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Farmers Received Net Price for the Agricultural Produce in Uttar Pradesh: A Socio Demographic Perspective

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Abstract
the rice cultivators often face the problem of under receipt of price from agricultural produce marketing. The social and demographic aspects needs equal consideration for the determination of current state of affairs. The social and demographic variables especially the farmer's age, family size, education land type, dependency on land, farmer's ict usage; often lead to statistically significant differences in resource usage patterns and obvious price realization from marketing of rice. The study across uttar pradesh based rice cultivators explores the role of age and other social demographic aspects in shaping the price realization propensity. The study incorporates regression modeling methodology to ascertain the possible mapping of relationships.
Key words*: net price received by farmer, agricultural produce, dependency on land, ict usage patterns, social demographics,*

INTRODUCTION

Rice cultivators often face the challenge of lesser and non-optimal realization of costs of production from ongoing agricultural activity. The channel intermediaries, lack of collective articulation of interest and bargaining power have long been identified as some of the contributing aspects. The question of price being received from marketing of rice produce; has remained a vastly explored aspect across developing and emerging economies and across economies dependent on agriculture. The political debates (Zsidisin, et.al, 2005) and agenda setting have long emphasized the issue of net price enhancement yet studies on subject matter have remained non convergent on subject. Some studies (Negi, et al., 2018) call for minimization and rationalization of intermediary's role in agricultural value chain (Yang, et al., 2012), yet a section of literature (Mourya & Mehta, 2021) calls for productivity enhancement and incorporation of technology. A section of studies (Boskova, et al., 2020) reflect on extent of farmer's organization (Degaonkar, 2016) as determining the scope and prospects for realization of sustainable development goals (Sachs, et al., 2020) as shaping the price realization. Farmers as gents in agricultural value chain (Stryker, 2013) consistently seem to suffer from the perennial problem of under realization of prices for the agricultural produce being harvested. Rice cultivators in Uttar Pradesh seem to be no exception to this country wide observation. Rice cultivators have been reported to earn less than satisfactory margins from the produce being grown across the harvesting season. The trends (Boskova, et al., 2020) across developing economies often cast a deep impact on the quantum of margin being received across harvesting cycle. Indian rice cultivators across rice growing regions are no exception to these global research outcomes. The studies (Ceballos, et al., 2020) on net price received by farmer often depict the pre and post lock down (Singh, et al., 2020) contrast and implications. Anyhow literature (Varshney, et al., 2021) on subject matter seems unanimous in depicting the significant role of social and demographics in shaping the net price received by the rice cultivators. The research is essential with regard to rice cultivators in order to figure out the possible impact of social and personal aspects in shaping the net price based realizations. The research is desired as the existing research on subject matter is in exhaustive, non-convergent and incapable of addressing the problems that are being faced across efficient and effective marketing of rice in state perspective. The research is needed to drive strategic advantage enhancement, positioning perspectives and value chain analysis in rice marketing from Uttar Pradesh state in particular. The instruments of marketing system are definitely in need for intensive change and need to evolve as per emerging

requirements of global markets. Hence research is justified. The research is desired in rice marketing as industry is scattered and not integrated. The sections below explore the literature on subject matter, reflect on the hypothesis, examine the research methodology and interpret the data in order to reach conclusions.

REVIEW OF LITERATURE

A host of studies (Negi, et al., 2018) seem to link the social demographics and price realization patterns across rice cultivators. Some studies (Haq, et al., 2013) examine the role of marketing channels, yet other examine the role of intermediaries (Degaonkar, 2016), some focus on training and personal characteristics (Moksadur, et al., 2006).Marketing channel behavior and dynamics (Ceballos, et al., 2020) in rice cultivation price determination and realization; presents a larger area of specialized research. The literature (Sachs, et al., 2020) classifies the subject as involving the aspects of strategic product development and product positioning, price based mechanisms, market entry conditions and the extent of structure of markets.

A study (Thiong'o, et al., 2019) on market channel dynamics explored the impact of market channels on possible market entry and resultant performance of firm. The study observed that the market channel dynamics does moderate the choice of market entry perspectives (Singh, et al., 2013) and possible generation of sustainable revenues. The market channel dynamics have been explored in multiple forms and contexts.

A section of literature (Sachs, et al.,2020) emphasizes the institutional perspectives whereas other section emphasizes the stakeholder dimension. A section of literature (Mourya & Mehta, 2021) explores the subject from the perspective of resource based view and calls for consistent acquisition and deployment of market assets (Saravanakumar & Kiruthika, 2015) and other strategic resources to revive and realize the competitive advantage (Moksadur, et al., 2006) in agriculture marketing.

The extent of uniqueness of resource (Khan, et al., 2018) sunder firm's control could usher in immense benefits in terms of market access, patronage and consistent consumption and positioning across leading and mass consumption markets. In case of agriculture goods (Boskova, et al., 2020) this could translate into extensive expertise in preserving the nutritional benefits, systems and mechanisms to protect the organic and non-pesticide nature and health friendliness of the produce in question.

The studies (Boskova, et al., 2020) on market channel behavior and resultant market dynamics often cite the critical role of price information flow mechanisms (Moksadur, et al., 2006) and information driven asymmetries as shaping effeminacy and profit sharing.

A research (Yang, et al., 2012) on channel dynamics pointed towards the institutional distances as crucial in the marketing channel development as they shape legitimacy and efficiency. The study observed substantial impact of channel pattern in shaping the reach across prospective customers. The study further noted that there are different routes that have been established in the marketing literature.

The role of commissioning agents (Haq, et al., 2013) in agriculture value chains is well documented across studies on agriculture dominant economies. The studies on subject matter identify the kucha and pakka arthis (commission agents) who work in tiered arrangements in order to meddle and seek financial incentives from the indirect sale of the produce from the farmers to other players in the agriculture value chain. As per literature, a kucha arthi acts as pure middlemen in bringing the farmers to pucca arthi and pucca arthi always aims at taking the ownership of the produce in the process. The process as such not only creates hurdles for price discovery but also leads to realization of lesser margins for the native rice grower. Informal money lending is also taken by the commission agent and in lieu of which he undertakes the guarantee form the farmer to have first right over the ripe crop when farmer is unable to pay.

A study (Kathiresan, et al., 2020) on constraints and opportunities to upgrading African and Asian rice markets; revealed that the poorly developed marketing system and lack of sustainable linkages across farmers, miller groups and marketing channels led to inconsistent price realization. Agriculture value chains are essentially buyer driven in nature and scope. This translates into reality that the rice buyers seem to possess more bargaining power than the rice cultivators. The lack of technological and managerial innovation has reduced the farmer's role in having a say in price determination.

The horizontal and vertical coordination mechanisms in rice value chains seem to differ substantially in adding value to the rice marketing. The horizontal coordination involves the coordination amongst the input suppliers, production actors, processing mechanisms, trading and retailing. The vertical coordination in turn involves the emphasis on strengthening of relationships across functional nodes of the value chain especially the participants in value chain. The question of net price received by rice cultivators is often viewed as related with vertical and horizontal integration across agricultural value chain. Net price realization in rice cultivation has been widely recognized as a challenge that needs

composite management. The matter of net price received by farmer is not limited to a select geography yet encompasses all rice producing terrains.

The social and economic aspects especially the farmer's age, family size, education land type, dependency on land, farmer's ICT usage have been observed as playing a vital role in shaping sensitivities. In context of rice marketing this translates into influences from across social formations, social divisions and economic bifurcations of society. In addition, the markets are not stand alone exchange mechanisms yet are socially and economically embedded into the social fabric and systems. The local networks and embedded social capital; has been a matter of extensive research in shaping market dynamics and ability of the producer to sell as desired margins. The social norms and social culture and standards of ethics and morality also seem to shape the social and economic dynamics.

Hypothesis formulation

In line with trends as evident in review of literature and overall pattern of aspects shaping the phenomenon, the conceptual approach was advocated. The conceptual approach concentrates on the possible relationships between social demographic aspects and the probable realization of produce price by rice cultivators in Uttar Pradesh perspective.

Table 1: Proposed Hypothesis statements for the research

	Assumed Hypothesis
H1	There is significant impact of rice cultivator's age, family size, education, land type and training on 'farmer's realization of price'
H2	There is statistically significant region wide differences with regard to impact of rice cultivator's age, family size, education, land type and training on 'farmer's realization of price'
H3	There is significant impact of 'education' in determination of 'farmer's realization of price'
H4	There are significant differences on account of 'ICT Usage' and 'regions' in 'farmer's realization of price'
H5	There is significant impact of 'land size' in determination of 'farmer's realization of price'
H6	There is statistically significant interaction between 'family size' and 'dependency on land' as shaping 'net price realization'
H7	There is significant impact of 'education' and 'family size' in determination of 'farmer's realization of price'
H8	There is significant impact of 'age' in determination of 'farmer's realization of price'
H9	There are significant differences on account of 'age' and 'family size' in 'farmer's realization of price'
H10	There are significant differences on account of 'age' and 'region' in 'farmer's realization of price'
H11	There are statistically significant differences in socio demographics by region.

RESEARCH METHODOLOGY

The data was collected from across rice cultivators were analyzed with aid of SPSS software version release 24.0. The detailed questionnaire was developed with the help of the literature in the field of the subject concerned. A total of 498 respondents participated in the study and the responses were examined for internal reliability with Cron Bach alpha. The reliability assessment was observed as 0.569 which is in safe range of 0.5 to 0.99.

Table 2: Descriptive Statistics of rice cultivators in Uttar Pradesh perspective

	N	Minimum	Maximum	Mean	Std. Deviation
AGE	498	1.00	5.00	2.5341	1.27971
FAMILYSIZE	498	1.00	3.00	2.0522	.83273
EDUCATION	498	1.00	3.00	1.6606	.63380
LANDTYPE	498	1.00	3.00	1.6546	.67819
DPENDENTONLAND	498	1.00	3.00	1.3293	.50349
NPF	498	1.00	3.00	1.7590	.74397

Analysis
Collinearity examination

The respective variables were assessed for multi-collinearity with aid of analysis of values of tolerance and variance inflation factor. The tables below depict the absence of the multi-collinearity problems across the data being considered for research and analysis.

Table3: Collinearity Assessment of data

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	AGE	.437	2.290
	FAMILYSIZE	.595	1.682
	EDUCATION	.681	1.468
	LANDTYPE	.727	1.376
	TRAINING	.984	1.016
a. Dependent Variable: NPF			

Durbinson test

Durbin-Watson analysis was leveraged to assess the extent of independence of error in the data as collected from the field. The observed measure of 1.985 is in satisfactory range of 1.5 to 2.50. The measure point to outcome that the behavior of one entrepreneur does not affects the behavior of other farmer participant in the study. The observed Durbin statistics hence seemingly observes as under the satisfactory range.

Table 4: Durbinson testModel Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.875[a]	.766	.764	.36179	.766	321.931	5	492	.000	1.194

a. Predictors: (Constant), TRAINING, AGE, EDUCATION, LANDTYPE, FAMILYSIZE
b. Dependent Variable: NPF

Base model

Hypothesis One: There is significant impact of rice cultivator's age, family size, education, land type and training on 'farmer's realization of price'

In terms of hypothesis validation, the first hypothesis was explored to ascertain the possible impact of rice cultivator's age, family size, education, land type and training on 'farmer's realization of price'

Table 5: Base model as observed

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.317	.105		12.505	.000
	AGE	.116	.019	.199	6.027	.000
	FAMILYSIZE	-.364	.025	-.407	-14.384	.000
	EDUCATION	-.268	.031	-.228	-8.639	.000
	LANDTYPE	.793	.028	.722	28.240	.000
	TRAINING	.020	.026	.018	.801	.424

a. Dependent Variable: NPF

The linear regression was calculated to predict 'farmer's realization of price' based on rice cultivator's 'age', 'family size', 'education', 'land type' and 'training'. The significant regression equation was observed

[F(farmer's realization of price)= 'age', 'family size', 'education', 'land type' and 'training'] with an observed R of 0.588.The reported empirical observations point towards the degree of freedom as 1 and equation was found[F(1(degree of freedom)=15.4(F),p<0.000), with an R of 0.588.The participating rice cultivating farmers predicted the weight as equal to1.317+ 0.116 (age)- 0.364(family size)- 0.268(education)+0.261 (social awareness)+0.793 (land type)+0.020(training). The R(multiple correlation coefficient) is regarded as a reliable measure of the quality of the prediction of the dependent variable(farmer's realization of price across rural areas in this case). The R2 (coefficient of determination) represents the proportion of variance in the dependent variable as reported by the constituent independent variables. The observed R2 of 0.346 depicts the 34 per cent variance in dependent on account of independent variables in determining the farmer's realization of price across rural areas. The reported value of 0.663 is a satisfactory measure of the multiple correlations.

Regression equation involving farmer's realization of price across rural areas = 1.317+ 0.116 (age)- 0.364(family size)- 0.268(education)+0.261 (social awareness) +0.793 (land type) +0.020 (training).

It is worthwhile mentioning here that the variable 'training' is not showing significant regression impact. It can thus be deduced that the training of farmers is yielding no significant impact on price determination and obvious realization. This in other words strengthens the notion that intermediaries are dominant in price determination mechanisms across rice marketing in Uttar Pradesh.

Cluster models

Hypothesis Two: There is statistically significant region wide differences with regard to impact of rice cultivator's age, family size, education, land type and training on 'farmer's realization of price'

In terms of hypothesis validation, the first hypothesis was explored to ascertain the possible impact of rice cultivator's age, family size, education, land type and training on 'farmer's realization of price' across four regions-East, West, North and South divisions

Table 6: cluster models Coefficients[a,b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.826	.277		2.982	.004
	TRAINING	.018	.065	.016	.276	.783
	LANDTYPE	.909	.071	.853	12.759	.000
	EDUCATION	-.167	.084	-.127	-1.995	.050
	FAMILYSIZE	-.399	.078	-.411	-5.089	.000
	AGE	.183	.052	.325	3.484	.001
a. Dependent Variable: NPF						
b. Selecting only cases for which REGION = 1.00						

Coefficients[a,b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.719	.222		7.760	.000
	TRAINING	-.054	.054	-.045	-1.003	.319
	LANDTYPE	.737	.056	.699	13.189	.000
	EDUCATION	-.370	.062	-.344	-5.995	.000
	FAMILYSIZE	-.304	.048	-.353	-6.274	.000
	AGE	.044	.043	.070	1.012	.315
a. Dependent Variable: NPF						
b. Selecting only cases for which REGION = 2.00						

Coefficients[a,b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.468	.175		8.369	.000

	TRAINING	.023	.045	.019	.499	.618
	LANDTYPE	.758	.051	.659	14.812	.000
	EDUCATION	-.269	.054	-.228	-4.950	.000
	FAMILYSIZE	-.394	.045	-.442	-8.831	.000
	AGE	.125	.031	.217	4.057	.000

a. Dependent Variable: NPF
b. Selecting only cases for which REGION = 3.00

Coefficients[a,b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.145	.203		5.630	.000
	TRAINING	.071	.045	.063	1.569	.119
	LANDTYPE	.814	.052	.753	15.707	.000
	EDUCATION	-.260	.059	-.225	-4.447	.000
	FAMILYSIZE	-.347	.046	-.392	-7.520	.000
	AGE	.102	.037	.181	2.746	.007

a. Dependent Variable: NPF
b. Selecting only cases for which REGION = 4.00

Where 1=East, 2=West, 3=North, 4=South

Education-Price interaction

Education as determinant of net price realized

H3 There is significant impact of 'education' in determination of 'farmer's realization of price'

The chi-square distributions were examined in linear generalized mode and the variables for tested for overall model with predictors as being either better or worse than an intercept only model. The intercept effect of rice growing farmer's education was explored on the farmer's receipt of net price prospects. The examination of break down effects separately yielded significant impact of 'education' on the shaping of overall price realization in farmer in rural Uttar Pradesh.

Table 7: Education-Price interaction

Omnibus Test[a]		
Likelihood Ratio Chi-Square	df	Sig.
49.778	2	.000
Dependent Variable: NPF Model: (Intercept), EDUCATION		
a. Compares the fitted model against the intercept-only model.		

Tests of Model Effects			
	Type III		
Source	Wald Chi-Square	df	Sig.
(Intercept)	1390.068	1	.000
EDUCATION	52.351	2	.000
Dependent Variable: NPF Model: (Intercept), EDUCATION			

ICT usage differs across regions

H4 There are significant differences on account of 'ICT Usage' and 'regions' in 'farmer's realization of price'

In similar prospect in order to ascertain the rice cultivator's ICT usage and region wide differences as influencing the overall independence as dependent variable, the two way ANOVA was applied. The result as exhibited in table below point to the statistically significant interaction across rice cultivator's general

ICT usage as independent variables. This is tantamount to observing that rice cultivator's ICT usage patterns do considerably vary across rural areas in Uttar Pradesh. The illustration below captures the statistical interaction rice cultivator's ICT usage across four regions from across rural Uttar Pradesh. As evident in the SPSS outcome in table below, the significance value is less than 0.05, hence the interaction is leading to significant impact on shaping rice cultivator across rural areas. This is tantamount to observing that interaction is exerting impact rice cultivating farmers across rural areas.

Table 8: ICT usage differs across regions

Multivariate Tests[a]						
Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.992	9792.608[b]	6.000	481.000	.000
	Wilks' Lambda	.008	9792.608[b]	6.000	481.000	.000
	Hotelling's Trace	122.153	9792.608[b]	6.000	481.000	.000
	Roy's Largest Root	122.153	9792.608[b]	6.000	481.000	.000
ICTUSAGE	Pillai's Trace	1.576	298.225	12.000	964.000	.000
	Wilks' Lambda	.041	314.865[b]	12.000	962.000	.000
	Hotelling's Trace	8.306	332.221	12.000	960.000	.000
	Roy's Largest Root	5.659	454.623[c]	6.000	482.000	.000
REGION	Pillai's Trace	.067	1.826	18.000	1449.000	.018
	Wilks' Lambda	.934	1.843	18.000	1360.959	.017
	Hotelling's Trace	.070	1.859	18.000	1439.000	.016
	Roy's Largest Root	.057	4.580[c]	6.000	483.000	.000
ICTUSAGE * REGION	Pillai's Trace	.101	1.381	36.000	2916.000	.065
	Wilks' Lambda	.903	1.388	36.000	2114.980	.003
	Hotelling's Trace	.105	1.392	36.000	2876.000	.061
	Roy's Largest Root	.056	4.511[c]	6.000	486.000	.000
a. Design: Intercept + ICTUSAGE + REGION + ICTUSAGE * REGION						
b. Exact statistic						
c. The statistic is an upper bound on F that yields a lower bound on the significance level.						

Land Type-Price interaction

Land type as determinant of net price realized

H5 There is statistically significant interaction between 'land type' and 'net price realization'

The chi-square distributions were examined in linear generalized mode and the variables for tested for overall model with predictors as being either better or worse than an intercept only model. The intercept effect of rice growing farmer's land type was explored on the farmer's receipt of net price prospects. The examination of break down effects separately yielded significant impact of 'land type' on the shaping of overall price realization in farmer in rural Uttar Pradesh.

Table 9: Land Type-Price interaction

Omnibus Test[a]

Likelihood Ratio Chi-Square	df	Sig.
407.210	2	.000

Dependent Variable: NPF

Model: (Intercept), LANDTYPE

a. Compares the fitted model against the intercept-only model.

Tests of Model Effects			
	Type III		
Source	Wald Chi-Square	df	Sig.
(Intercept)	6025.501	1	.000
LANDTYPE	630.100	2	.000

Dependent Variable: NPF Model: (Intercept), LANDTYPE

Interaction between family size and dependency on land as shaping net price realization

H6 There is statistically significant interaction between 'family size' and 'dependency on land' as shaping 'net price realization'

Rice cultivator's dependency on land and family size interaction revealed the incidence of statistical interference as exhibited by MANOVA. The wilk's lambda measure of 0.000 pointed to statistically significant interaction between rice farmer's dependency on land and family size as interacting mutually to shape farmer's net price receipt inclinations.

Table 10: Interaction between family size and dependency on land as shaping net price realization

Multivariate Tests[a]						
Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.772	413.226[b]	4.000	487.000	.000
	Wilks' Lambda	.228	413.226[b]	4.000	487.000	.000
	Hotelling's Trace	3.394	413.226[b]	4.000	487.000	.000
	Roy's Largest Root	3.394	413.226[b]	4.000	487.000	.000
FAMILYSIZE	Pillai's Trace	.567	48.271	8.000	976.000	.000
	Wilks' Lambda	.486	52.819[b]	8.000	974.000	.000
	Hotelling's Trace	.946	57.474	8.000	972.000	.000
	Roy's Largest Root	.811	98.896[c]	4.000	488.000	.000
DPENDENTONLAND	Pillai's Trace	.019	1.153	8.000	976.000	.325
	Wilks' Lambda	.981	1.154[b]	8.000	974.000	.325
	Hotelling's Trace	.019	1.154	8.000	972.000	.324
	Roy's Largest Root	.017	2.030[c]	4.000	488.000	.089
FAMILYSIZE * DPENDENTONLAND	Pillai's Trace	.038	1.558	12.000	1467.000	.098
	Wilks' Lambda	.962	1.565	12.000	1288.772	.096
	Hotelling's Trace	.039	1.571	12.000	1457.000	.094
	Roy's Largest Root	.033	3.998[c]	4.000	489.000	.003
a. Design: Intercept + FAMILYSIZE + DPENDENTONLAND + FAMILYSIZE * DPENDENTONLAND						
b. Exact statistic						
c. The statistic is an upper bound on F that yields a lower bound on the significance level.						

Education-Family size interaction

Education and family size as shaping net price realization

H7 There is significant impact of 'education' and 'family size' in determination of 'farmer's realization of price'

The independent variables education and family size were evaluated for cross interaction in shaping the net price receipt across rice cultivators. The two way ANOVA was applied to ascertain the education and family size interaction as influencing net price receipt as dependent variable. The result as exhibited in table below point to the statistically significant interaction across education and family size as independent variables. This is tantamount to observing that rice cultivator's education based differences and family size based variations do considerably effect the farmer's net price receipt in agricultural activities involving rice cultivation. As evident in the SPSS outcome in table above, the significance value is less than 0.05, hence the interaction is leading to significant impact on shaping net price receipt. This is tantamount to observing that interaction is exerting impact on rice cultivator's net price receipt.

Table 11: Tests of Between-Subjects Effects					
Dependent Variable: NPF					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	199.762[a]	7	28.537	185.648	.000

Intercept	137.715	1	137.715	895.891	.000
EDUCATION	4.815	2	2.408	15.663	.000
FAMILYSIZE	102.196	2	51.098	332.414	.000
EDUCATION * FAMILYSIZE	9.644	3	3.215	20.913	.000
Error	75.322	490	.154		
Total	1816.000	498			
Corrected Total	275.084	497			
a. R Squared = .726 (Adjusted R Squared = .722)					

Age-Price interaction

Age as determinant of NPF

H8 There is significant impact of 'age' in determination of 'farmer's realization of price'

The chi-square distributions were examined in linear generalized mode and the variables for tested for overall model with predictors as being either better or worse than an intercept only model. The intercept effect of rice growing farmer's age was explored on the farmer's receipt of net price prospects. The examination of break down effects separately yielded significant impact of 'age' on the shaping of overall price realization in farmer in rural Uttar Pradesh.

Table 12: Age as determinant of NPF

Omnibus Test[a]		
Likelihood Ratio Chi-Square	df	Sig.
712.171	4	.000
Dependent Variable: NPF Model: (Intercept), AGE		
a. Compares the fitted model against the intercept-only model.		

Tests of Model Effects

	Type III		
Source	Wald Chi-Square	df	Sig.
(Intercept)	8737.895	1	.000
AGE	1583.123	4	.000

Dependent Variable: NPF
Model: (Intercept), AGE

Age and family size as shaping net price realization

H9 There are significant differences on account of 'age' and 'family size' in 'farmer's realization of price'

The independent variables farmer's age and family size were evaluated for cross interaction in shaping the net price receipt across rice cultivators. The two way ANOVA was applied to ascertain the age and family size interaction as influencing net price receipt as dependent variable. The result as exhibited in table below point to the statistically significant interaction across age and family size as independent variables. This is tantamount to observing that rice cultivator's age based differences and family size based variations do considerably effect the farmer's net price receipt in agricultural activities involving rice cultivation. As evident in the SPSS outcome in table above, the significance value is less than 0.05, hence the interaction is leading to significant impact on shaping net price receipt. This is tantamount to observing that interaction is exerting impact on rice cultivator's net price receipt.

Table 13: Tests of Between-Subjects Effects

Dependent Variable: NPF

Source	Type III Sum of Squares	df	Mean Square	F	Sig.

Corrected Model	253.650[a]	7	36.236	828.348	.000
Intercept	1214.390	1	1214.390	27760.996	.000
AGE	59.290	4	14.823	338.846	.000
FAMILYSIZE	11.109	2	5.554	126.976	.000
AGE * FAMILYSIZE	23.743	1	23.743	542.767	.000
Error	21.435	490	.044		
Total	1816.000	498			
Corrected Total	275.084	497			

a. R Squared = .922 (Adjusted R Squared = .921)

Age region interaction as shaping net price realization

H10 There are significant differences on account of 'age' and 'region' in 'farmer's realization of price'

Rice cultivator's age and region interaction revealed the incidence of statistical interference as exhibited by MANOVA. The wilk's lambda measure of 0.000 pointed to statistically significant interaction between rice farmer's age and region as interacting mutually to shape farmer's net price receipt inclinations.

Table 14: Age region interaction as shaping net price realization

Multivariate Tests[a]						
Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.993	17142.440[b]	4.000	475.000	.000
	Wilks' Lambda	.007	17142.440[b]	4.000	475.000	.000
	Hotelling's Trace	144.357	17142.440[b]	4.000	475.000	.000
	Roy's Largest Root	144.357	17142.440[b]	4.000	475.000	.000
REGION	Pillai's Trace	.033	1.309	12.000	1431.000	.207
	Wilks' Lambda	.968	1.316	12.000	1257.023	.203
	Hotelling's Trace	.034	1.323	12.000	1421.000	.199
	Roy's Largest Root	.031	3.689[c]	4.000	477.000	.006
AGE	Pillai's Trace	1.877	105.646	16.000	1912.000	.000
	Wilks' Lambda	.025	214.423	16.000	1451.787	.000
	Hotelling's Trace	11.695	346.107	16.000	1894.000	.000
	Roy's Largest Root	9.797	1170.708[c]	4.000	478.000	.000
REGION * AGE	Pillai's Trace	.153	1.585	48.000	1912.000	.007
	Wilks' Lambda	**.853**	**1.603**	**48.000**	**1831.788**	**.006**
	Hotelling's Trace	.164	1.621	48.000	1894.000	.005
	Roy's Largest Root	.100	3.975[c]	12.000	478.000	.000
a. Design: Intercept + REGION + AGE + REGION * AGE						
b. Exact statistic						
c. The statistic is an upper bound on F that yields a lower bound on the significance level.						

Differences in socio demographics by region

H11 There are statistically significant differences in socio demographics by region

The study deployed the one way ANOVA to ascertain the difference sin farmer's notions of demographics across four chosen regions of Uttar Pradesh. As evident significant differences were observed as mentioned here.

Table 15: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
AGE	Between Groups	1.936	2	.968	.590	.055
	Within Groups	811.984	495	1.640		
	Total	813.920	497			
FAMILYSIZE	Between Groups	2.285	2	1.143	1.652	.193
	Within Groups	342.357	495	.692		
	Total	344.643	497			
EDUCATION	Between Groups	1.222	2	.611	1.524	.019
	Within Groups	198.427	495	.401		
	Total	199.649	497			

LANDTYPE	Between Groups	2.820	2	1.410	3.092	.046
	Within Groups	225.774	495	.456		
	Total	228.594	497			
ICTUSAGE	Between Groups	4.670	2	2.335	4.274	.014
	Within Groups	270.414	495	.546		
	Total	275.084	497			
DPENDENTONLAND	Between Groups	1.040	2	.520	2.060	.128
	Within Groups	124.952	495	.252		
	Total	125.992	497			
NPR	Between Groups	4.670	2	2.335	4.274	.014
	Within Groups	270.414	495	.546		
	Total	275.084	497			

Table 16: Hypothesis summary

Observed Hypothesis	Outcomes
There is significant impact of rice cultivator's age, family size, education, land type and training on 'farmer's realization of price'	Accepted
There is statistically significant region wide differences with regard to impact of rice cultivator's age, family size, education, land type and training on 'farmer's realization of price'	Accepted
There is significant impact of 'education' in determination of 'farmer's realization of price'	Accepted
There are significant differences on account of 'ICT Usage' and 'regions' in 'farmer's realization of price'	Accepted
There is significant impact of 'land size' in determination of 'farmer's realization of price'	Accepted
There is statistically significant interaction between 'family size' and 'dependency on land' as shaping 'net price realization'	Accepted
There is significant impact of 'education' and 'family size' in determination of 'farmer's realization of price'	Accepted
There is significant impact of 'age' in determination of 'farmer's realization of price'	Accepted
There are significant differences on account of 'age' and 'family size' in 'farmer's realization of price'	Accepted
There are significant differences on account of 'age' and 'region' in 'farmer's realization of price'	Accepted
There are statistically significant differences in socio demographics by region	Accepted

CONCLUSIONS

The research concentrated on the exploration of dynamics of agriculture marketing across rice produce in state of Uttar Pradesh. The research insights pose meaningful implications for the market channel planning and possible marketing strategy in state perspective. The research outcomes point towards the incidence of substantial implications for the market planning and execution of strategies in ground perspective. ICT has significant impact on net price received by the rice producer of Uttar Pradesh. The research observed that net price received is a significantly higher for the rice producer using new ICT, than the famers either using old or very old mode of ICT. The ICT usage needs to be promoted in the context of food grain marketing as this enables better flow of information and reduces information asymmetries between marketer and consumer.

Implications

The study based outcomes pose implications for theoretical development and application across agriculture marketing, other sectors of agriculture like fruits, flowers and horticulture as well. The core theoretical implications are evident in form of structural changes, inertia to change, pro-market orientation and ability to adapt with regard to changes in market. The existing frameworks across global research on subject matter apply well across Indian terrain. The study possesses implications for managerial action and strategy making. The managerial decision making is bound to get influenced from the observations with regard to rice marketing. The study outcome poses implications in terms of agriculture practices enhancement, policy making across cooperatives, policy drafting across rural credit

institutions and agriculture marketing boards. The observed marketing efficiency, influence of ICT and influence of globalization possesses implications for future marketing actions with regard to rice in particular and other food grains in general.

REFERENCES

1. Bošková, I., Ahado, S., and Ratinger, T. (2020),"The effects of the participation in producer organisations on the performance of dairy farmers in the Czech Republic and future challenges", Agricultural Economics, Vol. 66, No.8, pp.345-354.
2. Ceballos, F., Kannan, S., & Kramer, B. (2020),"Impacts of a national lockdown on smallholder farmers' income and food security: Empirical evidence from two states in India", World Development, 136,pp.105069.
3. Degaonkar, C. (2016), "Rice Export from India: Trends, problems and prospects", International Journal of Research-Granthaalayah", Vol. 4, No.7, pp. 122-136.
4. Haq, A., Aslam, A., Chaudhry, A. A., Naseer, A., Muhammad, K., Mushtaq, K., and Farooqi, M. S. (2013)," Who is the 'arthi': Understanding the commission agent's role in the agriculture supply chain", International Growth Centre (IGC), Working Paper.(2013).
5. Kathiresan, A., Nagai, T., and Haneishi, Y. (2020), "Policy options for galvanizing Africa's rice sector against impacts of COVID-19", World Dev., Vol.136, No.1, pp.105126. doi: 10.1016/j.worlddev.2020.105126.
6. Khan, W. H., Jamal, A., & Shah, A. H. (2018),"Sustainable Agricultural Development in India with Special Reference to Jammu and Kashmir: A Macro Analysis", Asian Journal of Managerial Science, Vol. 7, No.3, pp. 37-41.
7. Moksadur Rahman, S., Takeda, J., and Mohiuddin, M. (2006), "Rice FarmersMarketing Efficiency in Southwestern Part of Bangladesh", Journal of Applied Sciences, Vol.6, No.9, pp. 2043-2050.
8. Mourya, M., and Mehta, M. (2021),"Farmer Producer Company: India's Magic Bullet to Realise Select SDGs?", International Journal of Rural Management,Vol.17, No.1 (suppl), pp.115S-147S.
9. Negi, D. S., Birthal, P. S., Roy, D., and Khan, M. T. (2018), "Farmers' choice of market channels and producer prices in India: Role of transportation and communication networks", Food Policy, Vol. 81, No.1, pp.106-121.
10. Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G., Fuller, G., and Woelm, F. (2020), "The sustainable development goals and COVID-19", Sustainable development report, 2020.pp. 56-57.
11. Saravanakumar, V., and Kiruthika, N. (2015), "Economic analysis of production and marketing of paddy in Tamil Nadu", International Research Journal of Agricultural Economics and Statistics, Vol.6, No.2, pp.249-255.
12. Singh, B. I., Rana, J. C. and Ahlawat, S.P.(2020), "The future of smallholder farming in India: Some sustainability considerations", Sustainability, Vol.12, No.9, pp.3751.
13. Singh, S., Singh, R. K., and Singh, R. (2013), "Enhancing rice and wheat production by bridging yield gap in western Uttar Pradesh of India", Journal of Cereal Research, Vol.5, No.2,pp.43-44.
14. Stryker, J. D. (2013). 26 Developing Competitive Rice Value Chains. Realizing Africa's rice promise, 324.
15. Thiong'o, S. M., Kinoti, P., and Kibera, P. (2019),"Moderating Effect of Marketing Channel Dynamics on the Relationship between Market Entry Strategies and Performance of Multinational Corporations in Kenya", Journal of Markeitng and Communication, 64-79.
16. Varshney, D., Kumar, A., Mishra, A. K., Rashid, S., and Joshi, P. K. (2021), "India's COVID-19 social assistance package and its impact on the agriculture sector", Agricultural Systems, Vol.189, No.1, pp.103049.
17. Yang, Z., Su, C., and Fam, K. S. (2012), "Dealing with institutional distances in international marketing channels: Governance strategies that engender legitimacy and efficiency", Journal of Marketing, Vol.76, No.3, pp.41-55.
18. Zsidisin, G. A., Melnyk, S. A., and Ragatz, G. L. (2005), "An institutional theory perspective of business continuity planning for purchasing and supply management", International journal of production research, Vol. 43, No.16, pp.3401-3420.