Technological Impact on Socio-Economic Development of Farmers - A Multivariate Study

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Abstract: Science and technology (S&T) plays a major role in bringing about social and economic development and empowerment, especially in the rural area. Technological adoption by agricultural sector continues to play a crucial role in development of India. Technology has gained increasing prominence in the past few years as national policy initiative for balanced regional and area development, policy guidelines of government. Accordingly, this study has been undertaken to examine the direct impact of technology on farmers' socio-economic empowerment and development which followed by finding correlation between technology and economic progress through development. For evaluating the impact it considered various dimensions like health, spouse's emotions and children's education with their behaviour and health. With 150 respondents from Solapur district of Maharashtra state, this empirical study focused two major reasons for adoption of agro-technology categorized as 'self motivated' and 'external influences' which includes water or scarcity of resources, mechanization of agriculture, government rules and schemes, better value for produce, sound life, etc. The initial schedule contained 116 items on various dimensions of self motivation reasons, external influences factor, social development, economic development, economic progress, health and behavioural change. In order to collect more clear and satisfactory responses from respondents through structured questionnaire, some items were modified and few items deleted and 90 items were finally retained. As it is a multivariable study, apart from parametric statistical tools, ANOVA, MANCOVA, Confirmatory factor analysis and Structural Equation Modelling (SEM) are used in this study for data analysis and it has been done using SPSS (20.0) and SPSS AMOS. In this study, it is found that there is correlation between technology and economic progress of farmers and it also found that health consciousness has increased and behavioural pattern has changed.

Key words: Agro-technology, Economic development, Social development, External influences, Economic progress

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Introduction

There is a need for taking advantage of the recent developments in science and technology in rural areas which is the need of the hour to increase the socio-economic status of the rural population specially farmers. It is felt long back due to its potential in converting laggard rural areas to the most progressive. Science and technology are two crucial components of all efforts aimed at fostering growth and socio-economic development of nations (Herz, 1993). Many developing countries face the challenge of increasing incomes of rural sector through different approaches and to minimise the gap between the urban and rural. Most of the developing countries are agrarian economies, which are understood to be low productive and operating in small holder capacities. The question before us is that what hinders science and technology to be applied in agriculture sectors - rural areas. However, there are different reasons according to the contexts. Science and technology has been widely criticized for being a double edged weapon. Technology has been central and crucial towards attaining food security. The Green Revolution in Asia and Central and Latin America in 1960s are stark examples. Many of the third world nations have been quick absorbents in applying science and technology as a tool for rural development. The necessity of harnessing science and technology in rural India is found to be very recent. The present government in India has drafted a science and technology policy aiming to transform rural India on identified thrust areas. However, the farmers' socio-economic status depends on the adoption of technology. So, this study focuses on the impact of technology on farmers' socio-economic development.

Review of Literature

Developing economies have generally been described as dual economies with a traditional agricultural sector and a modern capitalist sector. Productivity is assumed to be lower in agriculture than in the modern sector. The canonical model was put forward by Lewis (1954) and subsequently extended by Ranis and Fei (1961). Lewis' model rests on the idea of surplus labour in the agricultural sector. With lower productivity in agriculture, wages will be higher in the modern sector, which induces labour to move from agriculture to the modern sector, which in turn generates economic growth. Other successors, such as Schultz (1964), also points out the importance of food supply by the agricultural sector. In Schultz's view, agriculture is important for economic growth in the sense that it guarantees subsistence for society, without which growth is not possible. This early view on the role of agriculture in economics matched Kuznets' (1966) empirical observation that the importance of the agricultural sector declines with economic development. In this view, the role of agriculture in economic development is to supply cheap food and low wage labour to the modern sector. Otherwise, both sectors have few inter-connections. Growth and higher productivity in the agricultural sector contribute to overall economic growth by releasing labour as well as capital to the other sectors in the economy. However, industrialization is seen as the ultimate driving force behind a country's development and agriculture as a tradition allows productivity sector

Objectives

The study is undertaken with the following objectives.

1. To discover vital predictors of technology.
2. To study the arbitrating correlation between technology and economic progress through socio-economic development.
3. To evaluate the impact of technology on health, spouse's emotions and children's education across socio-economic profile of the respondents.
4. To examine the direct impact of technology on social development, economic empowerment and economic progress.
5. To discover the reasons of adoption of technology with respect to self-motivation or external influences

Hypothesis

H1a. External Influences factors significantly predict the technology adoption

H1b. Self-motivated factors significantly predicts the technology adoption

H2a. Technology has direct impact on social development

H2b. Technology has direct impact on economic empowerment

H2c. Technology has direct impact on economic progress

H3a. Social development has direct impact on economic progress

H3b. Economic empowerment has direct impact on economic progress

H4. Social development mediates the relationship between technology and economic progress

H5. Nature of technology differs across the socio-economic variables

Methodology

Generation of scale items and data collection form

Extensive relevant literature has been reviewed to generate items pertaining to different dimensions of technology, social and economic empowerment, economic progress, behaviour and health. Since no paper has been found with well established scale, the research papers are reviewed to get an idea to frame a self developed schedule. The scale items are finalized after reviewing the literature and detailed discussions with the subject experts and academicians. Schedule is, thereafter, used for collecting the requisite information from the respondents. Schedule consisted of two sections, one general and other to elicit information about eight dimensions of technology namely, external influences, self motivated factor, social development, economic empowerment, economic progress, health and behavioural change. Schedule comprised of total 90 items, out of which 13 pertained to general information, 30 items related to technology adoption (18 of external influences, 12 of self-motivation factor), 13 items of social development, 10 items of economic empowerment, 10 items of economic progress, 5 items of health and remaining 9 items pertained to reasons of behaviour. The data are collected on 5-point Likert scale ranging from 1 to 5 on the basis of knowledge

regarding social development, economic empowerment, economic progress, health and behavioural issues (where, 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree and 5 = strongly agree).

Sampling techniques and data collection

The study was conducted in Solapur district in western region of Maharashtra State. This district was purposively chosen for the study because it is surrounded by maximum rural and farmer communities which are mainly familiar with agriculture sector and adopted technology for their development. Convenient sampling was used as the sampling technique and a total of 150 farmers were selected. The period of study was during January-March 2017. A structured pre-tested questionnaire was used as the data collection instrument. Pretesting of the questionnaire was done among small group of farmers. Sampling structure followed by -

Table 1. Sampling Structure

3 Talukas from Solapur district	3 X 1 = 3
5 Villages from each taluka	3 X 5 = 15
10 Farmers from each village	15 X 10 = 150
Total	150

Pretesting

The initial schedule was prepared in May 2017. To assess the impact of technology on farmer's livelihood and calculate final sample size, pretesting was done on 50 respondents. The respondents are selected on judgment and convenient basis, selecting five respondents from ten villages of Solapur district. The schedule comprised questions in dichotomous form, open ended and ordinal form of 5 point Likert scale, where rank '5' denotes 'strongly agree' and rank '1' denotes 'strongly disagree'. The initial schedule contained 116 items on various dimensions as technology adoption, social development, economic empowerment, economic progress, health and behavioural change. In order to collect more clear and satisfactory responses from respondents, some items are modified and few items deleted and ultimately 90 items are retained for final survey.

Outliers

An outlier is an observation which is numerically away from rest of the data (Barnett and Lewis, 1994). An outlying observation is one which appears deviated from the other members of the sample. There are number of methods provided in the statistics for identifying and deleting outliers. Box plot is considered as the most objective and quantitative approach to look out outliers (Mendenhall et al., 1993). In the present study, outliers are identified through box plot by calculating Z-scores of all the dimensions individually with the help of SPSS (20.0 versions). The outlier observations which are occurring for 3 or 4 times are deleted. Thereafter, overall Z score of all dimensions is calculated. Again outliers are identified and deleted with the help of box plot. In box plot, those points which are outside the end of the whiskers are outliers. Outlier observations are deleted from the data sheet. Further to check normalcy, Kolmogorov-Smirnov and Shapiro-Wilk test are performed which came out to be insignificant and proved that data is normal.

Statistical tool and techniques applied

1. Parametric	- Mean - SD - t-test
2. Non-Parametric	- FANOVA (Factor Analysis & ANNOVA) - Regression - MANCOVA - Confirmatory factor analysis - Structural equation modelling
3. Unobtrusive Methods	- Written and audio-visual records - Simple observations
4. Non-Unobtrusive Methods	- Focus Group Interviews - Questionnaires

Data Analysis and Discussion

Table 2. Socio-Economic Profile of Respondents

S. No.	Variable	Classification	Number	Percentage
1	Gender	Male	111	74
		Female	39	26
		Sub Total	150	100
2	Age	Up to 30 years	33	22
		30-40 years	45	30
		40-50 years	42	28
		Above 50 years	30	20
		Sub Total	150	100
3	Caste	General	51	34
		SC	30	20
		ST	27	18
		OBC	42	28
		Sub Total	150	100
4	Religion	Hindu	108	72
		Muslim	42	28
		Sub Total	150	100
5	Marital Status	Married	126	84
		Unmarried	24	16
		Sub Total	150	100
6	land	low	45	30
		Middle	63	42
		High	42	28
		Sub Total	150	100

Factor Analysis

Primary data was collected through a structured questionnaire. The respondents were asked to answer based on giving a rank to each statement on a 5-point Likert scale basis (1= strongly disagree and 5 = strongly agree) and factor analysis technique was used to analyze the primary data. Trimming a large number of variables to reach at few factors to explain the original data more economically and efficiently factors analysis, a widely used multivariate technique

in research was used. It is an important tool for resolving this confusion and identifying factors from an array of seemingly important variables.

Adequacy of the data is tested on the basis of results the Kaiser-Meyer-Olkin (KMO) measures of sampling adequacy and Bartlett's test of sphericity (homogeneity of variance) provided. The KMO measure of sampling adequacy is 0.872 (shown in table - 3) which indicates the present data suitable for factor analysis.

Bartlett's test of sphericity tests the hypothesis whether the population correlation matrix is an identity matrix. The existence of the identity matrix puts the correctness of the factor analysis under suspicion. Table 3 shows that chi-square statistic is 3725.533 with 190 degree of freedom. This value is significant at 0.01 levels both the results; KMO statistic and Bartlett's Test of sphericity indicate an appropriate factor analysis model.

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.872
Bartlett's Test of Sphericity	Approx. Chi-square	3725.533
	Df	190
	Sig.	.000

Confirmatory Factor Analysis (CFA)

CFA is a statistical tool that enables researchers to either confirm or reject preconceived theory. It is a deductive approach and multivariate statistical technique that is used to test how well the measured variables represent the construct and model building. To perform CFA, it is essential to specify both the number of factors that fall within a set of variables and which factor of each variable will load highly on before results can be computed. CFA is of great use in improving quantitative measurement in social sciences. It is generally based on a strong theoretical and empirical foundation that allows the analyst to specify an accurate factor structure in advance.

CFA is conducted with the objective of verifying the fitness of each latent construct. In the present study, it is performed to assess

Table 4: Results showing factor loadings and variance explained after scale purification (Rotated Component Method)

Factor-wise dimension	Mean	SD	Factor loading	Eigen value	Variance explained %	Cumulative explained %	Commu nality	Alpha (á)
EXTERNAL INFLUENCE FACTOR								
Factor 1: Socio-cultural				**5.264**	**42.534**	**42.534**		**.912**
·Unemployment	2.44	1.05	.857				.710	
·Propaganda	2.34	1.24	.848				.810	
·reduced Land availability	2.50	1.02	.816				.549	
·Food insecurity	2.57	1.06	.785				.750	
Factor 2: Political				**1.507**	**14.585**	**57.19**		**.693**
·Governments rules & Schemes	2.54	1.10	.547				.652	
·Lack of Infrastructure	3.51	1.48	.802				.647	
Factor 3: Economical				**1.244**	**12.456**	**69.575**		**.780**
·Lack of labour availability	3.18	1.36	.879				.844	
·slow economic growth	3.65	1.38	.823				.834	
·Mechanization of agriculture	3.62	1.84	.873				.850	
·Poverty	3.51	1.74	.834				.579	
·Low wages	3.79	1.52	.861				.864	
Factor 4: Environment				**1.147**	**8.391**	**77.966**		
·Environmental degradation	3.53	1.13	.852				.844	
·Natural disasters	2.51	1.08	.734				.834	
·Climate change	3.56	1.09	.809				.985	
·Water scarcity	3.54	1.12	.650				.843	
SELF MOTIVATED FACTOR								
Factor 1: Socio-cultural				**3.562**	**29.516**	**29.516**		**.945**
·Potential better standard of living	2.42	1.53	.944				.918	
·Fulfilment of aspirations	2.37	1.50	.934				.903	
·Education and cultural opportunities	2.42	1.46	.885	.826				
Factor 2: Political				**1.765**	**22.743**	**52.259**		**.710**
·Scope for exports of produce·	3.52	1.02	.757				.589	
Factor 3: Economic				**1.203**	**20.302**	**72.561**		**.872**
·Better value for produce	1.94	1.25	.890				.812	
·Employment and business opportunities	1.38	1.57	.861				.813	
·Sound life	1.69	1.03	.880				.794	
Factor 4: Environment				**1.106**	**12.643**	**85.204**		
·Lack of natural resources	3.35	1.18	.842				.945	
·Full utility of resources	4.01	1.03	.819				.936	

SOCIAL DEVELOPMENT								
Factor 1: Self Realization				**4.972**	**25.346**	**25.346**		**.648**
·Empowered me to move to all public places freely	3.45	.99	.834				.719	
·Improved hygiene and education	3.52	.94	.723				.779	
·Became independent in decision making	3.29	1.02	.744				.660	
·Increased your confidence level	3.76	.78	.764				.736	
·Family supports/appreciates your decisions	3.45	.93	.731				.529	
Factor 2: Community Development				**2.683**	**15.896**	**37.989**		**.881**
·Initiator to abolish bad custom	1.54	.94	.922				.890	
·Enhanced your business relations	1.56	.91	.733				.861	
·You often meet with & talked to people from other social groups outside your home regarding rural development and agricultural issues	1.62	.99	.888				.880	
Factor 3: Social Recognisation				**1.446**	**8.893**	**46.882**		**.782**
· Aware about all special schemes that are offered by the govt.	2.06	1.21	.844				.805	· Participate in maximum community activity and local issues
	2.83	1.54	.813				.934	
· Improved your agricultural skills(seeking guidance by ppl) Response and feedback is always appreciated regarding any agricultural and rural issues	2.95	1.32	.789				.785	
Factor 4: Social Status				**1.159**	**8.662**	**67.874**		**.659**
·Positively affects your social status (Purchase of Tractor, land, T.V.)	2.59	1.32	.759				.687	
·New house constructed	2.82	1.63	.843				.768	
ECONOMIC EMPOWERMENT								
Factor 1: Immovability				**4.993**	**46.768**	**46.768**		**.909**
· Enables you & your family to perceive/identify better economic status	3.51	.97	.846				.719	
·Increased scope for more productivity	3.33	1.06	.824				.779	
·Now prepared for financial emergencies	3.28	1.08	.812				.660	
·Enough money to meet any reliant condition	3.46	.99	.808				.736	
Factor 2: Economic Status				**1.116**	**21.106**	**67.874**		**.865**
·Increased your purchasing capacity	2.63	1.13	.830				.702	
·Living standard has been raised	2.27	1.08	.751				.598	
·Enhanced your level of income	2.63	1.67	.816				.927	
·Enabled your children to get better education economic status	2.43	1.48	.657				.648	
·Reduced your need to borrow money or goods in town	2.71	1.82	.591				.735	

ECONOMIC PROGRSS								
Factor 1: Improvement				**4.558**	**40.266**	**40.266**		**.664**
·Providing financial support to the needy	3.23	1.05	.846				.759	
·Introduce new innovation to the village	3.33	.94	.798				.683	
·Increased access to education of the society	3.47	.89	.768				.693	
·Expenditure on luxuries has increased	3.22	1.05	.765				.620	
Factor 2: Progress				**1.039**	**29.694**	**69.920**		**.803**
·It provide more land space for farming in rural area	3.83	.69	.875				.811	
·Overall reduced the level of poverty	3.62	.88	.854				.761	
·It helps to locate better market in town for farm products	3.68	1.78	.601				.678	
·Increased scope for experimentation to improve productivity of agriculture activities	3.64	.93	.733				.941	
BEHAVIOURAL				**4.351**	**36.428**	**36.428**		
Factor 1: Psychology								
Decrease in capacity of hard work	2.91	.31	.913				.732	
·Inclination towards lavish lifestyle	2.76	.64	.814				.798	
·Discrimination in community gathering	2.34	1.34	.648				.816	
Factor 2: Emotions			**1.864**	**23.627**	**60.055**			
·More self centered, More egoistic	2.73	1.50	.617				.782	
·Ill treatment to labors	2.19	1.39	.764				.864	
·More commercialized approach	2.81	.37	.846				.638	

the fitness, reliability and validity of five measured constructs, viz., technology (TECH) consists of two main dimensions i.e., external influences and self motivation; social development (SDEP); economic empowerment (EEMP) and economic Progress (EPGR). CFA is a way of testing how well measured variables represent a smaller number of constructs. Once baseline models are identified and measures are validated for discriminate and convergent validity (Larchel, 1981), reliability is assessed through the computation of Cronbach's alpha, composite reliability and average variance extracted (Hair et al., 2009).

CFA is carried out construct-wise to restrict the number of indicators. During CFA, items from the latent constructs having SRW below .50 got deleted (Hair et al., 2009). All the CFA models fulfilled the necessary condition of identification, according to which there must be at least three manifest variables for each construct so that it can have enough degrees of freedom to estimate all free parameters. The constructs have been found to be both uni-dimensional as well as multi-dimensional. Most of the indices like GFI, AGFI, NFI, TLI and CFI are above .90 whereas badness of fit indices i.e., RMSEA of all the constructs is below .08 and chi-square statistics (CMIN/DF) is less than recommended 0.5 level (Bagazzi and Yi, 1988)

CFA models

CFA is applied to assess the fitness, reliability and validity of six constructs, viz., technology (TECH) consists of two main dimensions i.e., external influences and self motivation; social development (SDEP); economic empowerment (EEMP) and economic Progress (EPGR). The various resulting models are as under.

CFA model for External Influences Factor

First order CFA (figure) is performed on external influences factor dimension, which constituted of eighteen items. Among eighteen items, ten items got deleted as they are not meeting the criteria i.e. SRW's > .50. After deleting, CFA produced good fit as CMIN/DF = 4.182, GFI = .934, AGFI = .961, NFI = .940, TLI = .962, CFI = .978

and RMSEA = .076 (table 7).The model has been found to be valid and reliable. The alpha value is.768 whereas composite reliability came out to be .973 thereby indicating that all items are reliable. Model has been proved to be valid, as AVE came out to be .549 (table 5). The construct validity also stands established as all the indicators have factor loading above .50. Out of the eight items, 'poverty' and 'lack of labour availability' emerged to be strongest contributor towards external influences factor dimension, as its regression weight is .85 and .90 respectively.

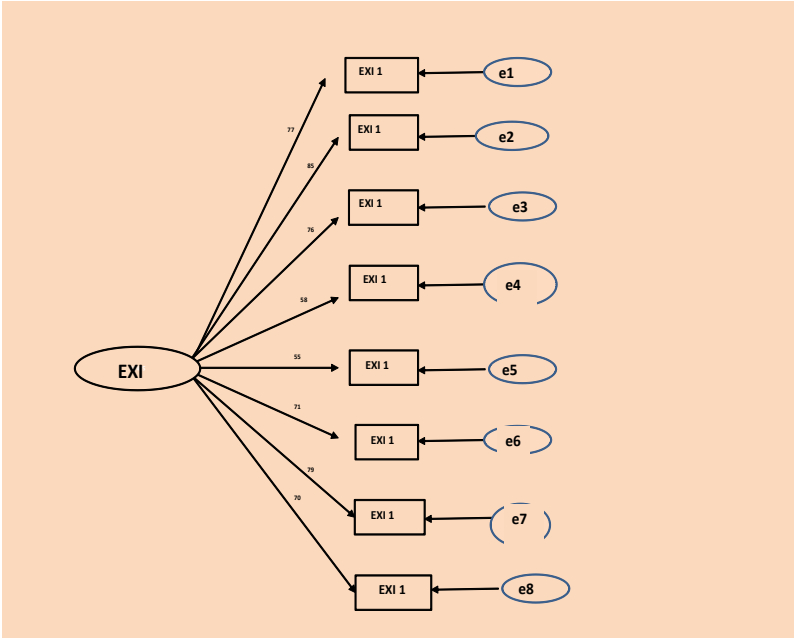

Figure 1: CFA Model for External Influences Factor Dimensions of Technology Adoption

CFA model for Self motivated factor, (SDEP) Social development, (EEMP) Economic empowerment, (EPGR) Economic progress, (BEHR) Behaviour and (HLTH) Health is performed on various dimensions of all these factors and result shown in table numbers 5, 6 and 7 regarding SRW's, CMIN/DF, GFI, AGFI, NFI, TLI, CFI, alpha value, composite reliability and regression weight.

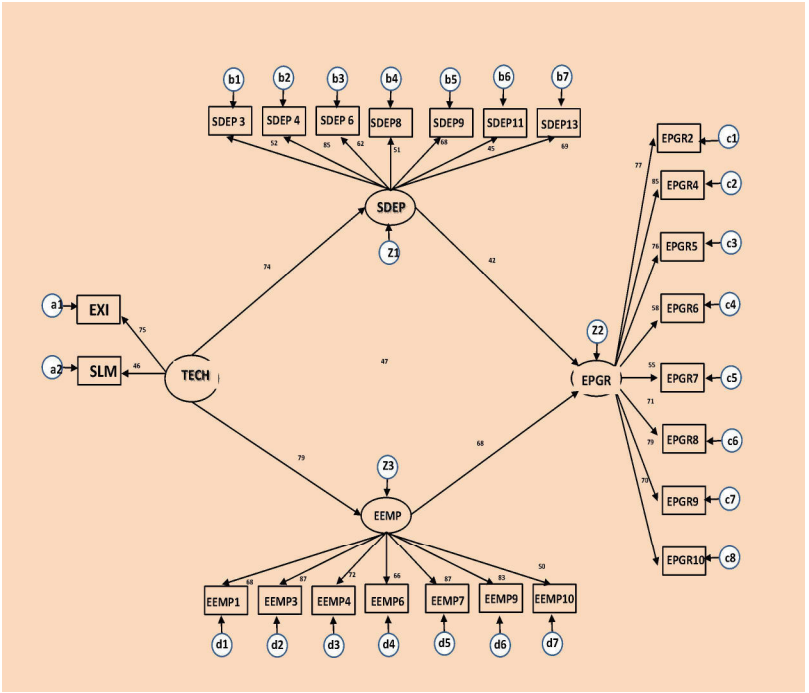

Figure 2: Overall Structure Equation Model

(EXI = External Influences Factor, SLM = Self Motivated factor TECH = Technology EEMP = Economic Empowerment; SDEP = Social Development; EPGR = Economic Progress)

Table 5: Reliability and Validity of Latent Constructs

Constructs	AVE	Composite reliability	Cronbach's alpha (á)
External influences factor	.549	.973	.768
Self motivated factor	.672	.974	.812
Social development	.643	.969	.667
Economic empowerment	.589	.954	.812
Economic progress	.675	.993	.870
Behaviour	.645	.987	.876
Health	.561	.934	.871

Table 6: Discriminant Validity of Latent Constructs

	EXI	SLM	SDEP	EEMP	EPGR	BEHR	HLTH
EXI	(.612)						
SLM	.32	(.578)					
SDEP	.18	.46	(.632)				
EEMP	.37	.26	.15	(.546)			
EPGR	.32	.30	.23	.50	(.604)		
BEHR	.30	.23	.13	.38	.40	(.584)	
HLTH	.24	.09	.06	.17	.16	.06	(.591)

(EXI = External Influences Factor, SLM = Self Motivated Factor, SDEP = Social development, EEMP = Economic empowerment, EPGR = Economic Progress, BEHR = Behaviour and HLTH = Health)

Table 7: Results of CRA FIT Indices

Constructs	CMIN/DF	GFI	AGFI	CFI	NFI	TLI	RMSEA
External influences factor	4.182	.934	.961	.968	.940	.962	.076
Self motivated factor	1.564	.967	.941	.963	.965	.975	.059
Social development	3.543	.983	.964	.981	.979	.975	.075
Economic empowerment	4.523	.982	.950	.978	.979	.965	.068
Economic progress	3.413	.981	.958	.989	.985	.985	.058
Behaviour	3.521	.963	.919	.976	.968	.952	.079
Health	4.367	.953	.957	.948	.928	.982	.086

Table 8: Fitness of the Structural Model

Model	CMIN/DF	GFI	AGFI	CFI	NFI	TLI	RMSEA
Modified model	4.879	.912	.826	.934	.927	.927	.079
Proposed model	9.913	.863	.854	.846	.829	.839	.132

Table 9: Results of Hypotheses Testing

	Hypotheses	CR	SRW	P-value	Accepted/ Rejected
H1a	External influence factors significantly predict the adoption of technology	10.966	.71	.000	Accepted
H1b	Self motivated factors significantly predicts the adoption of technology	12.351	.39	.000	Accepted
H2a	Technology has direct impact on social development.	13.284	.70	.000	Accepted
H2b	Technology has direct impact on economic empowerment.	8.342	.78	.000	Accepted
H2c	Technology has direct impact on economic progress.	4.328	.42	.000	Accepted
H3a	Social development has direct impact on economic progress	2.391	.40	.001	Accepted
H3b	Economic empowerment has direct impact on economic progress	2.520	.61	.002	Accepted
H4	Social development mediates the relationship between technology and economic progress	7.256	.52	.003	Accepted
H5	Nature of technology differs across the socio-economic variables	2.658	.98	.043	Partially accepted

Output from One-way ANOVA

Table 10 shows output from One-way ANOVA using different socio-economic variables subdivided into age, caste, religion and land on adoption of technology. Socio-economic variable wise, variance of groups is not same as the value of p is less than 0.05, indicating that significant mean difference exists in adoption of technology with regard to religion, and land whereas for age and caste, p value is more than 0.05 indicating no significant different exists.

Table 11 depicts the output from independent t-test measuring significance of mean difference on the basis of gender and marital status. As evident from the table, there exist no significant difference between male and female and married and unmarried respondents, as value of $p>0.05$ level of significance.

So, on the basis of table 10 and 11 we can say that the hypothesis 'Adoption of technology differs across the socio-economic variable' is accepted for religion and land and rejected for age, caste, gender and marital status.

Table 12 depicts age-wise output from One-way ANOVA using different dimensions of technology subdivided into external influences and self motivated factors. In case of external influences, variance of group is same as the value of p is more than 0.05, indicating insignificant mean difference exist among respondents of different age groups. Whereas in case of self motivated factor, variance of group is not same as the value of p is less than 0.05, indicating significant mean difference exist among different age groups. With regard to self motivated dimension of technology, respondents belonging to above 50 years of age are highly affected followed by 40-50 years, 30-40 years and up to 30 years (2.44 and 2.67).

Table 13 shows caste-wise output from One-way ANOVA using different dimensions of technology i.e. external influences and self motivated factors. For external influences dimensions, variance of group is not same as the value of p is less than 0.05 indicating significant mean difference exist among respondents belonging to different caste. Whereas no significant mean difference exist among respondents of different caste with respect to self motivated as variance of group is same as the value of p is more than 0.05. Caste-wise analysis shows that with regard to external influences dimension general caste respondents are highly contended followed by SC, ST and OBC respondents.

Table 14 shows output from independent t-test measuring significance of mean difference among male and female. As evident from the table, significant difference exists with regard to dimension as value of p is less than 0.05. Whereas no significant mean difference exist between male and female with regard to external influences and self motivated as the p value is greater than 0.05.

Table 15 reveals output from independent t-test measuring significance of mean difference among married and unmarried respondents. As evident from the table, value of p is less than 0.05

Table 10: Output from One-way ANOVA

Particular	Description of variable	Mean	Nature of variable	Sum of square	Df	Mean square	F	Sig.	Remarks
Technology Insignificant	Age	Up to 30 years 2.95	Between group	2.273	3	.758	2.139	.094	
		30-40 years 3.03	Within group	75.729	146	.353			
		40-50 years 3.10	Total	78.003	149				
		Above 50 years 3.18							
Technology Insignificant	Caste	General 3.11	Between group	2.670	3	.890	2.517	.057	
		SC 3.07	Within group	75.333	146	.353			
		ST 2.87	Total	78.003	149				
		OBC 2.82							
Technology	Religion	Hindu 3.08	Between group	2.731	2	1.366	3.872	.001	Significant
		Muslim 2.80	Within group	75.272	147	.353			
			Total	78.003	149				
Technology	Land	low 2.89	Between group	19.713	3	6.571	20.590	.000	Significant
		Middle 3.25	Within group	58.290	146	.319			
		High 3.39	Total	78.003	149				

Table 11: Mean Difference in the Adoption of Technology through T-Test

Particular	Nature of variable		Mean	SD	t-value	Df	Sig.	Remarks
Technology	Gender	Male	3.08	.61	.501	91.597	.617	Insignificant
		Female	3.04	.48				
Technology	Marital status	Married	3.09	.60	1.719	498	.086	Insignificant
		Unmarried	2.94	.52				

Table 12: Age-wise Output from One-way ANOVA

Dimensions of Technology	Description of variables	Mean	Nature of variable	Sum of square	Df	Mean square	F	Sig.	Remarks
External Influences	Up to 30 years	3.47	Between group	.697	3	.232	.518	.670	Insignificant
Factor	30-40 years	3.48	Within group	222.3	496	.448			
	40-50 years	3.51	Total	223.0	94	499			
	Above 50 years	3.59							
Self Motivated Factor	Up to 30 years	2.44	Between group	5.198	3	1.733	2.739	.043	Significant
	30-40 years	2.61	Within group	313.726	496	.633			
	40-50 years	2.70	Total	318.924	499				
	Above 50 years	2.81							

Table 13: Caste-wise Output from One-way ANOVA

Dimensions of Technology	Description of variables	Mean	Nature of variable	Sum of square	DF	Mean square	F	Sig.	Remarks
External Influences	General	3.54	Between group	3.497	3	1.166	2.633	.004	Significant
Factor	SC	3.53	Within group	219.597	146	.443			
	ST	3.31	Total	223.094	149				
	OBC	3.19							
Self Motivated	General	2.70	Between group	1.824	3	.608	.951	.416	Insignificant
Factor	SC	2.64	Within group	317.100	146	.639			
	ST	2.55	Total	318.924	149				
	OBC	2.46							

Table 14: Mean Difference in the Adoption of Technology between Male and Female through T-Test

Dimensions of Technology	Nature of variable	Mean	SD	t-value	Df	Level of significance	Remarks
External Influences	Male	3.50	.69	-1.259	95.863	.211	Insignificant
Factor	Female	3.59	.51				
Self Motivated	Male	2.68	.81	1.227	148	.220	Insignificant
Factor	Female	2.54	.75				

Table 15: Mean Difference in the Adoption of Technology between Married and Unmarried Respondents through T-Test

Dimensions of Technology	Nature of variable	Mean	SD	t-value	Df	Level of Significance	Remarks
External Influences	Married	2.84	.68	2.466	148	.641	Insignificant
Factor	Unmarried	2.69	.60				
Self Motivated	Married	2.66	.80	2.322	148	.001	Significant
Factor	Unmarried	2.41	.72				

indicating significant mean difference exists between married and unmarried with regard to self motivated factor. But insignificant mean difference exists on the dimension of external influences factor as p value is more than 0.05. Married respondents are more affected (2.69 and 2.84) than unmarried respondents (2.41 and 2.66) with regard to self motivated dimension of technology.

Conclusion

Technology has a large impact on a significant portion of rural area; the empirical study shows that technology has an unambiguous impact on socio-economic status and points to various mechanisms for poverty reduction besides simply increasing current household consumption. It is also leading to greater investments in household enterprises, increases in children's schooling and higher current consumption. Study also shows an opportunity for empowerment of dependents of farmers. Further it will contribute in social development. Technology offers economic empowerment and economic progress in villages. Technology also offers stimulation to children's education specially girls' education with the help of additional income. Technology offers social status and reorganization because of civic engagement in community development. It gives the scope for spouse to take decision regarding agriculture and family issues and it will make them self confident and independent. Technology has negative impact on young farmers' psychology; they have more commercialized approach, more self centered, more egoistic. There is positive impact of technology on physical health of defendants through proper hygiene. Comparatively Hindu and high land holder farmers adopted more technology and developed themselves with their social status and life style. It also seems that in SC and ST category famers have not adopted technology due to lack of self motivation and that's why they are not in a position to participate rural community development.

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