MARKETING OF AGRICULTURAL PRODUCE: AN ATTITUDINAL ANALYSIS OF FARMERS

¹Dr.Vikram Sandhu ,²Hansdeep kaur[*]

**Assistant Professor, University Business School, Guru Nanak Dev University, Amritsar. Punjab. India.
Email: sandhu.vikram@yahoo.com**
[*]**Research Scholar, University Business School, Guru Nanak Dev University, Amritsar. Punjab. India.**
Email address: - hansdeep@gmail.com

Abstract
Agriculture is a primary activity in India. Majority of the population in India still lives in rural areas and agriculture and its allied activities are the main source of income. However, despite of the various efforts of the government, there still lies a discrepancy between the investment made by a farmer and return received upon the investment made. Thus this study tries to explore the effect of the various factors affecting farmers' attitude towards the marketing of agriculture produce. Data has been collected from 505 respondents using a convenience sampling technique. Exploratory factor analysis and confirmatory factor analysis have been used to explore the factors. The results of regression analysis revealed that four dimensions namely lack of infrastructure, cost, lack of transportation, and unfair practices have a positive impact on farmers' attitude towards agricultural marketing produce.

Keywords: agricultural produce, lack of infrastructure, cost, lack of transportation, multiple regression analysis

INTRODUCTION

Agriculture is a vital activity that supports the survival of the human race by providing the required nutrition and minerals through the food grains. Besides acting as a survival tool, agriculture also engages the people in employment and thus also supports the economic goals of the individuals (Kapya, Beatrice, and Black, 2018). The livelihood of the majority of the population of India depends upon the agriculture and its allied activities. This sector contributes about 18 per cent of the total Gross Domestic Product (GDP). According to 2011 Census estimates, approximately 69 per cent of the country's total population, is still living in rural areas of India and their major occupation is agriculture. These conditions result in lower levels of per capita income, as a result, there is a large discrepancy between per capita income of non- farming and farming sector (Chandramouli and General, 2011). Thus, the issues impacting the income levels of the farmer should be addressed. These income levels of the farmers are dominated by the total production, supported by levels of productivity and the profits earned by the selling the produce. The process of growing and selling the yield is not as simple as it seems to be (Mohanty, and Singh, 2014). A lot of external variables act as a constraint and hinders the process. There are climatic factors such as a change in weather, delaying of rain, and deteriorating soil quality. Moreover, the market-related factors play a significant role in deterring the process. Constraints such as imperfect market conditions, lack of integration along the supply chain, and poor marketing channels affect the income levels of the farmers. Specifically, talking about the fruits and vegetables, which are marketed either through regulated Agriculture Produce Marketing Committee (APMC) or is market by totally unfettered local fruit and vegetable markets (Swaminathan, 1998). Use of these traditional channels makes marketing of the product difficult as minimal attention is paid to grading, storing, and sorting (Angelina, 2008). Additionally, weak regulation and handling while transporting the stock results in loss of 30-40 per cent of the entire production. Multi-layered supply chains are used, which impose serious implications on the farmers' income as the price and the quality of produce is not controlled directly by the farmers due to the participation of multiple players. In

contrast to the traditional market, organized retail and supply chains are better coordinated (Badhani and Seksena, 1990). Hence, the marketing of agriculture produce plays a vital role in providing the proper remunerative marketing opportunities. Therefore, marketing channels and techniques hold the key position in enhancing the profitability of the farmer and also help to provide the balanced price of the yield by providing the proper information of the market.

In India rice and wheat are marketed primarily through regulated wholesale markets (Tyagi, 1979). The structure and functioning of these wholesale markets were planned by Agricultural Produce Marketing (Regulation) Act, ratified by various states in the late 1960s and late 1970s (Venkataramanan and Prahladachar, 1980). Among their main features was prohibiting the sale of notified products outside regulated markets. Overtime these markets have proliferated with the growth of agriculture, but the average area served by an individual wholesale market continues to be large. In 2010, the national average of an area served by regulated market was 400 km. In addition to a sense that the growth in regulated markets has not kept pace with needs, concern about the Agriculture Produce Market Committee (APMC) regulated market system have also been voiced on grounds that it has not served the interests of farmers (Selvaraj, Sundaravaradarajan, and Raveendran, 1998). The Model APMC Act 2003 proposed that the "monopoly of Government regulated wholesale markets has prevented the development of a competitive marketing system". The requirement that all buyers and sellers be licensed works as a barrier to the entry of newcomers in the market (Atibudhi, 1998). The model act explicitly allowed private players to set up markets, in the expectations that the marketing infrastructure as a whole would improve. It also allowed for private selling either through farmers' markets or through contract farming. Parallel development includes the restarting of future trading, the relaxation of export restrictions on rice and wheat (Rajagopal, 2000). The implementation of the model act has not been uniform across states. One of the debates surrounding its implementation is whether the changes were going to be

beneficial to farmers (Syan, Kumar, Sandhu, and Hundal, 2019).

LITERATURE REVIEW

Literature works, reports, and records accessible on the selected area confirms that few examinations have been directed in the discipline of agricultural marketing and the rural advertising helpful specifically over years. Many research establishments, analysts and academicians have drawn out a colossal number of research considers on the marketing of agricultural produce. Moreover, the government additionally led various investigations since pre-freedom time. Some of the research works are looked into and outlined here.

Swaminathan (1998) directed an examination on how assimilate weak agricultural market committees as its chief objective. Some of the major issues accounted in the study were the non-contribution in the marketing business, absence of expert administration, absence of proper infrastructure, lack of vertical integrations, deficient tie-up courses of action and poor assets. Thus, for the restoration; the study suggested to improve the business turnover position and limiting the establishment costs.

Angelina Sheba Albert (2008) led an investigation on execution of agricultural market committees and broke down the different aspects such as objectives, structure, functions, features, advantages, membership, and sources of finance. Furthermore, the researcher has distinguished drawbacks of agricultural market committees and mentioned some remedial actions to defeat such limitations. Study made an endeavor to audit the marketing of rural agricultural in relation to its degree, opportunities, scope, strategies. It also reviewed some difficulties like absence of personnel training measure, high working operational, maintenance costs, and high attribution rates restricts these societies to deal with already existing brands in the market.

National Cooperative Development Corporation (1966) has drawn out a report on promoting of explicit plantation crops and also mentioned the marketing arrangements, agencies and their performs like market finance, advertising exercises, and price patterns. Furthermore, the study recommended the different measures for the foundation and advancement of specific agricultural market committees in regard of harvests like cashew nut, coconut, black pepper, cardamom, and dry ginger with handling as an aide function.

Badhnai and Seksena (1988) made a cases study in the state of Uttar Pradesh. Farmers were compelled to offer to the nearby dealers for the utilization credit that they have gotten from brokers during off seasons. This framework is named as 'credit based promoting framework'. The investigation has been led so as to think about the size of the issue and its conceivable arrangement. The significant findings of the study were: The laborers offered a noteworthy segment of vegetable to neighborhood dealers because of accommodation and obligation commitments, got lower prices, approximately 90 per cent of the farmers bought consumer products using a loan or at more expensive rates from the town brokers during off seasons and absence of rivalry in the market which was great to merchants. In light of these discoveries, the investigation proposed setting up a buyers' credit cooperative society (CCCS) with legitimate coordination of the promoting society to allocate the products of peasants by using a loan during the off seasons.

Tyagi (1979) revealed in his study that the farmers were not given the better cost although the produce which was imported; conveyed at lesser price than the open market costs. It was additionally shown that expanded economic and physical access to food did not permit the costs gotten by the ranchers to go up notwithstanding when creation stagnated during the period between 1950-51 and 1960-61.

Venkatarmanan (1980) revealed that market deals by farmers have increased and physical losses during transportation, storage were likewise diminished. The investigation further revealed that the procedure of cost disclosure in a large portion of the business sectors was visibly open, market charges have been supported forward and backward linkages of markets had extensively expanded. This all was in light of a legitimate concern for ranchers.

Selvaraj et al (1998) Studied and assessed the farmers' perception and functioning of regulated markets. The examination uncovered that the majority of the farmers didn't know about the working of directed markets and the consequences of mindfulness model demonstrated that the instructive status of the ranchers was observed to be a significant factor. This factor affected the farmer's mindfulness about the directed markets. Consequently, it was recommended that endeavors to be taken to disperse the advantages of the directed markets among every farmer through exposure and purposeful publicity exercises with the goal that he might be taught on this.

Atibudhi (1998) revealed in his investigation that producer's organization should be formed to secure the farmer's interest and for streamlining better promoting framework for any important increment in share of producer in customer's rupee. In such a way, efficiency of market wills likewise farmer's exploitation by the brokers can be limited by solidification of the market committee. He recommended that government must intervene in the working of these associations and should take required steps to improve the marketing departments by giving appropriate marketing offices, skilled staff and impose strict provisions of Regulated Markets Act.

Dhawan and Singh (1999) revealed that positive price policy of some commodities (e.g. wheat and rice) consequently increases the profit and thereupon results in capital formation. A favorable policy of agricultural pricing along with the evolution of elevated yielding variety of harvest particularly wheat and rice has assisted in achieving self-sufficiency in food grain production. Thus, it is contingent that agricultural pricing policy performs an optimistic task in eliminating the hunger from the country.

Rajagopal (2000) focused on ensuring the correctness in prices discovery, Weighment, regularity and packing. In addition to the above, it was also revealed from the study that besides these regulations of price discovery and weighment and on the contrary, health, and sanitation of the customers have also been considered in formulating the regulations. However, the directive of agricultural marketing is the state subject and thus reflects heterogeneity in execution. In the end, it was put forward that, it was imperative to think of a uniform pattern for execution of the marketing acts, rules. and orders.

Rao (2004) focused on some changes in the favor of agricultural marketing. It was suggested that, the structural issues of marketing should be given attention if farmers are willing to shift from food to cash crops. Moreover, private segment investments should be enhanced within the agricultural sector which was earlier below the expected echelon. Organized Commodity Boards should be formed to tackle the issues relating to production, processing and marketing which will also on the other hand offer a wide range of services.

Singh (2004) study insisted that the existence of internal barriers must be dealt with iron hand and should be paid attention. It was also realized that, reconsideration of those aspects of guiding principles which avert a direct communication between farmers and agro-industries. There should be a single market across the realm which will be beneficial for both agricultural and industrial produce and will enhance encouragement of agro-industry connection. Since, agriculture sector is a vital sector, therefore it must be given the main concern, as it deserves. Also, agricultural research, extension and training require much superior thought.

Sharma and Raghuvanshi (2009) focused on the facilities required for marketing of agricultural produce so as to ensure the preferred consequences. The study conveyed out that, farmers have to be endowed with certain basic facilities such

as storage for their goods so that, produces can be held by them to get better prices during off season. Cheaper transportation amenities must be made available to enable the farmers to take surplus produce to the market rather than dispose it of in the village. Data with respect to decision costs in markets must be given to them. There has to be limited number of mediators with the goal to diminish the agent's benefits and rancher's profits might be expanded

David Kapya (2018) studied the agro processing sector, which possessed mean technical efficiency approximately 42.5 per cent and the mean scale efficiency was 81.7 per cent. Beverage firms realized better gains than food producers. The food production sector, meat processing firms fetched the best profit. Conversely, the baking and milling firms performed the worst and faced huge losses. A reindustrialization program should concentrate on the advancement of present day innovations, limit building and foundation improvement, just as on upgrades in the administrative system.

Mutisungilire Kachulu (2018) In their study, the effects of climate change was studied on smallholder farmers as regard as the different crop technologies is concerned namely; optimal fertilization, conservation agriculture, crop rotation, drip irrigation etc. A biophysical economic modeling technique was used to evaluate the transformation in crop productivity. To enhance the well being of smallholder farmers, the study recommended that increase in the adoption of intensive farming, conservation agriculture to at least 12 per cent of total cultivated area. The study also reveals that farmers' inability to optimise land use has a higher negative impact on welfare when compared to the effect from climate change. This means that the optimisation of crop and technology choices may play a more vital role in improving farmers' welfare than mere adaptation to climate change.

RESEARCH GAP
Rural development is one of the key factors which play very eminent role in the development of any nation whose major pie of population resides in rural area. In spite of being the most important sector, it is facing lots of the problem. Condition is worst than ever which leads to the suicide of farmers (Syan, Kumar, Sandhu, and Hundal, 2019; Kapya, Beatrice, and Black, 2018; Kapya, Conradie, and Black, 2018). Farmers are still in the down position to get benefits of their work due to various reasons. They still not have any idea about how to the sale; how to get the right price of their produce; they don't know how to channelize their produce; they lack awareness regarding the risk mitigation; and they don't know about the latest technologies. Agriculture, a major sector of the Indian economy has several problems and marketing is the most critical one. Only in agricultural marketing, the scope for exploitation and defrauding the (farmers) producers are more. As the producer-farmers are scattered and unorganized the problem takes different dimensions. In India, in the agriculture markets such facilitates are either missing or inadequate. Therefore, farmers' markets were recognized and organized to perk up the circumstances of Indian Agriculture Marketing (Kachulu, 2018; Hundal and Kumar, 2015; Sharma and Raghuvanshi, 2009; Rao, Birthal, Joshi, and Kar, 2004; Singh, 2004; Chahal and Dhawan, 1999). This up gradation was done in anticipation that it will solve the problem of selling the produce in the spot market at lesser rates because of lack in infrastructure, transportation, information, storage and guidance to farmers to a certain extent. So far the betterment of farmers and ultimately for the rural development there is a need to know the importance of proper marketing of agriculture produce and how better marketing affects the farmers' livelihood. As a result, the study aims to discover the various factors that affect farmers' attitude towards marketing of agricultural produce by using the various statistical tools. Therefore, it is hoped that this research will close the gap in past literature.

Hypotheses formulation
Following are the hypothesis:-

$H0_1$ - There is no impact of 'Lack of Infrastructure' dimension on farmers' attitude towards marketing of agricultural produce.
$H0_2$ - There is no impact of 'Lack of Guidance' dimension on farmers' attitude towards marketing of agricultural produce.
$H0_3$ - There is no impact of 'Cost' dimension on farmers' attitude towards marketing of agricultural produce.
$H0_4$ - There is no impact of 'Lack of Transportation' dimension on farmers' attitude towards marketing of agricultural produce.
$H0_5$ - There is no impact of 'Unfair Practices' dimension on farmers' attitude towards marketing of agricultural produce.

METHODOLOGY AND MEASUREMENT
Data collection
The research schedule was employed to gather the information from the target respondents. Survey was carried out in three various regions Malwa, Majha, and Doaba of Punjab state. Survey was conducted from May 2018 to May 2019. Non random sampling was used in the study because it was impossible to create the sampling framework as per the research objective. The convenience sampling technique was used to collect the data. Questionnaires were administered to 700 respondents but only 513 returned representing a response rate of 73.2 per cent. Out of the returned questionnaires, responses of only 505 respondents were considered for data analysis based upon the completeness and appropriateness of the questionnaires (Kumar, Hundal, and Kaur, 2019).

A pilot study with 110 respondents was conducted to test the research instrument and to rule out any discrepancies resulting out of vagueness of the questions. The recommendations of the experts and the discrepancies found in the pilot study were give due attention and all the suggestions were adopted in crafting the final instrument so as to avoid ambiguity in the field survey (Bollen, 1989). Descriptive statistics have been used to describe the demographic characteristics of the respondents (Zikmund, 2003).

Item generation, Refinement, and Validity of scale
In order to study the factors which may affect farmers in relation to marketing of agricultural produce, item generation process was used. The process was segregated into three different parts namely item refinement, instrument generation, and validation of the research instrument. For generation of the items, distinct items have been identified that are proposed to measure the each dimension. An extensive review of literature was carried out for generating items. After going through the previous literature, modified scale was produced to achieve the research *objectives. Before the item generation, the suggestions of the experts, and researchers were consulted and suggestions were invited for making the constructs more robust and effective. The final scale thus produced was then checked for validity and reliability of scale (Kumar and Hundal, 2018).*

Research instrument
The modified scale has been used by making some alterations to the already existing scales in order to appraise the factors which may affect farmers in relation to marketing of agricultural produce. In total, five dimensions were considered to achieve the objectives. Various dimensions such as lack of infrastructure, lack of guidance, cost, lack of transportation, and unfair practices have been taken in the current study. The collected data was subjected to analysis by employing exploratory factor analysis, confirmatory factor analysis, and multiple linear regression analysis (Hair et al., 2015). All items of the scale were measured on a five point likert scale ranging from 1 to 5, 1 being strongly disagree and 5 being strongly agree.

Data analysis
From the part of the measurement, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were applied to verify the factor structure and their loadings by using SPSS 20 version software and AMOS 20 version software (Malhotra and Dash, 2014).

In this section, the attempt has been made to explore the factors affect the farmers' attitude towards marketing of agricultural produce. In order to achieve this, exploratory factor analysis has been applied to the set of statements. Prior to conducting the factor analysis, it was checked whether the data is fit for factor analysis or not. Initially, the inter-item correlation has been measured and the correlation matrix revealed that the correlation among the statements was high. Eigen values have been considered as the baseline comparison and the items with Eigen value less than unity were dropped and ultimately five factors were considered for the study (Hair et al., 2015). Bartlett's test of sphericity and kaiser-meyer-olkin was also calculated and values were well above the specified levels which signify that data is fit for conducting factor analysis. The reliability of the scale has been tested and Cronbach's alpha comes out to be 0.812 which ensures that scale is reliable (Kumar and Hundal, 2018). Principle component varimax rotated factor analysis was used for deriving the factors. All the factors have been derived having factor loading more than 0.6 and they account for 83.830 per cent of variance in total (Hair et al., 2015; Zikmund, 2003). In table 1 all the extracted variables along with their communalities are shown and the values are more than the threshold level of 0.50 (Kline, 2011). Rotated component matrix signifies that five factors have been extracted with factor loading value more than 0.6 (Hair, Black, Babin, and Anderson, 2015). Factors with less than three variables are generally considered weak and unbalanced. If the value is 0.6, it depends on the highest factor loading allocate by each of them. Thus, it can be concluded that data is suitable for further analysis (O'Leary-Kelly, and Vokurka, 1998).

Table.1: Rotated Component Matrix, Eigenvalues, Total variance explained, KMO and Bartlett's test of sphericity

	Component				
	1	2	3	4	5
VAR00017	.955				
VAR00016	.953				
VAR00012	.953				
VAR00010	.904				
VAR00013	.875				
VAR00008		.936			
VAR00009		.936			
VAR00002		.908			
VAR00001		.815			
VAR00003		.750			
VAR00022			.955		
VAR00021			.935		
VAR00011			.926		
VAR00020			.913		
VAR00004				.947	
VAR00005				.932	
VAR00007				.931	
VAR00006				.883	
VAR00019					.954
VAR00014					.950
VAR00015					.922
VAR00018					.832
Eigen Value	4.448	3.982	3.516	3.282	3.215
% of Variance	20.218	18.098	15.982	14.919	14.612
Total Variance					83.830
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.					.830
Bartlett's Test of Sphericity Approx. Chi-Square					12878.623
Df					231
Sig.					0.000
Extraction Method:					Principal Component Analysis.
Rotation Method:					Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.					
(Source: Compiled from SPSS 20 output)					

Table 2: Factor Effecting Farmers in relation to Marketing of Agricultural Produce

Items	Loadings	Factor naming	Variables
V17	.955	Factor 1 **Lack of Infrastructure**	Sheds
V16	.953		Lack of Drainage
V12	.953		Rest House
V10	.904		Market infrastructure
V13	.875		Lack of the new Technology
V8	.936	Factor 2 **Lack of Guidance**	Traditional Cropping
V9	.936		Lack of Guidance from seniors
V2	.908		Lack of Guidance from Agri, Deptt

V1	.815		Ignorance among the Farmers
V3	.750		No exposure to other markets
V22	.955	Factor 3	Delayed in Cash Payment
V21	.935	**Cost**	Lack of Banking Facilities
V11	.926		High transportation costs
V20	.913		Lack of Credit support
V4	.947	Factor 4	High transportation costs
V5	.932	**Lack of**	Internal Road
V7	.931	**Transportation**	External Roads
V6	.883		Lack of transportation
V19	.954	Factor 5	Non-qualitative storing
V14	.950	**Unfair**	Red tapism & Bribary
V15	.922	**Practices**	No transparency in marketing channels
V18	.832		Unfair policies regarding marketing of the agricultural produce

(Source: Compiled from SPSS 20 output)

The summarized result of factor analysis has been shown in table 2. Results also describe that there are only 5 factors that have eigenvalue more than one (Hair et al., 2015). The first dimension i.e. 'Lack of Infrastructure' comprises of five items relating to the infrastructure. It explained 20.218 per cent of the variation of the data, with an eigenvalue of 4.448. The second dimension, 'Lack of Guidance' explained 18.08 per cent variation in the data, having an eigenvalue of 3.982. The third dimension, 'cost' explained 15.982 per cent variation in the data, having an eigenvalue of 3.516 and comprises of four items. The fourth dimension, 'Lack of Transportation' also comprises of four items and explained 14.919 per cent of the variation of the data, with an eigenvalue of 3.282. The fifth dimension 'Unfair Practices' was responsible for 14.612 per cent of variation, having an eigenvalue of 3.215.

Measurement model
After exploring the various factors by using exploratory factor analysis (EFA), the explored factors have been confirmed by the employing confirmatory factor analysis and to check the validly, reliability and consistency of the underlying constructs. In the current study, the results of CFA have revealed that all the standards values were above the threshold level of fit indices (Kumar and Hundal, 2018). Table 3 represents the Goodness of Fit Index (GFI) = 0.946, Adjusted (AGFI) = 0.930, Tucker-Lewis Index (TLI) = 0.986, Normed Fit Index (NFI) = 0.974, Comparative Fit Index (CFI) = 0.988. The indices of badness of fit were also below the recommended the levels. Root Mean Square Error of Approximation (RMSEA) came out to be 0.037, which is quite acceptable.

To check the reliability of the scale, Cronbach's α coefficient was measured along with the composite reliability. The Cronbach's α value for each construct was above the recommended level of 0.70, which is considered satisfactory as suggested by Hair et al., (2015) and Hu and Bentler, (1999) Additionally, the value of the composite reliability was above 0.50 for each of the construct which has been suggested by the (Campbell and Fiske, 1959). To further analyze the constructs' validity, the convergent and discriminant validity was accessed. Convergent validly was assessed using standardized factor loadings (>0.50), composite reliability (>0.70), and average variance extracted (>0.50) of each construct, which was a recommendation by (O'Leary-Kelly and Vokurka, 1998). From the values given below in the table 4, it is quite evident that all the conditions have been satisfied which ensures convergent validity.

To check the Discriminant validity for individual constructs, statistical package developed by Prof. Gakingston for validity assessment was used (Hu, and Bentler, 1999).. For ensuring the Discriminant validity, average variance extracted for each construct with squared correlations between constructs was compared. The bold values in the table represents the squared values of AVE. Table 4 reported that square root of AVE for individual construct was larger than the corresponding squared correlations which ensure the discriminant validity, (Fornell and Larcker, 1981; Hair et al., 2015; Hu and Bentler, 1999). The measurement model was found to be valid in terms of Discriminant validity as both MSV and ASV of individual constructs were found to be lower than their respective Average shared variance (AVE) estimates (Campbell, and Fiske, 1959).

	Table 3.Fit Indices								
Variable	**CMIN/df**	**GFI**	**AGFI**	**CFI**	**TLI**	**NFI**	**IFI**	**RMSEA**	**RMR**
Value	1.769	0.946	0.930	0.988	0.986	0.974	0.988	.038	.018
Acceptable Range	<= 5.00	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	<0.5	<0.05

Table 4. Reliability and Validity									
	CR	**AVE**	**MSV**	**ASV**	**LOT**	**LOI**	**LOG**	**C**	**UP**
LOT	0.939	0.795	0.004	0.002	**0.892**				
LOI	0.960	0.828	0.004	0.002	0.038	**0.910**			
LOG	0.921	0.704	0.004	0.002	0.066	-0.027	**0.839**		
C	0.951	0.829	0.004	0.002	0.038	-0.067	0.008	**0.910**	
UP	0.939	0.795	0.003	0.001	-0.001	0.020	-0.055	-0.002	**0.892**

(Source: Compiled from SPSS output)

Note. LOI = Lack of Infrastructure; LOG = Lack of Guidance; C = Cost; LOT = Lack of Transportation; and; UP = Unfair Practices

Results of Regression analysis:

Multiple regression analysis has been applied to investigate the impact of different factors effecting farmers attitude regarding the marketing of agricultural produce. Farmers' attitude has been taken as dependent variable in the current study, whereas five other dimensions were taken as predictor variables in the regression model.

All the independent variables in the form of regression equation can be expressed as below:

$Y_i = \beta_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 \ldots\ldots B_nX_4$ ....

(1)

Summary of Regression Analysis:

Table 5 represents summary of the regression model. Initially, R^2 accounted for 0.714 in the current model, which signifies that there is 71.4 per cent of the variation in the dependent variable (farmer's attitude towards the marketing of agricultural produce) was caused by five independent variables included in the study. Secondly, an Adjusted R^2 value which is the most useful measure of the success of a model shows the value of 0.711. Alternatively, the value of R came out to be .714, which shows that there is a significant relationship between the independent and dependent variable. Additionally, the F-value came out to be 268.987 which show the model is fit for regression analysis.

Table 5. Model Summary										
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	.845a	.714	.711	.43789	.714	268.987	5	540	.000	1.973
a. Predictors: (Constant), Lack of Infrastructure; Lack of Guidance; Cost; Lack of Transportation; and; Unfair Practices.										
b. Dependent Variable: farmers' attitude towards marketing of agricultural produce.										

Table 6. ANOVA						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	257.886	5	51.577	268.987	.000b
	Residual	103.543	540	.192		
	Total	361.429	545			

Table 7. Multiple Regression Analysis Results					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.286	.019		175.333	.000
Lack of Infrastructure	.064	.019	.079	3.431	.001
Lack of Guidance	.011	.019	.013	.569	.569
Cost	-.090	.019	-.110	-4.781	.000
Lack of Transportation	-.048	.019	-.059	-2.544	.011
Unfair Practices	.677	.019	.832	36.104	.000

DISCUSSION AND CONCLUSION

The research emphasized on various factors that influence farmers' attitude towards agricultural marketing produce. Past literature provided numerous factors that have an influence on farmers' attitude. Out of the several factors identified, lack of infrastructure, cost, lack of transportation, and unfair practices are the main predictors. Results of multiple regression analysis represent that dimensions 'cost and unfair practices' (p=0.000 and p=0.000) are the best interpreters of farmers' attitude towards agricultural marketing produce followed by 'lack of infrastructure' (p=.001) and 'lack of transportation' (p=0.011). The null hypotheses for all four dimensions were rejected at 5 per cent level of significance which described that these dimensions have a significant impact on farmers' attitude towards agricultural marketing produce. However, dimension named 'Lack of Guidance' (p=0.569) has insignificant relationship with dependent variable. Therefore present research concludes that lack of infrastructure, cost, lack of transportation, unfair practices dimensions have a positive impact on farmers' attitude towards agricultural marketing produce. These results are in line with the previous studies of Kachulu, (2018); Sharma and Raghuvanshi, (2009); Rao, Birthal, Joshi, and Kar, (2004); and Chahal and Dhawan, (1999).

Limitations and future scope of the study

The present study also contains some limitation. The very first limitation of the study is that the sample size of the study is limited and the geographical reach is also limited to Punjab state because of the constraints regarding the time and money. This limitation makes the results of the study less generalized. Secondly, the study is cross sectional in nature and it measures the attitude of the farmers with regard to the particular point of time. Therefore, future studies can been conducted in nature with a larger sample and more heterogeneous sample so as to make the results generalized and to make the results account for more cultural diversity. Therefore, the generalization of the findings to other cultures can be done carefully. Finally, using convenience sampling techniques may affect the findings of the study which can be ruled out in future studies by using a probabilistic sampling technique for unbiased and normalized results.

REFERENCES

1. Angelina Sheba Albert (2008), "Role of Cooperative Marketing Societies", Tamilnadu Journal of Cooperation, Vol 8, No. 6, April. Pp 64-69.
2. Atibudhi, H. N. (1998). Role of Market Committee in Regulating Malpractices and Increasing Producer's Share in Consumer's Rupee: A Comparative Study in Sakhigopal and Satsankh Markets, Orissa. INDIAN JOURNAL OF AGRICULTURAL MARKETING, 12, 87-90.
3. Badhani K N. and Seksena.R.M (1990), "Credit based marketing system for poor peasants- A case study Nainidal District, UP, Indian Cooperative Review, July. Pp.11-20.
4. Bollen, K. A. (1989). Structural Equations with Latent Variables John Wiley New York.
5. Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological bulletin*, *56*(2), 81.
6. Chandramouli, C., & General, R. (2011). Census of india 2011. Provisional Population Totals. New Delhi: Government of India, 409-413.
7. David Kapya, Beatrice Conradie, and Anthony Black (2018) Can agro-processing lead re-industrialisation in Sub-Saharan Africa? A two-stage approach to productivity analysis, African Journal of Agricultural and Resource Economics Volume 13 Number 3 pages 199-208.
8. Dhawan, V., & Singh, J. M. (1999) Impact assessment of minimum support prices (MSP) on agriculture in Punjab: An analytic approach.
9. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2015). *Multivariate Data Analysis.* Pearson India, Noida.
10. Hu, L.T., & Bentler, P. M. (1999). Cut off Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1-55.
11. Hundal, B. S., & Kumar, V. (2015). Consumer perception towards green products: a factor analytic approach. *Pacific Business Review International*, *7*(10), 1-7.
12. Kachulu, M. (2018). Climate change effects on crop productivity and welfare sensitivity analysis for smallholder farmers in Malawi. African Journal of Agricultural and Resource Economics, 13, 58-77.
13. Kapya, D., Conradie, B., & Black, A. (2018). Can agro-processing lead re-industrialisation in Sub-Saharan Africa? A two-stage approach to productivity analysis. African Journal of Agricultural and Resource Economics, 13(311-2019-651), 199-208.
14. Kline, R. B. (2011). *Principles and Practice of Structural Equation Modeling.* Guilford Press, New York.
15. Kumar, V., & Hundal, B. (2015). Customer perception towards celebrity endorsement. *Pacific Business Review International*, *8*(5), 46-53.
16. Kumar, V., & Hundal, B. S. (2018). Evaluating the service quality of solar product companies using SERVQUAL model. *International Journal of Energy Sector Management*.
17. Kumar, V., Hundal, B. S., & Kaur, K. (2019). Factors affecting consumer buying behaviour of solar water pumping system. *Smart and Sustainable Built Environment*. Vol. 8 No. 4, pp. 351-364.
18. Malhotra, N. K., & Dash, S. (2014). *Marketing Research: An Applied Approach*, Pearson India, Dorling Kindersley, New Delhi.
19. Mohanty, S. S., & Singh, A. (2014). Agricultural produce market committee (APMC) act in Uttarakhand and its impact on agribusiness. International Journal of Marketing and Technology, 4(4), 189-203.
20. National Cooperative Development Corporation (India). (1966). Policy circulars on cooperative agricultural marketing & processing.
21. O'Leary-Kelly, S. W., & J. Vokurka, R. (1998). The empirical assessment of construct validity. *Journal of operations management*, *16*(4), 387-405.
22. Rajagopal (2000), "Agricultural Marketing Regulation in India" in Jagdish Prasad (Ed.) 'Encyclopaedia of Agricultural Marketing' Vol.5, New Delhi.
23. Rao, P. P., Birthal, P. S., Joshi, P. K., & Kar, D. (2004). Agricultural diversification in India and role of urbanization (No. 596-2016-40040).
24. Selvaraj, K. N., Sundaravaradarajan, K. R., & Raveendran, N. (1998). Farmers' perception and functioning of regulated markets-an assessment. Indian Journal of Agricultural Economics, 53(3), 405.
25. Sharma, Y. K., & Raghuvanshi, P. D. S. (2009). Surgical treatment of cloacal prolapse in a turtle. Indian Journal of Veterinary Surgery, 30(1).
26. Singh, S. (2004). Crisis and diversification in Punjab agriculture: Role of state and agribusiness. Economic and Political Weekly, 5583-5590.
27. Swaminathan (1998), Study on main Objectives of How to Rehabilitate Weak Cooperative Marketing Societies, Tamil Nadu Cooperative Union, Madras.
28. Syan, A. S., Kumar, V., Sandhu, V., & Hundal, B. S. (2019). Empirical Analysis of Farmers' Intention to Adopt Sustainable Agricultural Practices. Asia-Pacific Journal of Management Research and Innovation, 15(1-2), 39-52.
29. Tyagi, D. S. (1979). Farm Prices and Class Bias in India. Economic and Political Weekly, A111-A124.
30. Venkataramanan, L. S., & Prahladachar, M. (1980). Growth rates and cropping pattern changes in agriculture in six states: 1950 to 1975. Indian Journal of Agricultural Economics, 35(902-2018-1665), 71-84.
31. Zikmund, W. G. (2003). Business Research Methods (7th ed.). Southwestern Publishing, USA.
32. Uday Venkat Mateti, Anantha Naik Nagappa, Manohar Bairy, Shankar Prasad Nagaraju, Ravindra Prabhu Attur. "Pharmaceutical Care for Dialysis Patients." Systematic Reviews in Pharmacy 4.1 (2013), 1-6. Print. doi:10.4103/0975-8453.135830