. It has become important for the marketers to differentiate it based on size, type and services offered from its competitors (Milfelner, B.Snoj, Pisman Korda, 2009). Further, industry have classified it into different types like hotels, resorts, homestays, guest house and so on with different star categorisation ranging from one star to 5 star in India. Therefore, the value perception of the tourist from these categories of accommodation can vary depending up on the services offered by them. "Perceived value (PV) is a dynamic variable, experienced before purchase, at the moment of purchase, at the time of use, and after use. For each of these moments, the valuation made may be different" (Gardial et.al, 1994). So, the present study considered perceived value after visiting the destination.

It is very important for the marketers to perceive value with distinctive dimensions to create reliable strategies for positioning the product (Jillian C. Sweeney, 2001). He has also highlighted that price is not the only prominent factor for measuring tourism experiences but there could be other perceived values as well. So, understanding the impact of experiences offered by different types of accommodation sector on different value dimensions can enhance the positioning strategies. Some studies have pointed out the importance of research in perceived value and accommodation (Razli, Jamal & Zahari, 2017). Thus, the present study seeks to investigate how different types of accommodation such as hotels, homestays, resorts and apartments influence the perceived value of tourist in terms of perceived quality, monetary, non- monetary, social and emotional values based on Tour- PERVAL scale (Huang and Huang, 2007).

1.2 CONCEPTUAL FRAMEWORK

Understanding the greatest interest in the phenomenon of perceived value, Marketing Science Institute in its research list has prioritised and incorporated the perceived value as a concept. (Marketing Science Institute, 2001). Perceived value is "The consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given" (Zeithaml, 1988). Accordingly, perceived value was measured and studied as a single or uni- dimensional construct, which includes price-based studies (Monroe, 1979 & 1990), means-end studies (Gutman, 1982).

However other researchers like (Sweeney & Soutar, 2001) considered it as multi- dimensional which incorporates different dimensions such as “perceived price, quality, cost, benefits, sacrifices and so on”. The multi-dimensional theories proposed were “Consumer Value Hierarchy Model” (Woodruff & Gardial, 1996), “Utilitarian and Hedonic Values” (Babin et.al, 1994), “Axiology or Value theory” (Hartman, 1967, 1973), “Holbrook’s Typology of Perceived Value” (Holbrook, 1994 & 1999), “Consumption- Value theory” (Sheth et.al, 1991). Apart from this there are many other researchers who tried to study the multi- dimensional approach of perceived value (Gronroos, 1997; Sweeney, Soutar, and Johnson, 1999; Sweeney and Soutar, 2001).

A meta- analysis study on perceived value was conducted by (Sánchez et.al, 2006) and reported that “uni- dimensional and multi- dimensional models” of perceived value plays their own roles in understanding the concept. However, the measurement of the idea of perceived value is complicated and have different dimensions. This study has included the perceived functional value (quality, monetary, non- monetary values) perceived social value and perceived emotional value as dimensions of PV.

Functional Value is “The perceived utility acquired from an alternative’s capacity for functional, utilitarian or physical performance.” For eg: price, quality, durability and so on (Sheth et.al, 1991). Perceived quality, monetary price and non- monetary value is considered as an imperative factor to choose distinct types of accommodation. There are studies like that of (Milfelner,B.Snoj, Pismanik Korda, 2009), who tried to study the perceived quality in choosing hotels by comparing tourists from Slovenia and Italy and found a positive significant relationship. Similarly, (Razli, Jamal & Zahari, 2017), measured the quality, monetary, non- monetary, social and emotional values dimensions on peer to peer accommodation.

Social Value is “The perceived utility acquired from an alternative’s association with one or more specific social groups.” Eg: social identity that consumer wish to project. Emotional Value is “The perceived utility acquired from an alternative’s capacity to arouse feelings or affective states.” For eg: confident, excitement, fear, anger etc (Sheth et.al, 1991). Today, apart from the quality, monetary and non- monetary cost perspective, more importance is given for social and emotional value. According to the consumer decision making theory, the purchase of tourism products is considered as a highly emotional decision. The same has been vouched by (Jillian C. Sweeney, 2001).

The term perceived value was applied and studied in various products in the tourism sector as well as in the other industry. It would be therefore interesting to know more about perceived value in different categories of accommodation. (Jamal et.al, 2011) quoted that tourists’ perceived value for various kinds of stay is an important factor that may influence the growth of demand. This identified gap motivated the researchers to think about the relationship of perceived value on various kinds of accommodation. While reviewing different literatures, the researchers could not find any study that investigates this relationship. In light of the above discussion, an applied model was conceived by the researchers as shown in fig. 1 to carry out the research.

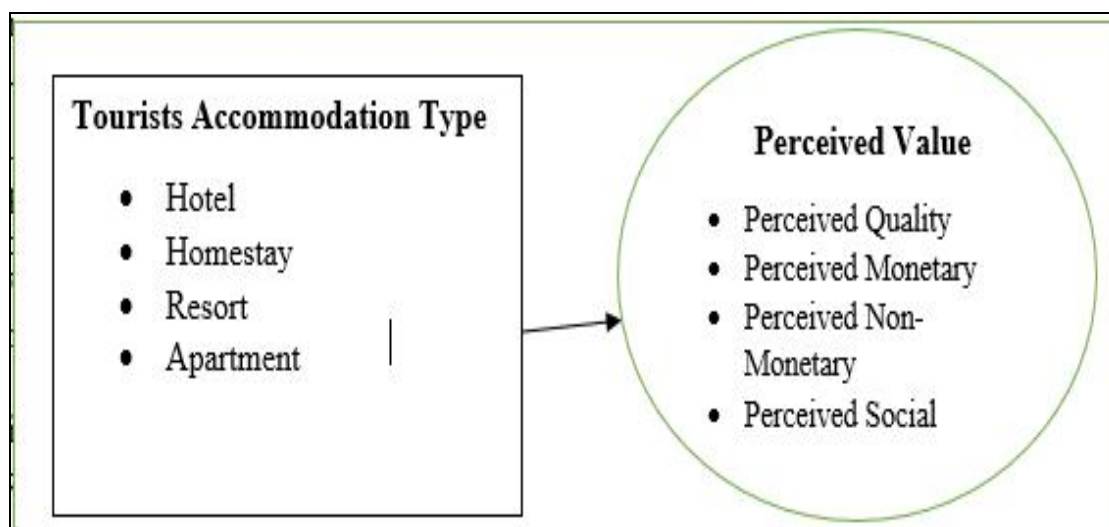


Figure-1: Conceptual model of the study

1.3 OBJECTIVES OF THE STUDY

- To do comparative analysis of different dimensions of perceived value (quality, monetary cost, non- monetary cost, social and emotional values) among international tourists with respect to their stay in hotels, homestays, resorts and apartments.

1.4 METHODOLOGY

1.4.1 Population and Sampling

The study is descriptive in nature. The population included the foreign tourist who took a trip to Kerala, India during 2014 to 2016. A purposive sampling methodology was adopted for the study. Perceived value can be measured before, during and after purchase of the product. This study considered perceived value after purchase of the product, i.e. the perceived value of the tourists who have completed their trip to Kerala. Hence the data has been collected from those tourists who have already completed their visit or on the last day of visit to Kerala. The sample was collected from international tourists. For purposive sampling, the major criteria to choose sample is that the foreign tourist should have stayed in the same type of accommodation for his entire trip. Further the data collection was continued to those tourists who have completed 18 years of age and have visited at least two destinations in Kerala. A self-reporting questionnaire were issued to 450 foreign tourists and 400 usable responses were obtained for the final analysis. The data was collected from those destinations where the airports are located- Cochin, Trivandrum and Calicut.

1.4.2 Measures

The questionnaire was designed in two parts. Part I included demographic profile of the tourists visiting Kerala. Part II included questions to evaluate the dimensions of perceived value. The perceived value (quality, monetary cost, non- monetary cost, social and emotional values) are measured using Tour- PERVAL scale developed by (Huang & Huang, 2007). This study rated responses on a 5-point Likert scale. The scale ranges from strongly disagree- “1” to strongly agree- “5”. To measure the dimensions of PV altogether 26 items were used. An open-ended question on the different types of accommodation used for the entire trip was asked in the questionnaire. Only those responses with a single type of accommodation for the entire trip was taken for this study. They were also instructed to mark their responses regarding the different dimensions of perceived value based on their experience during the stay with the accommodation they availed.

1.5 DATA ANALYSIS AND RESULTS

The data was analysed using IBM SPSS 20.0. Descriptive statistics (frequency distribution, mean and standard deviation) were used to profile the respondents age, gender and country of origin. Tests were done to handle missing values and to check the normality. The normality was tested considering the mean, median, standard deviation, skewness and kurtosis. Histogram and Q-Q Plot of each variable were also determined to analyse normality. Cronbach’s alpha coefficients was found to assess the reliability of the variable perceived value.

To identify the dimensions that explain variations among the variables under the study, Exploratory Factor Analysis (EFA) with Principal Component Analysis (PCA) and Varimax rotation was used. This study has used Kaiser- Meyer- Olkin (KMO) to assess the sample adequacy for PCA. Table 1 shows result of Cronbach’s score and Table 2 gives an overview of the EFA analysis. To compare the impact of services offered by different types of accommodation on different dimensions of perceived value statistical test like Analysis of variance (ANOVA) was used.

Table-1: Reliability Analysis

Scale	Cronbach’s score	No. of items
Perceived Value	.853	26

*Above the threshold of .50

Table-2: EFA Analysis

Variables	KMO	X ²	p
Perceived Quality Value	.698	2397.007	.000*
Perceived Monetary Cost Value	.749	1802.991	.000*
Perceived Non- Monetary Cost Value	.771	2559.824	.000*
Perceived Social Value	.537	2598.362	.000*
Perceived Emotional Value	.628	3579.331	.000*

*KMO above .50 * p=< .05

Descriptive statistics was done to profile the respondents. There were 225 males and 174 females who have participated in the survey. The highest responses were from the age group 30 to 40, followed by 20 to 25. Majority of the respondents are from France, followed by Germany, England and Denmark.

Table 3 explains the hypothesis testing where the testing of relationship was done between different types of accommodation and dimensions of perceived value. According to the results of one- way ANOVA analysis, there is significant difference among perceived social, emotional, monetary cost and non- monetary cost values

of tourists who stayed in various kinds of accommodation. From Table 3, there is no significant difference in perceived quality among tourists who stayed in different types of accommodation. Though the significant difference is not there, the mean score reveals that perceived quality is equally important for all tourists irrespective of their choice of accommodation.

Table-3: Hypothesis testing between different types of accommodation and dimensions of perceived value

Variables		N	Mean score	Sig.
Perceived quality	Hotel	114	3.8326	.244
	Homestay	180	3.9218	
	Resort	89	3.8081	
	Apartment	17	3.3382	
Perceived monetary cost	Hotel	114	2.9884	.002
	Homestay	180	3.0364	
	Resort	89	3.6704	
	Apartments	17	3.4510	
Perceived non-monetary cost	Hotel	114	2.3103	.013
	Homestay	180	2.7307	
	Resort	89	2.4319	
	Apartments	17	1.9931	
Perceived social value	Hotel	114	3.3741	.032
	Homestay	180	3.3220	
	Resort	89	4.2219	
	Apartments	17	2.8253	
Perceived emotional value	Hotel	114	3.6154	.002
	Homestay	180	4.1403	
	Resort	89	3.7497	
	Apartments	17	3.4071	

There was a significant difference between tourists who were using different types of accommodation and their perceived monetary cost ($p = .002$). Tourists who were staying in resorts perceived high monetary value (mean score = 3.67) in visiting destination compared to tourists who stayed in hotel, homestay and apartments. Perceived non-monetary cost value (mean score = 2.73) was highest among tourists who were staying in homestays compared to other types of accommodation and the difference was significant ($p = .013$). Tourists who were staying in resorts was having higher perceived social value (mean score = 4.22), compared to other types of accommodation and the difference was significant ($p = .032$). A significant relationship ($p = .002$) was found between various types of accommodation and perceived emotional value. Emotional value was higher (mean score = 4.14) for tourists who were staying in homestays when compared to other types of accommodation. Perceived quality value has no significant relationship ($p = .244$) between different types of accommodation.

1.6 DISCUSSION

The present study reveals the importance of using perceived value to frame distinctive promotional strategies as indicated by the tourist based on their accommodation preferences during the trip. While reviewing several literatures in marketing proposes that understanding customers' value perception can help marketers to take vital decisions regarding why people make certain consumption decisions (Petrick, 2002). This will help the managers to form effective marketing strategies.

Travellers are ready to spend a lot of cash for tourism related products amid their trip (Heung & Cheung, 2000). The present study also states the same with respect to the tourists staying in resorts. The experience of tourists who stay in resorts would enhance their perception on monetary value and social value. This is because, compared to other types of accommodation, people who stay in a resort pay higher price for their accommodation. Therefore, they expect higher monetary value for their trip. According to the consumer decision making theory, high involvement purchase is considered as a status symbol. Choosing a resort for stay is a high involvement purchase decision and this will enhance the social value. Thus, tourists who stay in a resort are ready to pay a higher price for visiting the destination; provided it should give them higher monetary value and higher social status. So, the resorts while preparing their promotional strategies can concentrate more on monetary value and social value to make their customers satisfied as well as to improve recommendations and revisit to the destination. (Gillian & Kimberly, 2001) has stated that giving a package which is all-inclusive, regardless of whether the cost is higher will help to boost the perceived value of tourist.

While the experience of tourists at homestays on the other hand shows a higher perceived non- monetary cost and emotional values. Non-monetary cost value represents other source of sacrifice such as time, effort, convenience etc. that a tourist considers in choosing a product. A tourist who stays in a homestay expects a form of tourism that provides them with actual experience of village life. So, it is important to provide emotional value and non- monetary value through homestays (Jamal *et.al*, 2011). Most of the tourists who stay in a homestay perceive higher non-monetary cost value and emotional value because they are budget travellers. They are concerned about the price and spend more time and effort (non- monetary cost value) in choosing their trip. So, even after the trip, their perception on non- monetary value increases. During their stay in homestays, they will gather good experience and knowledge with regards to the village life. There will be a strong bond between the guest and the host compared to the other types of accommodation. This would enhance the emotional value of the tourists'. The role of homestays in enhancing the emotional value of tourist was empirically studied and vouched by (Heyprakhon, Rinchumphu and Janjamlha, 2016). So, the marketers should focus on stimulating emotional experience, position the product and frame strategies based on the promise of such emotional experiences.

Perceived quality is very important for tourists irrespective of any type of accommodation. Similar finding was also pointed out in the previous researches, which cited that the quality is one among the main determinant of perceived value (Bolton and Drew, 1991). It is recommended that the various providers of accommodation services, destination development authorities and government should focus on the significance of these value dimensions in various types of accommodation to expand the overall tourists' perceived value and in addition to find better positioning methods for increasing the tourists.

1.7 CONCLUSION

It is of high importance to evaluate the perceived value of tourists since it would affect their satisfaction level and future behavioural intentions. It is important to understand how the tourist perceive values for enhancing the value of the destination. Otherwise, tourism will just be a temporary economic contributor. Perceived value was measured using a multi-dimensional approach to enlighten the marketers as well as host providers for understanding the value perception of tourist across different accommodation types. This will help the marketers to form effective marketing strategies (Cronin, Brady, & Hult, 2000).

The findings of this study clearly portray that the tourists' who stay in a resort has higher perceived monetary cost value and social value. At the same time, tourists' who stay in a homestay perceive higher non- monetary cost value and emotional value. Irrespective of the various types of accommodation, perceived quality value is very significant for the tourist. This is an indication of using perceived value as an effective predictor to frame strategies for different types of accommodation as well as tourism destination. Overall, the findings of this study give an effective empirical insight on how the different types of accommodation influences the perceived value of the tourists' in terms of quality, monetary cost, non-monetary cost, social and emotional values.

The study provides insights on perceived value of international tourists in different types of accommodation. The data representing international tourist are mainly from France, Germany, Italy, USA and Middle East who had visited Kerala. There could be tourists from other countries who had visited Kerala. Their perception can vary but that is only a small representation. The study has a wider scope regarding extending this study to the domestic tourist as sample, since they are also a major contributor towards tourism. The study can also be conducted using other multi-dimensions suggested by different authors with perceived conditional value, epistemic value etc.

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PROBLEMS AND CHALLENGES OF POULTRY INDUSTRY IN SAUDI ARABIA – AN ANALYTICAL STUDY

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ABSTRACT

The present research attempts to know the problems and prospects of poultry industries in Saudi Arabia. Several studies at various national and international levels on different aspects of the industries have been conducted by researchers, academicians and institutional agencies. Therefore it is quiet relevant to review the available literature that has relevance in identifying the gaps that exist in the field of present research. Saudi Arabia, poultry industry has made tremendous growth during the last few decades, which emerged from backyard ventures to a fully profitable industrial business.

Saudi Arabia is the biggest importer of the agricultural & food products among all other Gulf Cooperation Council (GCC) countries. The kingdom has approximately double population than other five GCC states I. e. UAE, Qatar, Bahrain, Kuwait and Oman.

Broiler meat production in Saudi Arabia has reached 670,000 MT in 2016. It is four percent higher than the previous year. Broiler production of Saudi is estimated to here after increase to 700,000 MT in 2017. This growth in local production is because of current modification in broiler meat the production operation by the 3 most important producers of Saudi poultry.

The import of boiler has decreased to 940,000 MT in 2016. There is a 2% decrease when compared the previous year. Brazil is the leading exporter with 85% of the Saudi broiler meat import market with 789,302 MT. The second is France with 14% share of market and 1 percent with the U.S. In the recent year, Saudi Arabia exported Broiler meat of 40,000 MT mostly to the countries of GCC.

Keywords: Poultry, Birds, Eggs, Farmers, Farming, Proteins.

INTRODUCTION

The Saudi government is focusing on poultry industry to meet the Kingdom's food security goals. The government is providing support to local poultry producers. It has helped with different types of production support like subsidies for animal feed, ease in the purchase of the purchase of poultry equipment by minimizing the interest rates. The Saudi Agricultural Development Fund (ADF) adopted a strategy to subsidize insurance for poultry production. The objective is to reduce average chicken mortality rate in the Saudi farms from 25% to 5% and to allow new investments in this sector. It has also compensated farmers for losses related to finance. The major financial loses are due to outbreak of poultry diseases. Therefore, the government is providing a lot opportunities in the country for trade, food processing and infrastructure requirements.

RATIONALE OF THE STUDY

In Saudi Arabia, poultry industry has made tremendous growth during the last few decades, which emerged from backyard ventures to a fully profitable industrial business. Saudi Arabia is the biggest importer of the agricultural & food products among all other Gulf Cooperation Council (GCC) countries. The kingdom has approximately double population than other five GCC states I. e. UAE, Qatar, Bahrain, Kuwait and Oman.

Broiler meat production in Saudi Arabia has reached 670,000 MT in 2016. It is four percent higher than the previous year. Broiler production of Saudi is estimated to here after increase to 700,000 MT in 2017. This growth in local production is because of current modification in broiler meat the production operation by the 3 most important producers of Saudi poultry.

The import of boiler has decreased to 940,000 MT in 2016. There is a 2% decrease when compared the previous year. Brazil is the leading exporter with 85% of the Saudi broiler meat import market with 789,302 MT. The second is France with 14% share of market and 1 percent with the U.S. In the recent year, Saudi Arabia exported Broiler meat of 40,000 MT mostly to the countries of GCC.

OBJECTIVE OF THE STUDY

The primary objective of the study was to

1. Identify problems of the poultry industry in Saudi Arabia
 2. Identify the main challenges of the poultry industry in Saudi Arabia
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LITERATURE REVIEW

In (2015) Abere Dagne found out the challenges and prospects of poultry industry of Bahir Dar Town in Ethiopia. According to his research the stake holders involved in the poultry business of Bahir Dar poultry farm industry believe the industry is actually declining and they assign the causes such as shortage of guaranteed land, absence of sufficient electric power, absence of genuine breed supply chicken, lack of knowledge on poultry industry production, shortage of professionals in the area, government's lack to amend land lease time policy based on the nature of poultry industry, absence of clear control mechanism of genuine breed poultry and absence of feed processor either private or / and government organization subsidies on agric inputs like feeds, drugs, equipment and several other factors. On the other hand major prospects of poultry industry in Bahir Dar city like presence of good government policy, presence of better market demand and conducive environment for poultry production were identified.

2. World's Poultry Science Association (2014). A regional report on poultry meat and hatching egg production in Kuwait. The study assessed the company's increasing revenues by producing a higher proportion of higher value products (fresh / chilled meat, further processed chicken products and live bird sales). The industry provides almost all its requirements for broiler chicken hatching eggs. The study suggests the production efficiency is reduced in the late summer months when combination of high temperature and humidity gives extreme climatic conditions.

3. Muhammad Mahboobali in (2013) made an attempt to know the problems and prospects of poultry industry in Bangladesh. He argued that strategic management in poultry sector requires complementing to achieve present government's vision of digital Bangladesh 2021. This industry can provide various opportunities to increase GDP growth rate plus equitable distribution through arranging food security as well as ensuring self-employment, creating purchasing power and reducing poverty at a large scale. Allowing importance of country's poultry industry in order to ensure the sustainable economic development it is now high time to step forward for the better accumulation of resources available from this industry and to see the small and medium farmers. Authors' observe that to import poultry related products huge amount of valuable foreign exchange will be spent. They proposed for providing subsidy to the local industry & protect safeguard to the local entrepreneurs of the poultry industry. Vaccine, Vaccinations services, alternative to vaccine services, antibiotic feed additives and other inputs & services of the poultry sector should be developed locally.

4. In March (2012) Food Research International conducted a study on current issues and prospects for control food borne illness caused by salmonella is a worldwide problem. In the United States salmonella Enteritidis is the second most commonly isolated serotype from human illness, and is known to be strongly associated with a shell eggs and egg containing products. Eggs can become contaminated internally either by penetration shell or directly during the formation in the reproductive tract. The finding further says salmonella enteritidis has a strong association with shell eggs and is transmitted horizontally and vertically. Stress increases hens susceptibility to colonization by salmonella refrigeration is an important intervention for salmonella in shell eggs.

5. Johnson Gyar (2011) in his studies the challenges and prospects of marketing poultry & poultry products in Kumasi. A case study of Akate farms trading and company limited. The sought find answers to issues like major constraints of poultry production and marketing in the Kumasi metropolis, the causes of the constraints, how it can be alleviated and the prospects of the poultry market. The study revealed that the growth of the Akate farms trading and co. Ltd is likely to decline if the challenges such as fluctuating price of maize, high interest rate of loans, government's failure to protect the local industry by enacting laws to check the importance of cheap foreign poultry products and lack of subsidies on agric inputs like feeds, drugs, equipment and several others are not addressed by the company and other stake holders.

It was concluded that if Akate farms fails to draw market plans and conduct marketing research it will be overtaken by the marketing challenges in the industry especially in the Kumasi metropolis. Thus company should adopt marketing plans which will help maintain and expand its marketing share.

6. M.S. Ali and M.M. Hossain (2010) conducted study to determine broiler production performance, the relationship between management practices and broiler performance and the problems faced by farmers involved with broiler production. The factors that had significant negative relationship with productive performance were education, land possession, annual family income, training exposure, broiler farming experience, broiler farm size, capital in broiler farming and extension contact for farmers. All had a significant bearing on performance, while credit needs, problem faced in broiler farming and feed conversion ratio.

7. Akanni (2007) opined that despite the poultry production importance it was characterized by low production level. This was due to limited finance for the procurement of basic poultry equipment and materials. The

consequence of this was that many of the small-scale poultry farmers are not encouraged to increase their productivity. Moving from small-scale production to a large scale production by small-scale poultry farmers encountered hindrances in the poultry industry which could be detrimental to increase poultry production.

CHALLENGES OF POULTRY INDUSTRY IN SAUDI ARABIA

The poultry industry in Saudi Arabia is facing many challenges. The inability of the local producers to meet the requirement has increased due to following problems.

1. Lower Production

Domestic broiler meat production in 2015-2016 was lower than USDA official estimates due to the inability of several domestic broiler meat producers to fulfill planned expansion aims. The increase in land prices, disputes of land ownership, and restrictions by the government increased the difficulty to acquire or buy land for expansion. The other factor which limits a drastic expansion in Saudi broiler meat production is continued chicken dying in the poultry farms mainly by the viral diseases for example Newcastle disease.

Kingdom's five year plan to increase self-sufficiency to 60 percent is described in the Policy section of this report. Broiler production in K.S.A is focus on all one's attention in about ten vertically-integrated companies which control about 80 percent of the broiler meat production in the country itself.

2. Production Costs

Production cost of boiler meat in Saudi Arabia is comparatively high due to controlling of temperature in the chicken houses of extreme hot geographic weather conditions have a high cost. The supply allowances on CGF(Corn Gluten Feed) and DDGS (Distiller's Dried Grains with Soluble) were reduced by 26 and 27 percent to \$99 and \$91 per MT, respectively. Local poultry producers report that the reduction in feed subsidies further increased their production costs and significantly reduced their ability to compete with lower priced imported products. The range of cost of production of local broilers is \$1.6 and \$1.87 per Kg, on the average of dressed weight, which are more than the retail price of few imported meat of broiler brands in the market of Saudi.

3. Disease Outbreaks in Poultry

Controlling poultry disease outbreaks is one of the most important challenges for this Saudi broiler industry. According to a study this has caused huge mortality rate. The diseases include Gumboro (IBD), Newcastle Disease (NCD), Avian Influenza (H9N2 subtype) and Infectious Bronchitis (IB). The Saudi poultry industry does not have enough measures and programs for prevention of these diseases.

4. Fluctuation in Demand

The poultry market of Saudi has a repetitive nature. There is a rise in demand particularly in the month of Ramadan, winter and in the season of Hajj, in particular in cities of Madina and Makkah when millions of tourists come to K.S.A to perform Umrah and Hajj rituals. However, consumptions decline in the summer months, due to millions of expatriate and Saudis workers leave the Kingdom for holidays. This is because of increase in demand of household working-couples, increasing demand in ready-to-cook poultry, and proceeding expansion in the food sector. The continuing growth of Supermarkets and Hypermarkets in the entire Kingdom had helped in rising the poultry in various varieties and thus raised up the demand for poultry meat overall.

5. Consumer's Preference

Locally produced fresh broiler chickens are preferred by Saudis. The local broiler meat sold chilled is more than 80 percent; mostly the poultry producers had switched the broiler meat production lines to chilled from frozen products, as it has more prof. Paying as much as 50% more for fresh or chilled domestic broiler meat over frozen imported broiler meat is never minded by the Saudi customers. Generally, local consumers prefer 900 to 1100 grm of birds. They require large broilers (1200 - 1400 grms) as being aged and not the tender meat. Restaurants and hotels like 900 - 1000 gms to serve whole, in the halves or in the quarters, they like to purchase a light weight bird in the least price.

6. Brazil the Supreme Broiler Meat Supplier to KSA

Another major challenge for Saudi Poultry industry is the export from Brazil. Following is the table showing the trend of export from Brazil.

7. Unfair Competition for Imported Broiler Meat

Cooperative Association of Saudi Arabia's Poultry Producers has blamed France and Brazil for dumping their chicken in Saudi markets in the current year. This incurred huge loss to local broiler meat producers. The associations said that, production cost of local producers is much higher than the low prices of imported chicken in the country. The association has suggested the government to look into the dumping of chicken at lower prices by exporters.

8. Government’s Policy

The targeted increased broiler meat production by Saudi government to meet 60 % of local consumption in the coming five years to meet the Kingdom’s strategic goals of food. The goal seems to be ambitious, to achieve this huge target the investments, biosecurity system and subsidies are required.

The recent list of animal’s feed suitable for import, subsidies includes feed ingredients to 31, such as soybean meal, yellow corn, dried grain, distillers with soluble, Corn Gluten Feed (CGF) and Sorghum. The subsidy import rates are calculated in accordance with the protein and energy levels of each feed’s ingredient. Poultry experts estimate that domestically produced broiler meat takes about \$0.50 per kg of subsidy by government on average.

DESCRIPTIVE STATISTICS FOR PROBLEMS ASSOCIATED WITH THE BUSINESS

1. Foreign Industries

Table-4.18: (a) Problems associated with foreign industries

Statistics		
N	Valid	198
	Missing	0
Mean		3.72
Std. Deviation		1.417
1/3 rd of Mean		1.240

Since, Standard Deviation (1.417) is more than 1/3rd of Mean (1.240), Mean is not a representative value. Hence, interpretation is based upon frequency distribution table.

From the frequency distribution table it can be seen that 7.6% agree that it is not a problem, 15.7% agree that it is a minor problem, and 25.3%, agree that it is a moderate problem, 51.5% agree that it is a serious problem. Hence majority of respondents agree that Career development is a serious problem for poultry industry in Saudi Arabia.

2. Seasonal Business

Table-4.20: (a) Problems related to Seasonal business

Statistics		
N	Valid	198
	Missing	0
Mean		3.64
Std. Deviation		0.883
1/3 rd of Mean		1.213

Since, Std. Deviation (0.883) is less than 1/3 rd of Mean (1.213). Hence, Mean is a representative value. It can be concluded that Seasonal business is a moderate problem for poultry industry in Saudi Arabia.

3. High raw material cost

Table-4.21: (a) High raw material cost

Statistics		
N	Valid	198
	Missing	0
Mean		2.67
Std. Deviation		0.966
1/3 rd of Mean		0.890

Since, Standard Deviation (0.966) is more than 1/3rd of Mean (0.890), Mean is not a representative value. Hence, interpretation is based upon frequency distribution table.

From the frequency distribution table it can be seen that 7.6% agree that it is not a problem, 46% agree that it is a minor problem, and 18.7%, agree that it is a moderate problem, 27.8% agree that it is a serious problem. Hence majority of respondents agree that High raw material cost is a serious problem for poultry industry in Saudi Arabia.

4. New Investments in the business

Table-4.22: (a) New Investments

Statistics		
N	Valid	198
	Missing	0
Mean		2.63
Std. Deviation		0.885
1/3 rd of Mean		0.877

Since, Standard Deviation (0.885) is more than 1/3rd of Mean (0.877), Mean is not a representative value. Hence, interpretation is based upon frequency distribution table.

From the frequency distribution table it can be seen that 8.6% agree that it is not a problem, 38.9% agree that it is a minor problem, and 33.8%, agree that it is a moderate problem, 18.7% agree that it is a minor problem. Hence majority of respondents agree that New Investments in the business is a serious problem for poultry industry in Saudi Arabia.

5. Working capital

Table-4.23: (a) Working capital

Statistics		
N	Valid	198
	Missing	0
Mean		2.38
Std. Deviation		1.323
1/3 rd of Mean		0.793

Since, Standard Deviation (1.323) is more than 1/3rd of Mean (0.793), Mean is not a representative value. Hence, interpretation is based upon frequency distribution table.

From the frequency distribution table it can be seen that 37.4% agree that it is n't a problem, 17.2% agree that it is a minor problem, and 22.7%, agree that it is a moderate problem, 15.2% agree that it is a problem and, 7.6% agree that it is a serious problem. Hence majority of respondents agree that Working capital is not a problem for poultry industry in KSA.

6. High Competition

Table-4.36: High Competition

Statistics		
N	Valid	198
	Missing	0
Mean		4.21
Std. Deviation		0.789
1/3 rd of Mean		1.403

Since, Std. Deviation (0.789) is less than 1/3 rd of Mean (1.403). Hence, Mean is a representative value. It can be concluded that High Competition is a problem for poultry industry in Saudi Arabia.

DESCRIPTIVE STATISTICS FOR PROBLEMS ASSOCIATED WITH THE PRODUCTION

1. Sourcing quality inputs

Table-4.37: (a) Sourcing quality inputs

Statistics		
N	Valid	198
	Missing	0
Mean		2.29
Std. Deviation		0.777
1/3 rd of Mean		0.763

Since, Standard Deviation (0.777) is more than 1/3rd of Mean (0.763), Mean is not a representative value. Hence, interpretation is based upon frequency distribution table.

From the frequency distribution table it can be seen that 12.1% agree that it is not a problem, 54% agree that it is a minor problem, 26.3% and, agree that it is a moderate problem, 7.6% agree that it is a problem. Hence majority of respondents agree that sourcing quality inputs is a minor problem for poultry industry in Saudi Arabia.

2. Mortality

Table-4.40: (a) Mortality

Statistics		
N	Valid	198
	Missing	0
Mean		2.33
Std. Deviation		1.298
1/3 rd of Mean		0.777

Since, Standard Deviation (1.298) is more than 1/3rd of Mean (0.777), Mean is not a representative value. Hence, interpretation is based upon frequency distribution table.

From the frequency distribution table it can be seen that 42.4% agree that it is not a problem, 12.1% agree that it is a minor problem, 15.2% and, 30.3% agree that it is a moderate problem. Hence majority of respondents agree that mortality by the farmers isn't a problem for the poultry industry in KSA.

3. Low Body Weight

Table-4.45: (a) Low Body Weight

Statistics		
N	Valid	198
	Missing	0
Mean		1.89
Std. Deviation		1.082
1/3 rd of Mean		0.630

Since, Standard Deviation (1.082) is more than 1/3rd of Mean (0.630), Mean is not a representative value. Hence, interpretation is based upon frequency distribution table.

From the frequency distribution table it can be seen that 48% agree that it isn't a problem, 30.8% agree that it is a minor problem, 5.1% agree that it is a moderate problem, 16.2% agree that it is a problem. Hence majority of respondents agree that low body weight is not a problem for poultry industry in Saudi Arabia.

DESCRIPTIVE STATISTICS FOR PROBLEMS ASSOCIATED WITH FINANCE AND GOVERNMENT POLICIES

1. Rent / Land (Capital Cost)

Table: 4.47 Rent / Land (Capital Cost)

Statistics		
N	Valid	198
	Missing	0
Mean		2.62
Std. Deviation		0.88
1/3 rd of Mean		0.88

Since, Std. Deviation (0.88) is less than 1/3 rd of Mean (0.88). Hence, Mean is a representative value. It can be concluded that Rent / Land (Capital Cost) is a minor problem for poultry industry in Saudi Arabia.

2. Labour and other cost

Table-4.48: (a) Labour and other cost

Statistics		
N	Valid	198
	Missing	0
Mean		2.66
Std. Deviation		1.073
1/3 rd of Mean		0.887

Since, Standard Deviation (1.073) is more than 1/3rd of Mean (0.887, Mean is not a representative value. Hence, interpretation is based upon frequency distribution table.

From the frequency distribution table it can be seen that 8.6% agree that it isn't a problem, 47% agree that it is a minor problem, 22.2% agree that it is a moderate problem, 14.6% agree that it is a problem and, 7.6% agree that it is a serious problem. Hence majority of respondents agree that labour and other cost is not a problem for poultry industry in Saudi Arabia.

3. Price Fluctuations

Table-4.51: Price Fluctuations

Statistics		
N	Valid	198
	Missing	0
Mean		3.51
Std. Deviation		1.1
1/3 rd of Mean		1.1

Since, Std. Deviation (1.1) is less than 1/3 rd of Mean (1.1). Hence, Mean is a representative value. It can be concluded that Price Fluctuations is a moderate problem for poultry industry in Saudi Arabia.

4. Subsidies

Table-4.53: (a) Subsidies

Statistics		
N	Valid	198
	Missing	0
Mean		3.01
Std. Deviation		1.135
1/3 rd of Mean		1.003

Since, Standard Deviation (1.135) is more than 1/3rd of Mean (1.003, Mean is not a representative value. Hence, interpretation is based upon frequency distribution table.

From the frequency distribution table it can be seen that 15.2% agree that it is not a problem, 18.2% agree that it is a minor problem, 17.2% agree that it is a moderate problem, 49.5% agree that it is a problem. Hence majority of respondents agree that subsidies is a problem for poultry industry in Saudi Arabia.

5. Govt. Policies

Table-4.54: Govt Policies

Statistics		
N	Valid	198
	Missing	0
Mean		3.28
Std. Deviation		1.003
1/3 rd of Mean		1.093

Since, Std. Deviation (1.003) is less than 1/3 rd of Mean (1.093). Hence, Mean is a representative value. It can be concluded that Govt. Policies is a moderate problem for poultry industry in Saudi Arabia.

DESCRIPTIVE STATISTICS FOR PROBLEMS ASSOCIATED WITH DISEASES

1. New cattle disease:

Table-4.55: (a) New cattle disease

Statistics		
N	Valid	198
	Missing	0
Mean		2.75
Std. Deviation		1.358
1/3 rd of Mean		0.917

Since, Standard Deviation (1.358) is more than 1/3rd of Mean (0.917), Mean is not a representative value. Hence, interpretation is based upon frequency distribution table.

From the frequency distribution table it can be seen that 19.2% agree that it is not a problem, 35.4% agree that it is a minor problem, 11.6% agree that it is a moderate problem, 19.2% agree that it is a problem and, 14.6% agree that it is a serious problem. Hence majority of respondents agree that new cattle disease is a minor problem for poultry industry in Saudi Arabia.

2. No vaccination

Table-4.57: (a) No vaccination

Statistics		
N	Valid	198
	Missing	0
Mean		2.86
Std. Deviation		1.354
1/3 rd of Mean		0.953

Since, Standard Deviation (1.354) is more than 1/3rd of Mean (0.953), Mean is not a representative value. Hence, interpretation is based upon frequency distribution table.

From the frequency distribution table it can be seen that 19.2% agree that it is not a problem, 23.2% agree that it is a minor problem, 27.8% agree that it is a moderate problem, 11.6% agree that it is a problem and, 18.2% agree that it is a serious problem. Hence majority of respondents agree that no vaccination is a moderate problem for poultry industry in Saudi Arabia.

DESCRIPTIVE STATISTICS FOR PROBLEMS ASSOCIATED WITH THE MACHINERY AND EQUIPMENT

1. Feeding Set/Feeder

Table-4.58: Feeding Set/Feeder

Statistics		
N	Valid	198
	Missing	0
Mean		1.77
Std. Deviation		0.435
1/3 rd of Mean		0.590

Since, Std. Deviation (0.435) is less than 1/3 rd of Mean (0.590). Hence, Mean is a representative value. It can be concluded that Feeding Set/Feeder is not a problem for poultry industry in Saudi Arabia.

2. Cleaning set (Flame Gun, etc.)

Table-4.59: (a) Cleaning set.

Statistics		
N	Valid	198
	Missing	0
Mean		1.8
Std. Deviation		0.712
1/3 rd of Mean		0.600

Since, Standard Deviation (1.712) is more than 1/3rd of Mean (0.600), Mean is not a representative value. Hence, interpretation is based upon frequency distribution table.

From the frequency distribution table it can be seen that 36.9% agree that it is not a problem, 47% agree that it is a minor problem, 15.7% agree that it is a moderate problem, 0.5% agree that it is a problem. Hence majority of respondents agree that cleaning set (flame gun etc.) is a minor problem for poultry industry in Saudi Arabia.

3. Brooders

Table-4.61: (a) Brooders

Statistics		
N	Valid	198
	Missing	0
Mean		2.42
Std. Deviation		0.885
1/3 rd of Mean		0.807

Since, Standard Deviation (0.885) is more than 1/3rd of Mean (0.807), Mean is not a representative value. Hence, interpretation is based upon frequency distribution table.

From the frequency distribution table it can be seen that 18.7% agree that it is not a problem, 28.8% agree that it is a minor problem, 44.4% agree that it is a moderate problem, 8.1% agree that it is a problem. Hence majority of respondents agree that brooders is a moderate problem for poultry industry in Saudi Arabia.

4. Heating System/Heaters

Table-4.66: (a) Heating System

Statistics		
N	Valid	198
	Missing	0
Mean		3.06
Std.		1.367
1/3 rd of		1.020

Since, Standard Deviation (1.367) is more than 1/3rd of Mean (1.020), Mean is not a representative value. Hence, interpretation is based upon frequency distribution table.

From the frequency distribution table it can be seen that 16.7% agree that it is not a problem, 20.7% agree that it is a minor problem, 22.7% agree that it is a moderate problem, 20.2% agree that it is a problem and, 19.7% agree that it is a moderate problem. Hence majority of respondents agree that heating system/heaters is a minor problem for poultry industry in Saudi Arabia.

FINDINGS

1. Seasonal business is a moderate problem for poultry industry in Saudi Arabia
2. High raw material cost is a serious problem for poultry industry in Saudi Arabia.
3. New Investments in the business is a serious problem for poultry industry in Saudi Arabia.
4. Working capital is not a problem for poultry industry in Saudi Arabia.
5. Government Policies is a minor problem for poultry industry in Saudi Arabia.
6. Productivity isn't a problem for the poultry industry in KSA.
7. Quality of input is a minor problem for poultry industry in Saudi Arabia.
8. Quality of output isn't a problem for the poultry industry in KSA.
9. Mortality by the farmers isn't a problem for the poultry industry in KSA.
10. Rent / Land (Capital Cost) is a minor problem for poultry industry in Saudi Arabia.
11. Labour and other cost is not a problem for poultry industry in Saudi Arabia.
12. Price Fluctuations is a moderate problem for poultry industry in Saudi Arabia.

13. New cattle disease is a minor problem for poultry industry in Saudi Arabia.
14. Feeding Set/Feeder is not a problem for poultry industry in Saudi Arabia.
15. Cleaning set (flame gun etc.) is a minor problem for poultry industry in Saudi Arabia.
16. Brooders is a moderate problem for poultry industry in Saudi Arabia.
17. Subsidies and incentives is a moderate prospect for poultry industry in Saudi Arabia.

SUGGESTIONS

Industries in Saudi Arabia should focus on the major problems to the poultry sector to make it profitable and number one among the competitors. Poultry Industries must focus more on the issues related to

- Career development which is a major problem for the industries to grow. Industries must open ways to overcome this issue for the development of the poultry sector.
- The second major issue for the development is the cost of raw material which is hindering the growth of the poultry sector in Saudi Arabia. Measures should be implemented to overcome this issue and the industries can focus more on profit margin over cost of raw material.
- Medicine storage is another challenge for the industries to focus on.
- Eating habits of the customers should be prioritized.
- It's been noticed in the recent times that Saudi Arabia is deporting thousands of expatriates from the country where, the expatriates constitute more than 80% of the work force in most of the GCC Countries countering failing in resulting a financial loss and reputational damage to several retailers and brands. It's a serious issue which gives a good opportunity to the other foreign industries to excel further be concentrated on.
- Expo 2020 is expected to play host to exhibitors from across 180 destination and at least 25 million visitors is a great opportunity to the Industries to follow on the suggestions listed and open the opportunities for seekers and to lead with the competitors.

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RELEVANCE OF ISLAMIC BANKING SYSTEM TO ADDRESS UNEMPLOYMENT ISSUE OF INDIA

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ABSTRACT

Unemployment is a severe economic issue in any economy. India too has the same problem. The unemployed persons in India averaged 30.60 million from 1971 until 2016, reaching an all-time high of 48.26 million in 2014. CMIE report mentioned that there are nearly 31 million unemployed Indians looking for jobs at present. It was noted that in the week ended on February 25, 2018, the unemployment rate increased to 6.1% as compared to 5 % in January. This 6.1% unemployment rate is the highest monthly rate in the past 15 months. In recent times, Islamic Banking and Finance (IBF) has evolved as an alternative to conventional banking system and proponents of it are of the opinion that it has the potential to solve many of the economic issues that the world economy is currently facing. In this context, an attempt is made in this research paper to test whether or not, the Islamic banking is able to address unemployment issue in the countries where it is operational. Further, it is also tested whether or not, the interest based banking system in India is effective in addressing unemployment issue. It is found in the paper that interest based banking is ineffective in India and Islamic banking is effective in IBF countries in addressing unemployment issue. Hence, it is concluded that Islamic banking is relevant to India in addressing unemployment issue. This paper applied Granger causality tests to test the cause and effect relationship between the variables.

Keywords: Islamic Banking, Unemployment, India, Relevance, Granger Causality Tests

INTRODUCTION

Islamic banking though has origin from the era of Prophet Mohammad (Peace Be Up on Him), evolved as a formal banking system since 1970s. In its modern journey of over 40 years, it has spread to over 75 countries worldwide about 40% of which are non-Muslim countries. Islamic Financial Services Industry Stability Report (2015) has reported that Islamic finance industry's assets are evidenced a double-digit CAGR of 17% between 2009 and 2013 with estimated value of USD 1.87 trillion as at 1st half 2014. Besides Arab countries, modern, secular and industrialized countries like Britain, Singapore, Japan and Hong Kong have already become hub for Islamic banking and finance. (H.Abdul Rakeeb, 2010) HSBC, Citi Bank etc. have started separate branches that offer Islamic financial products. (CA Ashutosh Verma, 2008)

Islamic banking system can be simply described as a banking system that adheres to the principles of Shariah i.e. the Islamic law. In other words, it can be viewed as a financial system which identifies itself with the spirit of Shariah as laid down by the holy Qur'an and Sunnah as regard to its objectives, principles, practices and operations. Islamic banking and finance is based on the following principles with respect to its operations. (H. Abdul Rakeeb, 2010)

- Prohibition of receipt and payment of interest (H. Abdul Rakeeb, 2010)
- Emphasis is on profit and loss sharing (H. Abdul Rakeeb, 2010)
- Prohibition of Qimar (gambling), Iktinaz (hoarding), Ihtikar (monopoly), Israf (extravagance), Fasad (corruption), Mujazafah (speculation), Ghish (deception), Tadlees (fraud), Kathib (lying) etc. (Dr. Abdelkader Chachi, 2013)
- Prohibition of contracts involving Gharar (excessive risk). (Dr. Abdelkader Chachi, 2013)
- Prohibition of financing socially detrimental projects that deal with Khamr (intoxicants), Khinzir (Pork), and unethical dealings such as prostitution etc (Dr. Abdelkader Chachi, 2013)
- Prohibition on selling what is not owned or possessed. (Dr. Abdelkader Chachi, 2013)
- Prohibition on selling fruits before they are ripe (Dr. Abdelkader Chachi, 2013)
- Prohibition on selling debts (Dr. Abdelkader Chachi, 2013)
- *Asset Backing Principle*: It is required that financial transactions should be unpinning by an identifiable and tangible underlying asset. (H. Abdul Rakeeb, 2010)
- The financial transactions must be accompanied by an underlying productive economic activity that generates legitimate wealth. (Dr. Zeti Akhtar Aziz, 2010)

- *Disclosure Principle:* All the parties are treated as partners in the business. Hence they must be adequately informed on all the financial dealings i.e. there will be full disclosure of information on all the aspects of the business to all the concerned parties. (H. Abdul Rakeeb, 2010)

EVOLUTION OF ISLAMIC BANKING IN INDIA

India has played a pioneering role in the development of Islamic finance and interest free credit societies. But, Islamic banks have not formally received the permission to function as banks in India. However, the individuals and groups in order to cater to the needs of Muslims in India, have started Islamic banks in the form of cooperative credit societies and Non-Banking Finance Corporations (NBFC), the prominent among them have been Bait-un-Nasr and Barkat Group of Bombay, Al-Ameen Group of Bangalore and Muslim Fund Group of Najibabad. However, historical evolution of Islamic banking in India is as follows. (Shariq Nisar, 2002)

- **In 1890s:** '*Anjuman Mowodul Ikhwan*' is the first Baitul Maal in the modern age founded in *Hyderabad, India*.
- **In 1923:** *Anjuman Imdad e- Bahmi – Qard Bila Sud'* established in 1923 in Hyderabad, India
- **During the period of Aasafia:** 12 such organizations had established, few of them continued till partition of the country in 1947.
- **In 1939:** Patni Co-operative Credit Society, Surat, India was established.
- **In 1940:** *Muslim Fund, Tanda Baoli, Rampur* was established, and closed down due to partition effect.
- **In 1961:** *Muslim Fund, Deoband, Uttar Pradesh, India* which is still working with public deposits over Rs. 90 millions. According to the Federation of Interest Free Organization (FIFO) there are more than 100 Muslim Funds in India. Of them, 30 Muslim Funds are the members of FIFO.
- **In 1966:** Toor Baitul Maal, Hyderabad, India was established.
- **In 1971:** Muslim Fund Najibabad (MFN) is the largest Muslim Fund in India with more than 40 branches all over India and around 2, 00,000 shareholders. It enjoys deposits of around Rs. 360 million. Muslim Fund Najibabad has also floated a subsidiary called Al-Najib Milli Mutual Benefits Ltd. in the year 1990.
- **In 1973:** *Bait-un-Nasr, Urban Co-Operative Credit Society (BUN)* is the largest Cooperative Credit Society in any of the metros of India with more than 1,55,050 shareholders and 20 branches with deposits around Rs. 125 millions and loan turnover of more than Rs. 365 million in the city of Mumbai alone
- **In 1983:** Barkat Group established an offshoot of Bait-un-Nasr, Bombay
- **In 1984:** All India Council of Muslim Economic Upliftment (AICMEU) was established.
- **In 1984:** Baitul Maal of Bombay was established.
- **In 1986:** Al-Ameen (Bangalore) was established.
- **In 1989:** Syed Shariyat and Al-Baraka Finance House Ltd. (Now Al-Barr) was established.
- **In 1990:** Baitul Islam was established.
- **In 1990:** Assalam Finance and Investment was established.
- **In 1994:** Barkat and Muslim Fund Al-Najib group joined together. This made their deposits to Rs. 550 million with 60 Branches all over India.
- **In 1996:** Barkat Investment Group along with some other Islamic financial institutions convinced India's premier business house, the Tata Group to launch a mutual fund scheme specially designed for Muslims in view of their inhibitions towards interest. The scheme named '**Tata Core Sector Equity Fund**' TCSEF succeeded in raising Rs. 230 million from the public. (Now it is called Tata IT Sector Fund)
- **In 2000:** The non-banking financial companies (NBFCs) crisis during late 1990s resulted in revocation of the licenses of many Islamic financial institutions and after the liquidation of Barkat Investment Group in May 2000, the Islamic financial activities, in India, have got big setback.
- **In 2008:** Dr. Raghu Ram Rajan Committee has given two major recommendations regarding interest free banking in India. Firstly, the committee has recommended that measures should be taken to permit the delivery of interest free finance on a larger scale, through the banking system, with the objective of inclusion

and growth through innovation. Secondly, the committee has also recommended that interest free banking is currently provided in a limited manner through non-banking financial companies and co-operatives.

- **In Kerala**, Islamic banking started on the base of Islamic non-banking financing company (Al Barakah Financial Service Ltd) in India with the partnership of state government department viz. **Kerala State Industrial Development Corporation (KSIDC)** after dismissal of petition filed by **Subramanian Swami** and **RV Babu** in High Court. Al Barakah is not operating as a bank to extend loans but making direct investments in infrastructure projects not liked with pork, alcohol and other non-halal products, after which profits would be shared in the form of dividends and not as interest.

BACKGROUND OF THE PAPER

Indian economy is one of the most happening economies of the world. With the consistent efforts of the successive governments, it is on its way of becoming an economic super power in the world. The modern Indian i.e. the 21st century Indian is living in surfeit of luxuries. He is bestowed with cars and aero planes to travel, air conditioned bungalows to reside in, KFC's burger to eat up, corporate hospitals to cure even cancers and so on. This is only one side of the coin. Though, it is 2000 plus years AD to us, there are certain sections in India, for which it is 2000 years BC. They are striving hard to get even a single bread piece to eat. Forget about the cars, they do not even have bicycles to travel, forget about AC bungalows, they do not even have proper huts to reside in, forget about the cancer, they die just on mosquito bites. Therefore, India's development is not including all the segments. There are many economic problems that India is currently facing. Growing number of farmers' suicides, alarming unemployment rates, fluctuating GDP growth rate, frightening inflation, etc. are a few to mention.

In particular, the unemployed persons in India averaged 30.60 million from 1971 until 2016, reaching an all-time high of 48.26 million in 2014. A very recent report of CMIE mentions that there are currently nearly 31 million unemployed Indians looking for jobs. It was noted that in the week ended on February 25, 2018, the unemployment rate increased to 6.1% as compared to 5 % in January. This 6.1% unemployment rate is the highest monthly rate in the past 15 months. (Sushma U N, 2018)

The economists and scholars like Dr. Raghu Ram Rajan, MS Swaminathan (The Father of Green Revolution in India), Prof. Vijay Shankar Vyas (Prime Minister's Economic Advisory Council Member), Justice Krishna Iyer (Supreme Court), MBN Rao (Indian Banks Association), D R Mehta (Former Chairman, SEBI) et al opining that Islamic Banking System (IBS) has the potential to solve the above mentioned economic issues of India. (H Abdur Rakeeb, 2010) Currently practiced interest based banking system of India has its own limitations in addressing unemployment issue. Whether or not, the interest free Islamic banking system is able to address unemployment issue in a better way in the countries where it is operational is the main research problem of this article. If it is successfully addressed, then Islamic banking is effective in those countries to address unemployment issue. At the same time, if the Indian banking system has fails to address the same issue, then Islamic Banking and Finance becomes relevant to India.

OBJECTIVES OF THE PAPER

This research is undertaken with the following objectives.

- To examine the relevance of Islamic banking system to address unemployment issue of India
- To recommend the policy makers appropriate ways to introduce Islamic banking in India, if it is proved to be relevant.

However, the first objective mentioned above is of abstract nature and hence difficult to test it in its current form. Hence, it is transformed into following secondary objectives.

- To ascertain whether there exists or not, any cause and effect relationship (causality) between Real Net Domestic Credit (RNDC) and Unemployment Rate (UNEMPR) in case of India.
- To ascertain whether there exists or not, any cause and effect relationship (causality) between Real Net Domestic Credit (RNDC) and Unemployment Rate (UNEMPR) in case of sample IBF countries.
- To ascertain whether or not, Islamic banking is relevant to India in bringing cause and effect relationship (causality) between RNDC and UNEMPR.

RESEARCH HYPOTHESES

The above objectives are transformed into the following testable hypotheses.

- **H₀₁**: There is no (granger) causality between Real Net Domestic Credit (RNDC) and Unemployment Rate (UNEMPR) in case of India.

- **H₀₂:** There is no (granger) causality between Real Net Domestic Credit (RNDC) and Unemployment Rate (UNEMPR) in case of sample IBF countries.

RESEARCH METHODOLOGY

- **Data Variables:** In order to test the above two hypotheses, data related to Real Net Domestic Credit (RNDC) and Unemployment Rate (UNEMPR) are collected for both India and sample Islamic Banking and Finance countries.
- **Data Sources:** World Bank has collected and compiled the data related to all nations from officially recognized international sources and termed the data set as 'World Development Indicators' (WDI). This source is used to collect the data related to Net Domestic Credit (NDC) in Local Currency Units (LCU), unemployment rate (%), and GDP deflators to convert NDC into RNDC.
- **Sample Size:** Out of the 75 countries in which Islamic banking is operational, only 3 countries claim that they are putting efforts to completely eliminate interest from their economy and comply with IBF principles. They are Pakistan, Iran and Sudan. Hence, in this study, only these 3 countries are included in the sample. Thus, the sample size is 3.
- **Sampling Method:** Judgment sampling.
- **Data Analysis Methods:** The Karl Pearson's correlation coefficient is used to know the direction and degree of association between the variables. In order to test the causality, either of Error Correction Model (ECM) or Unrestricted VAR model or Toda and Yamamoto model is used. Before applying them, Augmented Dickey Fuller (ADF) test, Phillips - Perron (PP) test, and Kwiatkowski - Phillips - Schmidt - Shin (KPSS) test are applied to know the stationarity of the series and then, Johansen co-integration test to assess the long run equilibrium between the variables.

DATA ANALYSIS AND INTERPRETATION

Case – 1: Testing the Causality between RNDC and UNEMPR in case of India

The calculated value of Karl Pearson's correlation coefficient (r) between RNDC and UNEMPR is found to be -0.52 . It means that both these series are negatively (inversely) correlated with each other, meaning that increase in RNDC is associated with decrease in UNEMPR and vice versa. But, correlation need not be causation. In order to know, whether there is any cause and effect relationship between these variables (series), Granger causality test is performed which has three steps.

- **The first step** is to check for stationarity / unit root / level of integration of these variables.
- **In the second step**, if the variables are of same level of integration, Johansen co-integration test is performed in order to trace out the long run equilibrium between these variables.
- **In the third step**, Granger causality test is performed to know the cause and effect relationship between the variables. If co-integration is found at second step, Error Correction Model (ECM) is used at third step to check the granger causality. If no co-integration is found at second step, then, either Unrestricted Vector Auto Regression (U – VAR) Model or Granger Causality test is performed at third step. Toda and Yamamoto Test is one more test which is used to check the causality when the variables are of different orders i.e. $I(0)$, $I(1)$ and $I(2)$. The results of various tests are given in the following section.

Step – 1: Testing for Stationarity of RNDC and UNEMPR Series: ADF, PP and KPSS tests are applied to know the level of stationarity of both the series. The results indicated that RNDC is of order $I(2)$ and UNEMPR is of order $I(1)$. As the variables are of different order; Johansen co-integration test can't be applied. Hence, Toda and Yamamoto test can be directly applied to test the causality.

Step – 2: Toda and Yamamoto Model of Causality: Toda and Yamamoto model has two steps. The first step involves finding d_{\max} i.e. maximum order of integration among the variables in the model and optimal lag length (m). The maximum order is 2 for this model as highest order is $I(2)$ for RNDC series. To apply Toda and Yamamoto model, the optimal lag must be greater than d_{\max} . The second step is to apply VAR Granger Causality / Block Exogeneity Wald test to trace out the causality.

Step – 2.1: Determination of Optimal Lag: Different lag length criteria are selected to find out the optimal lag. When the lag length criteria selected is 6, the optimal lag of the model is 3 as per FPE and SIC criteria.

Step – 2.2: The VAR Granger Causality / Block Exogeneity Wald Test: This test is applied to know the causality. In this test, model equation is estimated with 3 optimal lags (obtained in step 2.1) plus another 2 extra lags of d_{\max} . The results are given below.

Table-1: VAR Granger Causality / BEW Test for India (RNDC and UNEMPR)

<i>Dependent Variable: UNEMPR</i>				<i>Dependent Variable: RNDC</i>			
Excluded	χ^2	dof	Prob.	Excluded	χ^2	dof	Prob.
RNDC	3.79	3	0.28	UNEMPR	0.86	3	0.83
All	3.79	3	0.28	All	0.86	3	0.83

The result of the test shows that the probability of RNDC is 0.28 which is greater than $\alpha = 0.05$; hence, it can be inferred that RNDC doesn't granger causes UNEMPR. Similarly, the probability of UNEMPR is 0.83 which is greater than $\alpha = 0.05$; hence, it can be inferred that UNEMPR doesn't granger cause RNDC. Thus, the test results evidenced that there is no causality between RNDC and UNEMPR in any direction in case of India.

Case – 2: Testing the Causality between RNDC and UNEMPR in case of Pakistan

The calculated value of Karl Pearson's correlation coefficient (r) between RNDC and UNEMPR is found to be – 0.59. It means that both these series are negatively (inversely) correlated with each other, meaning that increase in RNDC is associated with decrease in UNEMPR and vice versa. But, correlation need not be causation. Hence, Granger causality test is performed in the same manner as applied in the previous section. However, selection of a model to test the causality depends on the level of integration of the series, and the existence or non-existence of co-integration between these series. The results are as follows.

Step – 1: Testing for Stationarity of RNDC and UNEMPR Series: ADF, PP and KPSS tests are applied to know the level of stationarity of both the series. The results indicated both the series are integrated at I(1) i.e. they become stationary after first difference.

Step – 2: Testing for Co-integration of RNDC and UNEMPR Series: As both the series are of order I(1), Johansen co-integration test is applied after determining the optimal lag. It is found from the test that the optimal lag is 5. The results of Johansen co-integration test for an optimal lag of 5 indicate that there is no co-integration between the variables.

Table-2: U – Co-integration Rank Test (Trace) for Pakistan (RNDC and UNEMPR)

Hypothesized Number of Co-integrating Equations	Eigen Value	Trace Statistic	Critical Value @ 5%	Probability
None	0.2999	9.06	15.49	0.35
At Most 1	0.1137	2.29	3.84	0.12

Conclusion: Trace Test indicates **no co-integration @ 5% level**

Table-3: U – Co-integration Rank Test (MEV) for Pakistan (RNDC and UNEMPR)

Hypothesized Number of Co-integrating Equations	Eigen Value	Max Eigen (ME) Statistic	Critical Value @ 5%	Probability
None	0.2999	6.77	14.26	0.51
At Most 1	0.1137	2.29	3.84	0.12

Conclusion: Max Eigen Values Test indicates **no co-integration @ 5% level**

Step – 3: Testing for Causality: U–VAR model is used to test the causality as there is no co-integration. The results of U – VAR model for an optimal lag of 5 are given below.

Table-4: VAR Granger Causality / BEW Test for Pakistan (RNDC and UNEMPR)

<i>Dependent Variable: D(UNEMPR)</i>				<i>Dependent Variable: D(RNDC)</i>			
Excluded	χ^2	dof	Prob.	Excluded	χ^2	dof	Prob.
D(RNDC)	13.70	5	0.02	D(UNEMPR)	4.93	5	0.42
All	13.70	5	0.02	All	4.93	5	0.42

The result of the test shows that the probability of D(RNDC) is 0.02 which is lesser than $\alpha = 0.05$; hence, it can be inferred that D(RNDC) granger causes D(UNEMPR). But, the probability of D(UNEMPR) is 0.42 which is greater than $\alpha = 0.05$; hence, it can be inferred that D(UNEMPR) doesn't granger cause D(RNDC). Thus, the test results evidenced that there exists forward causality from RNDC to UNEMPR, but there exists no backward causality from UNEMPR to RNDC in case of Pakistan.

Case – 3: Testing the Causality between RNDC and UNEMPR in case of Iran

Surprisingly, the calculated value of Karl Pearson's correlation coefficient (r) between RNDC and UNEMPR is found to be + 0.17. It means that both these series are positively (directly) correlated with each other, meaning that increase in RNDC is associated with increase in UNEMPR and vice versa. But, correlation need not be causation. Hence, Granger causality test is performed. The results of the causality test are given below.

Step – 1: Testing for Stationarity of RNDC and UNEMPR Series: ADF, PP and KPSS tests are applied to know the level of stationarity of both the series. The results indicated that both the series are integrated at I(1).

Step – 2: Testing for Co-integration of RNDC and UNEMPR Series: As both the series are of order I (1), Johansen co-integration test is applied after determining the optimal lag. It is found from the test that the optimal lag of the model is 1. The results of Johansen co-integration test for an optimal lag of 1 evidenced no co-integration between the variables as shown below.

Table-5: U – Co-integration Rank Test (Trace) for Iran (RNDC and UNEMPR)

Hypothesized Number of Co-integrating Equations	Eigen Value	Trace Statistic	Critical Value @ 5%	Probability
None	0.2333	7.37	15.49	0.53
At Most 1	0.0532	1.25	3.84	0.26
<i>Conclusion:</i> Trace Test indicates no co-integration @ 5% level				

Table-6: U – Co-integration Rank Test (MEV) for Iran (RNDC and UNEMPR)

Hypothesized Number of Co-integrating Equations	Eigen Value	Max Eigen Statistic	Critical Value @ 5%	Probability
None	0.2333	6.11	14.26	0.59
At Most 1	0.0532	1.25	3.84	0.26
<i>Conclusion:</i> Max Eigen Values Test indicates no co-integration @ 5% level				

Step – 3: Testing for Causality: U–VAR model is used to test the causality as there is no co-integration. The results of U – VAR model for an optimal lag of 1 are given below.

Table-7: VAR Granger Causality / BEW Test for Iran (RNDC and UNEMPR)

<i>Dependent Variable: D(UNEMPR)</i>				<i>Dependent Variable: D(RNDC)</i>			
Excluded	χ^2	dof	Prob.	Excluded	χ^2	dof	Prob.
D(RNDC)	1.54	1	0.21	D(UNEMPR)	0.24	1	0.61
All	1.54	1	0.21	All	0.24	1	0.61

The result of the test shows that the probability of D(RNDC) is 0.21 which is greater than $\alpha = 0.05$; hence, it can be inferred that D(RNDC) doesn't granger cause D(UNEMPR). Similarly, the probability of D(UNEMPR) is 0.61 which is greater than $\alpha = 0.05$; hence, it can be inferred that D(UNEMPR) doesn't granger cause D(RNDC). Thus, the test results evidenced that there is no causality between RNDC and UNEMPR in any direction in case of Iran.

Case – 4: Testing the Causality between RNDC and UNEMPR in case of Sudan

The calculated value of Karl Pearson's correlation coefficient (r) between RNDC and UNEMPR in case of Sudan is found to be – 0.47. It means that both these series are negatively (inversely) correlated with each other, meaning that increase in RNDC is associated with decrease in UNEMPR and vice versa. But, correlation need not be causation. Hence, Granger causality test is performed. The results of the causality test are given below.

Step – 1: Testing for Stationarity of RNDC and UNEMPR Series: ADF, PP and KPSS tests are applied to know the level of stationarity of both the series. The results indicated that both the series are integrated at I (1) i.e. they become stationary after first difference.

Step – 2: Testing for Co-integration of RNDC and UNEMPR Series: Johansen co-integration test is applied after determining the optimal lag. It is found from the test that the optimal lag of the model is 4. The results of Johansen co-integration test for an optimal lag of 4 evidenced no co-integration between RNDC and UNEMPR series of Sudan.

Step – 3: Testing for Causality: U–VAR model is used to test the causality as there is no co-integration. The results of U – VAR model for an optimal lag of 4 are given below.

Table-8: VAR Granger Causality / BEW Test for Sudan (RNDC and UNEMPR)

<i>Dependent Variable: D(UNEMPR)</i>				<i>Dependent Variable: D(RNDC)</i>			
Excluded	χ^2	dof	Prob.	Excluded	χ^2	dof	Prob.
D(RNDC)	16.66	4	0.0022	D(UNEMPR)	82.29	4	0.0000
All	16.66	4	0.0022	All	82.29	4	0.0000

The result of the test shows that the probability of D(RNDC) is 0.0022 which is lesser than $\alpha = 0.05$; hence, it can be inferred that D(RNDC) granger causes D(UNEMPR). Similarly, the probability of D(UNEMPR) is

0.0000 which is lesser than $\alpha = 0.05$; hence, it can be inferred that D(UNEMPR) granger causes D(RNDC). Thus, the test results evidenced that there is bidirectional causality between RNDC and UNEMPR in case of Sudan.

SUMMARY OF RESEARCH FINDINGS

The following table presents the major findings of the study after analyzing the data related to RNDC and UNEMPR series of four countries viz. India, Pakistan, Iran and Sudan.

Table-9: Summary of Research Findings for Sample Countries (RNDC and UNEMPR)

Country	Series	Correlation Coefficient	Co – Integration	Causality from	
				RNDC to UNEMPR	UNEMPR to RNDC
India	RNDC and UNEMPR	- 0.52	Not Applicable*	Doesn't exist	Doesn't exist
Pakistan	RNDC and UNEMPR	- 0.59	Doesn't exist	Exists	Doesn't exist
Iran	RNDC and UNEMPR	+ 0.17	Doesn't exist	Doesn't exist	Doesn't exist
Sudan	RNDC and UNEMPR	- 0.47	Doesn't exist	Exists	Exists

(*co-integration can't be applied because the variables are of different orders)

1. The values of Karl Pearson's correlation coefficient between RNDC and UNEMPR for India, Pakistan, Iran and Sudan are - 0.52, - 0.59, + 0.17 and - 0.47 respectively. It is found that India, Pakistan and Sudan have negative correlation which means that increase in RNDC is correlated with decrease in UNEMPR. The study found that Pakistan is more effective in this regard when compared to India and Sudan. However, surprisingly, Iran has positive correlation which means that increase in RNDC is correlated with increase in UNEMPR. Even so, existence of correlation between two variables need not be due to causation. Hence, to have better idea about their relationship co-integration test is performed.
2. The co-integration test which is performed to trace out the long run equilibrium between RNDC and UNEMPR series has found no long run equilibrium in case of Pakistan, Iran and Sudan. However, this test is not applied to Indian data as the series are of different orders. Hence, no evidence is found at this stage to identify the long run equilibrium between RNDC and UNEMPR in case of any country under the study. But, it doesn't mean that existence of such equilibrium at later stages of analysis is completely ruined. Thus, there may or may not exist such equilibrium at later stages. To test it, further analysis is done with Granger causality tests.
3. Unrestricted Vector Auto Regression (U – VAR) model or Toda and Yamamoto Model which are used at the third and final stage to assess the cause and effect relationship between the variables failed to identify any significant cause and effect relationship from RNDC to UNEMPR in case of India and Iran. However, U – VAR model effectively identified significant cause and effect relationship from RNDC to UNEMPR in case of Pakistan and Sudan. Two out of the three sample IBF countries in the study i.e. Pakistan and Sudan have causality but one country i.e. Iran has no causality from RNDC to UNEMPR. It is acceptable as its $r = + 0.17$, which means that increase in RNDC is correlated with increase in UNEMPR, which is against the established economic principles. The proof of non-causality in case of Iran provides evidence that RNDC is not a cause to UNEMPR in Iran. There are some factors other than RNDC which are contributing to UNEMPR in case of Iran.
4. With regard to reverse causality from UNEMPR to RNDC, the study failed to identify any significant cause and effect relationship in case of India, Pakistan and Iran whereas Sudan has it.
5. From the above findings, it can be concluded that
 - There is no forward causality running from RNDC to UNEMPR in case of India.
 - There is a forward causality running from RNDC to UNEMPR in case of Pakistan.
 - There is no forward causality running from RNDC to UNEMPR in case of Iran.
 - There is a forward causality running from RNDC to UNEMPR in case of Sudan
 - There is no reverse causality running from UNEMPR to RNDC in case of India.
 - There is no reverse causality running from UNEMPR to RNDC in case of Pakistan.

- There is no reverse causality running from UNEMPR to RNDC in case of Iran.
- There is a reverse causality running from UNEMPR to RNDC in case of Sudan.

RESULTS OF HYPOTHESES TESTED

The acceptance and rejection position of hypotheses after testing them by using appropriate econometric models are given below.

- The hypothesis (H_{01}) which is framed as “*there is no (granger) causality between Real Net Domestic Credit (RNDC) and Unemployment Rate (UNEMPR) in case of India*” is accepted. It means that RNDC is not a cause to decrease UNEMPR in case of India.
- The hypothesis (H_{02}) which is framed as “*there is no (granger) causality between Real Net Domestic Credit (RNDC) and Unemployment Rate (UNEMPR) in case of sample IBF countries*” is rejected for 2 (i.e. Pakistan and Sudan) out of 3 sample IBF countries. It means that RNDC is causing UNEMPR to decrease in 2 out of 3 sample IBF countries. In case of the third country i.e. Iran, since there is positive correlation coefficient i.e. + 0.17, acceptance of null hypothesis is desirable because such acceptance can be interpreted as RNDC is not a cause to increase UNMEPR in case of Iran.
- From the above two findings, it is proved that interest based banking (RNDC) in India is ineffective in decreasing the Unemployment rate (UNEMPR) whereas interest free Islamic banking (RNDC) in sample IBF countries is effective in decreasing the UNEMPR. Hence, it can be concluded that Islamic banking is relevant to India in addressing unemployment issue.

POLICY IMPLICATIONS

In light of the above findings, this paper makes the following recommendations.

1. It is recommended that the policy makers may consider the option of promoting MSMEs in India to create employment in a large scale since MSMEs make up over 95% of all firms and account for approximately 60%–70% of total employment in business world.
2. While promoting MSMEs, it is recommended that the government may consider the option of adapting certain Islamic banking and finance products like Mudarabah (profit sharing contract) and Musharakah (profit and loss sharing / partnership) contracts for better results to that of conventional banking system. In conventional banking system, banks simply advance loans on interest to firms and become free from business risks and the entrepreneur is exposed to all risks. In contrast to it, in Mudarabah contract where one partner (bank) provides money to another partner (entrepreneur) for investing in a commercial enterprise and undertake work and management on behalf of him (bank). In this process, if the profits are realized, they are shared in an agreed proportion whereas losses if any are completely borne by bank. This system has the ability to encourage entrepreneurship in India thereby reduce unemployment. Similar is the case with Musharaka contract where bank becomes an active partner (or passive partner, if it wishes) in the business and helps the other partner in all the spheres of business management. This model definitely encourages an individual to become entrepreneur. However, there are certain issues in implementing these contracts not only in India but also in the countries where IBF is operational. They are;
 - a) In a society where corruption exists, an entrepreneur may show to the bank that the business has incurred the losses, though it has earned profits. In such a case, banks lose both profit and principal. However, this is not expected because such an act is against his own interest as no bank lends him money in the future after seeing his track record of losses in the past. In order to overcome the problem of showing lesser profits by the entrepreneur, *it is recommended* that the government in consultation with RBI may implement a well designed auditing policy. In framing such standards, it may consider the practices of the countries in which IBF is operational. *Another recommendation* is that a dishonest entrepreneur may not be sanctioned loans by all banks of the country for certain period of time. This system makes him to be transparent.
 - b) One more problem is that when a bank becomes partner, business secrets are known to it and through it they are known to competitors. In order to overcome this issue, *it is recommended* that a condition is put in the agreement that bank should not interfere in management affairs like Mudarabah contract.
 - c) The banks and the firms need to disclose their profits transparently under IBF system, actual profits earned by banks and firms are known to tax authorities. As a result, the firms which were evading the taxes earlier have to pay now more taxes. Hence, IBF is need not preferred by most of the firms and banks. In order to overcome this problem, *it is recommended* that the government may levy reasonable taxes or reduce tax rates so that the firms may pay taxes honestly.

- d) The core business of the banks under conventional system is to advance the loans and earn interest. Its scope doesn't include buying and selling of goods. But, under IBF system, the banks have to deal with goods like a trader. Hence, it is criticized that IBF distracts the banks off track from their core operations which make them inefficient. This is a wrong claim. Even, conventional banks also perform a lot of other activities which do not belong to their core business. Merchant banking divisions of conventional banks perform more than just lending. They deal with equity and equity related finance, raise funds from money and capital markets, take risk by involving in management, help in project and corporate counseling etc. Hence, *it is recommended* that conventional banks also can deal with goods by establishing the separate windows in conformity with IBF principles which make them to earn additional profits.
3. Mere promotion of MSMEs through IBF is not enough to reduce the unemployment. *It is recommended* that the government may design and include a well structured entrepreneurship course as a part of their curriculum so that the graduates right from the time of childhood may dream to become entrepreneurs and provide employment to others rather than seeking employment from others. The syllabus of entrepreneurship course up to SSC and plus two may highlight the benefits of becoming entrepreneurs and the stories and case studies of successful MSME runners. At graduation and higher level, the focus of the syllabus may be on marketing and strategic aspects of running the MSME businesses. This approach not only reduces unemployment but also brings sustainability in the generated employment.
4. There are four major acts by which banks in India are governed. They are (i) The Negotiable Instruments Act, 1881 (ii) Reserve Bank of India Act, 1934 (iii) The Banking Regulation Act, 1949, and (iv) The Co-operative Societies Act, 1961. Islamic banks, though meet most of the sections, fail to meet certain sections. Hence, they can't get license to operate in India. It is worth to mention here the statement of D. Subba Rao, former RBI governor, "*We got to see that Islamic banking which does not allow charging interest or taking of interest is inconsistent with our existing laws. All that I am saying is Islamic banking is not consistent with current banking laws*". The sections which are against Islamic banking are; (i) Islamic banks operate on profit and loss sharing principle but the section 5 (b) and 5 (c) of the Banking Regulation Act, 1949 prohibit the banks to invest on profit and loss sharing basis. (ii) Section 8 of the Banking Regulation Act, 1949 mentions "No banking company shall directly or indirectly deal in buying or selling or bartering of goods", but Islamic banks have to deal with goods in Salam, Murabaha etc contracts. (iii) Islamic banks use Ijarah contract for home finance in which they own an immovable property. But, the section 9 of the Banking Regulations Act, 1949 prohibits banks to use any sort of immovable property apart from private use, and (iii) Islamic banks do not receive or pay interest. But, the section 21 of the Banking Regulations Act, 1949 requires payment of interest. In this regard, the following recommendations are made.
- a) It is *recommended* that the government of India may amend these sections to accommodate IBF in Indian Banking sector which benefits India to attract surplus from Gulf Cooperation Council countries just like what the modern developed countries like UK, Japan, Singapore, Australia and Hong Kong have done. Though, India is more attractive to make investment than these countries, GCC business houses are left with no option, but to invest in the countries which have amended their laws. India is definitely losing a very big bet due to its indecisiveness. It is interesting to note here that Indian banks like ICICI and Kotak have Shariah compliant windows in their Gulf operations. The major five Indian companies viz. Reliance Industries, Infosys Technologies, Wipro, Tata Motors and Satyam Computer Services are indexed in Standard & Poor's BRIC Shariah Index.
- b) The word Islam or Islamic might be abhorred by certain sections in the society. Hence, it is *recommended* that not to call it as Islamic banking. Name it as interest free banking or ethical banking or alternative banking or participatory banking or something else. Gulf houses don't look for the title, they are concerned about whether the system complies with Shariah rules or not.
- c) In addition to banking, financial system of India also comprises of Non-Banking Financial Companies (NBFCs), Mutual Funds, Insurance Companies and Developmental Institutions. Under these sections, Islamic banks can operate without much to change in the sections of the laws. However, NBFCs seem to be the best available option for those Indian banks or individuals who want to start Islamic banks because of easier entry norms, lower capital requirements, lower regulation and flexibility in registration and functioning. Hence, *it is recommended* that Islamic banks can enter India through NBFCs mode just like what the Kerala State Finance Corporation has done.
- d) It is *recommended* that the government may allow public sector banks to come out with a scheme under which instead of paying interest on deposits, they may convince the depositors to share profits earned out

of actual investments in financing infrastructural projects and other core business activities. It is similar to investment on shares in stock exchange.

CONCLUSION

In this research paper an attempt is made to know whether Islamic banking is relevant to India or not in addressing the unemployment issue. To test it, the data related to India (which operate on interest based banking) and three countries viz. Pakistan, Iran and Sudan (which operate on Islamic Banking and Finance (IBF) principles) are collected in terms of RNDC and UNEMPR. Granger causality tests are applied to test the cause and effect relationship between these variables for all the countries in the study. It is proved that interest based banking (RNDC) in India is ineffective in decreasing the Unemployment rate (UNEMPR) whereas interest free Islamic banking (RNDC) in sample IBF countries is effective in decreasing the UNEMPR. Hence, it can be concluded that Islamic banking is relevant to India in addressing unemployment issue. In light of these findings, it is recommended that government of India may consider the option of introducing Islamic banking in India with a different title like participatory banking etc. It may make necessary adjustments in banking laws to accommodate Islamic banking in India. Initially, the products which are similar to conventional banking products may be introduced. Later on based on its performance, the government may go for further expansion.

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AN OVERVIEW ON THE GROWTH OF KANCHIPURAM SILK INDUSTRY

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ABSTRACT

Kanchipuram silk sarees are the pride of south India from times immemorial. South Indian marriages are incomplete without a kanchipuram saree for the bride. Kanchipuram sarees are also called as kanjivaram and kanchi sarees. Pure kanchi sarees are produced only in Kanchipuram. Kanchipuram has a reputation that dates back to few centuries as a silk weaving centre. Government of Tamilnadu has given Geographical Identification for these sarees, which has given the global significance for these products. Therefore Kanchipuram is rightly called as 'SILK PARADISE OF SOUTH INDIA'.

People from length and breadth of the country come to Kanchipuram to purchase pure kanchi sarees. The climatic condition is the boon to this place to produce these sarees. This paper throws light on the history of kanchipuram sarees, its growth, modernization, modification, competition, sustainability, challenges and issues faced by this industry.

Keywords: Kanchipuram, Sarees, Tradition, Growth, Weaving, Industry, Silk, Jari.

INTRODUCTION

Silk is a symbol of luxury and class where no other fabric can match it in glow and elegance. The touch of silk reminds the very thread of history, a shimmering fabric of unparalleled grandeur.

India has a glorious silk tradition of its own, which no other country in the world can share. Tamilnadu occupies fourth position in silk production in the country and silk weaving is a long standing tradition here. Kanchipuram is world renowned for the gorgeous handwoven silk sarees of myriad rich colours, famed for their luster, finishing and their matchless beauty.

Kanchipuram is a town which has been established and flourished during the reign of Krishnadevaraya. It is one of the India's seven sacred cities which was the historical capital of the Pallavas and Cholas. It is also known as 'SILK CITY' as the main profession of the people living in and around the city is, weaving silk sarees. The silk weavers settled here for more than 400 years, have given it an inevitable reputation as the best silk sarees in the country. 75% of population in the city are dependent on the silk saree weaving either directly or indirectly.

In those days weaving silk clothes and wearing it was a sign of custom and tradition, which is continued even today. The people who migrated from Andhra Pradesh, settled in Kanchipuram and started their hereditary profession, who were famously called as Devangas and Saligars, who recognised themselves as descendants of sage Markanda, the master weaver for gods.

Kanchipuram is called as temple city which is known for its rich heritage and weaving industry. The sarees wove in this town famously came to be known as Kanchipuram sarees, which is called as "Queen of all sarees" in India and all over the world. It is an extraordinary type of saree with the rich and traditional look. It is also expensive, because of its superior manufacturing quality and glow.

LITERATURE REVIEW

Ramanathan (2014) Consumer Patronization Through Effective Category Management in Silk Saree Retailing at Kanchipuram Town, has opined that Kanchipuram silks have built a brand value and attract customers from all over the world.

Kalaiyarasi (2014) An empirical study of the preferences and buying behavior of silk Sarees among women consumers in vellore town has stated that, Kanchipuram silk sarees are very desirable and gracious among silk sarees which are preferred by women, because of their shining borders, contrast colours, uniqueness, and finishing.

Babu Rao (2004) Development of X-ray fluorescence-based methodology for quality control of zari used in silk saris has opined that, Kanchipuram sarees maintain a very high market share and distinguished position in the minds of customers because of its bright colours, borders and jari which is made up of gold coated silver thread.

Aartikawlra (2013) Kanchipuram Sari as Heritage: Artisanship and the Politics of Culture and Technology. The author has determined that Geographical Indication (GI) given to Kanchipuram sarees has created the awareness of the brand among the customers to identify and differentiate it from other type of sarees. The author has mentioned that Kanchipuram sarees are also used in creating suitable dance costumes.

B. Bowonder, S. V. Sailesh (2005) ICT for the renewal of a Traditional Industry: A. Case Study of Kancheepuram Silk Saree. The author has stated that adoption of information and communication technology (ICT) in Kanchipuram silk industry has opened the new opportunities for weavers to develop innovative computer-aided designs in weaving and attracting customers from all over the world.

Kumarguru Kasinathan (2001) Sustainable Synergy of Traditional and CAD Based Silk Saree Designing/Production. The author has stated that adoption of new computerised jacquard technology called CAD/CAM, in the production process of Kanchipuram sarees has increased the production and also demand in the market. The author has also explained the process work flow of Kanchipuram saree industry South India heritage.

Jyoti Bhasin. (2009). South India heritage. Kanchipuram Sarees of Tamil Nadu. The author in this study has determined that, the rich weave and feel of Kancheepuram Sarees hold women in their wave for the past 150 years. These sarees with a tremendous instigation of the craftsmen, represent the heritage of South India.

PRODUCTION PROCESS

China is the largest producer of silk in the world, but the silk used for world famous Kanchi sarees is mulberry silk which is grown in Karnataka and Tamilnadu. Jari (a gold coated silver thread) used for borders and pallu is from Gujarat, which gives metallic look and brightness to a saree. It consists of 57% of silver and 0.6% of gold.

Weaving a Kanchipuram saree is very different from any other saree. The skill of weaving kanchipuram saree has flown from generation to generation, with great care and elegance. It is an art that was inherited, taught by the elders and honed by practice, creativity and vision. Weaving a kanchipuram saree is tedious but has a stamp of splendour and durability.

A kanchipuram saree is distinguished as body portion, border portion, and pallu portion. It is called as “Korvai”, where body and pallu are woven separately and then interlinked together. It is interlinked in such a way that the joining could not be identified from the front. It is a symbol of identification and differentiation of Kanchi saree from other sarees. The width of typical kanchipuram saree is much broader by 3 inches, where the standard silk saree is 45 inches. Using a double warp for weaving is its speciality, where each thread is actually made up of three single threads twisted together which makes it much stronger and expensive from its counterparts from Banaras or Dharmavaram. Initially, these sarees were woven in 9 yards, but today 6 yards saree is the trend followed every where.

Contrast jari border is a distinguishing feature of this saree. It is a silk thread which is twisted with the silver thread over it and dipped into pure gold to make jari border. However now adays tested jari is used, where the thin copper wire is electroplated with silver.

The major reason for the consistency in the quality of the sarees is the dyeing process followed from hundreds of years. River Palar which flows across Kanchipuram is a boon to this city. The stiffness of the saree is only because, it is dyed in the Palar river water. In order to bring thick consistency in the saree, silk yarn is dipped in rice water and dried in the hot sun.

UNIQUENESS OF KANCHIPURAM SAREES

A special technique is used to weave these sarees, where three single threads of mulberry silk yarn is twisted with jari to produce a saree which is not found in any other saree. Its excellency lies in formation of motifs, (design or pattern) by trained weavers. These motif designs are taken from sculptures of temples, which has brought the name to the city as “Temple City”. Some of the common motif designs are peacock, leaves, mango, rudrakshi, stripes, elephants and so on. We can also see motifs from the epics of Ramayana and Mahabharata.

GEOGRAPHICAL INDICATION

To present the traditional Indian heritage kancheepuram sarees has been brought under Geographical Indication act. Kancheepuram sarees are India’s alluring exquisite saree originating from the district of kancheepuram Tamilnadu. Only pure kancheepuram sarees are awarded with silk mark by silk board of India and this label on saree is the surity of its genuineness.

Kanchipuram sarees have got (GI) from government of India in 2006, which gives it a distinctive identification and recognition in India and all over the world. This (GI) tag has proved to be a marker to build brand name Kanchipuram. According to this (GI), it should maintain standard weight, quality and Jari mark as it is mentioned in the norms of the act.

After implementation of (GI) to Kanchipuram sarees sales has been increased all over the world.

MARKETING

Previously Kanchipuram sarees were marketed only through co-operative societies. There are around 60,000 silk weavers in the city, out of them 50,000 weavers work under co-operative fold. Retailers had to register themselves as the member of these societies and purchase only through these societies. Kamatchi Amman, the first Kanchipuram Co-operative society was established in 1942 at Kanchipuram and later extended its branches all over Tamilnadu, Andhra Pradesh and Karnataka. At present 24 co-operative societies are working in India. Slowly the trend changed and weavers started selling their products directly to wholesalers and retailers which brought them reasonable profits.

As the days passed, there are new trends in marketing these silk sarees i.e., online marketing, social media marketing etc have been implemented by the large scale silk saree showrooms. It's price range starts from Rs. 7000 – Rs.2,00,000. Worth of today's Kanchipuram industry is 20 million dollars.

Silk showrooms also provide with customisation of these sarees, by having their own artisians, who hand weave the saree of customer choice. It takes 15-20 days of duration, to complete one single saree depending on intricate designs.

On account of globalisation, kancheepuram sarees are available all over the world. It makes the job of selection quite challenging because of its dazzling colours designs and variety. There are 60,000 looms in kancheepuram and Rs.200crores turnover, with 3croresof exports. They are now shipped abroad to cater to the overseas Indians.

Kancheepuram sarees have crossed the Indian boundaries and have inspired the international run ways. Some of the acclaimed designers like Chanel, Alexanden Mc Queen and Louisvuitton took inspiration from the brocades and silks. Alexanden Mc Queen's , 2008 collection was based upon on the theme of 'British Royalty Meeting Indian Regality'. It was noticed as sovereign master piece in the show. (Kishore Balakrishna- author)

CURRENT TREND

Authentic, unique and handpicked handloom silk sarees from across South India adds elegance and style to woman. The changing consumer tastes, especially from traditional handlooms to fancy light sarees are the signals to the industry to reorient its production plans to suit the changing demand patterns.

Today power looms have overtaken handlooms and made the work easy and fast. Adoption of ICT (Information and Communication Technology) in production and marketing process has increased both demand and supply. Implementation of Computer Aided Design (CAD) / Computer Aided Motif (CAM) has given rise to exploration of new modern designs in borders and pallu.

Times have changed and kancheepuram sarees have also under gone a transformation. Embroidery and crystal works are done on the traditional kancheepuram sarees. Due to the demand in light weight Kanchi sarees, weavers blend cotton and kora while weaving these sarees. In the modern world consumers prefer less costly, weightless, light colours and simple designs.

To cut down the heavy cost of saree and to make it available for all type of customers weavers are producing sarees with single side border, which brings down the cost by half the price.

Implementation of above strategies has badly affected the sale of pure Kanchipuram sarees. Instead of using Pure Jari which would cost Rs 3000 and above, tested jari (artificial Jari) of Rs. 300 to Rs. 400 is been used in the borders of saree.

CONCLUSION

Kanchivaram is the king of Indian silks. It is special with fine texture, soft feel, quality, craftsmanship, superior weaving technique and fare colour combinations. The whole culture of South India can be looked out in a single sari. By taking its birth in small town of Tamilnadu it has proved its worth all over the world. The wardrobe shelf of Indian women is incomplete without one kanchi saree. It has maintained its position in the minds of customers from the decades. Though it has changed its traditional look, it is the symbol of auspiciousness to wear a Kanchipuram saree in festivals and ceremonies.

Even though the industry has changed from traditional handloom to modern power loom, it has maintained its outlook by satisfying the modern customers.

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MARITAL QUALITY AND DYADIC ADJUSTMENT IN RELATION TO WORKING STATUS OF COUPLES

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ABSTRACT

The aim of the present research was to study dyadic adjustment as an indicator of marital quality in single and dual-career couples of urban areas. A sample of 200 persons (100 married couples comprising 50 single-career couples and 50 dual-career couples) in the age range of 25 to 50 years was purposefully selected from middle socioeconomic status of Chandigarh and its neighbouring districts. Revised Dyadic Adjustment Scale (RDAS) by Busby et al. (1995) was used to measure dyadic adjustment among the couples; and to measure marital quality, Relation Assessment Scale (RAS) by Hendrick (1988) was used. The results evinced that the single-career couples were better on marital quality as well as on dyadic adjustment than the dual-career couples. The husbands in single-career group were better on dyadic adjustment with their wives than the husbands in dual-career were with their wives, but no difference on marital quality was seen between the two groups. The wives in single-career group were better on marital quality as well as on dyadic adjustment with their husbands than the wives in dual-career were with their husbands. The results also showed very high positive correlations of marital quality with dyadic adjustment ($r=0.69$) as well as with its aspects –consensus ($r=0.55$), satisfaction ($r=0.71$), and cohesion ($r=0.54$).

Keywords: Dyadic adjustment, marital adjustment, marital quality, satisfaction, single and dual-career couples

INTRODUCTION

Marital quality is an important aspect of family life that shapes people's health and well-being. Marital quality has been defined as a global evaluation of one's marriage (Bradbury & Fincham, 1990). Marriage is portrayed as a lifelong companionship with an individual that is built upon mutual trust, commitment, support, romance, passion and a greater level of intimacy (Beegam et al., 2017). Korchin (1976) defines a healthy marriage as "Husband and wife both should be free of any conflict, regarding responsibility, dominance, submission, autonomy, and have affection and respect for each other". More specifically, marital quality was considered as health, well-being, and stability of the marriage (Knoblach, 2008). According to Shah (1995), quality of marriage includes understanding, rejection, satisfaction, affection, despair, decision making, discontent, dissolution-potential, dominance, self-disclosure, trust and role-functioning, as assessed by Marital Quality Scale. Marital quality is dependent upon a number of factors. They include cohesion, mutual trust, satisfaction, affection, and conflict resolution (Margolin, 1980; Lazarus & Delingis, 1983). Dyadic adjustment is one of the most important factors of marital quality. An adjusted relationship is defined as a relationship in which even if the partners oppose each other, they make a good relationship and solve their common problems in a satisfied and mutual way (Locke & Wallace, 1959). Adjustment is a process that its consequences can be identified with the rate of couples' problematic conflicts, interpersonal tensions, individual anxiety, marital satisfaction, coherence, integrity, and collaboration about marital important problems (Spanier, 1976; Difiore, 2008). Spanier, (1976) defined dyadic adjustment as "consensus on matters of importance to marital functioning". Burgess and Cottrell (1939), in their book *Predicting Success or Failure in Marriage*, define adjustment as "the integration of the couple in a union in which the two personalities are not merely merged, or submerged, but interact to complement each other for mutual satisfaction and the achievement of common objectives."

Adjustment in any relationship is the most important ingredient that savours the quality of relationship. So, marital adjustment is a good predictor of marital quality. Many studies have shown that higher the level of marital adjustment, better the marital quality (Fonseca, 1966; Lewis and Spanier, 1979; Gore & Manigione, 1983). It is important to mention that, though, the two terms- marital adjustment and dyadic adjustment- have been used interchangeably in the literature; there could be a slight difference between them, which can be better understood within the context that marriages in India are perhaps not between two persons, rather between two families. So, marital adjustment is the adjustment of husband/wife with his/her spouse as well as with the whole family, while dyadic adjustment is the adjustment of husband/wife with his/her spouse only. This could be better clarified by looking through the items of Marital Adjustment Questionnaire (Kumar and Rohatgi, 1999) that measures marital adjustment and Revised Dyadic adjustment Scale (Busby et al. 1995) that measures dyadic adjustment of the couple with each other.

In today's marriages, as more and more women are getting into jobs and other businesses and perhaps are moving beyond gender typical role, an apprehension about transition is inevitable in marital adjustment and dyadic adjustment. As, the number of dual-career couples is increasing very rapidly, this has become a

challenge for dual-career couples to manage their family as well as their jobs. Fraenkel and Wilson (2000) suggest that the trend towards spending more hours at work has been the single most powerful factor leading to a sense of diminished time for couple relationships. Thomas et al. (1984) claimed that a two-professional marriage is one with a high level of risk. The marriage of two highly educated individuals with distinct professional and personal goals, strong achievement needs, rigorous work schedules, and several role responsibilities, demands considerable skills in addressing conflicts and negotiating compromises. If parenting roles and responsibilities are added, further complications can arise, which may negatively impact the overall quality and satisfaction of the marriage.

On the other hand, many other studies tout the benefits of dual-career-hood. Thoits (1983) believes that the sheer number of roles possessed by dual career partners may provide gratification, security, and increase their purpose in life. Dual-career partners utilize their shared work and organizational experiences to help them function more effectively at home (Hertz, 1986). Crohan, Antonucci, Adelman & Coleman (1989) also suggest that such participation is associated with feelings of control which can offset pressures of time and role overload and lend greater overall life satisfaction for both men and women. Emmons et al. (1990) examined dual-career families with preschool children and found positive effects on intimate relationships as a result of both partners participating in full-time careers.

The research is all the more confounding as Dave (2015) found that there is significant difference in marital adjustment among working and non working women. Bradbury & Fincham (1990) studied that women feel more depressed and stressed after marriage and these two factors affect their married life too. In their study, results revealed that non-working married women are better adjusted than working married women. This indicates that working married women cannot pay full attention to their homes and are unable to satisfy their family members. While, Jamabo & Ordu (2012) show that both working and non-working class women exhibit no clear difference in their marital adjustment, also the educational attainment of women does not affect their marital adjustment. Due to this, women in low socio-economic status exhibit the same degree of marital adjustment as those of higher economic status. But, contrarily, Rogers & May (2003) viewed that working class women are generally more satisfied with their lives and marriage than non-working women. Perhaps, the difference between these findings could be attributed to cultural differences. Also, in the present era of squeezing family size, and an increased trend for nuclear rather than traditional joint families, relevance of adjustment within families is also confining to a dyadic than overall family adjustment.

Although, there is ample research done on marital quality in relation to marital adjustment, but there is a dearth of research done on dyadic adjustment as an indicator of marital quality. So, through present research it would be interesting to study the relationship between marital quality and dyadic adjustment. An attempt also has been made to see the effect of working status of couples on their marital quality. Moreover, it would be interesting to study dyadic adjustment in single and dual-career couples, because dyadic adjustment is a phenomenon which depends on the degree of mutual adjustment between spouses and husbands and wives in dual-career group have to deal with a lot of issues of mutual adjustment due to diminishing time for each other. To look into gender differences on marital quality and dyadic adjustment will also be of interest in the present study.

METHODOLOGY

Sample

A total of 200 persons (100 married couples, out of them, 50 had single-career status i.e., only husband is professionally occupied and 50 had dual-career status i.e., both the spouses were occupationally engaged) were purposefully selected in this study. They were all married at least at the legal age i.e. 21 years for males and 18 years for females in the age range 25-50 years, with at least 7 years and at most 15 years of marriage. Only the couples married within their own caste and religion and having at least one child or at the most three children were chosen. They were selected from the middle class socioeconomic status with a minimum qualification of higher secondary education. All of them belonged to the urban areas of Chandigarh and its neighbouring districts.

Tools

1. Revised Dyadic Adjustment Scale (RDAS) by Busby et al., (1995). The RDAS has been found to have a Cronbach's alpha (reliability) of 0.90.
2. Relationship Assessment Scale (RAS) by Hendrick (1988). The internal consistency for RAS was high, with Cronbach's alpha of 0.828 (Maroufizadeh et al., 2018).

Procedure

The aim of the present study was to study dyadic adjustment as an indicator of marital quality in single and dual-career couples in urban areas. The couples fulfilling the required inclusion criteria, from the urban areas of

Chandigarh and its neighbouring districts were chosen through purposive sampling. The data were collected through personal visits at the couples' residences. Informed consent was taken from every couple. Questionnaires were administered separately to both the respective spouses to ensure that they did not share any information with each other and could provide their unbiased responses.

RESULTS AND DISCUSSION

Table-1: Marital Quality: Single Vs dual-career couples

Group	N	Mean	SD	t-ratio
SC	100	31.09	4.86	1.78*
DC	100	29.79	5.40	

Note: SC= Single-Career couples, DC= Dual-Career couples; *Significant at 0.10 level

One of the main objectives of this study was to find out the degree of quality of marriage among single and dual-career couples. From the Table 1, it can be seen that the mean scores of single and dual-career couples on marital quality came out to be 31.09 and 29.79, respectively. So, as per the norms, both single and dual-career couples enjoy high marital quality. Also, the t-ratio for comparing the means of the two groups (Mean SC=31.09, Mean DC=29.79) on marital quality was 1.78, which is significant at 0.10 level. So, the single-career couples were in healthier, more stable marriages (Knoblauch, 2008), with better understanding, satisfaction, affection, decision making and trust (Shah, 1995), as compared to those when both spouses were occupationally engaged.

Table-2: Dyadic adjustment: Single Vs dual-career couples

Variables	Groups	N	Group Mean	Std. Dev.	t-ratio
Dyadic Adjustment	SC	100	54.36	8.79	3.33***
	DC	100	49.17	12.86	
Consensus	SC	100	25.07	3.96	2.95***
	DC	100	23.14	5.17	
Satisfaction	SC	100	16.75	3.46	2.84***
	DC	100	15.00	5.08	
Cohesion	SC	100	12.32	4.40	1.45 ^{NS}
	DC	100	11.36	4.90	

Note: SC= Single-Career couples, DC= Dual-Career couples; ***Significant at 0.01 level;

NS= Not Significant.

Another objective was to compare dyadic adjustment amongst single and dual-career couples. Although, according to the norms, both types of couples enjoyed high level of dyadic adjustment, but Table 2 shows that when the means of the two groups were compared on the overall dyadic adjustment ($t= 3.33$, Mean SC= 54.36, Mean DC =49.17), the single-career couples were found to be relatively better on overall dyadic adjustment; with more agreement than disagreement, more satisfaction than dissatisfaction, more cohesiveness; with each other, as compared to the dual-career couples. But, since the average scores of both-single and dual-career couples fall in the range of 48-69, both the groups were found to be satisfied with their dyadic adjustment with their spouses, with spouses in dual-career group being very close to the lower borderline.

Similar results emerged on the differences between these two groups on two of the three aspects of dyadic adjustment. The mean score of single career couples is significantly higher than that of the dual-career couples on dyadic consensus ($t= 2.95$, Mean, SC= 25.07, Mean, DC= 23.14); this means single-career couples have higher dyadic consensuses than the dual-career ones. That is, the single-career couples perhaps agreed more frequently than the dual-career couples on the issues like demonstration of love and affection towards each other, making major decisions, accepting each other's behaviour, and career decisions etc. On satisfaction, the mean scores of single-career couples were significantly higher than that of the dual-career couples ($t= 2.84$, Mean SC= 16.75, Mean DC= 15.00); this means, again, the single-career couples are more satisfied with each other than the dual-career ones. That is, the spouses in the former group quarrel less frequently than the spouses in the latter group. However, when the two groups were compared on cohesion, the results were insignificant ($t=1.45$, Mean SC= 12.32, Mean, DC=11.36). This means, the single and dual-career couples had almost same degrees of cohesiveness. That is, when it came to activities like engaging in outside interests, working together on a project, or calmly discussing something with each other; spouses of both the groups involved almost equally.

Table-3: Correlation of Marital Quality with Dyadic Adjustment and its aspects

Variables	Dyadic Adjustment	Satisfaction	Consensus	Cohesion
Correlation Coefficient (r)	.69***	.71***	.55***	.54***

Note: ***Significant at 0.01 level

To look into the relationship between marital quality and dyadic adjustment with all its aspects was another area of interest in this study. There emerged high positive correlation of 0.69 ($p > .01$) between marital quality and dyadic adjustment, indicating that couples who enjoyed better dyadic adjustment, also had better quality of marriage.

More so, when marital quality was correlated with various aspects of dyadic adjustment, i.e. consensus, satisfaction and cohesion; satisfaction emerged to be the strongest correlate of marital quality ($r = .71$; $p > .01$), followed by consensus ($r = .55$; $p > 0.01$) and cohesion ($r = .54$; $p > .01$). These results evinced that couples who reported higher quality of marriage had better dyadic adjustment, as they were more satisfied with each other, agreed on mutual issues, perhaps also resolved their well and amicably and were a close and cohesive and supportive dyad.

Table-4: Gender differences in marital quality and dyadic adjustment.

Variables	Groups	N	Mean	Std. Dev.	t-ratio
Marital Quality	Husbands	50	30.21	5.21	-0.62 ^{NS}
	Wives	50	30.67	5.14	
Dyadic Adjustment	Husbands	50	50.62	11.92	-0.44 ^{NS}
	Wives	50	52.91	10.56	
Consensus	Husbands	50	24.10	4.54	-0.02 ^{NS}
	Wives	50	24.11	4.87	
Satisfaction	Husbands	50	15.40	4.63	-1.52 ^{NS}
	Wives	50	16.35	4.17	
Cohesion	Husbands	50	11.58	4.89	-0.78 ^{NS}
	Wives	50	12.10	4.45	

Note: NS= Not Significant.

Furthermore, gender differences on marital quality as well as on dyadic adjustment were also exposed. Table 4 shows that no significant gender differences emerged either on marital quality or dyadic adjustment and its aspects. This means, husbands in urban middle class have almost same levels of marital quality as well as almost same levels of dyadic adjustment as their wives.

Table-5: Descriptive statistics and t-ratios: Single and Dual-Career Husbands.

Variables	Groups	N	Mean	Std. Dev.	t-ratio
Marital Quality	SCH	50	30.66	5.24	0.86 ^{NS}
	DCH	50	29.76	5.19	
Dyadic Adjustment	SCH	50	53.28	8.50	2.27**
	DCH	50	47.96	14.15	
Consensus	SCH	50	24.86	3.77	1.68*
	DCH	50	23.34	5.12	
Satisfaction	SCH	50	16.34	3.24	2.06**
	DCH	50	14.46	5.57	
Cohesion	SCH	50	11.92	4.77	0.69 ^{NS}
	DCH	50	11.24	5.04	

Note: SCH= Single-Career group Husbands, DCH= Dual-Career group Husbands;

**Significant at 0.05 level, *Significant at 0.10 level, NS- Not Significant.

**Significant at 0.05 level, *Significant at 0.10, level NS- Not Significant;

Table-6: Descriptive statistics and t-ratios: Single and Dual-Career Wives.

Variables	Groups	N	Mean	Std. Dev.	t-ratio
Marital Quality	SCW	50	31.52	4.47	1.67*
	DCW	50	29.82	5.65	
Dyadic Adjustment	SCW	50	55.44	9.03	2.45**
	DCW	50	50.38	11.43	
Consensus	SCW	50	25.28	4.17	2.46**
	DCW	50	22.94	5.27	
Satisfaction	SCW	50	17.16	3.64	1.97*
	DCW	50	15.54	4.54	
Cohesion	SCW	50	12.72	4.02	1.39 ^{NS}
	DCW	50	11.48	4.80	

Note: SCW= Single-Career group Wives, DCW= Dual-Career group Wives;

Moreover, an attempt was also made to compare single-career husbands and wives with their counterparts in dual-career group on marital quality and dyadic adjustment. When husbands in single career group were compared with the husbands of the dual-career group on marital quality and dyadic adjustment, the former were found to be significantly better on dyadic consensus, dyadic satisfaction and overall dyadic adjustment. Also, no significant difference was seen between the two groups on dyadic cohesiveness. Even, no significant difference was found between the two groups on marital quality too.

Interestingly, results were more or less similar when the means of their female counterparts were compared on these variables. That is, wives in single-career couples were found to be significantly better on dyadic consensus, dyadic satisfaction, and on overall dyadic adjustment, than the dual-career wives. No significant differences were seen between the two groups on dyadic cohesiveness. But, the marital quality of wives of single-career couples was found to be significantly better than the wives in dual-career couples. That is, non-working wives enjoy better marital quality than the working wives

CONCLUSION AND IMPLICATIONS

Previous studies have shown that there are significant differences between single and dual career couples on marital quality and marital adjustment; some studies have shown the benefits of dual-career, while others have found it problematic in the family, and some other studies showed no difference between the two groups. Among these equivocal findings, this study has found significant differences between single and dual-career couples on marital quality as well as dyadic adjustment and on its aspects- consensus and satisfaction. A strong correlation between marital quality and dyadic adjustment and significant differences between single and dual-career couples on the two variables prove that the marital quality of the single career couples is somewhat better than that of the dual-career couples. This may indicate that the spouses in single-career couples perhaps met their partner's needs and expectations better, had lesser problems, were apparently more satisfied, than the counterparts of dual-career couples. Also, husbands in single career group were found to be better adjusted with their wives than the husbands in dual-career couples with their wives. Similarly, wives in single career groups were found to be better adjusted with their husbands than the wives in dual-career group with their husbands. Non-working wives also experienced better marital quality than the wives who were working.

But, as a part of the earlier research touts the benefits of dual-career (Thoits, 1983; Hertz, 1986; & Crohan et al., 1989; Emmons et al., 1990), more research can be done to explore what then keeps the dual-career-hood on advantage. These earlier researches may be contradictory to the present results, perhaps because most of these have been done on western populations. In India, maybe still the gender stereotypical roles rule one's behavior, more so within the institution of marriage. Hence, both husbands and wives are relatively more satisfied, better adjusted and enjoy better marital quality, where wives are not working, and men are the main breadwinners. But, in western societies, maybe the gender roles have changed, rather have fused, hence giving dual-career couples an edge over single-career couples.

Need is to change the mindsets, especially where Indian urban society is in a state of transition, with more nuclear families, and where earnings of wives supplement the family income, without sharing of their domestic responsibilities. This perhaps is only adding to the work pressures of these wives and may be also causing dissatisfaction among their husbands, thereby affecting their marital quality.

Also, this study has been done on couples of middle socio-economic status living in urban areas; it would be interesting to explore dyadic adjustment between single and dual-career couples in rural areas and in other socioeconomic classes and in other demographic groups.

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SPECTROCHEMICAL STUDIES OF NEWLY SYNTHESIZED '4-HYDROXY-3-[(1E)-PROP-1-EN-1-YL] PHENYL 4-(1H-INDOL-3-YL) BUTANOATE' COMPOUND

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ABSTRACT

In the present studies condensation of isoeugenol with Indole-3-Butyric Acid, using DMF as a solvent. The structure of the synthesized compound elucidated by physico-chemical and analytical techniques, FTIR, UV-Vis and ¹H NMR spectra etc. synthesized compound is insoluble in water, but soluble in common organic solvents and have high melting point. The title compound is stable in room temperature at open atmosphere.

Keywords: Isoeugenol, condensation reaction, NMR spectra and Indole-3-Butyric Acid

1. INTRODUCTION

Isoeugenol and Indole-3-butaryic acid are most important in plant growth process like cell division, cell expansion, vascular tissue differentiation, root initiation, gravitropic and phototropic responses, flowering, fruit ripening, leaf senescence and abscission of leaves and fruits. They are also used in tissue culture media as a rooting hormones for plant explants, useful increases in the fruit lengths, size etc.

Isoeugenol and Indole-3-butaryic acid both are known to excellent importance in Pharmaceutical, Agricultural, Fragrance, Flavor, Cosmetic and various other industries. In view of these, proposed compound expected to range of Pharmaceutical, anti-inflammatory, analgesic, antioxidant and anticancer activities. They are also useful increases in the fruit length, size, diameter, fruit pulp, bunch weight and decrease in the skin thickness. The proposed compound is expected to safe, non-toxic, show synergistic action on plant growth.

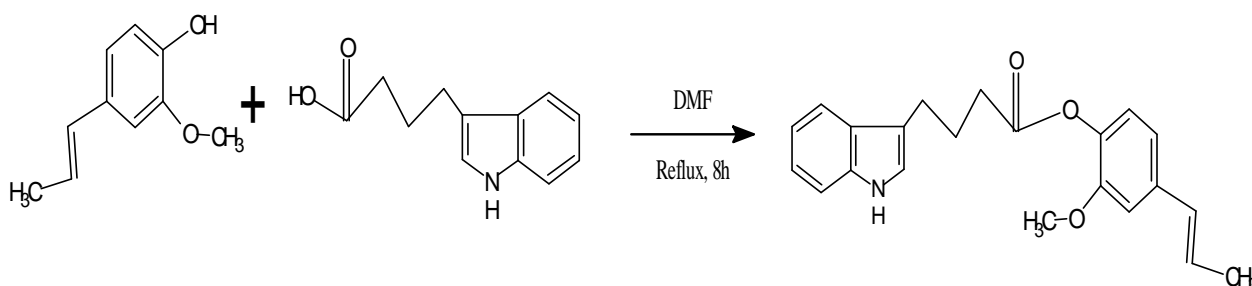
In this view proposed compound expected to increases above activities in various fields. Its plays an important role in plant development process like cell expansion, vascular tissue differentiation root initiation, garavitropic etc. The present study deals with condensation between isoeugenol with indole-3-butaryic acid and it is abbreviated as 'IEIBA and IUPAC name of the proposed compounds is '4-Hydroxy-3-[(1E)-prop-1-en-1-yl]phenyl 4-(1H-indol-3-yl)butanoate'. The synthesized compound structure elucidated by various physico-chemical techniques and some spectral studies such as, UV-Visible, FT(IR), PMR spectra etc.

2. MATERIAL AND METHODS

All chemicals used in this work were reagent grade (AR), including Isoeugenol, Indole-3-butaryic acid, DMF and ethanol. Spectroscopic grade solvents were used for spectral measurements. Melting points were determined on an Electrothermal 9200 apparatus and are uncorrected. Compounds were routinely checked for their homogeneity by TLC. Microanalyses were performed on a Carlo Erba elemental analyzer, model 1108; the results agreed favorably with the calculated values. The FT(IR) spectrum were recorded in range (4000-200) cm⁻¹ on a 'Perkin- Elmer spectrum 100' FTIR spectrophotometer, using KBr Pellets. PMR spectra was recorded spectra were recorded in CDCl₃ solvent, using Bruker AV300 NMR spectrometers. The chemical shifts are reported in ppm from TMS and are given in δ (ppm). Solvents were dried by refluxing with the appropriate drying agent and distilled before use.

PREPARATION OF ISOEUGENOL-INDOLE-3-BUTYRIC ACID (IEIBA)

Isoeugenol (2.46 g, 15 mmol) and Indole-3-Butyric acid (2.03g, 10mmol) were homogeneously mixed in the presence of DMF. The mixture was heated at 105°C and kept at this temperature for 8 h. Then, the residue was treated with ether and filtered and the formed crude product was recrystallized from *n*-butanol and allowed to dry; yield 2.65g (76%); m.f. C₂₂H₂₃NO₃; m.p. 225°C.



Scheme-1: Reaction scheme of condensation reaction between isoeugenol and indole-3-acetic acid

3. RESULTS AND DISCUSSIONS

The reaction of Isoeugenol with the Indole-3-butyric acid (1.5:1 molar ratio in DMF), gave Isoeugenol-indole-3-Butyric Acid (IEIBA) compound and this reaction were found to be quite facile (Scheme-1). The synthesized compound was characterized on the basis of satisfactory elemental analysis, some physicochemical techniques and spectroscopic measurements. The present compound is insoluble in water and soluble in methanol, CHCl₃ and DMF. The elemental analyses results for the title compound were tabulated in Table-1. The analytical data are consistent with the proposed molecular formula, C₂₂H₂₃NO₃, for the Isoeugenol-indole-3-Butyric Acid (IEIBA) compound. The molecular weight determination by Rast's method showed the monomeric nature of the proposed compound at room temperature.

Table-1: Physical and Analytical data of isougenol derivatives of Indol-3-Butyric Acid

Comp	Color	M.P.	Elemental Analysis			
			% C Found (Calcd)	% H Found (Calcd)	% N Found (Calcd)	% O Found (Calcd)
IEIPA	Dark Brown	225	75.62 (73.99)	6.63 (6.13)	4.01 (3.97)	13.74(13.29)

UV-Visible Spectra

The electronic spectrum of all synthesized compounds in methanol for the UV region reveals two high intensity bands at 339nm and 249nm (Table: 2), these due to $n \rightarrow \pi^*$ and $\pi \rightarrow \pi^*$ transitions possible from the Carbonyl ($>C=O$) and Alkene ($>C=C<$) environments in the proposed molecule¹¹.

Table-2: UV-Visible data of isougenol derivatives of Indol-3-Butyric Acid in methanol

Compound	λ nm	Functional Group	Transition
IEIBA	339	$>C=O$	$n \rightarrow \pi^*$
	249	$>C=C<$	$\pi \rightarrow \pi^*$

FT (IR) Spectra

A significant feature of the FT(IR) spectrum of IEIPA is absence of band between 3400-3500cm⁻¹ due to the ν_{O-H} vibration reported¹² at 3443cm⁻¹ in parent molecules (Isoeugenol) indicating a successful replacement of the Hydroxyl group by the ether group during condensation reaction. This observation also supported by, the new band observed at 1051 in the all compounds, indication the $-C-O-$ present in the synthesized molecule. Three bands observed at 3290cm⁻¹, 3176cm⁻¹ and 1678cm⁻¹ suggesting the $-NH$, $=CH_2$ and $>C=O$ groups respectively, in the proposed molecule. Important ir bands of the synthesized molecule are listed in Table-3.

Table-3: Important IR bands (cm⁻¹) and their assignments for isougenol derivatives of Indol-3-butyric Acid

Comp.	-NH	-CH ₂ -	=CH ₂	Ar.v(C-H)	>C=O	Ar v(C=C)	>C=C<	-C-O-
IEIBA	3284	2965	3188	3069	1649	1515	1598	1051

¹HNMR Spectra

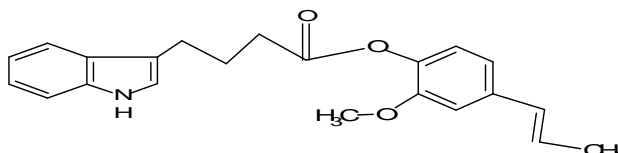
¹HNMR spectra recorded in d₆ DMSO solvent and they are listed in Table-4. No any peak observed in the region 12.00-13.00 ppm in prepared compounds, this is reported¹² at 12.50ppm of $-OH$ group in isoeugenol, suggested that successfully replaced hydroxyl group to ether group formation. PMR spectra recorded in d₆ DMSO solvent and they are listed in Table-4. Another singlet observed at around 9.92ppm, suggesting the tertiary amine group of the all compounds

Table-4: ¹HNMR data of the for isougenol derivatives of Indol-3-Propanoic Acid in ppm

Comp	-NH-	Phenyl Rings	-CH=	-CH ₂ -	-OCH ₃	-CH ₃
IEIBA	9.89	7.55-8.50	3.56	3.98	4.45	1.85

4. CONCLUSION

Synthesized molecule is insoluble in water but soluble in dilute alkali, common organic solvents and have high melting point indicated strongly bonded all elements and table at room temperature in open atmosphere. On the basis of spectral and analytical data, structure of the synthesized molecule tentatively assigned below;



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IN VITRO - EVALUATION OF ANTIOXIDANT ACTIVITY OF LEAVES OF LAGERSTROEMIA SPECIOSA (L.) PERS

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ABSTRACT

The aim of present study was to find out the antioxidant activity of *Lagerstroemia speciosa* (L.) Pers. (Family: Lythraceae) by DPPH Assay, FRAP Assay and content of total phenols. The *Lagerstroemia speciosa* has been reported to possess medicinal properties against a various diseases like diabetes, kidney diseases, purgative, ulcer, and hypertension and deobstruent. From preliminary phytochemical analysis it was confirmed the presence of alkaloids, tannins, phenols and flavonoids in methanolic extract of leaves. Quantification of total phenol was done by Folin -Ciocalteu method, Antioxidant activity was determining by DPPH assay and FRAP assay. The present studies revealed that the methanolic extract of *Lagerstroemia speciosa* showed the total phenol content ($7.8 \pm 0.01 \mu\text{g/gm}$). In this study, *Lagerstroemia speciosa* were identified as potentially novel source of free radical scavenging compound. Result indicates that methanolic leaves extract of *Lagerstroemia speciosa* have marked amount of total phenols which could be responsible for the antioxidant activity.

Keywords: *In vitro* Antioxidant activity, *Lagerstroemia speciosa*, free radical scavenging activity (DPPH assay), reducing power, total phenol contents.

I. INTRODUCTION

Natural products have been used for a wide variety of purposes for many thousands of years and for a long time, minerals plants and animal products were the main source of drugs ¹. Developed organic chemistry and industrial revolution have been facilitated identification and isolation of pure compounds, structural modification to produce potentially more active and safer drugs can easily performed. The vast majority of these cannot yet be synthesized economically and are still obtained from wild or cultivated plants ². Natural antioxidant present in the plants scavenges harmful free radicals from our body. Free radicals oxidatively damage lipids, proteins and compromise genomic DNA integrity. They are widely recognized as main cause of many degenerative diseases including cardiovascular disease, cancer and aging ³. Antioxidant compound scavenge free radical such as peroxide, hydro-peroxide or lipid peroxy and thus inhibit the oxidative mechanism that lead to degenerative diseases ⁴.

The leaves of *Lagerstroemia speciosa* (Linn.) Pers. (Family: Lythraceae), also known as “Queens Crape Myrtle,” is a deciduous tree which grow in tropical and subtropical areas. Natives of Philippines it is commonly called as “Banaba”. In India known as “Pride of India”. The banaba trees grow from 5 to 20 meters in height, and the leaves are smooth, acuminate, oblong and 12 to 25 centimeters long ⁵. Leaves have been used as a folk medicine and decoction of the leaves is used like tea for diabetes mellitus in Philippines. The leaves also used for kidney diseases, purgative, antiulcer, anti-hypertension and deobstruent. The leaves contain Ellagitannins, triterpenoids, maslinic acid and corosolic acid. Corosolic acid is known to possess hypoglycemic activity ⁶. Recently interest has increased considerably in finding natural occurring antioxidant for used in foods or medicinal materials to replace synthetic material or antioxidants that have been restricted due to their side effects such as carcinogenicity. Most of the biological activity and active constituents reported in these plants may be related to its antioxidant nature. Based on this idea the *In vitro* antioxidant activity of the extract of leaves of *Lagerstroemia speciosa* has been evaluated and reported here under.

II. MATERIAL AND METHODS**2.1 Plant material**

The fresh *Lagerstroemia speciosa* leaves were collected from the locality of Nagpur district in the month of December.

2.2 Preparation of plants extract

The collected leaves were first washed with tap water and then with distilled water, then dried in shade and powdered in mechanical grinder machine. The extraction of the *Lagerstroemia speciosa* leaves were carried out using known standard procedures ⁷. The powdered of 15 gm of plants materials was taken in thimble of Whatman filter paper No. 1 and soxhlated with methanol for 10-12 hrs at a temperature not exceeding the boiling point of the solvent. The extracts were filter using Whatman filter paper No.1. The methanolic extract was evaporated in water bath. The dried weight of plant extract was obtained by the solvent evaporation and used to determine in mg/ml.

2.3 Preliminary phytochemical testing

Preliminary phytochemical analysis were done by using the methanolic extract and standard test given by different scientist.^{8,9,10,11,12,13,14,15}

Flavonoids test: The extract were screening for the presence of flavonoids by Shinoda's reaction¹⁶. The solution of the extract was evaporated and residue dissolved in ethanol. On addition of Magnesium powder and concentrated hydrochloric acid, the red / yellow colour was developed this indicates that the presence of Flavonoids.

Tannins test: 1.0 ml of extract was diluted with 1.0 ml of water and 2-3 drops of dilute Ferric chloride solution was added. The blue black / green black colour was Developed indicate the presence of tannins

Phenolic test: The dried residue of the extract was dissolved in methanol. Methanolic extract was tested for the presence of phenolics by the method given by Zafer and Mujeeb¹⁷. A few drops of acidified ferric chlorides (5%) solution were added to the extract. The appearance of blue, green or brown coloration indicated the presence of phenolics compound in the sample.

Alkaloids tests: Two ml of extract was taken separately in 5 ml of 1.5% v / v aqueous hydrochloric acid and filtered. A brown precipitate on addition of Wagner's reagent (1.27 gm of iodine and 2 gm of potassium iodide were dissolved in 5ml of distilled water and solution was dissolve in diluted to 100 ml.) indicated the presence of alkaloids Polyuronoids, emodins, anthracene glycosides, phlobatannins, fatty acid, carotenoids, anthocyanidins, anthocyanins, coumarins and steroids were screened as above described in literature.

2.4 DETERMINATION OF TOTAL ANTIOXIDANT ASSAY

Antioxidant activity of *Lagerstroemia speciosa* was determined by DPPH Assay and by FRAP Assay and content of total phenols.

A. *In -vitro* Antioxidant activity (DPPH Assay)

The antioxidant potential of any compound can determine on the basis of scavenging activity of the stable DPPH (2, 2-diphenyl-1-picrylhydrazyl)¹⁸. DPPH is stable free radical containing an odd electron in its structure and usually utilized for detection of the radical scavenging activity in chemical analysis.

The absorption maximum of a stable DPPH radical in methanol was at 517 nm. The decrease in absorption of DPPH radical caused by antioxidant, because of the reaction between antioxidant molecule and radical progresses, which result in the scavenging of the radical by hydrogen donation. The antioxidant assay was performed by the protocol reported by Bhalodia *et. al.*,¹⁹ with some modification.

Preparation of standard solution

Required quantity of Ascorbic acid (Vitamin - C) (Make - HIMEDIA) was dissolved in methanol and prepared the various concentration by taking 10, 20, 30, 40 and 50 µg/ml.

Preparation of test sample

Stock solution of test sample was prepared by dissolving 10 mg of dried methanolic extract in 10 ml of methanol to give concentration of 1mg/ml, then prepared sample concentration of 10, 20, 30, 40 and 50 µg/ml.

Preparation of DPPH solution :- 3.9 mg of DPPH (2, 2-diphenyl-1-picrylhydrazyl) Make – HIMEDIA (RM2798-1G) was dissolved in 3.0 ml methanol; it was protected from light by covering the test tube with aluminum foil.

Estimation of DPPH scavenging activity

Antiradical activity was measured by a decrease in absorption at 517 nm of a solution of colored DPPH in methanol brought about by the sample^{20,21,22,23}. A stock solution of DPPH (1.3 mg/ml in methanol) was prepared such that 75 µl of it in 3 ml methanol gave an initial absorption of 0.9. Decrease in the absorption presence of sample extract and standard at different concentration was noted after 30 minutes. IC₅₀ was calculated from % inhibition. A blank reading was taken using methanol instead of sample extract. Spectrophotometer is calibrated and zero absorbance is adjusted with solvent blank. Absorbance at 517 nm is determined after 30 minute using UV-visible Spectrophotometer (Shimadzu UV-Spectrophotometer -1800), and IC₅₀ (inhibitory concentrations to scavenge 50% free radicals) is also determined. Lower the absorption of the reaction mixture indicates higher free radical scavenging activity. IC₅₀ value denotes the concentration of sample required to scavenge 50 % of the DPPH free radical.

The capacity to scavenge the DPPH radical was calculated using the following equation.

$$\text{DPPH Scavenged (\%)} = \frac{A_{\text{control}} - A_{\text{test}}}{A_{\text{control}}} \times 100$$

Where,

A_{control} = Absorption of DPPH alone.

A_{test} = Absorption of DPPH alone with different concentration of extracts.

IC₅₀ was calculated from equation of line obtained by plotting a graph of concentration versus % inhibition.

B. Ferric Reducing Antioxidant Power (FRAP) Assay

Substance which having reducing potential react with potassium ferricyanide (Fe^{3+}) to form potassium ferrocyanide (Fe^{2+}) which react with ferric chloride to form ferric – ferrous complex that has an absorption maxima at 700 nm. FRAP assay method focus on different mechanism of the antioxidant defense system, i.e., scavenging of oxygen and hydroxyl radical, reduction of lipid peroxy radical, inhibition of lipid per-oxidation, or chelating of metals ions. The ferric reducing efficiency of polyphenolic compounds is the representative of most common structure occurring in plants²⁴.

For the measurement of the reductive ability, we investigated the Fe^{3+} , Fe^{2+} transformation in the presence of plant extracts, following the method of Oyaizu N.,(1986)²⁵. The reducing capacity of the compound may serve as a significant indicator of its potential antioxidant activity. Like the antioxidant activity, the reducing power of plants extract and standard increasing with increasing concentration.

Preparation of standard solution

3 mg of Ascorbic acid dissolved in 3 ml of distilled water and the various concentrations were prepared by taking 10, 25, 50, 75 and 100 µg/ml ascorbic acid solution.

Preparation of test sample

Stock solution of sample was prepared by dissolved 10 mg of dried methanolic extract in 10 ml of methanol and the various concentrations was prepared by taking 10, 25, 50, 75 and 100 µg/ml plant extract.

Estimation for reducing power assay

According to this method, the aliquot of various concentrations of the standard and test sample extracts (10 to 100 µg/ml) in 1.0 ml of distilled water were added with 2.5 ml of (pH 6.6) phosphate buffer and 2.5 ml of (1%) potassium ferricyanide. The mixture was incubated at 50°C in water bath for 20 minutes. After cooling aliquots of 2.5 ml of (10%) Trichloroacetic acid was added to mixture, which was then centrifuge at 3000 rpm for 10 minutes. The upper layer of solution 2.0 ml was mixed with 2.0 ml distilled water and a freshly prepared 1.0 ml of (0.1%) Ferric chloride solution. The absorption was measured at 700 nm in UV-visible Spectrophotometer (Shimadzu UV-1800). A blank was prepared without adding extracts. Ascorbic acids at various concentrations (10 to 100 µg/ml) were used at standard. The results indicate that the increase in absorption of the reaction mixture indicates increase in reducing power.

Plot a standard graph of ascorbic acid and calculate the ferric reducing power of the extracts from the reference standard of ascorbic acid. Compare the reducing power of given extracts with that of ascorbic acid standards.

C. Determination of content of total phenols

Total Phenolic content was determined by using Folin-Ciocalteu method with Catechol as standard. 0.5ml (1000µg/ml) of sample extract was diluted to 3 ml with distilled water and 0.5 ml of Folin-Ciocalteu reagent was added. After 3min, 2 ml of 20% sodium carbonate was added and the contents were mixed thoroughly. The blue colour was developed and absorbance measured at 650nm in spectrophotometer (Shimadzu UV-1800) after 60min. Different concentrations of standard (Catechol) solution (10mg/100 ml) were used to plot the calibration curve. Results were expressed as mg catechol/ 100g of fresh weight material using the formulae equivalent.

$$= \frac{\text{O.D. sample } A_{650} \times V \times \text{D.F.} \times 100}{w \times 1000}$$

Where, A_{650} is absorbance at 650nm, V is volume of sample, D.F is dilution factor and w is weight of sample in grams²⁶.

III. RESULT AND DISCUSSION

3.1 Preliminary phytochemical screening

From preliminary primary screening it was estimated that the methanolic extract of leaves of *Lagerstroemia speciosa* showed the presence of different secondary metabolites such as tannin, alkaloids, flavonoids, phenols, polyuronoids, emodins, anthracene glycosides, phlobatannins, anthocyanidins, coumarins and steroids (Table-1).

3.2 DPPH Free radical scavenging activity

In free radicals scavenging activity, DPPH is a stable free radical at room temperature and accept electron and hydrogen radical to become stable diamagnetic molecule. The reduction capability of DPPH radical was determined by the decrease in its absorbance at 517nm, which is induced by different antioxidants. The decrease in absorbance of DPPH radical caused by antioxidants because of the reaction between antioxidant molecule and free radical progresses which result in the scavenging of the radical by hydrogen donation. It is visually noticeable as a change in colour for purple to yellow. *Lagerstroemia speciosa* exhibited a comparable antioxidant activity with that of standard ascorbic acid at varying concentration (10, 20, 30, 40, 50 µg/ml). There was a dose dependant increase in the percentage antioxidant activity for all concentrated tested (Table- 2, 3).

The extract at a concentration of 10 µg/ml shows a percentage inhibition of 34.42±0.02 and for 50 µg/ml it was 47.74±0.03. Ascorbic acid was used as the standard drug for the determination of the antioxidant activity by DPPH method. The concentration of ascorbic acid varied from 10 to 50 µg/ml. Ascorbic acid at a concentration of 10 µg/ml exhibited a percentage inhibition of 43.36±0.03 and for 50 µg/ml 66.62±0.03 (Table. 2, 3). A graded increase in percentage was inhibition was observed for increase in the concentration of ascorbic acid. The IC₅₀ value of ascorbic acid was found to be 22.6 µg/ml. IC₅₀ value of sample extract could not be calculated because of lower value of inhibition that 50 % (Fig. 1,2). All determination were done in triplicate value were determine. Hence DPPH is usually as a substance to evaluate the antioxidant activity.

3.3 Reducing power assay

Reducing power assay method is the based on principle that substances, which have reduction potential, react with potassium ferricyanide (Fe³⁺) to form potassium ferrocyanide (Fe²⁺), which then react with ferric chloride to form ferric ferrous complex that has absorption maximum at 700nm. The reduction power of methanolic extract and standards increase with the increase amount of sample extract and standards concentration (Table 4, 5). The significant changes is show in reducing power was observed good linear relation in both standards R² =0.994 as well as sample extract R² =0.990 (Fig. 3, 4).

Table-1: Phytochemical screening of methanolic extract of leaves *Lagerstroemia speciosa* (L.) Pers

Sr .No.	Secondary Metabolites	Methanolic leaves extract
1.	Tannin	++
2.	Alkaloids	+
3.	Flavonoids	++
4.	Phenols	+++
5.	Polyuronoids	+
6.	Emodins	+
7.	Anthracene glycosides	+
8.	Phlobatannins	++
9.	Fatty acid	-
10.	Carotenoids	-
11.	Anthocyanidins	++
12.	Anthocyanins	-
13.	Coumarins	++
14.	Steroids	+++

(-) Absent (+) Present (++) moderately present (+++) Appreciable present

Table-2: Shows the percentage inhibition of Standard Ascorbic acid at various concentrations (µg/ml) in scavenging model

Concentration (µg/ml)	% Inhibition	IC ₅₀
10	43.36±0.03	22.6 µg/ml
20	47.75±0.04	
30	55.54±0.03	
40	63.32±0.02	
50	66.62±0.03	

Value are mean±SD (n=3)

Table-3: Shows the percentage inhibition of methanolic extract of leaves at various concentrations (µg/ml) in scavenging model

Concentration (µg/ml)	% Inhibition	IC ₅₀
10	34.42±0.02	-
20	36.65±0.02	
30	40.05±0.05	
40	43.35±0.02	
50	47.74±0.03	

Value are mean±SD (n=3)

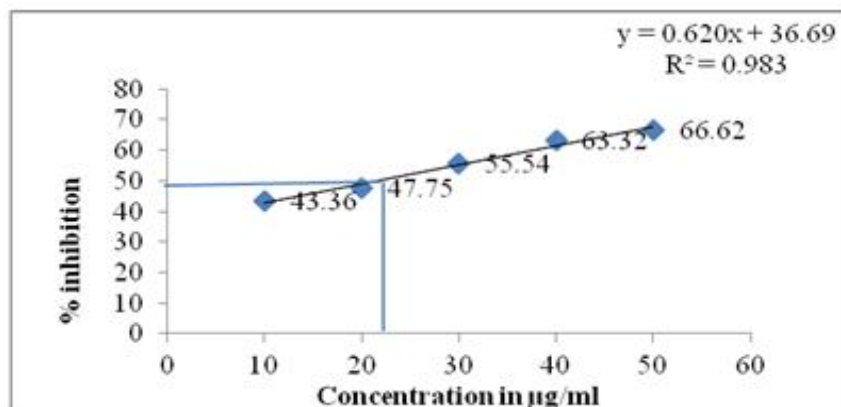


Fig-1: DPPH free radical scavenging activity of standard Ascorbic acid

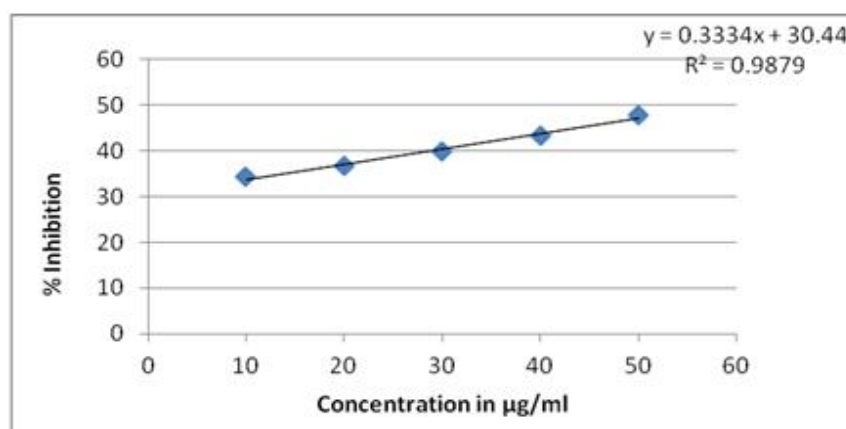


Fig-2: DPPH free radical scavenging activity of methanolic extract of leaves

Table-4: Shows the absorbance of Standard at various concentration (µg/ml) in Ferric reducing power determination model.

Concentration (µg/ml)	Absorbance
10	0.097±0.001
25	0.136±0.001
50	0.257±0.001
75	0.364±0.001
100	0.497±0.002

Value are mean±SD (n=3)

Table-5: Shows the absorbance of methanolic extract of leaves at various concentrations (µg/ml) in Ferric reducing power determination model.

Concentration (µg/ml)	Absorbance
10	0.034±0.001
25	0.180±0.001
50	0.496±0.001
75	0.734±0.001
100	0.914±0.001

Value are mean±SD (n=3)

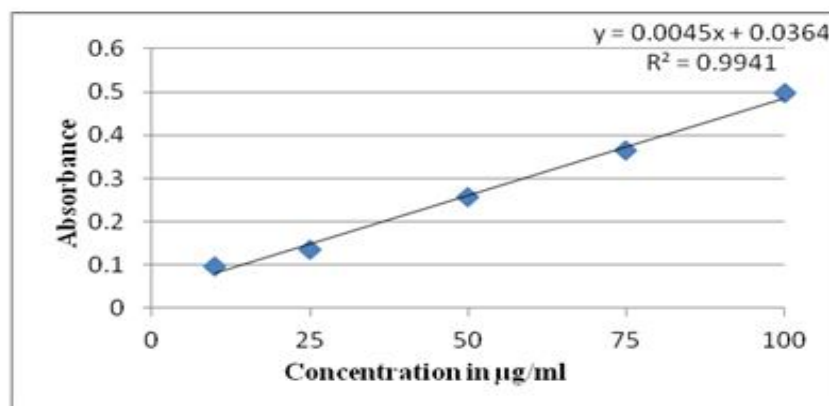


Fig-3: Ferric reducing power determination of standard Ascorbic acid.

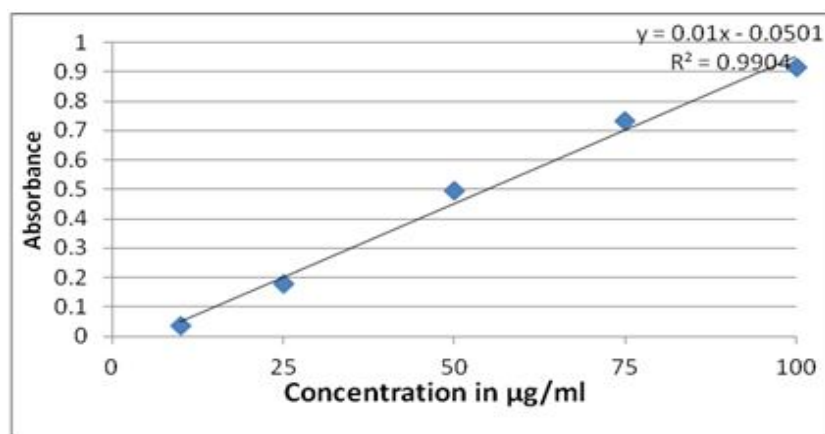


Fig-4: Ferric reducing power determination of methanolic extract of leaves.

3.4 Total phenolic contents

The amount of total phenol in the leaf extract was estimated by the Folin-Ciocalteu method. The total phenol contents of leaves extract was found to be $7.8 \pm 0.01 \mu\text{g/gm}$. Free radicals are produced under certain environmental conditions and during normal cellular function in the body, these molecules are missing an electron, giving them an electric charge. To neutralize this, charge-free radicals try to withdraw an electron from, or donate an electron to a neighboring molecule. The newly created free radical in turn looks out for another molecule and withdraws and donates an electron, setting off a chain reaction that can damage hundreds of molecules. Phenolic compounds are important plant constituents known as powerful chain-breaking antioxidants²⁷. Due to their hydroxyl group scavenging ability²⁸ and effective hydrogen donors²⁹, which may make them good antioxidants. Our finding of the total phenolic content was $7.8 \pm 0.01 \mu\text{g/gm}$ plant extract (in Catechol). Such a yield of total free phenolic in the extract is very important for their antioxidant activity as it is suggested that polyphenolic compounds have inhibitory effects on mutagenesis and carcinogenesis in humans, when ingested 1 gm daily with a diet rich in fruit and vegetables³⁰.

IV. CONCLUSION

On the basis of results obtained by the ferric reducing power determination method and quantification of total phenols ($7.8 \pm 0.01 \mu\text{g/gm}$) it is concluded that the methanolic extract of leaves of *Lagerstroemia speciosa* L. plant species possesses a marked antioxidant activity, which might be helpful in pharmaceutical industries and preventing or slowing the progress of various oxidative stress-related diseases. Further investigation on the isolation and identification of antioxidant components of active principles in the plants may lead to chemical entities with potential for clinical uses.

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QUEST FOR GROWTH, EQUALITY AND SUSTAINABLE DEVELOPMENT IN INDIA: EDUCATION AMONG DALITS

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ABSTRACT*“No country can really develop unless its citizens are educated.”ⁱ**-Nelson Mandela*

Sustainable development is essential for a developing country to maintain its economic growth. However, in a heterogeneous country like India, one of the important factors in maintaining sustainable development is equality. Equality can be achieved when all sections of society work towards it. Education can prove to be an important tool to achieve equality in society. Educational reform policies and programmes can play a positive role for society and country as a whole. The goal of equality however will remain unfulfilled till the time the most deprived section of society Scheduled Castes, in case of India, get access to quality education. Despite the successive governments at the centre and at the state level starting many programmes in this direction, the implementation and effect of these programmes has left much to be desired. The education level of Dalits in India (Literacy rate – 66.1% census 2011) has increased in past few decades but educational inequalities along caste lines still exist and Dalits are, till date, facing the problems of backwardness. This paper aims to analyse some of the important educational schemes and their relative impact on progress of Dalits. The paper argues that there is a strong relationship between education and development and the continuing prevalence of social inequalities comes in the way of the agenda of enabling the Dalits.

Keywords: Sustainable development, Equality, Dalits, Educational inequalities

INTRODUCTION

There is unanimity in India on the necessity for the growth of education. Education is doubly important for those without other material resources. As Baba Saheb Dr. Ambedkar said, “The backward classes have come to realize that after all education is the greatest material benefit for which they can fight. We may forego material benefits, we may forego material benefits of civilization, but we cannot forego our right and opportunities to reap the benefit of the highest education to the fullest extent. That the importance of this question from the point of view of the backward classes who have just realized that without education their existence is not safe.”ⁱⁱ Indian education system is the second largest in the world. The constitution makers of India, seeks an inclusive education system which include the all section of society. It will different from Brahminical system that was monopolised by some groups.ⁱⁱⁱ With the implementation of positive discrimination, all adverse sections countered the facilities such as education, health, drinking water, roads etc.^{iv} The idea has to improve their status and include the excluded sections in mainstream. But the literature on educational inequalities in India suggested that even in the 21st century, the educational inequalities still persist in spite of the literacy rate increased. Dalit children still face considerable hardships and discrimination at educational institutions physically and psychologically by their teachers and fellow students.^v Therefore, the paper will provide clear picture about understanding the caste disabilities in India especially in education sector and more important to find solution for it.

Putting education within the reach of those whom Ambedkar mentioned as ‘backward classes’— who are not better known as scheduled castes - has been the stated agenda of numerous governments that have been formed since independence. After much dilly dallying, in 2009, the Government of India passed the Right to Education Act which ensures that every child of school going age has a right to be educated. Given the high income disparities in the country and the large number of people who did not have the financial muscle to send their children to school, the Act also made it incumbent upon all schools to have a certain number of seats for those from economically weaker background. It also made compulsory for local authorities to ensure that the RTE Act was implemented in letter and spirit. The right to education act in the constitution protects the Scheduled Caste/ Scheduled Tribes children from being discriminated on educational ground and also it provides special facilities for them in the form of scholarships and hostels. A newly passed law requires that every local authority ensure that children belonging to disadvantaged groups should not face discriminatory behaviour at any ground.^{vi} They have fundamental right like other children of India to pursue and complete their elementary education at least as per the article 21 A of the Constitution. Moreover, the scholarship and fellowships to Dalit students^{vii}, Sarve Shiksha Abhiyan (SSA), Mid Day Meal (MDM) scheme are the some other major projects for the development of all students. It is a positive action for giving equal opportunities to all. SSA is a programme

for achieving goal for free and compulsory education from the age of 6 to 14 years. It was introduced by 86th amendment of the constitution of India as a fundamental right. The mid-day meal scheme is also important in the sense that free lunch is provided to primary and upper primary students in government and government aided schools. It is a forward step to improve nutrition status of children at national level. The NPE's special focus is on women education that takes forward step to provide equal status to them. These are very positive steps to improve educational structure of India, but its progress depend on its implementation. Although, government of India has made many policies for the betterment of Dalits but there are many cases which reveal the true picture regarding disparities in education system.

THE PRESENT SCENARIO OF THE EDUCATIONAL DISABILITIES:

Recently, time again two new suicide cases, Rohith Vemula case (2016) and Senthil Kumar suicide case (2008) emphases to think about the disabilities and discrimination with Dalits especially in education sector. Rohith Vemula, a Dalit student, was also a PhD research scholar in University of Hyderabad. He was reported to have committed suicide due to misbehaviour by university authorities. He was denied the payment of scholarship and debarred from entering in the campus and the hostel. He was a student activist of Ambedkar Student's Association (ASA). After his death, a new controversy started over his caste. He fought for the rights of Dalits. There is no doubt the Rohith's death was due to the reaction against caste based humiliation which is deep rooted in our country.^{viii}

Another case of suicide attempt in 2008 by Senthil Kumar, a Scheduled Caste Ph.D. research scholar has been given much attention. It revealed the fact that despite reservation access to Scheduled Castes for entry in educational field, the caste prejudice and humiliation continue at all levels. Senthil Kumar was reportedly the victim of caste discrimination that forced him to commit suicide but university authority denied and even covered up the charge. After the clearance of suicide attempt by post mortem report, the 'SC/ST Joint Action Committee' demands enquiry. But one thing is under consideration that nobody can deny the truth that Dalits has to face caste based discrimination in every walk of life. As Senthil Kumar Solidarity Committee argued that this is not first time that Scheduled Caste students were humiliated by upper castes. But the matter of fact is that democratizing of institutions is under threat.^{ix} The number of cases related to caste discrimination much higher but many of them could not be highlight due to inaccessible means.

Some studies like Thorat and Lee, (2005)^x also explained that discrimination and humiliation still continues for marginalised people. In education sector, Dalit students are discriminated while serving the food is served to them under midday meal programme. People denied to give them equal respect and treatment at educational institutions. Deshpande (2008)^{xi} analyses the affirmative action plan and argues that there is lot of gap between education policies and its implementation. He also mentions that access of education and attitude of teachers towards Scheduled Castes is affected by caste discrimination in schools. Dnyandev (2017)^{xii} argued that nowadays education merely become a commercialized source and targeted by politics. Due to this backdrop, education funds are shirking and weaker sections face disabilities. So, there should be equity and fair representation in education opportunities for all.

Although government has taken positive steps to protect the right to education and prohibit discrimination in access to education for all marginalized people with making policies but its implementation is under scanner which determines progress and success of these policies. The first and foremost step is right to education and second reservation in educational institutions. However, it has been noticed that teachers, school administrators, and their follow students treat Dalit children as unequal and refuse to give them an equal education. On the bases of reservation, while 15% seats are reserved for Scheduled Castes and 7.5% for ST but in some institutions, seats remain unfilled especially in professional field.^{xiii} The poverty and poor economic condition of Scheduled Castes are the main backdrops. The data related to their education revealed their problems regarding education. According to 2011 census, the literacy rate among Scheduled Castes 66.1 % and among Scheduled Tribes, it was 59 %, as against 74.04 % for others. Among women, the literacy rate for Scheduled Castes was 56.5 % and for others it was 65.46 %. As per school attendance, this was about 10 % less among Scheduled Castes boys than other boys, and about 5 % less among Scheduled Caste girls than other girls. The dropout at primary stage, middle stage and secondary stage is respectively, 36.56%, 59.42%, and 73.13%. The statistics for higher education is also alarming, only 8.37% Dalits are enrolled as compared to 91.63% other.^{xiv}

It has become much important to study the status of education developments among Scheduled Castes in India and the reason and impact behind this. Firstly, the fact is that though Scheduled Castes and Scheduled Tribes get reservation in educational institutions but most of the seats remain unfilled. Secondly, colleges and universities fail to follow the guidelines set up for Scheduled Castes students. They are not interested to work on this ground. Another thing is that although, there is increase in overall literacy rates of Scheduled Castes but

they still lag behind in higher and professional education. The famous MDM scheme is not behind in this discrimination. The Times of India reported that in MP and Karnataka's schools, Scheduled Castes children are discriminated during midday meal, their utensils are kept aside or they are forced to bring their food from homes.^{xv}

There are many stories that come across in the daily life which reveal a bitter truth that despite the process of modernisation taking place and the governmental efforts, Dalits remain in poor condition and bounded within the oppressive caste boundaries. They face many disabilities due to their caste and linger on its impact that they are low caste degraded people. To improve the situation many programmes are made by the government of India to provide equal status to every citizen especially in educational sector. But there are many cases of caste discrimination in the education sector which prove to be a setback to above mentioned policies and programmes. The method of discrimination may be different but the caste based deprivation is the same. This is leading pitiable life and future of Dalit children as well as youth.

Most importantly, a survey called 'Voice of Children of Manual Scavengers' conducted by the Navsarjan Trust, the Center for Human Rights and Global Justice and the International Dalit Solidarity Network collected many testimonies that revealed caste discrimination at school level all over India. Both reports explain that Dalit children are victims of caste discrimination. These are the personal experiences or stories of Dalit children who faces many miseries and deprivation in their life i.e. upper castes teachers and children force Dalit children to clean classrooms, toilets and offices^{xvi}, they force Dalit children to sit separately in the classroom and during meals^{xvii} or even to leave the school. Outside the classroom, Dalit children work as manual scavengers.^{xviii}

Another study approved by the Ministry of Human Resources Development, conducted in six states i.e. — Bihar, Madhya Pradesh, Andhra Pradesh, Odisha, Assam and Rajasthan revealed the same story that Dalit children are discriminated and exploited by upper castes. It also mentioned that Rajasthan is one of the worst hit states in this regard. The sample of the study came from 120 schools on the bases of caste and gender. The study shows that whereas education is important for development but the future of the Dalit children remains dark because of caste based disabilities. It also indicates the caste practices of segregated sitting arrangements in the classroom and while sharing meals and more worse they were asked to clean the toilet.

"Democratic practices were not the norm in any sample school, while dealing with participation of students in school activities and tasks. It all depends on prevailing social norm or perception of teacher, not the personal assessment of student."^{xix}

Here, the important aspect is 'Affirmative Action Plan' that gives many opportunities to Scheduled Castes discussed above. The Constitution of India provides many provisions and safeguards to Dalits in the form of affirmative action plan, but their condition remained the same. As mentioned above, the literacy rate among Dalits is increasing but when it comes to higher education, it is seen that Scheduled Castes are not making much progress. Rao (2000)^{xx} mentions in his study that the progress of Dalits in higher education is dismal and Dalit students mainly adopt arts/ humanities subjects and not 'prestigious' subject like science and commerce which remain the preserve of the other castes. He has also mentioned that the emerging areas like technology especially information technology and engineering are out of reach of the Scheduled Castes. For instance, only 7.77% students from Scheduled Castes and 2.33% students from Scheduled Tribes were enrolled in higher education (MHRD 1997).

A TV channel DNA, reported that caste discrimination occurs in the elite institutions during the interviews with scheduled castes students of that institution. It is reported that due to caste discrimination by the teachers and the upper caste students, an engineering student committed suicide. But the authorities of the institutions denied all allegations.^{xxi} Of late, there have been many such incidents in the higher educational institutions. The Tribune report^{xxii} says that in Himachal Pradesh, government schools students are divided on the caste basis during midday meal. The parents of upper caste students refused to let their children sit with Scheduled Castes and teachers are helpless to solve the problem. Another report from Himachal Pradesh also claims the same problem of different sitting arrangements during serving the food in schools. The report also identified more than 20 cases of different form of discrimination from seven districts of the state. Scheduled Castes students face discrimination by teaching and non teaching staff in accessing education, in addition to sexual harassment faced by Scheduled Castes girls.^{xxiii}

The government of India and many social organisations^{xxiv} and activists are working on it and surprisingly, they have huge reports on caste discrimination in educational field. The reports reveal the fact that marginalised communities are being discriminated in schools. When the pain of humiliation becomes too much for Scheduled Castes to bear, they no longer want to attend school or even in higher education they commit suicides. That's

the reason behind early marriages. Though there is increase in Dalit literacy rate. The Government data shows that more than 42 percent of students drop out before completing the eighth grade, and more than 49 percent drop out before the tenth grade.^{xxv}

A Human Rights body named- Human Rights Watch- recently, released a report, “They Say We're Dirty”: Denying an Education to India's Marginalised,^{xxvi} highlights religious and caste-based discrimination in Indian schools. Discrimination continues in educational field and the most effected children from marginalized communities like Dalits and Muslims. The report reveals discrimination such as segregation in classrooms, corporal punishment, and food deprivation, cleaning toilets, derogatory remarks, and denying leadership positions. The director Satyendra Kumar, Bihar of New Delhi-based Centre for Social Equity and Inclusion expressed his views on caste discrimination in an interview with Human Rights Watch:

“Dalit children continue to be pushed out of the education system because of discriminatory behaviour of teachers and institutional exclusion such as poor investment in schools in Dalit habitations. Dalit children are made to feel inferior in schools and the schools reinforce caste norms. When it comes to any manual work such as cleaning of classrooms or picking up garbage, it’s always the Dalit children who are asked to do it.”

CONCLUDING NOTES

With a reference to the above discussion our argument is that the goal of sustainable development can only gain currency when society and the political regimes accord equal importance to all the citizens. However the matter of fact is that scheduled castes have to suffer inequality and discrimination. As the happenings of atrocities against the Dalit children reveal, the crime against Scheduled Castes children has been increasing day by day. They are being discriminated in schools, colleges and also in the universities. Education is the mean that makes one aware towards their rights and also is a medium of providing salvation to Scheduled Castes from caste based miseries. But while fulfilling their endeavour of securing quality education, they have to face humiliation which makes them mindful of their low status within the society because of which many of them get disheartened and are forced to take such extreme measures as suicide. However, the government of India and many NGOs are very intensely working on this particular problem to provide social justice to them but the outcome of these initiatives is not very encouraging. There are some problems of implementation of the affirmative policies and the policies of protective discriminations to give rights to scheduled castes. It is true that unless the rights of all citizens are not equally secured, the growth and development of our country cannot be achieved.

ⁱ <http://www.thesomeroproject.org/about/the-vision/>

ⁱⁱ Ambedkar B.R. *Writings and Speeches, Vol.2*, (Bombay: Government of Maharashtra,1982), 62.

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- xvi I collect the excrement lying near the school which the teachers of the school ask the Valmiki children to clean.” - Amrut Ishwarbhai Patadiya, age 7, Surendra nagar District.
- xvii I go to study in the government school. The teachers in our school practice discrimination with us. They make us sit in the last row in the classroom and so the teachers are not interested to teach. Our names are not written in any competitions that happen in the school. So I feel like that I will fail and so I should stop going to the school.” – Vishalkumar Rameshbhai Vaghela, age 14, Bhavnagar District.
- xviii *Navsarjan Trust* (www.navsarjan.org), *the Center for Human Rights and Global Justice* (www.chrgj.org) and *the International Dalit Solidarity Network* (www.idsn.org)
- xix <http://www.dnaindia.com/india/report-state-of-government-schools-lower-caste-students-face-acute-discrimination-1928549> (accessed on 07.6.2018).
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