ISSN No. 0975-6280 • Volume 15 • No. 1 • Jan - Jun 2019

JIM QUEST

Journal of Management and Technology

A Bi-annual Referred Research Journal of Jaipuria Institute of Management, Indirapuram, Ghaziabad

JAIPURIA INSTITUTE OF MANAGEMENT
EMPOWER • ENTHUSE • EXCEL

JAIPURIA INSTITUTE OF MANAGEMENT
Indirapuram, Ghaziabad

JIM QUEST

Journal of Management and Technology

Volume 15, No. 1, Jan - Jun 2019

Address for Editorial Correspondence:
Chief Editor, JIMQUEST- A Journal of Management & Technology, Jaipuria Institute of Management, Block A, Gate No. 2, Shaktikhand IV, Indirapuram, Ghaziabad.

JIM QUEST

Journal of Management and Technology

Volume 15, No. 1, Jan - Jun 2019

From the Desk of the Chief Editor

It gives me great pleasure to welcome you to the latest issue of the JIM QUEST; a bi-annual referred research journal for disseminating the knowledge between academics and management practitioners regarding theories, methods and applications related with new perspectives in the field of management and technology.

This issue addresses various issues that confront economic stability to create a framework for constructing resilience and competency. This issue is an attempt to discuss and draw various perspectives of economic policies and challenges for implementation highlighting their relevance in the field of business management.

I take this opportunity to thank the people who made the publication of JIM QUEST possible especially the authors of papers without whose contribution the journal would not be a reality.

I hope that readers will find the content of JIM QUEST informative and valuable.

Prof. (Dr) Daviender Narang
Chief Editor

JIM QUEST

Journal of Management and Technology

Volume 15, No. 1, Jan - Jun 2019

Contents

Regional Development Gap among Rural House Holds in Kerala: An Inter District Analysis

N. Karunakaran*
Aruna Devi R S**

Abstract

Regional development has a greater significance in the dynamic process of economic development of a country. In India rural population is much higher than the urban population. So the development among rural regions is also essential for consideration. Many of the Indian states have a development gap among rural regions. Kerala also suffer the economic gap between different rural regions. So the study analysed and compared deviation of variables that influencing the overall development and revealed that there exists a regional development gap among rural households in Kanjiramkulam and West Eleri gramapanchayaths of Thiruvananthapuram and Kasaragod districts respectively.

Key words: *Regional development; development gap; Kerala; rural households.*

Introduction

India is predominantly a rural country with two-third population and seventy percent work force residing in rural areas. Rural economy contributes 40 percent of national income and is relevant to the overall growth and inclusive development. Rural development is generally a strategy designed to improve the economic and social life of people in rural settlement in particular (Kaur Prabhjot and Sharanjith Singh Dhilon, 2015). It focused on rural poor comprising small farmers, tenants and the landless and is mainly intended to reduce poverty, increase production and productivity of the rural economy.

Development advances a nation socially, politically, economically and culturally. Due to variations in demographic factors like education, health, consumption, income, saving and investment, the extent of advancement of economies often differ. It improves the quality of life of people and depends on the extent of fulfillment of biological, social, economic and psychological requirements.

The dynamic process of rural development thus includes the changing quality of life of people. The socio-economic and demographic variables like consumption, income, saving, investment, education, and so on plays a dominant role in the development of quality of life of rural households (Nayak Subhashree, 2013).

Development gap among regions is happened because of differences in the quality of life of people and varies in different geographical areas. It seems an unbalanced growth and development among people in different regions; and the economic gap among rural regions is based on the living conditions also (Israr Muhammad, et. al, 2017). Hence, a comparison of two rural regions, such as Kanjiramkulam Gramapanchayath of Thiruvananthapuram district and West-Eleri Gramapanchayath of Kasaragod district is studied in terms of education, consumption, saving, investment, income and housing and is attempted in this study by analyzing the development gap among rural households in these two regions.

Review of Literature

Anvar P (2003) conducted a study to assess the inter district variations in the economic development and development status of Malappuram district in Kerala. Patil and Balagouda S (2007) conducted a detailed analysis of inter regional and intra regional disparities in various dimensions of development and found that perfect regional balance is not possible partly because of the regional factor resource endowments and partly due to tendency of new investment areas with infrastructure development facilities. Cohoudary Uma Datta Roy (2009) studied the income, saving and consumption in urban and rural India. Pandey and Govind Narain (2011) examined about income, saving and investment pattern in farming households in Gonda district of Uttar Pradesh. Urmy C J (2011) in the study

*Head of the Post-Graduate Department of Economics, EKNM Government College Elerithattu, 671314, Nilishwar, Kasaragod, Kerala, India, E mail: narankarun@gmail.com
**Post-Graduate student of Economics, EKNM Government College Elerithattu, 671314, Nilishwar, Kasaragod, Kerala, India, E mail: arunadeviirs@gmail.com

revealed that the old age dependency ratio and young age dependency ratio have negative effect on savings in Kerala in spite of low per capita income and very high saving rate. Venkateshwara Rao A (2011) studied about the levels of living of rural households in Guntur district of Andhra. Nayak Subhashree (2013) found that in rural areas, the marginal propensity to consume is more than the marginal propensity to save. Girish jain and Meena Baliyan (2014) examined the determinants of saving and investment in India and found that saving rates rises with the level and rate of growth of disposable income. Pradhjot Kaur and Sharanjit Singh Dhillon (2015) made an inter-state analysis of economic development in India. Ekurkekar, et.al (2015) studied about income, consumption and investment pattern in Latur district and inferred that occupational status and income are closely related to saving and investment. Muhammad Israr, et.al (2017) in their study found that livelihood of the rural households in the developing regions is still depending on farm and non-farm economic activities.

Materials and Methods

Unbalanced development of sectors, regions, states and countries has a greater significance in economics. The development gap among rural regions is an important issue of recent times. Examination of economic gap is very relevant in the Kerala context. The study is conducted among rural households of Kanjiramkulam Grama panchayath of Thiruvananthapuram district and West-Eleri Grama panchayath of Kasaragod district in Kerala. Questionnaire is used to collect primary data from households. Multi-stage sampling technique is used and a sample of 60 households from both panchayaths is selected for primary data. Secondary data were collected from journals, working papers, and websites.

To analyze the socio-economic conditions in terms of consumption, saving, investment, income, housing and land holding, percentage and graphs were used. To find out the overall regional development, Physical Quality of Life Index (PQLI) is also used.

PQLI = (1/3) (L.E.I+I.M.I+B.L.I)
Where, L.E.I = life expectancy; I.M.I = Infant mortality rate; B.L.I = Basic literacy rate.

Results, Analysis and Discussion

Rural development has gained world reputation in the socio-economic development of the mass of people especially in developing countries. It is a process which involves active participation of the rural people in decision-making and results in the improvement of the living conditions (Shakya Kushuan, 2012).

Table.1: Age and Gender of Households in Percentage

Age			Gender		
Age (in years)	Kanjiramkulam Grama panchayath	West Eleri Grama panchayath	Kanjiramkulam Grama panchayath		
			Male	Female	Total
20-30	16.7.00	10.00	60	40	100
30-40	13.40	20.00	West Eleri Grama panchayath		
40-50	33.30	36.67	Male	Female	Total
50-60	23.30	23.33	87	13	100
60-70	13.30	10.00			
Total	100.00	100.00			
Source: Primary Data					

Educational and Occupational Status of Households in two Regions: The regional development gap among rural households of Kanjiramkulam Grama panchayath of Thiruvananthapuram and West Eleri Grama panchayath of Kasaragod districts is analyzed using socio-economic factors of households and demographic features of two regions. Table 1 show the age and gender composition of the respondents in Kanjiramkulam and West Eleri Grama panchayaths. In both the regions, the age group of 40-50 is highest in number. Educational status of people in the two regions is presented in table 2.

Table 2: Educational Status of two Regions in Percentage

Educational Status	Kanjiramkulam Grama panchayath			West Eleri Grama panchayath		
	Male	Female	Total	Male	Female	Total
Lower Primary	0	8.33	3.33	11.53	50.00	16.67
Upper Primary	11.11	25.00	16.67	11.53	0	10.00
High School	22.22	16.67	20.00	19.23	0	16.67
Higher Secondary	16.67	8.33	13.33	42.30	0	36.67
College	44.44	41.67	43.34	11.53	50.00	16.67
Technical Education	5.56	0	3.33	3.88	0	3.32
Total	100.00	100.00	100.00	100.00	100.00	100.00
Source: Primary Data						

Occupational status shows employment, unemployment and under employment status of the head of the households. In table 3, 56 percentages of people are under employed in West Eleri Grama Panchayath, whereas in Kanjiramkulam it is 11 percentage, showing under employment is much higher in West Eleri than in Kanjiramkulam.

Table.3: Occupational Status of Households in two Regions

Occupational Status	Kanjiramkulam Grama Panchayath				West Eleri Grama Panchayath			
	Male	Female	Total	Percentage	Male	Female	Total	Percentage
Employed	8	4	12	40	6	2	8	27
Unemployed	2	5	7	23	4	1	5	17
Under Employed	8	3	11	37	16	1	17	56
Total	18	12	30	100	26	4	30	100
Source: Primary Data								

4.2. Income and Expenditure of Households in two Regions: Table 4 compares the major sources of income of people in two regions; almost 43 percentages of income earned from government sector and from abroad in Kanjiramkulam, whereas in West Eleri, the major source of income of the people is from agriculture (36percentage).

Table.4: Sources of Income of Households in two Regions

Table .4: Sources of Income of Households in two Regions				
Source of Income	Kanjiramkulam Grama Panchayath		West Eleri Grama Panchayath	
	Number	Percentage	Number	Percentage
Agriculture	5	17	11	36
Labour	3	10	9	30
Self Employment	7	23	2	7
Business	2	7	3	10
Others	13	43	5	17
Total	30	100	30	100
Source: Primary Data				

Another source of income is from land other than from employment. In Kanjiramkulam, 60 percentages do not have earnings from land, whereas in West Eleri, 83 percentages of people have earnings from land (table 5).

Table.5: Earnings from Land of Households in two Regions in Percentage

Earnings	Kanjiramkulam Grama Panchayath	West Eleri Grama Panchayath
Earnings from Land	40	83
No Earnings from Land	60	17
Total	100	100
Source: Primary Data		

Income of households in a year is an important factor and table 6 shows the annual income of households in both the regions. In West Eleri, second highest class is low income households whereas in Kanjiramkulam it is high income class.

Figure.1: Expenditure on Food

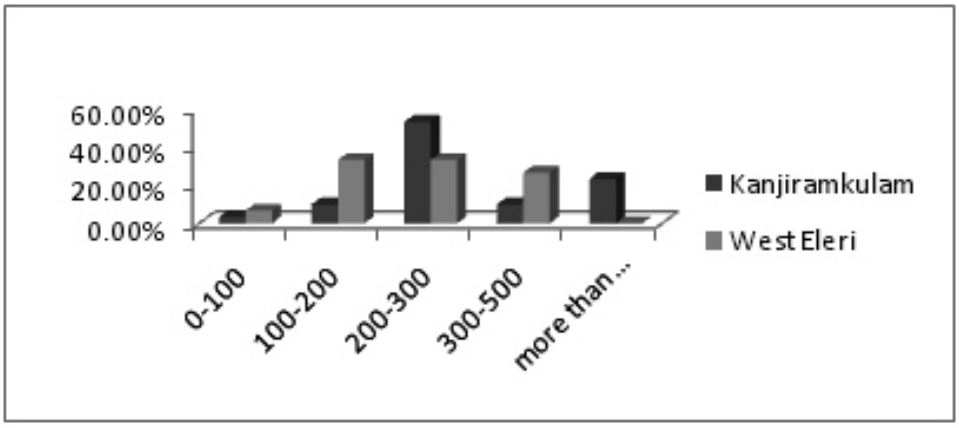


Figure 1 shows the expenditure pattern of people on food in a week; 53 percentages of households in Kanjiramkulam Grama panchayath consume food at range of Rs 200-300 in a week and in West Eleri Grama panchayath also the similar pattern observed.

Table.6: Annual income of Households in two Regions

Income group (in Rupees)		Kanjiramkulam Grama Panchayath				West Eleri Grama Panchayath			
		Number	%	Total	% to Total	Number	%	Total	% to Total
Low Income	< 1000	0	0	7	23.33	0	0	8	26.67
	1001-5000	7	23.33			8	26.67		
Middle Income	5001-10000	**7**	23.33	16	53.33	11	36.67	19	63.33
	10001-50000	9	30.00			8	26.66		
High Income	50001-1 lakh	3	10.00	7	23.34	1	3.33	3	10.00
	> 1 lakh	4	13.34			2	6.67		
Total		30	100.00	30	100.00	30	100.00	30	100.00
Source: Primary data									

Expenditure on mobile recharge incurred by households in a week is also estimated and is shown in table 7; and it indicates that in Kanjiramkulam, 53 percent spend more than 100 rupees in a week for mobile recharge which is higher compared to West Eleri, where it is 33 percent.

Table.7: Weekly Expenditure on Mobile Recharge of Households in two Regions (in Percentage)

Expenditure (in Rupees)	Kanjiramkulam Grama Panchayath	West Eleri Grama Panchayath
0-20	4	8
21-50	10	26
51-100	33	33
> 100	53	33
Total	100	100
Source: Primary Data		

Table 8 provides the expenditure on education and is higher in Kanjiamkulam Grama panchayath. In West Eleri, major percent of households spend less than 500 rupees per month for education.

Table.8: Monthly Expenditure on Education of Households in two Regions (in Percentage)

Monthly Expenditure (in Rs)	Kanjiramkulam Grama Panchayath	West Eleri Grama Panchayath
0-100	10	23
101-200	3	30
201-500	3	34
501-1000	24	10
> 1000	60	3
Total	100	100
Source: Primary Data		

Saving and Investment of Households in two Regions: From table 9, it is revealed that the people of Kanjiramkulam have more savings in banks and insurance and in West Eleri, majority have no saving in any of the institutions. Percentage of households undertakes investment shows different picture in two regions under study.

Table.9: Saving and Investment of Households in two Regions (in Percentage)

Type of Saving	Saving		Type of Investment	Investment	
	Kanjiramkulam Grama Panchayath	West Eleri Grama Panchayath		Kanjiramkulam Grama Panchayath	West Eleri Grama Panchayath
Bank Saving	54	40	Land	10	0
Post Office Saving	3	0	Farm Machinery	3	7
Insurance	27	0	Business	47	3
Mutual Funds	3	0	Agriculture	7	27
No Saving	13	60	No Investment	33	63
Total	100	100	Total	100	100
Source: Primary Data					

4.4. Development Gap of Regions: Regional development can be measured in several dimensions and the quality of life of people highly influences the overall development of a particular region.

Table.10: Physical Quality of Life Index (PQLI) in two Regions

Indicators	West Eleri Grama Panchayat h in Kasaragod district	Kanjiramkulam Grama Panchayath in Thiruvananthapuram district
Life expectancy	75.07	75.2
Basic literacy	90.09	91.98
Infant mortality	24	30
PQLI	63.05*	65.73*
Note: *Retrieved from Indicators Source: *Vital Statistics,* Census 2011		

Table 10 shows the variables influencing development gap and examined the gap among two regions of Thiruvananthapuram and Kasaragod. It is clearly shows that the region in Thiruvananthaputam has better quality of life than the region in Kasaragod.

Conclusion

The notion of development in the context of regional development refers to a value positive concept which aims at enhancing the levels of the people and general conditions of human welfare in a region. Regional development is a multidisciplinary approach. It has been interpreted as intra-regional development design to solve the problems of a particular region. At the micro level of villages and development block, the aim of regional development is generally conceived to minimize the disparities in the level of development as served in different access to resources and differences in economic structure and social transformation. The study analyzed and provided evidence that regional development gap exists between regions in Kasaragod and Thiruvananthapuram. This economic gap is mainly due to the variations in educational status, occupational status, age structure, male-female work participation, consumption, income, saving, investment

pattern and so on. There are many differences in the development of the regions and it can be reduced by adopting policy measures from the bottom to top levels of government.

Reference

1) *Anvar P (2003) "Inter District Variations and Development Status of Malappuram District", pp: 45-50. http://hdl.handle.net/10603/2626*
2) *Cohoudary Uma Datta Roy (2009), "Income Consumption and Saving in Urban and Rural India", online paper-2009*
3) *Ekurkekar, Balaji and Madhukar (2015), "Income, Consumption and Investment Pattern in Latur District", pp: 20-50. http://hdl.handle.net/10603/74756*
4) *Girish Jain and Meena Baliyan (2014), "Determination of Saving and Investment in India", SSARSC International Journal of Geo Science and Geo Informatics, Vol. No 1, pp: 200-225.*
5) *Israr Muhammad, asif Yseen and Shakeel Ahmad (2017), "Sustainable Rural Development and Livelihood Sources of the Rural Households in Mountainous Pakistan", American Journal of Rural Development, Vol 5(4), pp: 97-105.*
6) *Kaur Prabhjot and Sharanjith Singh Dhilon (2015), "An Interstate Analysis of Economic Development in India", Journal of Economic and Social Development, Vol. No.11, pp: 1-15.*
7) *Nayak Subhashree (2013), "Determinants and Pattern of Saving Behaviour in Rural Households of western Odisha", Department of Humanities and Social Sciences, National Institute of Technology Rourkela.*
8) *Pandey and Govind Narain (2011), "Income, Saving and Investment Pattern in Farming Households on Gonda Districts of Uttar Pradesh", pp: 25-36. http://hdl.handle.net/10603/177079*
9) *Pattil and Balagouda s (2007), "Inter regional and intra regional in various dimensions of development", pp: 48-62. http://hdl.handle.net/10603/96025*
10) *Shakya Kushuan (2012), "Measurment of Quality of Life and Per-Capita Icome in Nepal", The Economic Journal of Nepal, Vol. no 35, pp: 64-86.*
11) *Urumy C J (2011), "Determinants of savings of Rural Households in Kerala", Online Paper 2011.*
12) *Venkateshwara Rao A (2011), "Levels of Living of Rural Households: A Study of Guntur District in Andhra Pradesh", Journal of Rural Development, Vol. No 30, pp: 2-8.*

Evolution of FRCs (Food Retail Chains) and Innovations in Agri Supply Chains: Domestic and International Experiences

Premachand Babu*
Mahesh**

Abstract

For a result oriented operational processes, there is a need for building innovative models. Food retailing in developed countries has been characterized by exponential development of organized retail chains with end to end integration of operations cutting through the supply chain. The big retail chains with high through put capacity have innovated some of the efficient cost saving techniques like centralization of procurement, contract farming, seamless supply chains, etc,. However, in India with organized food retailing constituting only 2% of the food trade makes India a case apart with Agri Supply Chains (ASC). With the evolution of FRCs in developing countries, large retail outlets started procuring fresh produce directly from original producers (Farmers) and sell it to customers through their own outlets precluding the need for further intermediation. Organized retailers not only helped in bypassing intermediaries, but also created innovations in the way farm fresh can be efficiently distributed by developing new Agri Supply Chain models and employing modern technologies resulting in improving QSP (Quality, Service and Price).

The inadequate and poor functioning of the traditional channels and the need for efficiency inducing reforms in marketing of fresh produce has been revealed in several evaluative studies (Shroff 2004). The cost of poor agri supply chain infrastructure in terms of post-harvest losses is as high as 30% of the produce (Kumar and Arora 1999). Inefficient supply chains results in huge difference between customer cost and produce cost due to involvement of number of intermediaries (Khunt et al. 2003).

The studies reveal that the emergence of retail chains has not only reduced the price spread between what customer is paying and what the producer is receiving (Bardhan et al. 2009) but also reduces unproductive marketing cost, intermediary margins and wastage(Young and Hobbs 2002). Due to high quality standards and close involvement by FRCs right from identification of producers and produce processes, the quality of the produce also substantially increased in FRCs (Fafchams and Vargas Hill 2005). This is only possible due to the diversion from the conventional distribution to the modern channels.

This study focuses on studying conventional models having large number of intermediaries in comparison with Food Retail Chains(FRCs) emerged out of innovations in Agriculture Supply Chains (ASCs).The entire study is divided into three parts: I) Evolution of FRCs in emerging markets (India and China). II) Benefits of adoption of FRCs in terms of Quality, Service and Price (QSP). III) Resulting benefits of FRC's in converting emerging retail markets into matured retail markets. The first part of the work is presented in this paper that explains the major differences in the new supply chain models developed by FRCs in comparison with the traditional supply chains with reference to India and China. This is followed by a discussion on the various supply chain models developed by FRCs and their implication on the distribution of produce in the country. The paper concludes with some policy issues. Part II and Part III is based on empirical research, measuring the benefits of implementation of FRCs in improving QSP and converting emerging retail markets into matured markets.

Key words:Agri Supply Chains, Food Retail Chains, organized retail,innovations, .

Data Sources and Methodology

The study makes use of secondary data collected from various sources. The principle sources for this research include industry reports and academic journal articles and popular studies on the topic. Ebscohost's Business Source Premier, Emerald Insight and EconLit, JSTOR (online periodical databases) were used as the primary information sources in obtaining peer reviewed academic and practitioners' journals. The popular studies on the topic have been obtained from the websites of Asian Development Bank (ADB), A.T. Kearney, The World Bank,

*Dean, Carrier Guidance and Placements, at Sri Krishnadevaraya University, Anantapuramu, AndhraPradesh, India. E-mail: palagiri21289@gmail.com
** Research scholar at Sri Krishnadevaraya University, Anantapuramu, AndhraPradesh, India. E-mail: mahesh.pdlkr@gmail.com.

National Bank for Agriculture and Rural Development (NABARD), Central Statistical Organisation, etc.

Conventional Marketing System

Marketing ofagricultural produce in India is controlled by Agriculture Produce Marketing Committee (APMC). This controlled system of marketing is done with an overall intention to safe guard farmers against any exploitation by moneylenders and intermediaries. This system also helps in aggregating overall produce in one place and auction the produce based on supply demand factors. In the traditional distribution process fresh food items changes hands between eight different middlemen before reaching the final consumer. As a result, 30-40% of fresh food items are going waste on their way from farm (Trebbin and Hassler 2012).With the liberalization of retail trade in India Agricultural Produce Marketing and Regulation Act 1966 has yielded to change and got replaced with Model Agricultural Produce Market Committee (APMC) Act 2003. This amendment has played a critical role that lead to many innovations in the way Agri produce is distributed. Some of the major reforms in the new act include (i) Phasing out restrictions on the movement of agri-produce and compulsion on growers to sell in regulated markets, (ii) allowing contract farming and direct marketing between farmers and corporate, (iii) setting up of electronic exchange linked with future markets for proper price discovery, (iv) facilitating processing and value addition. These initiatives along with changes at macro-level due to trade liberalization, faster income growth, urbanization and changes in food demand pattern has brought about efficient agri-marketing system. With both back-end and front-end linkages between the growers and the industry enabled farmers to increase their income by overcoming some of the short comes in the traditional system.

In India, food items constitute more than half of the average Indian consumer basket. Fresh foods play a very important role in grocery retail as this category improves or decrease the walk-inns to a store. But it is this category than any modern retailer struggles to organize an efficient supply chain. There are certain fresh foods that can be moved over larger distances, such as Apple, Pomegranate, orange, potato, onion which are little easy to manage supply chain but organizing the daily supply of perishable products that constitutes majority of customer basket is a challenge to any organized retailer (Trebbin 2014).In the present scenario of limited technology, warehouse infra shortage, highly fragmented market, etc., organized retail chains started developing their own supply chain model in-order to serve their customers in the best possible way. In the process, organized retailers have identified three strategies to bring in efficiency in the fresh food supply chain (1) Developing their own consolidation system of procuring produce from farms, APMC's, wholesalers to their consolidation centers and distributing them among the chain stores (2) Entering into contract farming agreement with the farmers and developing a supply chain to serve the retail stores (3) Will go for Store in Store format where a retailer will lease out the space to concessionaries to run fruits and vegetables department.

Innovations in Agri Supply Chain

The emergence of rural and urban modern food retail led to the innovations in agri supply chains in India. Agricultural products move in the value chain through different channels. The channels are distinguished from each other on the basis of market functionaries involved in carrying the produce from the farmers to the ultimate consumers. Length of a marketing channel depends on the size of market, nature of the commodity and the pattern of demand at the consumer level. Agri supply chain, basically, defines the number of intermediaries that connect the producer with the ultimate consumer in the value chain.

In the belowagri value chain system (see figure I), Model 1 represents Traditional Agri Supply Chain, where the farm produce is rooted through five stages before it reaches to the final consumer. These five stages do not add any value in the supply chain, whereas each stage adds cost to the goods in the form of profit margins, inventory cost, movement of goods cost, etc. This Model highlights the non value added stages in the supply chain, lower returns to farmer, inefficiencies in the supply chain, higher wastages, and finally higher price to the end user. The Model 2 represents the Semi OrganisedAgri Supply Chain Model, which is a contemporary one. In this Model, many of the non value adding stages are eliminated before the produce reaches end consumer. The major benefits in this model is reduction in the wastages, swifter movement of goods, quality produce, etc.

Model 3 can be called as Revamped Agri Supply Chain Model, (or OrganisedAgri Supply Chain Model), where the organized food retailer acts as a link between producer and end consumer. It is very predominant in the developed Western countries and is catching up in the Indian food retailing sector. This Model is an institutional arrangement, which has offers higher returns and lower costs to the farmers. In addition, it gives access to larger markets, and control transaction and marketing costs.

As described in the Model 3, the shortening of the distribution network could result in cost reduction of about 35 percent of the overall cost. In case of farm supplies, the three claimants to these economies are the farmer, organised food retailer and consumer. The share of each of these three parties is a function of their relative market power and competitive situation. Kumar et al (2008) pointed out that "higher the level of competition in the organised food retailing sector, higher would be the proportion of their profits that would be competed away and higher would be the benefits that would accrue to the farmer and consumer".

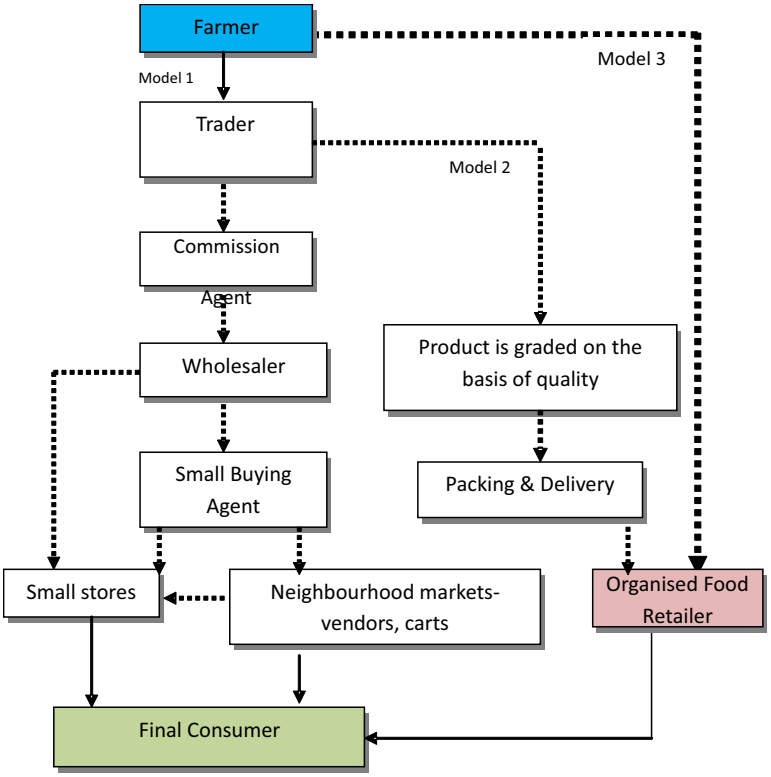


Fig 1: Innovations in Agri Distribution Framework, Source: Rk Mishra, Mahesh, kolluru (2012)

The overall idea behind depicting this framework is simple. These models helps in understanding how different players in the framework are opening up or closing off opportunities for producer (farmer) across an entire value chain. With this understanding it is possible to design and implement the changes that would support appropriate participation by small-scale farmers. These changes may relate to government policies, support programmes, investment, infrastructure development, innovation and technology development, etc, to the ways farmers organise themselves, or to the contract set by organized food retailers. The main activities involve in these models are: (i) mapping out the value chain to identify the main players and flow of produce, (ii) mapping key policies and institutions that influence the function of distribution network, (iii) identifying key drivers, trends and issues, (iv) identifying the better options for inclusion, and (v) development of strategies for support by public and private sectors.

Adaptation by FRC's:
Domestic Experience_Case Studies

Reliance Fresh:

Reliance Retail Ltd. is a retail division of Indian conglomerate Reliance Industries founded in 2006.it is the largest retailer in India with a revenue of Rs.33,765/-crores in 2017. Reliance Retail operates outlets in foods, groceries, apparel and footwear, lifestyle and home improvement products, electronic goods, and farm implements and inputs categories. It has a total of 3,616 stores as of June 2017 in India with an area of over 13.5 million square feet across 702 cities.

As shown in Fig. 2 Reliance Fresh retail has started collection centers in various strategic locations to serve its store. Collection center collects fresh produce from the registered farmers every day early in the morning. Produce collected at the collection center are graded and crated and sent to the city processing center. Produce that is not available with the farmers or that is short supplied at the collection center is procured from the local APMC mandi's by city processing center. City processing center also coordinated with the national markets to procure produce that is not grown or not available in the local markets or to take advantage of lower prices in other markets.

The graded and crated produce received by the city processing center from collection center, APMC mandis's and national markets are further graded and segregated as per the orders received from various Reliance retails stores attached to the city processing center. Produce is packed and crated as per the orders and are dispatched to the stores. To minimize loses and damages, produce is not stationed at any of the points for long time except some hard vegetables like potato's and onion's etc. To store exotic fruits and vegetables, a special cold store is arranged in city processing center.

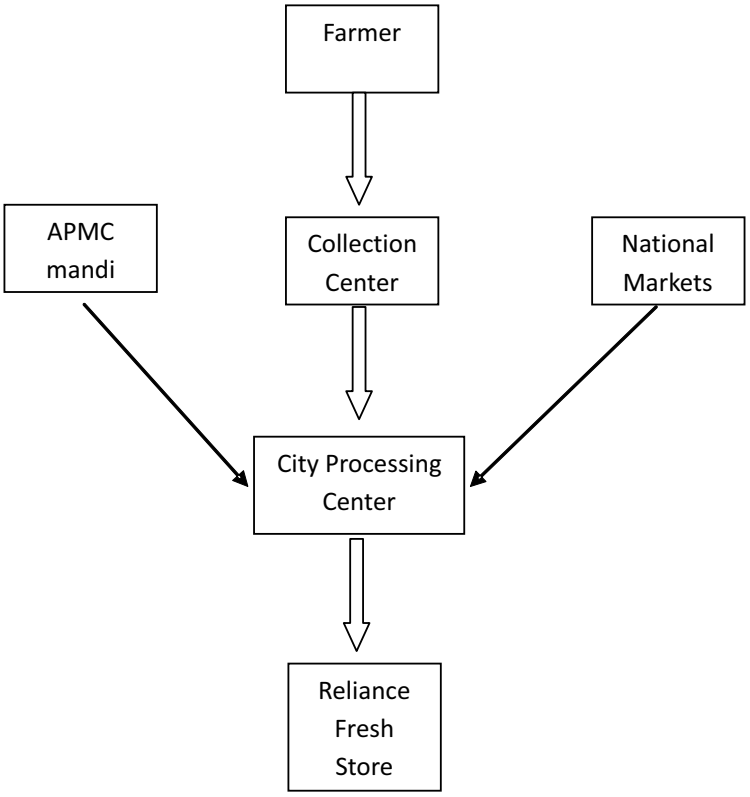


Fig. 2 Procurement and Distribution operations of Reliance Fresh

Singla et al.(2016) in a study on procurement by Reliance Fresh through this model concluded that the cost of procurement from the mandis was about 8% more than the procurement from farmers. This 8% comprises of APMC mandi commission (6%), market cess (1%) and labour and transportation cost (1%). The study concluded that the farmers supplying to organized retails chains are realizing better margins than their counter parts depending on mandis due to higher yields, higher price realization and infrastructure support given by retail chains.

Spencer's Retail:

Spencer's Retail, promoted by CESC, Flagship Company of RP-SanjivGoenkahas presence in more than 35 cities. Main business line of Spencer's retails is food and FMCG that contributes around 79% to the business and followed by apparel, electronics and general merchandise contributing 21% to the business. Spencer's retail has generated revenue of Rs 2021 crore in the financial year ending 2017 with a total of 120 stores.

Fig. 3 shows the typical supply chain process followed by Spencer's Retails for its fresh fruits and vegetables requirements. The consolidation centers are located strategically in terms of access to good quality F & V, logistics, and nearness to servicing cities. The concept adopted by Spencer's is " Ready to Retails" model , in which the produce procured by the retailer is already graded, packed and coded by the suppliers i.e., is farmer. This model is helping the retailer to eliminate middle men and also duplication of works like grading, crating at different points. As per the study of P.G. Chengapps et al. (2016) Spencer's retails in its consolidation center in Hoskote is procuring 70% of its requirements of fresh fruits and vegetables from farmers and the remaining 30% modern auction system by National Dairy Development Board (NDDB) through consolidator. The study has concluded that the backward integration of Spencer's by having consolidation center has increased retailers control over price fluctuation, quality and on the other hand it also helped the farmers with greater insights on farming techniques, crop selection, seed selection etc.,.

International Experience_ Case Studies:
Supply chain Models of China:
China has become the world's second largest retail and consumer market after the U.S. since 2014. Total retail sales increased nominally by 10.4% yoy to reach 33.2 trillion yuan in 2016. In real terms, retail sales of consumer goods increased by

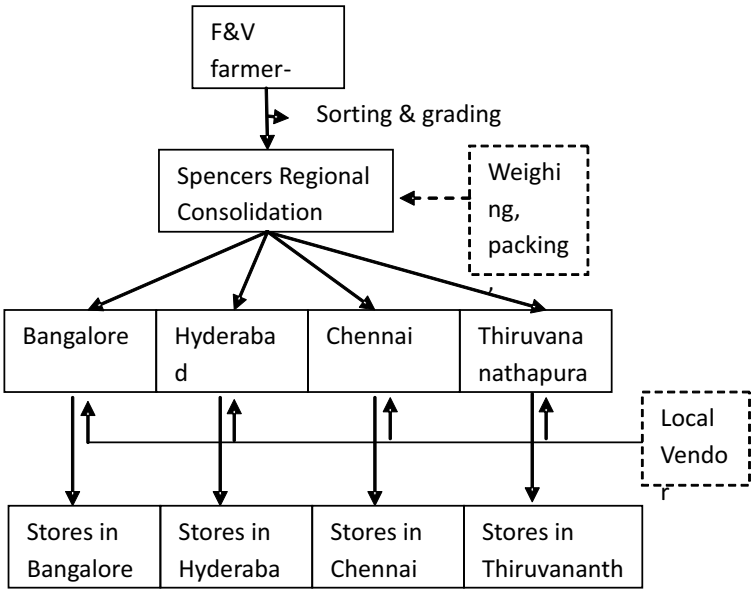


Fig 3: Supply Chain Model of Spencers Retail

9.6%. Consumer confidence index gradually picked up towards the end of 2016, indicating that the consumption atmosphere in China remained positive. Middle-class consumers in China, particularly the millennials, are becoming increasingly influential in the retail sector.

Chinese retail started evolving with the in line with the reforms that started from 1978. Like Indian retail sector Chinese retail sector is also highly fragmented and dominated by unorganized sector. Chinese farming sector is also highly fragmented and face lot of challenges in terms of marketing the produce and price fluctuation. Chinese government's initiatives towards inclusive growth of farming sector by leveraging the growth of organized retail had yielded them good results. Farmer-Supermarket Direct-purchase model initiated by Ministry of Agriculture achieved win-win situation for farmers, supermarkets and consumers (Hu et al. 2009).

contributing 21% to the business. Spencer's retail has generated revenue of Rs 2021 crore in the financial year ending 2017 with a total of 120 stores.

Fig. 3 shows the typical supply chain process followed by Spencer's Retails for its fresh fruits and vegetables requirements. The consolidation centers are located strategically in terms of access to good quality F & V, logistics, and nearness to servicing cities. The concept adopted by Spencer's is " Ready to Retails" model , in which the produce procured by the retailer is already graded, packed and coded by the suppliers i.e., is farmer. This model is helping the retailer to eliminate middle men and also duplication of works like grading, crating at different points. As per the study of P.G. Chengapps et al. (2016) Spencer's retails in its consolidation center in Hoskote is procuring 70% of its requirements of fresh fruits and vegetables from farmers and the remaining 30% modern auction system by National Dairy Development Board (NDDB) through consolidator. The study has concluded that the backward integration of Spencer's by having consolidation center has increased retailers control over price fluctuation, quality and on the other hand it also helped the farmers with greater insights on farming techniques, crop selection, seed selection etc.,.

International Experience_ Case Studies:
Supply chain Models of China:
China has become the world's second largest retail and consumer market after the U.S. since 2014. Total retail sales increased nominally by 10.4% yoy to reach 33.2 trillion yuan in 2016. In real terms, retail sales of consumer goods increased by 9.6%. Consumer confidence index gradually picked up towards the end of 2016, indicating that the consumption atmosphere in China remained positive. Middle-class consumers in China, particularly the millennials, are becoming increasingly influential in the retail sector.

Chinese retail started evolving with the in line with the reforms that started from 1978. Like Indian retail sector Chinese retail sector is also highly fragmented and dominated by unorganized sector. Chinese farming sector is also highly fragmented and face lot of challenges in terms of marketing the produce and price fluctuation. Chinese government's initiatives towards inclusive growth of farming sector by leveraging the growth of organized retail had yielded them good results. Farmer-Supermarket Direct-purchase model initiated by Ministry of Agriculture achieved win-win situation for farmers, supermarkets and consumers (Hu et al. 2009).

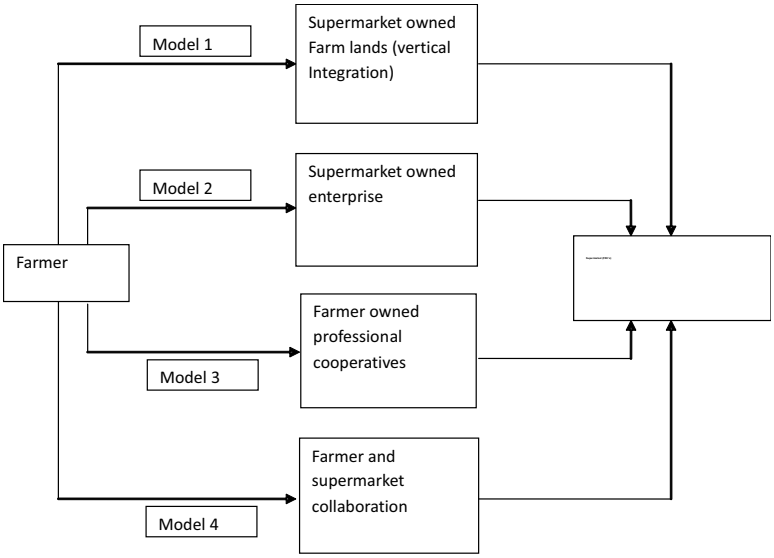


Fig. 4: FRC's supply chain models in China

Model 1 (fig. 4)

With the rapid growth of urban population and due to challenges in the Fresh produce supply chain, supermarket's are integrating vertically by entering into farm business. For example, Jiajiayue Supermarket, a popular supermarket with 700 plus stores is operating more than 26.6 ha of vegetable farms. In 2009 ,Jiajiayue Supermarket made an agreement with villagers and aggregated the farmland by paying rent to the land and also gave farm work to the residents of the village. The company uses all its outlets to market the produce from this farm.

Model 2 (fig. 4)

Classic example of model 2 supply chain adopted by FRC is creation of Star Farm Agricultural Information Consulting Co., Ltd by Metro Supermarket chain. As part of this model, Star Farm provides training service for producer-suppliers in the base area and helps set up quality and traceability systems. By using traceability system a customer can just enter or scan the barcode on the "Star Farm"-labeled product package, and can clearly get all the information about the product from cultivation, processing, packaging to transportation and sales. Produce from the base are supplied to all the Metro stores.

Model 3 (fig. 4)

Model 3 is the most common supply chain procedure followed by most of the supermarket chains. In this model, supermarkets purchase produce from a producer cooperatives comprising of small scale growers. This will not only help the supermarkets to cut down of lot of middle men in the supply chain but also in controlling the quality of the produce, deciding harvesting schedule etc.,. This model is also helping farmers in getting investments, getting technical support from the supermarket chains.

The main problem from this model is the scale of cooperatives. With the introduction of "Farmer Cooperatives Law" by Chinese governments in 2007, a number of cooperative societies mushroomed with very little scale and lack of stable channel for their produce.Hu and Zeng (2009) in their research identified that farmer-supermarket Direct-purchase can address this problem.

Model 4 (fig. 4)

Carrefourhas launched direct purchase model in the year 2007. Carrefour started DP with two cooperatives and started growing to very large scale as the project spread its wings. Over the year Carrefour made adjustments to the DP supply chain system and enhanced it to the level of global sourcing model.

Conclusion and Policy Recommendations

India has occupied a remarkable position in global retail rankings; the country has high market potential, low economic risk and moderate political risk. India is ranked first in the Global Retail Development Index 2017, backed by rising middle class and rapidly growing consumer spending.

India is expected to become the world's third-largest consumer economy, reaching US$ 400 billion in consumption by 2025, according to a study by Boston Consulting Group. In FDI Confidence Index, India ranks 8th (after U.S., Germany, China, UK, Canada, Japan, and France).

IKEA opened its first store in Hyderabad that has come up over 13 acres with 400,000 sq ft. facility, which has come up with an investment of ₹ 1,000 crore, houses the largest restaurant for IKEA anywhere, with a seating capacity of 1,000, serving Swedish and Indian dishes. The Swedish retailer has earmarked an investment₹ 10500crore and already invested ₹ 4500 crore.

With the advent of large retailers with large restaurants will help in further innovations in the agri supply chains.

Governments need to appendage private efforts with investments in improving farmers' access to recourses, services, training, and information. Some of these assets are public goods, such as regulations on retailer-supplier relations to promote fair commercial practices, wholesale market upgrading, market information, and physical infrastructure such as cold chains and roads. Other recourses are private goods, such as assistance with market linkages between small farmer cooperatives and supermarket chains; training in postharvest handling; and credit facilities for making on-farm investments in assets needed to meet quality and volume requirements, such as irrigation and greenhouses.

The Indian government is now presented with the valuable opportunity to create conditions that will mitigate the dislocating effects of retail liberalization for India's most vulnerable populations. The possibility of deregulating FDI in India right may be enticing to some, what should be clear to all is that the costs of getting this process wrong is something that the Indian people cannot afford.

References

1) *Trebbin A, Hassler M (2012) Farmers' producer companies in India: a new concept for collective action? Environ Plan A 44(2): 411-427*
2) *Bardhan P, Mookherjee D, Masatoshi T (2009) Middlemen margins and globalization. Paper presented at seminar organized by IFPRI, Mimieo*
3) *Fafcamps M, Vargas Hill R (2005) Selling at the farmgate or travelling to market. Am J Agric Econ 87:717-734*
4) *Kumar A, Arora VPS (1999) Post harvest management of vegetable in Uttar Pradesh hills, Indian J Agric Mark 12(2):6-14*
5) *Shroff (2004) Marketing in Maharastra. Indian J Agric Mark 18(2): 45-55*
6) *Trebbin(2014) Linking small farmers to modern retail through producer organizations- experience with producer companies in India. Food Policy 45:35-44*
7) *Singla N, Singh S, Dhindsa P (2016), Organized Retailing and Agri Business, India Studies in Business & Economics: 229-240*
8) *Chengappa P.G, Mangala K.P, Dega V (2016), Organized Retailing and Agri Business, India Studies in Business & Economics: 241-250*
9) *Hu D, Yang W, Yu Z (2009), Farmer-supermarket direct-purchase and development of farmers professional cooperatives, Rural Oper Manage 8*
10) *Hu D, Zeng X (2009) Opportunities and Challenges of farmer-supermarket direct-purchase. Chin Farmers' coop 1*

Leather Industry Growth and Relative Strength Analysis: A Study

Dr. Esha Jain*

Abstract

High development potential on fares, the prepared accessibility of cowhide, the bounty of fundamental crude materials and quick walks in the zones of limit modernization and extension, aptitude improvement and condition the executives, combined with a positive venture atmosphere has made the Indian calfskin industry a great speculation goal. In this study the growth of company is measured in terms of share prices movements. This is a significant technical analysis of selected companies which helps to understand the price behaviour of the shares, the signals given by them and the major turning points of the market price. The objective of this study is to do technical analysis on selected stocks of companies come under the category of Leather products, furthermore, decipher on whether to purchase or sell them by utilizing methods. This thus would assist financial specialists with identifying the present pattern and dangers engaged with the scrip comparable to showcase. The investigation is absolutely founded on auxiliary sources which incorporates the verifiable information accessible from the site of NSE. With the end goal of investigation, procedures like Relative Strength Index and Simple Moving normal is utilized for the examination to know whether the stock is in fact solid.

Keywords: *Investment, Moving Average, Relative Strength Index, Technical analysis.*

Introduction

Leather Industry

The Leather Industry holds a prominent place in the Indian economy. With 55% of the workforce below the age of 35, the Indian leather industry has one of the youngest and most productive workforces. This sector is known for its consistency in high export earnings and it is among the top ten foreign exchange earners for the country . The all-out generation of the Indian cowhide industry remains at USD 11 Billion with extraordinary potential for fares and an enormous residential market. Fares have developed from USD 1.42 Billion out of 1990-91 to an unequalled high of USD 6 Billion of every 2013-14. Fares are anticipated to develop at 24% per annum throughout the following five years. The residential market is relied upon to twofold in the following five years. Similar favourable circumstances in expense of generation and work costs USD 6 Billion worth of fares in 2013-14. The business accounts 10% of the world's cowhide generation. There is 24% development anticipated in the following five years. The development sought after for calfskin is driven by the style business, particularly footwear. Aside from this, furnishings and inside plan ventures, just as the car business likewise request calfskin. The cowhide business has a position of conspicuousness in the Indian economy because of generous fare profit and development, other than the way that it utilizes 2.5 million individuals. India is the fifth-biggest exporter of calfskin merchandise and adornments on the planet .

Technical Analysis

Technical analysis involves searching for recurrent and predictable patterns in stock prices. The methods used to analyse securities and make investment decisions fall into two very broad categories: fundamental analysis and technical analysis. Fundamental analysis involves analysing the characteristics of a company in order to estimate its value. Technical analysis takes a completely different approach; it doesn't care one bit about the "value" of a company or a commodity. Despite all the luxurious and phenomenal gadgets, it uses, specific examination incredibly just assessments free market movement in a market attempting to make sense of what course will continue later. By the day's end, specific examination attempts to understand the emotions in the market by inspecting the market itself, rather than its fragments. In case you fathom the focal points and repressions

*Faculty, School of Management Studies, The NorthCap University (Formerly ITM University), Gurugram. Email: dr.eshajain1985@gmail.com

of specific assessment, it can give you another course of action of instruments or capacities that will enable you to be an unrivalled vendor or examiner. Specialized investigation is a strategy for assessing protections by dissecting the measurements produced by market action, for example, past costs and volume. Specialized experts don't endeavour to gauge a security's inherent worth, yet rather use outlines and different apparatuses to recognize designs that can recommend future movement.

Specialized investigation includes scanning for intermittent and unsurprising examples in stock costs. The strategies used to investigate protections and settle on venture choices fall into two exceptionally general classifications: crucial examination and specialized investigation. Basic investigation includes examining the qualities of an organization so as to gauge its worth. Specialized examination adopts a totally unique strategy; it couldn't care less one piece about the "esteem" of an organization or an item. Despite all the luxurious and exceptional gadgets it uses, specific examination very just assessments free market action in a market attempting to make sense of what course, or example, will continue later on. By the day's end, specific examination tries to understand the sentiments in the market by inspecting the market itself, rather than its fragments. If you appreciate the focal points and restrictions of particular assessment, it can give you another game plan of instruments or capacities that will engage you to be an unrivalled dealer or examiner. Specific examination is a system for surveying assurances by dismembering the estimations created by market activity, for instance, past expenses and volume. Specialists don't attempt to check a security's characteristic worth, yet rather use diagrams and diverse devices to perceive plans that can suggest future development.

The examination on specialized investigation of chose organizations dependent on Stratified testing strategy is noteworthy as it helps in understanding the characteristic estimation of offers and to know whether the offers are underestimated or exaggerated or accurately evaluated. It ends up basic to know the exhibition of the organization so the speculation will be properly giving returns and guarantee wellbeing of the venture. Further it helps in understanding the value conduct of the offers, the sign given by them and the significant defining moments of the market cost. The Technical examination focuses on plotting the value developments of stock, drawing inductions from the value developments in the market. It is a methodology by expectation of future costs through the powers like free market activity. It is particularly helpful for an examiner who goes for net revenues.

Review of Literature

Fama (1965) has responded to the inquiries to what broaden can the history of a typical stock cost can be utilized to make important expectations concerning the future costs of the stock? The hypothesis of arbitrary stroll on stock costs is considered with two theories. They are I) Successive value changes are autonomous and ii) The value changes comply with some likelihood appropriation. The information for this investigation comprises of day by day costs for every one of the thirty supplies of the Dow – Jones mechanical normal. This investigation reasons that there is solid and voluminous proof for arbitrary walk hypothesis.

Sharma and Robert (1977) tested the applicability of random walk hypothesis to the stock market in developing country namely India and compare this to that of stock markets in developed countries namely USA, and England. For this purpose, the price behaviour of Bombay stock exchange is factually inspected both for haphazardness and freedom. The test the arbitrary walk theory. The test covers 132 months to month perceptions for each securities exchange record of normal stock recorded in Bombay trade for a long time from 1968-1973.The investigation shows that value reliance while measurably huge, is equivalently little in the creating nations. In view of the test, it was noticed that the Bombay stock trade stock complies with an irregular walk and is equal to created nations stock trade.

Bessembinder and Chan (1995) assessed whether some simple forms of technical analysis can predict stock price movement in Asian markets, and they found the rules to be quite successful in the emerging markets of Malaysia, Thailand and Taiwan. The rules have less explanatory power in more developed markets such as Hong Kong and Japan. They also found that technical signals emitted by U.S. markets have substantial forecast power for Asian stock returns beyond that of own-market signals.

Kho (1996) re-examined the efficiency of foreign currency futures markets by evaluating the role of time-varying risk premia and volatility in explaining technical trading rule profits and showed that large parts of the technical rule profits can be explained by the time-varying risk premia estimated from a general model for the conditional CAPM.

Ramaswami (1996) evaluated the relationship among book esteems, profit, profit and market cost of offer, effect of extra issues, effect of security trick on value return .keeping that in mind, the writer utilized every day offer cost of 30 organizations incorporated into the development of BSE touchy file, day by day information of BSESI and NYSE composite file, yearly information on BV per offer market value per offer, EPS and DPS

and information on reward issue made, during the time of study ,the specialist utilized connection ,relapse and recurrence dispersion for deciphering information.

Rodriguez, Rivero and Felix (1999) evaluated whether some basic types of specialized investigation can foresee stock value development in the Madrid stock trade, covering thirty-one-year time frame from Jan 1966 – Oct 1997.the outcomes give solid help to productivity of those specialized exchanging rules. By utilizing bootstrap systems the creator demonstrates the profits got from these exchanging standards are not predictable with a few invalid models every now and again utilized in fund.

Gupta (2003) analysed the discernments about the principle wellsprings of his stresses concerning the financial exchange. An example involves white collar class family unit's spread more than 21 satiates/association domains. The examination uncovers that the preeminent reason for stress for family unit financial specialists is false organization the board and, in the runner, up is a lot of instability and in the third spot is an excessive amount of value control.

Ravindra and Wang (2006) inspected the relationship of exchanging volume to stock records Asian markets. Securities exchange files from six creating markets in Asia are investigated over the multi month time frame finishing off with October 2005. In the South Korean market, the causality reached out from the stock records to exchanging volume while the causality is the inverse in the Taiwanese market.
Chong and Ng (2008) inspected two oscillators – the Moving Average Convergence–Divergence (MACD) and the Relative Strength Index (RSI) – to check whether these principles are beneficial. Utilizing 60-year information of the London Stock Exchange FT30 Index, it is discovered that the RSI just as the MACD standards can create returns higher than the purchase and-hold methodology by and large.

Rosillo, Fuente and Brugos (2012) intended to analyse the consequence of the use of the pointers Relative Strength Index (RSI), Moving Average Convergence Divergence (MACD), Momentum and Stochastic in various organizations of the Spanish consistent market. By utilizing these pointers, they expected to give buy and deal proposals to little financial specialists. The age of extraordinary capital additions relies upon the sort of the stock trade organization and the pointer which was being utilized.

Jain, E. (2014) focused to show the share price movements across a reference point from one extreme to another and to determine the point of buy and sell decision by investor by using RSI indicator and found that this tool is quiet dependable for trading in share market as it gives positive results in general.

Jain, E. (2014) proved the importance and reliability of RSI tool and its implementation by applying it on 30 actively traded stocks of Bombay stock Exchange and made understand the law of demand and supply with investor sentiments.

Jain, E. (2015) examined the nature of the volatility in the Indian stock markets with special reference to India bulls by using relative strength index on the scrip from January to August 2014 and found the perfect coordination of this technical indicator with stock price movement.

Objectives of the Study

- To make a study on Technical Analysis on selected stocks and interpret on whether to buy or sell them.
- To analyse price movements using Relative Strength Index.
- To understand trends and patterns in share price movements using Simple Moving Average.

Methodology

The examination goes for investigating the value developments of chose organizations' scrips. As the investigation portrays the current statistical data points given in the budget report and the value developments of the chose organizations, the examination configuration pursued is expressive and explanatory in nature. For Technical Analysis, the daily share price movements of the selected companies in NSE were absorbed for the 6 years i.e. from January 2010 to December 2015. The closing prices of share prices were taken, and the future price movement was analyzed using various tools. Data were collected from secondary sources i.e. trading of equity market in NSE. All the listed companies in the category of Leather Products were taken into consideration and top 5 were selected on the basis of their market capitalization in December 2015. The selected companies with their market capitalization are:

Table 1: Showing Sample Companies with market capitalization

S. No.	Company Name	Market Cap (Rs. Cr)
1	Bata India	6,362.11
2	Relaxo Footwear	5,836.33
3	Mirza Intl	1,245.97
4	Bhartiya Inter	608.77
5	Liberty Shoes	346.68

The sample companies shown in Table 1 were taken into consideration on the basis of their market capitalization which is valued in Rs. Crores. The companies shown in table are the top companies in the segment of Leather products. The data with market capitalization value is taken as on December 2015.

Analysis and Interpretation

The data analysis for Relative Strength Index and Simple Moving Average for the said objectives is done as under: -

Table 2: Showing Closing Prices

Date	Bata India	Relaxo Footwear*	Mirza International	Bhartiya International	Liberty Shoes
Jan-10	91.00		15.40	73.10	99.70
Feb-10	117.35		15.90	78.75	107.30
Mar-10	114.05		14.70	63.80	100.70
Apr-10	137.83		15.70	71.65	105.60
May-10	130.08		13.90	64.70	93.10
Jun-10	136.15		14.80	69.75	95.75
Jul-10	143.03		15.00	67.00	98.60
Aug-10	155.83		15.85	101.65	98.75
Sep-10	167.08		16.90	113.25	112.35
Oct-10	168.08		15.75	83.10	104.30
Nov-10	170.13		22.95	79.00	106.65
Dec-10	181.10		23.65	79.70	107.80
Jan-11	157.80		21.00	67.45	92.45
Feb-11	171.70		19.95	47.95	81.50
Mar-11	195.60		22.20	52.00	88.40
Apr-11	213.88		23.45	61.70	92.30
May-11	242.93		22.70	55.30	89.30
Jun-11	306.00	29.98	21.95	56.20	103.55
Jul-11	329.58	30.00	21.60	57.55	101.65
Aug-11	347.10	32.00	17.70	41.35	81.75
Sep-11	324.68	44.00	19.10	49.40	82.10
Oct-11	362.28	43.42	19.55	55.50	83.90
Nov-11	308.95	30.10	17.30	60.25	69.15
Dec-11	265.03	24.12	16.55	52.05	60.35
Jan-12	343.70	29.02	20.40	56.80	82.45
Feb-12	349.93	32.02	19.45	57.20	91.00
Mar-12	384.30	30.05	18.60	52.45	88.80
Apr-12	439.18	31.42	19.00	52.30	94.30
May-12	439.00	42.92	17.60	49.50	105.30

Jun-12	433.15	51.07	19.35	48.35	105.70
Jul-12	444.93	54.27	18.45	47.90	95.25
Aug-12	444.25	63.22	17.25	46.50	95.95
Sep-12	488.65	72.63	18.05	52.45	117.20
Oct-12	427.10	81.82	19.25	98.20	103.70
Nov-12	460.50	81.12	24.80	168.70	106.80
Dec-12	433.48	80.33	24.65	178.15	101.10
Jan-13	393.65	82.20	23.45	179.45	95.35
Feb-13	373.78	65.10	20.00	175.85	87.25
Mar-13	359.18	58.87	18.25	200.35	84.50
Apr-13	373.00	59.27	21.00	228.30	91.80
May-13	401.20	65.00	24.00	220.55	86.80
Jun-13	417.58	80.02	20.65	190.15	82.25
Jul-13	481.45	78.95	20.80	147.85	79.10
Aug-13	409.33	71.19	20.10	154.70	78.10
Sep-13	428.28	85.22	21.20	182.20	79.40
Oct-13	457.00	85.97	24.50	189.30	90.40
Nov-13	534.18	88.18	23.85	203.25	96.30
Dec-13	526.88	114.38	29.95	178.45	155.10
Jan-14	475.53	115.40	27.65	171.65	119.05
Feb-14	530.33	126.80	26.35	182.70	127.60
Mar-14	570.35	147.15	28.05	203.40	147.90
Apr-14	534.08	151.68	28.25	232.80	174.90
May-14	578.80	184.93	28.15	269.35	166.50
Jun-14	641.28	191.88	34.80	358.45	220.15
Jul-14	623.55	193.55	31.80	335.45	281.90
Aug-14	639.00	217.63	36.75	352.25	304.70
Sep-14	662.28	238.90	39.65	375.20	292.25
Oct-14	636.55	256.65	42.80	380.30	280.20
Nov-14	625.55	246.95	42.15	412.25	261.95
Dec-14	653.43	281.03	43.00	401.65	263.00
Jan-15	711.53	329.90	75.75	406.95	266.25
Feb-15	641.18	360.83	91.70	409.80	297.85
Mar-15	545.43	325.95	86.85	417.45	247.50
Apr-15	509.60	363.78	83.30	407.35	241.85
May-15	535.48	424.90	86.05	452.65	231.85
Jun-15	528.85	472.45	79.15	502.10	226.65
Jul-15	600.20	563.10	129.15	539.30	248.05
Aug-15	536.30	521.65	111.20	502.35	208.20
Sep-15	539.13	529.55	108.70	535.25	191.60
Oct-15	502.95	519.40	126.95	555.90	204.55
Nov-15	499.50	505.30	143.10	561.80	216.45
Dec-15	495.00	486.20	134.40	519.70	203.45

*Relaxo Footwear listed on NSE in June 2011.

The closing prices of all 5 sample companies are shown in Table 2. The data is shown for the period of last 6 years i.e. from January 2010 to December 2015. But the closing prices of Relaxo Footwear are shown from the month of June 2011 as the company was listed on National Stock Exchange in June 2011.

Table 3: Showing 5 days and 10 days Moving Averages for the period

Date	BATA INDIA		RELAXO FOOTWEAR		MIRZA INTL		BHARTIYA INTL		LIBERTY SHOES	
	5MA	10MA	5MA	10MA	5MA	10MA	5MA	10MA	5MA	10MA
Jan-10										
Feb-10										
Mar-10	118.06				15.12		70.40		101.28	
Apr-10	127.09				15.00		69.73		100.49	
May-10	132.23	136.05			14.82	15.39	67.38	78.68	98.75	101.62
Jun-10	140.58	143.96			15.05	16.15	74.95	79.27	98.36	102.31
Jul-10	146.43	150.34			15.29	16.92	83.27	79.36	99.71	102.36
Aug-10	154.03	154.71			15.66	17.55	86.95	79.73	101.95	101.54
Sep-10	160.83	158.10			17.29	17.98	88.80	77.36	104.13	99.13
Oct-10	168.44	164.65			19.02	18.81	91.34	76.09	105.97	98.66
Nov-10	168.84	172.42			20.05	19.67	84.50	75.28	104.71	98.31
Dec-10	169.76	182.41			20.66	20.44	71.44	74.11	98.54	97.38
Jan-11	175.27	197.43			21.95	21.05	65.22	69.57	95.36	97.86
Feb-11	184.02	213.68			22.05	21.52	61.76	64.00	92.49	96.79
Mar-11	196.38	231.58			21.86	21.72	56.88	59.82	88.79	94.54
Apr-11	226.02	247.04			22.05	21.33	54.63	56.86	91.01	92.08
May-11	257.60	265.16			22.38	20.92	56.55	54.44	95.04	89.69
Jun-11	287.90	280.27			21.48	20.55	54.42	53.72	93.71	87.36
Jul-11	310.06	289.60			20.61	20.21	51.96	54.13	91.67	85.25
Aug-11	333.93	304.41	35.88		19.98	20.03	52.00	54.61	90.59	84.65
Sep-11	334.52	318.02	35.90		19.05	19.63	52.81	54.16	83.71	84.52
Oct-11	321.61	332.16	34.73	32.47	18.04	19.22	51.71	53.88	75.45	84.47
Nov-11	320.93	345.47	34.13	32.62	18.58	18.93	54.80	53.49	75.59	83.55
Dec-11	325.98	356.42	31.74	33.91	18.65	18.53	56.36	52.68	77.37	83.91
Jan-12	330.38	365.02	29.06	35.81	18.46	18.69	55.75	53.38	78.35	86.31
Feb-12	356.43	377.05	29.33	36.84	18.80	18.63	54.16	53.23	83.38	87.62
Mar-12	391.22	385.24	33.09	38.82	19.01	18.40	53.65	52.33	92.37	88.83
Apr-12	409.11	403.21	37.50	43.07	18.80	18.47	51.96	51.55	97.02	93.63
May-12	428.11	419.42	41.95	48.84	18.60	18.74	50.10	56.17	97.87	97.97
Jun-12	440.10	431.10	48.58	54.05	18.33	19.18	48.91	67.36	99.30	100.40
Jul-12	450.00	439.45	56.82	58.89	18.14	19.70	48.94	79.45	103.88	101.41
Aug-12	447.62	440.39	64.60	64.10	18.47	20.19	58.68	92.15	103.56	102.07
Sep-12	453.09	433.85	70.61	67.47	19.56	20.29	82.75	104.51	103.78	101.36
Oct-12	450.80	425.87	75.82	69.06	20.80	20.35	108.80	119.59	104.95	99.28
Nov-12	440.68	419.85	79.62	69.88	22.04	20.52	135.39	137.59	104.83	97.89
Dec-12	417.70	415.48	78.11	70.96	22.43	21.07	160.07	154.85	98.84	97.05
Jan-13	404.12	412.81	73.52	72.64	22.23	21.41	180.50	169.22	95.00	95.68
Feb-13	386.62	412.09	69.15	73.27	21.47	21.69	192.42	178.76	92.00	91.87
Mar-13	380.16	410.32	66.09	72.21	21.34	21.77	200.90	184.41	89.14	89.31
Apr-13	384.95	407.09	65.65	72.62	20.78	21.41	203.04	185.76	86.52	86.57
May-13	406.48	409.45	68.42	73.18	20.94	21.40	197.44	186.87	84.89	85.50
Jun-13	416.51	423.50	70.89	73.78	21.31	21.44	188.31	189.25	83.61	85.59
Jul-13	427.57	438.81	76.08	78.71	21.35	22.43	179.09	189.51	81.13	92.38
Aug-13	438.73	450.44	80.27	84.36	21.45	23.37	172.84	186.64	81.85	95.83
Sep-13	462.05	466.18	81.90	91.11	22.09	23.91	175.46	182.08	84.66	99.41
Oct-13	471.13	483.09	88.99	99.33	23.92	24.31	181.58	180.37	99.86	105.52
Nov-13	484.37	494.74	97.83	106.49	25.43	25.07	184.97	184.63	108.05	114.79
Dec-13	504.78	504.48	106.15	117.09	26.46	25.81	185.07	196.78	117.69	123.53
Jan-14	527.45	527.67	118.38	129.16	27.17	27.28	187.89	217.16	129.19	137.73
Feb-14	527.43	547.20	131.08	139.99	28.05	28.34	193.80	232.48	144.91	157.98
Mar-14	537.82	565.40	145.19	153.16	27.69	29.56	211.98	248.78	147.19	179.41
Apr-14	570.97	578.21	160.49	168.23	29.12	31.14	249.34	265.97	167.41	199.01
May-14	589.61	589.18	173.84	182.46	30.21	32.43	279.89	286.16	198.27	211.52
Jun-14	603.34	604.18	187.93	195.61	31.95	33.88	309.66	310.22	229.63	225.81
Jul-14	628.98	616.49	205.38	211.04	34.23	35.54	338.14	332.11	253.10	239.35
Aug-14	640.53	630.61	219.72	229.31	37.16	40.31	360.33	352.47	275.84	251.18
Sep-14	637.39	641.32	230.74	250.23	38.63	46.66	371.09	370.17	284.20	263.48
Oct-14	643.36	637.98	248.23	264.33	40.87	52.53	384.33	384.98	280.42	271.58
Nov-14	657.87	624.81	270.69	281.52	48.67	57.38	395.27	389.87	272.73	273.75
Dec-14	653.65	616.00	295.07	304.65	59.08	62.80	402.19	401.59	273.85	268.74
Jan-15	635.42	604.99	308.93	330.13	67.89	67.04	409.62	416.57	267.31	260.94
Feb-15	612.23	598.78	332.30	362.55	76.12	75.99	408.64	432.98	263.29	256.52
Mar-15	588.64	588.76	361.07	389.05	84.73	82.83	418.84	445.19	257.06	249.32
Apr-15	552.11	580.11	389.58	417.31	85.41	89.49	437.87	457.49	249.14	242.28
May-15	543.91	565.07	430.04	441.15	92.90	97.88	463.77	472.91	239.18	236.44
Jun-15	542.09	543.86	469.18	458.69	97.77	104.62	480.75	488.40	231.32	231.46
Jul-15	547.99	529.24	502.33	471.23	102.85	108.89	506.33	499.39	221.27	222.02
Aug-15	541.49		521.23		111.03		526.98		215.81	
Sep-15	535.62		527.80		123.82		538.92		213.77	
Oct-15	514.58		512.42		124.87		535.00		204.85	
Nov-15										
Dec-15										

To achieve the objectives, 5 days and 10 days moving averages are calculated which is shown in Table 3. Most patterns demonstrate a great deal of variety in value development of a scrip. This can make it hard for dealers to get a thought of a security's general pattern. One basic technique investor's use to battle this is to apply moving midpoints. A moving normal is the normal cost of a security over a set measure of time. By plotting a security's normal value, the value development is smoothed out. When the everyday changes are evacuated, dealers are better ready to distinguish the genuine pattern and increment the likelihood that it will work to support them. In moving normal examination, if the value line is over the moving normal, it demonstrates the purchase signal and if the value line is beneath the moving normal, it demonstrates the sell signal. The detailed analysis with the help of graphs is shown as under: -

Fig. 1: Showing moving averages of Bata India

In moving average analysis, if the price line is above the moving average, it shows the buy signal and if the price line is below the moving average, it shows the sell signal. Figure 1 clearly shows that the price line is approximate equal to both moving averages. It indicates neither buying signal nor selling signal, it clearly show the stock to be on hold.

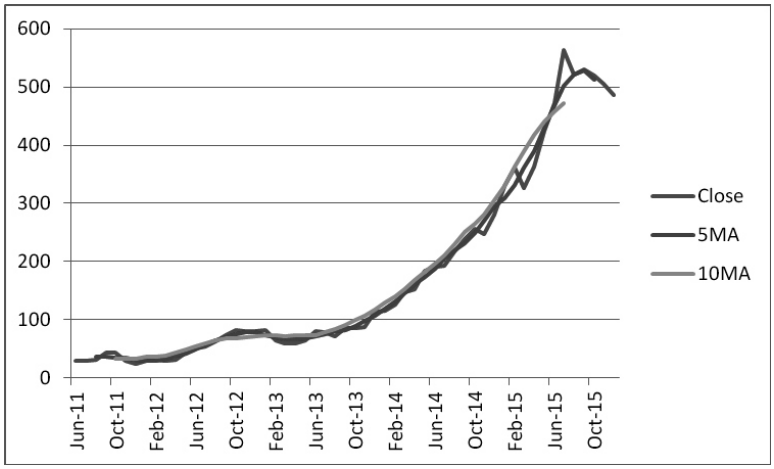


Fig. 2: Showing moving averages of Relaxo Footwears

In moving average analysis, if the price line is above the moving average, it shows the buy signal and if the price line is below the moving average, it shows the sell signal. Figure 2 clearly shows that the price line is below the moving averages. It indicates selling signal for the stock.

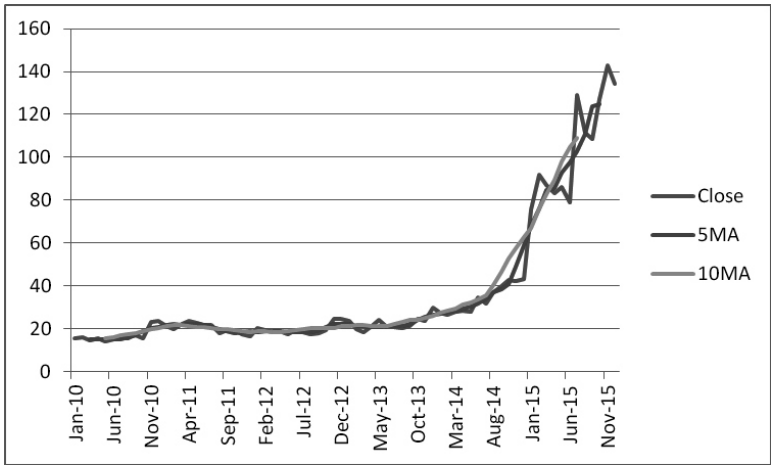


Fig. 3: Showing moving averages of Mirza International

In moving average analysis, if the price line is above the moving average, it shows the buy signal and if the price line is below the moving average, it shows the sell signal. Figure 3 clearly shows that the price line is below the moving averages. It indicates selling signal for the stock.

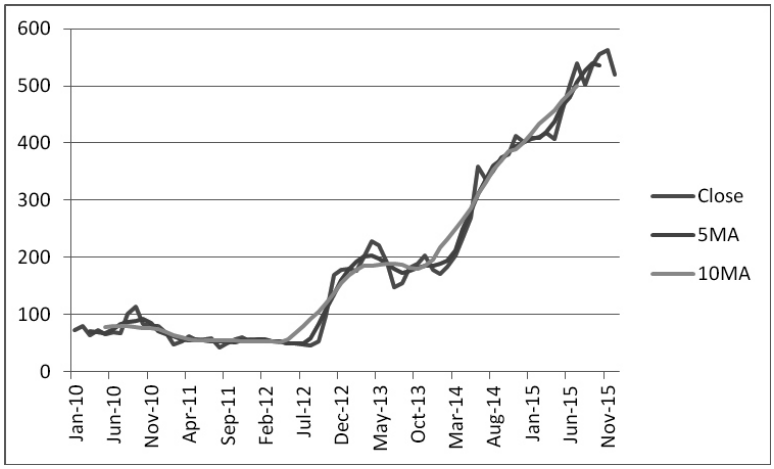


Fig. 4: Showing moving averages of Bhartiya International

In moving average analysis, if the price line is above the moving average, it shows the buy signal and if the price line is below the moving average, it shows the sell signal. Figure 2 clearly shows that the price line is below the moving averages. It indicates selling signal for the stock.

Fig. 5: Showing moving averages of Liberty Shoes

In moving average analysis, if the price line is above the moving average, it shows the buy signal and if the price line is below the moving average, it shows the sell signal. Figure 5 clearly shows that the price line is approximate equal to both moving averages. It indicates neither buying signal nor selling signal, it clearly show the stock to be on hold.

Table 4: Showing RSI values

Companies	Bata India	Relaxo Footwear	Mirza International	Bhartiya International	Liberty Shoes
RSI	59.5	77.62	70.6	68.8	55.85

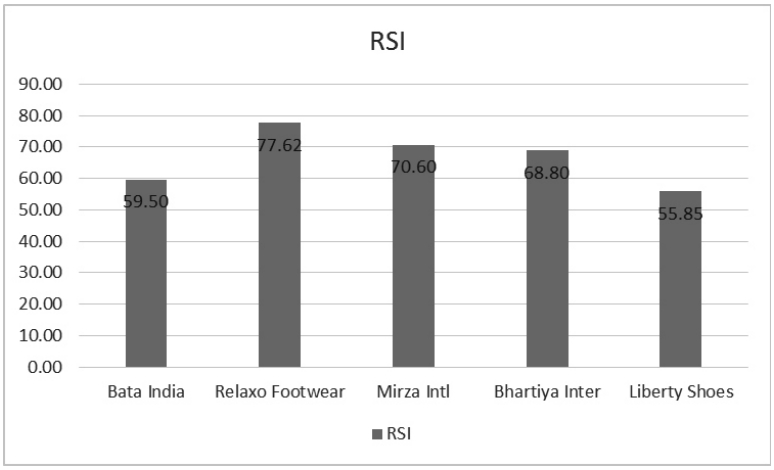


Fig. 6: Showing RSI of companies

Table 4 and figure 6 shows the values of Relative Strength Index of the companies. When the Average Gain is greater than the Average Loss, the RSI rises because RS will be greater than 1. Conversely, when the average loss is greater than the average gain, the RSI declines because RS will be less than 1. If the value of RSI exceeds the value of 70, it indicates overbought condition and if the value of RSI is less than 30, it indicates the oversold condition of the stock. The values obtained from analysis shows buying and selling conditions of the stock. According to the values derived from analysis and shown in table, Bata India and Liberty Shoes shows at average position which indicates to hold the stock but Relaxo Footwear, Mirza International and Bhartiya International show overbought zones which directly indicates sell signals.

Suggestions

Today, the strength of stock trade is exclusively reliant on the example of venture by the speculator. As the money related market experiences lively changes, financial specialists should search for right open doors keeping tuned in to the elements of market condition. Budgetary market mirrors a nation's monetary development as they supply important money related contributions for the advancement of the nation. Specialized examination gives financial specialist a superior comprehension of the stocks and furthermore provides them right guidance to go on further to purchase or sell the stocks .Therefore, the little speculators and dealers ought not indiscriminately make a venture rather they ought to break down utilizing the different devices to check if the scrip is in fact solid. Other than given examination, speculators should likewise consider different variables like administration of India spending plan, organization execution, political and get-togethers, climatic conditions and so forth before any choice is made. The scrip ought to likewise be in a general sense great. In this manner, it's prudent for a broker or financial specialist to make specialized examination of stocks for better return of speculations.

Conclusion

It is concluded from the study that investor if analysed technically the stocks before investment then it is very easy to predict the movement of market. In this study, with the help of relative strength index and simple moving average, it is found that the stock prices of Bata India and Liberty Shoes after analyses are at average position and gives indication of holding of shares whereas Relaxo Footwear, Mirza International and Bhartiya International gives selling signal clearly.

References

1. *Bessembinder, H., & Chan, K. (1995). The profitability of technical trading rules in the Asian stock markets. Pacific-Basin Finance Journal, 3(2), 257-284.*

2. *Chitra, R. (2011). Technical analysis on selected stocks of energy sector. International Journal of Management & Business Studies, 1(1), 42-46.*
3. *Chong, T. T. L., & Ng, W. K. (2008). Technical analysis and the London stock exchange: testing the MACD and RSI rules using the FT30. Applied Economics Letters, 15(14), 1111-1114.*
4. *Fama, E. F. (1965). The behavior of stock-market prices. Journal of business, 34-105.*
5. *Fernández Rodríguez, F., Sosvilla Rivero, S., & Andrada Félix, J. (1999). Technical analysis in the Madrid stock exchange. FEDEA –D.T.99-05, 1-29*
6. *Gupta, L. G. (2003). Stock Market Investors' Biggest Worries Today.Portfolio Organiser, 41(5), 47-51.*
7. *Ibrahim, H. S. (2017). A study on technical analysis of select steel companies in India. International Journal of Applied and Advanced Scientific Research, 2(1), 45-50.*
8. *Jain, E. (2014). Technical analysis of oriental Bank of commerce. SAARJ Journal on Banking & Insurance Research, 3(2), 76-90.*
9. *Jain, E. (2014). Impact of Law of Demand & Supply on Stock Market: A Study of Most Active BSE Indices with the Help of RSI. IOSR Journal of Economics and Finance, 5(6), 06-15.*
10. *Jain, E. (2015). Short Term Volatility in Prices of India bulls Securities Pvt Ltd: A Detailed Study of Scrip from January 2014 to August 2014. International Journal of Marketing, Financial Services and Management Research, 3(10), 91-101.*
11. *Kamath, R., & Wang, Y. (2006). The causality between stock index returns and volumes in the Asian equity markets. Journal of International Business Research, 5(2), 63.*
12. *Kanaka, S., & Chinadurai, M. (2012). A study of comparative advantage of Indian agricultural exports. Journal of Management and Science, 2(3), 1-9.*
13. *Kho, B. C. (1996). Time-varying risk premia, volatility, and technical trading rule profits: Evidence from foreign currency futures markets. Journal of Financial Economics, 41(2), 249-290.*
14. *Rosillo, R., De la Fuente, D., & Brugos, J. A. L. (2013). Technical analysis and the Spanish stock exchange: testing the RSI, MACD, momentum and stochastic rules using Spanish market companies. Applied Economics, 45 (12), 1541-1550.*
15. *Sharma, J. L., & Kennedy, R. E. (1977). A comparative analysis of stock price behavior on the Bombay, London, and New York stock exchanges. Journal of Financial and Quantitative Analysis, 12(03), 391-413.*

The Economics of Digital Currency: World of Crypto currency

Dr. Sana Moid*
Shreyansh Jain**

Abstract

Crypto currency is a form of asset which exists in digital form that is in binary format and it comes with the right to use. In this context digital asset is being referred to national currency which is used as a medium of exchange. This transaction is secured using cryptography. Crypto currency acts as digital token that uses cryptography for exchanging digital signatures of token transfer, peer-to-peer networking and decentralization. Some of the popular crypto currencies available for trade in online market are Bitcoin, Namecoin, Litecoin, Peercoin, etc. The present study will further help in understanding the pros and cons of digital money and how it can be made more secured.The paper explores many aspects of Crypto currency platforms attempting to answer the main questions of this research which are "Will Crypto currency be the next currency platform? Are virtual currency platforms safe enough to be used?" It investigates different Crypto currency platforms in order to provide deep insight about mechanisms of implementing, controlling, issuing, spending and exchanging Crypto currencies alongwith studying the impact of demonetisation on Cryptocurrency.

Keywords: *Digital Currency, Crypto Currency, Bitcoin, Currency Platform*

Introduction

The term "virtual currency" refers to a medium of exchange existing entirely in intangible form that is not a legal tender but can be substituted for legal tenders. Older forms of "currency" that are not "legal tender" include paper-based currency substitutes, such as military scrip and depression scrip. In recent times, the term "virtual currency" has developed an added connotation that it exists only in an electronic or digital form and is used only as a medium of exchange between members of an online or virtual currency community. Virtual currencies may be used for online games, social media, or corporate loyalty programs for buying virtual goods or redeem prizes. A subset of virtual currency is "cryptocurrency," by which we mean an internet-based virtual currency in which the ownership of a particular unit of value is validated using cryptography. Its value varies by its movement in the market. The paper explores many aspects of Cryptocurrency platforms attempting to answer the main questions of this research which are "Will Cryptocurrency be the next currency platform? Are virtual currency platforms safe enough to be used?" It investigates different Cryptocurrency platforms in order to provide deep insight about mechanisms of implementing, controlling, issuing, spending and exchanging Cryptocurrencies.

Literature Review

(Raymaekers, 2014) in his research article states Bitcoin to be a cryptocurrency which was introduced in 2009 to be first decentralized digital currency. Bitcoin allows online payments to be made by sending money via banks, buying goods and services online to be done from one party to the other without going through a financial institution (Raymaekers, 2014). There are many advantages of using bitcoin currency such as the speed of transaction, security of transaction, cost and convenience (Raymaekers, 2014). The technology that supports bitcoin is blockchain technology. Over US$1.2 billion has already been invested in blockchain start-ups (Shin, 2016). Blockchain technology increases the efficiency and transparency of governance, financial and security settlements, and financial clearing processes. Hence, blockchain is of great interest to businesses legitimately involved in the bitcoin eco space (Robb, 2017). With its origins in distributed databases, the blockchain's data is partitioned into blocks, continuously adding new sequential blocks of data (Swan, 2015).Cretarola and Figà-Talamanca (2017) are economics researchers and academic professionals that analyzed and developed a model of Bitcoin pricing derived from consumer confidence. The authors state "one of the main issues about Bitcoin is whether it should be considered a currency, a commodity or a stock". They arrive

*Assistant Professor, Amity Business School, Amity University, Email: sanamoid14@gmail.com
**B.Com (H), Amity Business School, Amity University, Lucknow

at the conclusion that the speculative nature of Bitcoin drives the high market volatility and that Bitcoin's volatility is more like a stock than a currency.

Low and Teo (2017) agree that Bitcoin and other cryptocurrencies are a financial instrument, but conclude that it may not exactly fit existing models of financial instruments despite the similarities among them feasibly as a form of property. The authors find in their conclusion that Bitcoin may be a new form of property that is sustained by consumer faith and trust in the decentralized system itself, which may be bolstered by legal recognition and further sustained via regulation. Manta and Pop (2017) discuss the difficulties and risk of Bitcoin and other virtual/digital currency payments due to the lack of legal enforcement inherent in internet transactions that are not legally binding because of limited divergent opinions on applicable regulations. They find virtual currency to be highly volatile due to the lack of established regulatory accountability . This presents great risk to those that use virtual coins as a means of payment as well as commodity investments. The authors used traditional scientific research, utilizing measurements, documentation, statistics, data analysis, and peer rigor to draw conclusions from their results regarding the sustainability of the trends they observe. The authors find that the United States of America is one of the most advanced in terms of the regulation of virtual currency. Additionally, they authors suggest that regulation is important to mainstream appreciation and adoption in mainstream financial institutions as part of future financial services, particularly its distributed, trust-less, system ledger, "blockchain".

Wales (2015) is an entrepreneur and advocate for crowdfunding and the democratization of funding agencies, i.e banking and lending in capital markets. The author posits that a fundamental shift in lending, made possible due to peer-to-peer technologies, may empower and enable disenfranchised markets in undeveloped countries that lack traditional banking services and improve existing wealth inequality.

Bitcoin only very recently became a subject of research in economics. The topic has been of interest for longer in computer science. A small number of theoretical papers written by computer scientists address incentives. (Eyal, 2013) show that mining is not incentive-compatible and that the so-called "selfish mining" can lead to higher revenue for miners who collude against others. The threshold for selfish mining to be profitable is lower than for double-spending attacks.

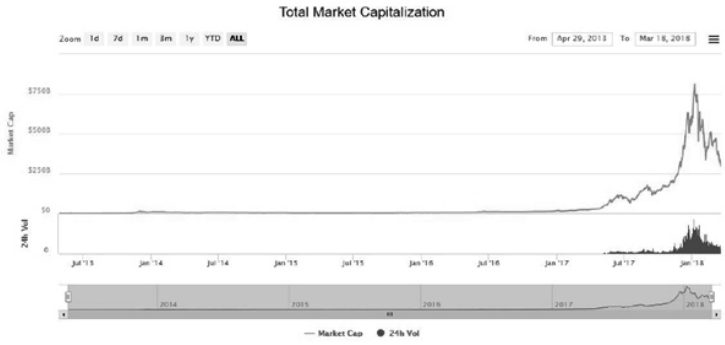
Objectives Of The Report

- To study the origin of crypto currency.
- To study the current economic scenario of Crypto Currency globally and in Indian context.
- To study the impact of cryptocurrency on economy, banking and finance.

The Cryptocurrency Market

Global Landscape

As of March 18 2018 there are 1564 Cryptocurrencies available & traded in about 9422 exchanges. The market capitalization of all the cryptocurrencies is $275,797,435,861 i.e. $275 Billions. & 24-hour volume was $ 18,207,953,654 i.e.$18 Billions.The Bitcoin has maximum dominance in the cryptocurrency market with around 45% of market share & market capitalization of $142.2 Billions (Rs 9.25 Trillion). Its market price is $ 8254.8 i.e Rs 5,35,767.



Source: The growth of Cryptocurrency in India

B. Its Rise in India:

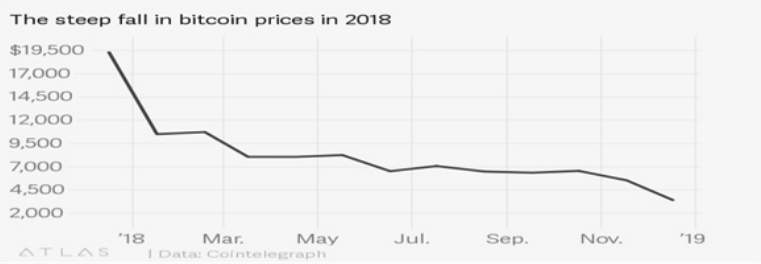
As early as 2012, small scale Bitcoin transactions were already taking place within the country. These were still early days in the development of Bitcoin when only crypto hobbyists were interested in Bitcoin. By 2013, Bitcoin was beginning to gain a level of popularity that was spreading across many countries. That year, a few businesses began to accept Bitcoin payment. A vintage era pizza shop called Kolonial in the Worli area of Mumbai became the first restaurant service in India to accept Bitcoin payments.

In a short space of time, cryptocurrency exchanges began to spring up within the country. Pioneers like BtcxIndia, Unocoin, and Coinsecure began offering cryptocurrency exchange and trading services in India. Over time, others like Zebpay, Koinex, and Bitcoin-India were added to the list. With the proliferation of crypto trading and exchange platforms, the crypto market in India has grown from its modest level in 2013 to what it is today. Apart from these online exchanges, there are also a number of over-the-counter (OTC) crypto shops in the country.

The 2016 demonetization policy may have spurred the adoption of cryptocurrencies among a considerable portion of the population but realities soon began to emerge that have stifled the growth of the market in the country. Despite its vast population, India only contributes 2 percent of the total global cryptocurrency market. capitalization. The small role being played by such a large economy can be attributed to the high cryptocurrency prices & the RBI-led government crackdown. The general level of prices of cryptocurrencies in India is on the high side. Market rates are relatively higher by as much as 5 to 10 percent compared to the global average.

Perils and promises of trading in cryptoassets in India:

The year 2018 was a decisive one for India's cryptocurrency ecosystem. From a central bank diktat prohibiting banks from dealing in cryptocoins, to the country's biggest exchange, Zebpay, downing its shutters, investors and traders believe they've seen it all in the past year. In December 2017, the price of bitcoin was at an all-time high of nearly $20,000, and investors in India were making a beeline for cryptocoins. This year, however, prices plummeted and currently a bitcoin is priced at around $4,000.



Source: https://www.theatlas.com/charts/BkpehOebV

In order to stay afloat, exchanges have experimented with peer-to-peer (P2P) and crypto-to-crypto trading. This allows traders and the exchanges to circumvent the RBI ban as transactions are not routed through the exchanges' bank accounts.

Features of Cryptocurrencies

Convertible to Fiat Currency. By using crypto currency exchanges, users may buy and sell cryptocurrencies in exchange for the fiat currency of their choice (subject to the availability at the exchange), much like a foreign currency exchange. Exchanges in the U.S. are subject to state regulations as money transmitters/money services businesses and to Know Your Customer regulations under the Bank Secrecy Act. Cryptocurrency exchanges offer a variety of different services which may resemble retail banking services and merchant payment processing services in addition to cryptocurrency/fiat currency exchange.

Irreversible. A transaction cannot be reversed by either party after it is confirmed. No cryptocurrency currently provides a mechanism to reverse transactions even in the situation where someone may have fallen victim to malicious actors. Cryptocurrencies which support multi-signature transactions (where M of N signatures are required to access the output of a given transaction) and time locks (where the output of a transaction is unspendable until a future time) allow the construction of transactions which are effectively reversible or escrowed.

Transparent Transaction Information. Similar to varying degrees of customer information, cryptocurrencies record varying levels of transaction information (i.e., physical location of transaction endpoints, value of the transaction, time of the transaction, etc.). The degree of transaction information provided by cryptocurrencies may discourage ecosystems participants from adoption as it prevents those participants

from being able to conduct activity that is available in the traditional financial system.

Rapid Settlement (Scaling). The cryptocurrency technology should enable rapid settlement of transactions as increasing users join the network in order to prevent unconfirmed transactions and maintain low transaction fees. Due to their limited scale and acceptance, the number of transactions cryptocurrencies can process is orders of magnitude smaller than those currently handled by retail payment systems. It remains to be seen if and to what extent cryptocurrencies would be able to evolve in order to process a significantly higher number of transactions.

Permissionless. Users can download and install the software necessary to receive and send Bitcoins and other cryptocurrencies for free on their own. Anyone may submit transactions to the network without any authentication other than the ability to put valid signatures on transactions, demonstrating ownership of the funds being spent.

Secure. Cryptocurrency funds are locked using a public key cryptography system. Only the owner of the private key can send cryptocurrency. This use of cryptography and current computational limitations to break this cryptography bolster the security of cryptocurrency transactions. The acceptance of cryptocurrencies can be affected if differing versions of the ledger coexist during extended periods of time, or if the procedures to achieve consensus are flawed.

Cryptocurrencies that Closely Align to Desired Features

Bitcoin: The Bitcoin blockchain is a distributed and decentralized digital money system. It is decentralized in the sense that there is no central authority responsible for regulating or taxing the money system. As Bitcoins are mined and transactions are verified via peer-to-peer cryptographic proof-of-work, there is no need for such an authority. The Bitcoin blockchain is also distributed – meaning every node on the network retains a complete copy of the digital ledger, which prevents tampering, while ensuring full transparency.

Ethereum: Ethereum is an open-source, public, blockchain-based distributed computing platform featuring smart contracts. Ethereum's focus on smart contracts – contracts able to self-verify their own conditions using both blockchain and external data – utilizes a tamper resistant means for criminals to expand the crime-as-a-service model.

Monero: Monero is an open-source, freely available, secure, private, and untraceable cryptocurrency. Originally created in April 2014, Monero adoption has increased significantly over the last few years, with its value reportedly increasing by 2,760 percent in 2016. (15) While many new cryptocurrencies are viewed as derivatives of Bitcoin, Monero is hailed as a new form of cryptocurrency, possessing unique privacy and decentralization properties.

Zcash: Zcash is marketed as a permissionless cryptocurrency that can fully protect the privacy of transactions using zero-knowledge cryptography. Zcash also enables users to send public payments similar to Bitcoin. With the support for both shielded and transparent addresses, users can choose to send Zcash privately or publicly. Zcash payments sent from a shielded address to a transparent address reveal the received balance, while payments from a transparent address to a shielded address hide the value received.

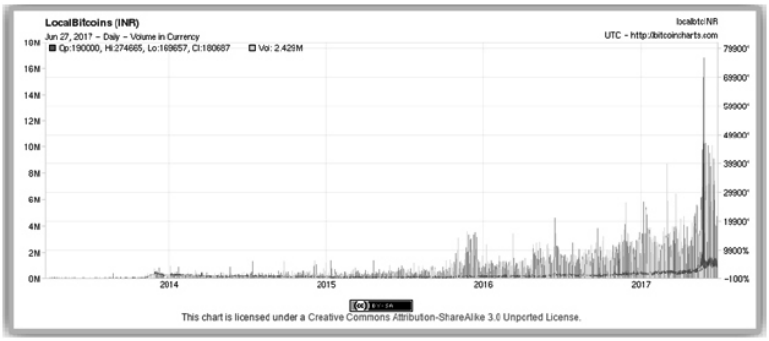
Major exchanges operating in India

India has seen a positive growth in the cryptocurrency market vis-à-vis other countries. In line with recent growth in the global markets, bitcoin exchanges in India are very much operational and successful. Their business models range from basic trading platforms to comprehensive service providers. The type of services being offered in the current market is listed in one of the above sub-topics (supra).

Listed below are some of these exchanges that have made it big in the industry

Name of the Exchange	Name of the Company promoting the platform	Brief of Company Structure	Date of Set-up of Exchange	Date of formation of Company	Website	Location(s)
Coinsecure	Secure Bitcoin Traders Pvt Ltd	company set up as a private company in India	N/a	2014	https://coinsecure.in	Delhi, India
Bitxoxo	Bitxoxo Bitcoins Online Pvt Ltd	company set up as a private company in India	N/a	2016	https://www.bitxoxo.com	Warangal, Telangana, India
Unocoin	Unocoin Technologies Pvt Ltd	company set up as a private company in India	2013	2015	https://www.unocoin.com	Bengaluru, Karnataka, India
ZebPay	Zeb IT Service Pvt Ltd	Set up in India as a private company, has an associate company in Singapore called Zeb Ventures Pte Ltd.	2012	2015	https://www.zebpay.com	Ahmedabad, GJ, India
Bitcoin India	Bitcoin India Software Services Pvt Ltd	company set up as a private company in India	N/a	2014	https://bitcoin-india.org	Hyderabad, Telangana, India

Volumes of Trading in Bitcoins

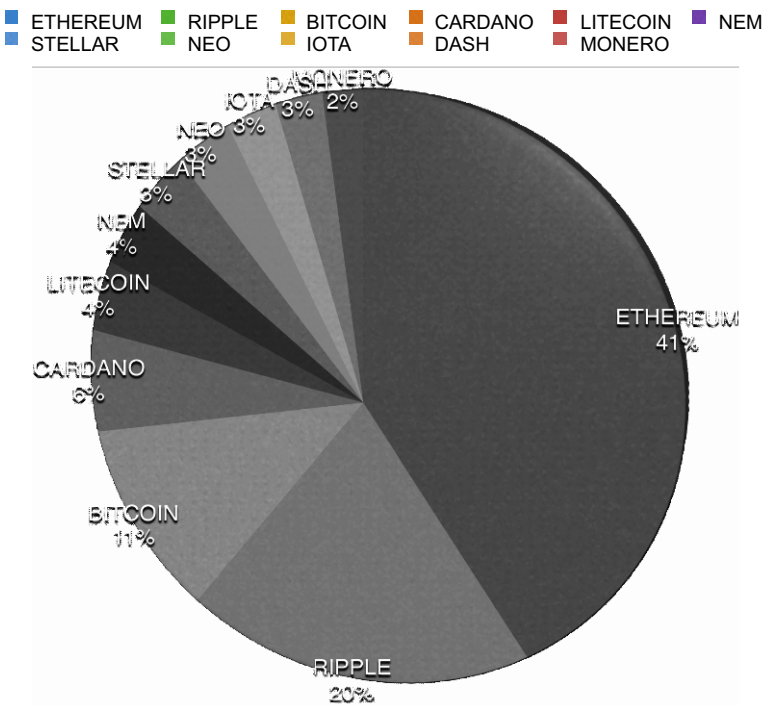


Local Bitcoins is an internationally renowned bitcoin exchange, primarily used for trading purposes by users round the globe. Presented in chart 6.2 above is data showcasing volume of trading in bitcoins in Indian Rupee (INR) in the given exchange since the beginning till June 27, 2017. As on the date, the aggregate volume in trades is equivalent to almost INR 2.5 million. Evidently, high trading volumes can be ascertained in late 2015 compared to pre 2015, however the numbers reduce and then move on a normal pace while gradually increasing up to the beginning of the year 2017, where excessive trading is evident. Trading came up abnormally in the year 2017 in India and everywhere else too.

CRYPTOCURRENCY	MARKET CAPITALISATION	PERCENTAGE SHARE	PRICE	NO. OF UNITS
ETHEREUM	$ 95 BILLION	41%	$ 973.84	97551959
RIPPLE	$ 47 BILLION	20%	$ 1.21	38842975207
BITCOIN	$26.9 BILLION	11%	$ 15.92	168969849
CARDANO	$ 14 BILLION	6%	$ 0.54	25925925926
LITECOIN	$ 9.6 BILLION	4%	$ 175.47	5471021
NEM	$ 8.4 BILLION	4%	$ 0.93	903225806
STELLAR	$ 8.1 BILLION	3%	$ 0.45	1800000000
NEO	$ 7.7 BILLION	3%	$ 118.62	6491317
IOTA	$ 6.6 BILLION	3%	$ 2.39	276150628
DASH	$ 5.9 BILLION	3%	$ 749.8	786877
MONERO	$ 4.9 BILLION	2%	$ 312.77	1566646

Table 1: Market Capitalisation of Crypto Currency

Source: https://coinmarketcap.com/



Graph 1:Cryptocurrency In Terms Of Market Capitalisation

Using Bitcoins in the corporate world

People use virtual currencies everyday so the concept is not a brand new phenomenon. Examples range from credit card reward points and airline miles to online video game currencies. It is the decentralized peer-to-peer function of Bitcoin that gives it unique properties. Businesses and corporations are continuously looking for new ways and innovations to increase sales. Bitcoins have some advantages and disadvantages in the corporate world. Bitcoin does, in a way, protect itself from a country's economic instability.

Bitcoins are digital and float against other currencies and as such are protected against economic instability or issues such as political unrest. Despite this, the price of Bitcoins is very volatile which comes from speculations, media coverage and uncertainties as the currency is still in its infancy. For corporations, this amount of volatility is unacceptable. Virtual currencies also lack liquidity to the point that it would be very hard to use it as an alternative to fiat currencies. If most corporations decided to actively use Bitcoins in their daily business, the demand for virtual currency would create an imbalance in supply and demand, further increasing price volatility. However this is quite appealing to those who are wary of high inflation from badly run monetary policies of central banks. The supply that miners can add into the circulation is too limited for widespread use. The currency also lacks a formalized market.

Advantages of Cryptocurrency

The benefits of digital currency are a plethora. Not only is it good for the business or the business owner but the buyer themselves. Of course if you purchased a specific crypto and it has shot up in price, you're buying using pennies on the dollar. In the long term, it definitely pays off. That is definitely one of the benefits of bitcoin.

- Easy access – Cryptocurrency is readily available to the general public. Almost anyone can make use of it. It is a decentralized operation and investors from all over the world have easy access to them.
- Quick and easy payments – Making payments using cryptocurrency is very easy. You can do it in just a matter of a few seconds. It is very fast because you don't require to feed many details, you don't even need to enter your credit/debit card details. All you need is the address of the wallet of the person or enterprise to whom you wish to make the payment too.
- Fast Settlements – With cryptos, you don't need to wait a couple days for your business to receive the money. Due to the technology cryptocurrencies are based on, the blockchain, it removes delays, payment of fees and a host of other third party approval that might have been present.
- Lower Fees – We've all been there and sometimes it could be painful just to view your monthly account statements from your bank. You'll often be shocked at the number of fees chalked up. Transferring money by using any other online forum or bank gateway is expensive as they levy considerable fees for the transaction. Credit card processing companies charge hefty fees. But it is not the case with cryptocurrency as the costs are nil or negligible. With credit cards or debit cards, the seller is the one paying a fee but for crypto's, it is the buyer paying the small fee.
- Private– You don't need to share your identity or whereabouts or the details of the transactions made between you and the beneficiary. No information is required to share with the government and the bank regarding the deal. It is truly decentralized.
- Identity Theft – Nobody can steal your personal information from merchants, which ensures the privacy of your sensitive data. By creating a proxy ID, you can make sure that no one knows anything about you. Among the benefits that come from using cryptocurrency is the protection of your online identity.
- No chargebacks – Once you made the payment, you cannot chargeback. This considerably depletes the chances of a fraud. Once the transfer has completed, it cannot reverse. Nobody can file chargeback like you can on credit cards. It has it's cons but can be an benefit also.

Disadvantages of Cryptocurrency

All the advantages do not mean that there are no risks involved in investing in cryptocurrencies. Just like anything else financially, they are not perfect and there are drawbacks of Bitcoin. Here we will discuss the disadvantages of cryptocurrencies:

- Difficult to understand – Cryptocurrencies are relatively new and come with a learning curve. People end up investing without proper knowledge and lose money to something they did not learn about.
- Lack of knowledge – People are not aware of how to use cryptocurrency and hence open themselves to hacker. The technology is somewhat complex and therefore one needs to be mindful of it before investing.
- Not accepted widely – Not many websites and companies accept digital currencies yet. Very few countries have legalized the use of cryptocurrencies. It makes it impractical for everyday use. Due to lack of acceptance, before buying or investing online or offline, you need to make sure that it's accepted at that place where you want to use it.
- Can lose your wallet – There is a possibility of losing your wallet. If you have stored the money in the form of digital currency on your phone or computer, you better remember your password and not lose those devices. Losing your coins means you won't be able to retrieve it, even with the help of legal assistance so that is just one of Bitcoins flaws.
- No way to reverse the payment – If you mistakenly pay someone by using cryptocurrency, then there is no way to get a refund of the amount paid. All you can do is to ask the

person for a refund and if your request is turned down, then just forget about the money.

- Uncertainty & Volatility – Since cryptocurrencies are so new, they are also very volatile. Many corporations don't want to deal with a form of money that is going to go through huge swings in volatility.
- Scaling – Based on the way smart contracts are designed, there is a limit to the speed and number of transactions it can process at a time which has hindered the widespread adoption of digital currencies. With the introduction of Lightning Networks, the crypto community has put a foot in the right direction which gives breathes hope into the idea that cryptocurrency could one day replace conventional credit card transactions.

Legal Status of Bitcoins Currency

Currency is generally defined as tokens used as money in a country. In addition to metal coins and paper bank notes, money orders, traveler's checks, it also includes electronic money or digital cash.

To fit in this definition, this is not exhaustive, "Currency" includes all currency notes, postal notes, postal orders, money orders, cheques, drafts, travellers cheques, letters of credit, bills of exchange and promissory notes, credit cards or such other similar instruments, as may be notified by the Reserve Bank, as per Section 2(h) of Foreign Exchange Management Act, 1999 5

As is evident from the above definition, bitcoin doesn't fit in any of the illustrative names, however if RBI wants, it can certainly notify it to be included in the above definition.

RBI hasn't notified bitcoin as legal tender in India and therefore it couldn't be termed as real currency for the time being.

Coins in India are governed by the Coinage Act, 2011.
Section 2(a): "coin" means any coin which is made of any metal or any other material stamped by the Government or any other authority empowered by the Government in this behalf and which is a legal tender including commemorative coin and Government of India one rupee note.

On study of above, bitcoin is certainly not metal or even any other material for that matter. Moreover, it's not legal tender. If it was to become e-money in the near future, still it could not be coin as per the Coinage Act, since e-money is specifically excluded from the above definition. Consequently, bitcoins cannot be considered as coins now or in the days to come.

The 2016 Demonetization
On November 8, 2016, Prime Minister Narendra Modi announced the commencement of a demonetization policy. The move was aimed at effecting the withdrawal of the Rs 1,000 and Rs 500 currency notes from circulation. Announcing the move, the Prime Minister described the move as part of the government's effort to curb counterfeiting of currency. He also declared that the move would fight against the circulation of black money while significantly reducing the level of inflation in the country's economy. This was only the third time that the Indian government had demonetized the economy. The other two occasions were in 1949 and 1978, with the former happening a year before the country's independence.

Impact on Cryptocurrencies
The move by the government to demonetize approximately 86 percent of the country's paper currency sent shockwaves all across the subcontinent of India. People with large cash holdings required a new means of holding such wealth without incurring significant tax burdens and sundry government scrutiny. It became common practice for some to buy large orders of Bitcoin or other cryptocurrencies and then sell them at a later date. This meant that they were effectively circumventing what would have been considerable taxes if they had tried to circulate their wealth through the banking system.
The demonetization policy also led to widespread criticism of the mainstream financial scene in the country. In the space of 24 hours, 86 percent of the country's paper currency in circulation had been rendered valueless by virtue of a single government proclamation. Realizing that fiat money isn't exactly "real" money since it isn't backed up by anything, Indians began to seek alternative currency models. Many Indians, especially those in the 40 percent bracket with access to the Internet began to take up Bitcoin and other cryptocurrency investments.

Notable Challenges
The 2016 demonetization policy may have spurred the adoption of cryptocurrencies among a considerable portion of the population but realities soon began to emerge that have stifled the growth of the market in the country. Despite its vast population, India only contributes 2 percent of the total global cryptocurrency market capitalization.

Security threats: Hackers and malicious users can create as much as they want from virtual currency if they break the system and know the method of virtual currency creations. This will lead to the ability to create fake virtual currency or steal virtual currency by just changing the accounts balances.

Collapse concerns in cryptocurrency systems: Unlimited issuing of virtual currency in the variety virtual communities will lead to economic problems since its issuing is not based on the

demand and supply. It is possible for some providers such as Second Life to issue unlimited Linden Dollars and increase their virtual items prices in order to gain more real revenues.

Impact on real monetary systems: Since some virtual currency systems are connected with real world monetary systems, they may affect the demands and supply facilities of real world money. For example, enabling users to purchase virtual and real goods and services with virtual currency in some platforms may reduce the demands on real money. Users will no longer depend on real money to buy what they want and they will use virtual money instead.

Gold farming risks: Gold farming term is very popular in China and developing countries. Gold farmers are players who play in social games such as World of Warcraft in order to gain gold, which is virtual currency of the game, and then sell it for real money. The targeted buyers are the players who do not have enough time to play and compete for gaining virtual currency.

Fluctuation in virtual currency value: According to Chow and Guo study, it is observed that when the popularity of a virtual community drops, the value of its virtual currency will be devalued. For example, users who own 1000 units of virtual currency can buy from variety of 100 items. In case the provider of that virtual currency drops, users can only buy from 10 items with their 1000 units since dropping will be reflected in fewer goods and services especially in closed virtual communities.

Money laundering: Money laundering is one risk that is very likely to rise with the use of VC especially with platforms that enable users to exchange virtual currency with real money. In practical case occurred in Korea in 2008, the police arrested a group of 14 persons for laundering $38 million obtained from selling virtual currency.

Unknown identity risks: Since creating an account in most of virtual currency platforms such as social games and social networks is not authenticated, financial transactions cannot be monitored very well. Gamers and users can create more than one account with unknown identities and use them for illegal transactions. There is no way to recognize the source of creating or cashing out the virtual currencies.

Black market for cryptocurrency: The financial position of some social games such as Second Life and World of Warcraft are mature enough to create black market for buying and selling their virtual currency. The increasing popularity of virtual currency in online environment has led to a thriving black market for trading virtual currency with real money. By observing several social games' forums, some fraud cases have been raised and discussed between users.

Status of Governments on Cryptocurrency around the World

Exchanging virtual currency with real currency is a hot topic in E-business and E-commerce industries. Trading cryptocurrency for cash is banned and prohibited in some countries where in other countries, it is either allowed or not regulated yet. If 2017 was the year of the Initial Coin Offerings (ICO), it seems as if 2018 is destined to become the year of regulatory reckoning. Things have already begun to heat up as countries around the world grapple with cryptocurrencies and try to determine how they are going to treat them. Some are welcoming, others are cautious. And some countries are downright antagonistic. This section gives a brief overview of some of countries treating cryptocurrency regulations:

United States (Friendly): The U.S. has been taking an approach to foster innovation and growth of blockchain and cryptocurrency while protecting investors from high risks and fraud. In December 2017, the SEC took the position that Initial Coin Offerings (ICOs) are subject to U.S. Securities regulations, meaning only accredited investors may participate in ICOs that are not (and almost never are) registered with the SEC

China (Hostile): China is notorious for some of the world's largest bitcoin mines. In 2017, China banned cryptocurrency trading on Chinese exchanges and made ICO fundraising illegal, curving market demand, and causing a large overall downtrend in the cryptocurrency markets .

Chinese cryptocurrency bans would have, but it could possibly continue to fuel negativity in the market. The People's Republic of China appears to be the most stringent cryptocurrency regulator of the major economies regarding cryptocurrencies.

South Korea (Neutral): The cryptocurrency market's all-time highs in January 2018 were quickly silenced, in part from fears that South Korea may ban cryptocurrency trading in a manner similar to China. News sites published articles mistakenly claiming there would be a total trading Ban in Korea, causing havoc in the cryptocurrency markets. Later in January, South Korea proposed new rules to prevent anonymous trading and impose penalties for failing to comply.

Singapore (Friendly): Singapore is often considered one of the more hospitable governments toward cryptocurrencies. In October 2017, the Monetary Authority of Singapore (MAS) published a clarifying document on cryptocurrency regulation. The document states that MAS does not directly regulate

cryptocurrency, but regulates fraudulent and dangerous financial activities such as money laundering and terrorism.

Iran (Friendly): Iran is developing a state-run cryptocurrency. On February 21, 2018, MJ Azari Jahromi, the Iranian Minister of Information and Communications Technology announced discussing cryptocurrency and blockchain at a meeting with the Iranian central bank's board of directors .

Britain (Neutral): On February 22, 2018, the U.K. Treasury announced that it will begin looking into issues surrounding cryptocurrency and blockchain technology. The investigation will look into the role of cryptocurrencies in Britain, including both opportunities and risks for consumers, businesses, and government. The Treasury Committee will look at the potential risks that cryptocurrency could pose, such as price volatility, money laundering, and cybercrimes.

Germany (Friendly/Neutral): Joachim Wuermeling, the Director of German's Central Bank (Bundesbank), is pushing for bitcoin and cryptocurrency to be regulated through an international set of rules, rather than solely national rules. He believes cryptocurrencies are difficult to regulate within a specific region or country. At the G20 summit this March, Germany and France are planning to release a joint statement proposing regulations, and analyzing the risks linked to bitcoin and cryptocurrency

Brazil (Hostile): In May 2017, Brazil set up a commission to discuss regulation of cryptocurrency. It has since held seven public hearings. In December, Brazil announced it would take the stance to prohibit the issuance of cryptocurrency in national territory, prevent its commercialization, intermediation, and acceptance as a means of payments and settlement of debts. The CVM and Central Bank of Brazil also announced that "The Bitcoin is a financial asset with no ballast that people buy because they believe it will appreciate.

The future of cryptocurrency

The future of cryptocurrency is open for interpretation. In an age of credit cards, debit cards and online bank accounts the prospect of digital currency is not as jarring as it might sound. Transferring money digitally is very convenient, instantaneous and cheap. However, Bitcoin seems to be too complicated and unsafe for mainstream use. There is not much demand for a decentralized currency from the average consumer. For it to work as an established currency, there would inevitably need to be an increase in regulation and consumer protection.

There are also not many applications for the use of Bitcoins in the corporate world. Decentralization increases the risk of bankruptcy and so does the volatility in its price. Bitcoin can be used to bypass capital controls but only to a limited extent. Bitcoins in an investment portfolio increase returns and lower risk but are too risky to act as a core asset – they are useful for diversifying a portfolio. Bitcoin also lacks the liquidity that other fiat currencies have, it is vulnerable to code-based attacks and untraceable theft.

It is thus unlikely that much demand for Bitcoin will come from anyone apart from investors looking to diversify their portfolio, customers with an interest in cryptocurrencies and customers looking to transact anonymously on the black market. The lack of demand is evident in the rapid fall of Bitcoin's price. It is unlikely that many stores will accept Bitcoin and that it will garner any widespread application. There is however plenty of room to expand within the field of cryptocurrency as its technology is very promising.

The year 2017 was a bull market for bitcoin and other cryptocurrencies, while in 2018 they were in the throes of a bear hug. As 2019 is approached, the industry is hoping that once again the tide will turn.

The transfer is instantaneous and money once sent is sent. It's impossible to reverse a transaction the way a bank can.

2) It's an extremely volatile market that dips every time a government (China, South Korea, etc) bans cryptocurrency per se or a by-product of cryptocurrency i.e. Initial Coin Offerings (which are basically the IPO version of cryptocurrency).

3) Unlike other investment avenues, cryptocurrencies are not regulated by government entities or banks. If you get ripped off in a bitcoin transaction, it is impossible to get the money back, even the police officials are unable to help as it is not recognised as currency.

4) One major hurdle in the path of Indian investors, who are interested in investing in cryptocurrency, is the confusion about its legal status. While they haven't been declared illegal, cryptocurrencies are not recognised by the Reserve Bank of India (RBI) or any other authority in India, as a 'currency'.

5) It is much more difficult to track illegal activities in the cryptocurrency space, such as increased chances of money laundering and financing of terrorism. This risk also lowers

the chances of cryptocurrencies becoming mainstream in India, leaving the future of the market mired in uncertainty.

6) The GST tax regime is struggling in its own implementation and addressing the area of cryptocurrency dealing or mining operations looks farfetched but the authorities do not take a minute to impose duties and penalties even if no tax regime to deal with such subjects are there.

Conclusion

Money is one of the most valuable and sought after commodities in the world, affecting people in almost every facet of their life. One of the most controversial new innovations in this field are cryptocurrencies. It is a currency that is not protected by governmental regulations or law, making it impervious to government interference. The currency is fully decentralized, and unlike fiat money the government cannot affect its value. The first cryptocurrency created, and the most widely used, is Bitcoin.

The demand for Bitcoin comes mainly from its decentralization and anonymity, low transaction costs, use for illegal transactions and as a financial instrument to profit from its price volatility or to diversify a portfolio. Other possible uses for Bitcoin include measures to avoid currency controls or other sources of governmental interference and for tax evasion. There are however many disadvantages associated with the currency.

As it stands, Bitcoin is unlikely to catch on as an official currency for the general public as it has too many faults and has too many risks whereas its strengths are necessarily not something that the general public desires in an established currency. For an innovation in currency to be successful it needs to improve on what the debit card and credit card has to offer. It has to be more convenient, safer and accepted by merchants worldwide. An example of a possibly more successful payment method is Apple pay.

The technologies that come with Bitcoin have many mainstream applications and it is very possible that some kind of implementation of cryptocurrency's technology and mobile-based payment system with cryptocurrency integration could be the future of mainstream payment systems. It will be very exciting to see the future technological innovations in currency and payment systems and although Bitcoin will most likely not be a largely popular established currency in the future, its technology will surely have widespread future implications.

References

1. *Bradbury, D. (2013). The problem with Bitcoin. Computer Fraud & security, 11, pp. 5-8. Retrieved 20th February 2015 from http://www.sciencedirect.com/science/article/pii/S1361372313701015*
2. *Cope, J. (2002). Peer-to-Peer Network. Computerworld. Retrieved 11th February 2019 from http://www.computerworld.com/article/2588287/networking/peer-to-peer-network.html*
3. *Eyal, I. a. (2013). Majority is not Enough: Bitcoin Mining is Vulnerable. http://i.cdn.turner.com/money /2013/images/11/04/btcProc.pdf?iid=EL.*
4. *Raymaekers. (2014). Cryptocurrency Bitcoin: Disruption, challenges and opportunities. Journal of Payments Strategy & Systems, 1-40.*
5. *Robb, A. B. (2017). Block chain, forensic accounting and research. Working paper.*
6. *Swan, M. (2015). Blockchain: A blueprint for a new economy. Journal of Information Systems, 155-167.*

Technical Efficiency of Rainfed Sugarcane Producers in Kwara State of Nigeria

Sadiq, M.S., Singh, I.P., Ahmad, M.M. and Lawal, M

Abstract

The present research empirically determined the technical efficiency of sugarcane farmers in Kwara State of Nigeria using undated information elicited via structured questionnaire complemented with interview schedule from 105 farmers chosen through multistage sampling designs. The collected data were analyzed using descriptive statistics and stochastic production frontier function. The empirical findings showed that all the farmers were fairly efficient which is due to inadequate adoption of available sugarcane technologies and practices in the studied area. Therefore, in order to achieve optimal efficiency in sugarcane production in the studied area, the research recommends that government and non-governmental organization should assist the farmers in the area of extension service delivery, adopt farmers to farmers' extension approach, encourage the farmers to pool their social capitals and link the farmers' pooled social capitals with input markets, credit markets and off-takers.

Keywords: *Technical efficiency; Sugarcane; Farmers; Stochastic frontier; Kwara State; Nigeria.*

Introduction

Despite sugarcane been cultivated by thousands of local farmers in Nigeria, yet the production level has not kept pace with the demand for industrial and human consumptions. However, in Nigeria, the land has become a shrinking resource for agriculture owing to high competing demand for its use. The high demand for arable land for other purposes has become a nightmare in the country which is evident by persistent occurrences of farmers/herders clashes, communal rifts, thus resulting in colossal loss of lives and property in the country. This loss is rearing its dearth consequence on not only the farming population and the rural economy but also on the economy of the country, as the food security is been threatened via escalating inflation of food prices. Hence, any further increase in agricultural production has to be achieved by increasing the productivity of land, as it is the surest means to increase sugarcane productivity. Thus, researchers need to look inward on how to improving farmers' technical efficiency using the available technology at their disposal.

Literature shows that embarking on new technologies would be meaningless unless the existing technology is used to its full potential (Kalirajan et al., 1996; Samarpitha et al., 2016). Improvement in the efficiency of the available resources available at the farmers' disposal is of great concern among the various determinants of productivity. According to Murali and Prathap (2017), inefficiency is one of the major factors affecting the exploitation of the full potential of the improved technologies in sugarcane production. Thus, efficiency enhancement would offer more immediate goals at modest costs if inefficiencies present in the agricultural production are substantial (Goyal et al., 2006). Based on literature review, to the best of our knowledge not much has been done on technical efficiency of sugarcane production in Nigeria (e.g. Omoteshe et al., 2013) with little or no empirical related study in Kwara State of Nigeria despite its importance in the production of sugarcane in the country.

In order to achieve the goal of improving sugarcane farmers' efficiency in the studied area, identification and quantification of factors affecting the technical efficiency of sugarcane production are required. An estimate on the extent of efficiency can help to decide whether to improve efficiency or to develop new technologies to raise agricultural production. For both policy formulation and farm management, efficiency and productivity analyses have important implications, as investigation of low yield in order to bring efficiency in sugarcane sector can improve the overall living standard of the sugarcane farming community in the studied area. Therefore, this research attempts to determine the farm-specific technical efficiency of sugarcane producers in Kwara State of Nigeria, as it can serve as a guide on resource utilization that can lead to

*Department of Agricultural Economics and Extension, FUD, Dutse, Nigeria , **Department of Agricultural Economics, SKRAU, Bikaner, India
***Department of Agricultural Economics, BUK, Kano, Nigeria, ****Department of Agricultural Education, Federal College of Education, Katsina, Nigeria

considerable resource saving in the studied area. The specific objectives of the study were to describe the socio-economic profiles of the respondents and to determine the technical efficiency of the respondents in the studied area.

Research Methodology

The Kwara State of Nigeria lies between longitudes 40 20' and 40 25' East of the Greenwich meridian and latitudes 80 30' and 80 50' North of the equator. The population of the state is approximately 2.3 million and has a landmass of approximately 36,825 square kilometres with varying physical features like hills, lowland, rivers etc. Its vegetation is a derived savannah with two distinct wet and dry seasons, with mean annual precipitation and monthly temperature of 1000-1500mm and 250C-340C, respectively (Anonymous, 2010). The major occupation of the inhabitants is agricultural activities complemented by trade, artisanal, Ayurvedic medicine etc. The present research used undated data elicited through structured questionnaire complemented with interview schedule from 105 active sugarcane farmers during the 2017 production selected via multi-stage sampling design. In the first stage, one agricultural zone, namely zone B was purposively selected due to its comparative advantage in the production of sugarcane. In the second stage, the two LGAs viz. Edu and Patigi which made-up the selected agricultural zone were automatically selected as both have the comparative advantage in the production of sugarcane. Because of the limited number of villages producing sugarcane in the selected LGAs all the villages were considered. Therefore, a total of seven villages: five (5) villages from Edu LGA and two (2) from Patigi LGA were the areas of coverage. In the last stage, fifteen sugarcane farmers from each of the selected villages were randomly selected: seventy-five (75) and Thirty (30) active farmers from Edu and Patigi LGAs respectively. Therefore, a total of 105 active farmers formed the sample size for the study.

For reliability test of the questionnaire, the questionnaire was pre-tested in a pilot survey made up of 15 farmers from the sampling population and the estimated Cronbach Alpha value was 0.86, indicating high reliability and consistency of the questionnaire. With the aid of trained enumerators, ex-post data of 2017 sugarcane cropping season were collected in the year 2018. The collected data were analyzed using both descriptive statistics and stochastic production frontier function. The first objective was achieved using descriptive statistics while the second objective was achieved using both stochastic production function and descriptive statistics.

Model specification

Following Ali and Jan (2017), the stochastic production frontier function is given below:

$$Y_i=f(X_{ij};\beta)+V_i-U_i \quad (i=1,2.....n) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Y_i=Output of the i^th farmer;

X_ij=Vector of the actual j^th inputs used by the i^th farmer;

V_i=Uncertainty which is beyound the control of the i^th farmer;and,

U_i=Risk which is attributed to error of the i^th farmer;

The model is such that the possible productionY_i, is bounded above by the stochastic quantity, 〖f(X〗_i;β) exp (V_i) (that is when (U_i=0) hence, the term stochastic frontier. Given suitable distributional assumptions for the error terms, direct estimates of the parameters can be obtained by either the Maximum Likelihood Method (MLM) or the Corrected Ordinary Least Squares Method (COLS). However, the MLM estimator has been found to be asymptotically more efficient than the COLS (Coelli, 1995), thus, been preferred for empirical analysis.

The technical efficiency of i^thfarmer is specified below:

$$〖Te〗_i=\exp\ (\ 〖-U〗_i) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

That is;

$$〖Te〗_i=Y_i/\ 〖Y_i〗^* =(f(X_{ij};\beta)\exp\ (V_i-U_i))/(f(X_{ij};\beta)\exp\ (V_i)\exp\ (-U_i))=\exp\ 〖-U〗_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

〖Te〗_i=Technical efficiency of the i^th farmer; Y_i= Observed output; and, 〖Y_i〗^*= Frontier output. The technical efficiency of a farm ranges from 0 to 1. The maximum efficiency in production has a value of 1.0 while lower values represent less than maximum efficiency in the production. For the present research the Cobb-Douglas functional form of the stochastic production frontier function used is stated below:

$$〖\ln Y〗_i=〖\ln\beta〗_0+\sum\ 〖\beta_j\ 〖\ln X〗_{ij}+V_i-U_i\ 〗 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Where, Y_i = Farm output (kg) from i^thfarmer; X_i= Vector of farm productive inputs used: X_1= Sucker (kg); X_2= NPK fertilizer (kg); X_3= Urea fertilizer (kg); X_4= Herbicides (litre); X_5=Family labour (man-day); X_6= Hired labour (man-day); X_7= Depreciation on capital items(N); and, X_8= Farm size (hectare); V_i = random variability in the production that cannot be influenced by the i^th farmer also know also known as uncertainty; U_i= deviation from maximum potential output attributable to technical inefficiency also known as risk. β_0=intercept; β_j=vector of production function parameters to be estimated;i=1,2,3……n farmers; j=1,2,3……m inputs.

The inefficiency model is:

$$U_i=\delta_0+\delta_1 Z_1+\delta_2 Z_2\ldots\ldots\ldots+\delta_n Z_n \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Where, Z_1 = Age (year); Z_2 = Marital status (married =1, otherwise = 0); Z_3 = Educational level (formal = 1, otherwise = 0); Z_4 = Household size (number); Z_5 = Farming experience

(year); Z_6 = Land ownership (yes =1, otherwise = 0); Z_7 = Non-farm income (yes =1, no = 0); Z_8 = Extension contact (yes = 1, no = 0); Z_9 = Co-operative membership (yes =1, no = 0); Z_10 = Access to credit (yes =1, no = 0); Z_11 = Sickness of farm family member (number); Z_12 = Security threat (yes = 1, otherwise = 0); δ_0 = intercept; and, δ_(1-n) = parameters to be estimated.

Results and Discussion

Socio-Economic Profile of the Sugarcane Producers

Presented in Table 1 are the socio-economic profiles of the sugarcane farming population in the studied area. The results showed the sugarcane farming population to have an effective labour force which will enhance production as indicated by the mean and standard deviation values of 44.09 years and 8.63 respectively. The mean and standard deviation values of 13 persons and 4.47 respectively, depict a large household under the control of the farming household head. The implication is that large household mostly composed of able-bodied people is an asset as the farmer will have access to free farm labour supply which if properly utilized would increase the farm production. In addition, a large farm family will have access to a stream of income, thus boosting the aggregate income base of the farming household. However, large household mostly made-up of weak people or dependants such as children and old people would drain farmers income due to high expenditure on food and non-food items which is required for keeping the body and soul together. The results showed sugarcane farming to be mainly male affairs in the studied which may be due to tedious nature associated with the cultivation of the crop. The non-participation of women at the primary production level may be attributed to cultural and religious beliefs in the studied area which limits women to domestic house choir and agricultural marketing. The results depicted a responsible social setting in the studied area as the majority of the respondents were married. Marriage is an asset as married farmers stand the chance of benefiting from the twin advantage of economic and social capitals. Furthermore, the findings showed a literate farming population as majority possessed one form of formal education or the other. Though, farmers who exceeded secondary educational level dominated sugarcane farming in the study area. The ability of a farmer to read and write will encourage him to source for innovative information on production and potential market for input demand and output supply, thus enhancing production of sugarcane in the studied area. The results showed sugarcane cultivation in the studied to be carried-out mostly on small-scale (1.76±0.81) which may be attributed to pressure on the use of land for various agricultural purposes coupled with capital paucity, thus limiting farmers from exploring the commercial potential of sugarcane production owing to the establishment of BUA Sugar Company in the studied area. The results showed the majority of the farmers to have adequate years of experience in sugarcane production in the studied area (5.58±3.39, thus making them to be efficient managers in the allocation of their farm resources. The low productivity level of sugarcane production observed in the studied area is attributed to the sole cultivation of local variety which may be due to poor extension contact, the poor relative advantage of improved and hybrid varieties during the studied period. Also observed was that majority of the farmers were not into enterprise diversification, thus making them liable to food insecurity in any situation when risk or uncertainty arises. Most of the respondents had no extension contact during the studied period, thus indicating that most of the farmers had no access to any innovative technologies on sugarcane production during the last cropping season. A similar scenario of abysmal extension contact in the same studied area was observed for rice production (Sadiq et al., 2018). The findings showed that majority of the sugarcane farmers were not members of social organization and have no access to credit facilities during the studied period, thus indicating inability of the farmers to benefit from pecuniary advantages such as bulk discount for input purchase and bargaining power for co-operative marketing; and inability to procure adequate inputs for sugarcane production during the studied period respectively. Most of the farmers reported a moderate number of family members been sick during the last production season, thus affecting their income base as they have to contend with the expenditure of securing medication for the sick family members. In addition, they firmly stated that their farm labour efficiency and their attention to farming have been distorted during the illness period/moment. However, the farming environment during the production period had relative peace devoid of crises such as herdsmen/farmers and communal conflicts. Though, a pocket of minor communal conflict occurred during the production period in the studied area. The results showed that most of the farmers possessed the title of ownership i.e. owned the land which they used for sugarcane cultivation, with the land been acquired by inheritance. The implication is that lands acquired by this means mostly do not permit commercial production being subject to fragmentation and dispute, as any member of the household who attained adulthood would ask for his own share of piece of land.

Table 1b: Socio-economic profile of sugarcane farmers

Variables	Frequency	Percentage
Inheritance	67	53.6
Borrow	8	7.6
Communal	27	25.7
Rent	3	7.9
Total	105	100 [1440.67]

Source: Field survey, 2018

Summary Statistics of the Farm Inputs included in the Model

A cursory review of the results showed the sugarcane mean output to be 20045kg with a standard deviation value of 9624.80. Therefore, given the large value of the standard deviation, it can be suggested that the output of the farmers in the studied area varies. In addition, the mean value of the inputs used in conjunction with their respective standard deviation values indicates variations in the utilization of these productive resources across the sugarcane farms in the studied area (Table 2).

Table 2: Summary statistics of production inputs in the stochastic frontier model

Production inputs	Mean	Standard deviation
Output	20045	9624.80
Sucker	359.24	128.51
NPK fertilizer	114.81	44.43
Urea fertilizer	79.27	22.97
Herbicides	3.23	2.53
Family labour	41.03	15.42
Hired labour	57.23	22.27
Capital items depreciation	11273	16778
Farm size	3.47	1.62

Source: Field survey, 2018

Maximum Likelihood Estimates of Stochastic Production Frontier Function (SPFF)

The parameters of maximum-likelihood estimates (MLE) of the stochastic production frontier are shown in Table 3. The variance parameters results showed the estimated sigma-squared (0.0225) and gamma (0.4018) parameters to be different from zero at 10% degree of freedom, indicating the correctness and goodness of fit of the distributional form assumed for the composite error term and the presence of inefficiency accounting for 40.18% variation in the total output of the farmers, respectively. In addition, the gamma indicates that the systematic influences that are unexplained by the optimal/frontier goal are the dominant sources of random walk. Furthermore, the calculated LR Chi2 of the log-likelihood function is greater than the tabulated, implying that the traditional response function (OLS) is not an appropriate estimation method for the data (Table 3b). The results of the deterministic component of the stochastic frontier showed almost all the productive resources with the exception of hired labour and farm size not to be different from zero as indicated by their respective estimated parameters which were outside the radius of 10% degree of freedom. The negative sign and significance of the hired labour estimated coefficient indicates how the method of labour reward "in-kind" (mutual labour exchange called 'gaya') make the use of this input to be in excess in the production of sugarcane, thus decreasing sugarcane output. Therefore, the elasticity implication of increasing hired labour by one man-day will decrease sugarcane output by 0.0993%. Furthermore, the positive significance of farm size parameter shows that large-scale farmers will have high output in sugarcane production due to economies of scale: pecuniary advantage viz. bulk discount in input purchase. The elasticity implication of increasing farm size by one hectare will increase sugarcane output by 0.876%.

On the other hand, the positive but non-significance of the sucker parameter may be attributed to the use of a local variety of sucker in the production of sugarcane in the studied area. The positive non-significant of NPK fertilizer and herbicides estimated coefficients may be due to high costs which affect their applications in required quantity, while the negative non-significant coefficient for the urea fertilizer may be attributed to the lack of technical know-how of the soil chemistry-diagnosis by the farmers, thus affecting its significance in sugarcane production in the studied area. The composition of the farm family with weak people i.e. children and aged affect the quality of the labour efficiency provided by the farm family, thus making it not to have significant influence in sugarcane production in the studied area. The non-significant of the depreciation on capital items coefficient may be due to the dominant use of primitive tools by the farmers in the production of sugarcane in the studied area.

The sum elasticity of 0.984 implies that the farmers were operating at the economic region of production i.e. stage II of production surface. Therefore, for the farmers to optimize their

production they need to enhance resource allocation keeping in view the input costs and output price.

The results presented in the inefficiency model showed gender, extension contact and access to credit to be the only factors in the inefficiency model that significantly influenced technical efficiency of sugarcane farmers in the studied area, as indicated by their estimated parameters which were different from zero at 10% degree of freedom. The negative sign and significance of the gender parameter implies that male farmers were more technically efficient than their female counterparts due to the facts that the former have access to productive resources as compared to the latter where religious and cultural barriers limit their access to productive resources. In addition, in the studied area, tradition barred women from being a household head even when the husband is deceased, as she is expected to be under the custody of a man either by re-marrying or remaining under the leadership of the family of deceased husband or her sons who have attained elder-hood position in the community. However, women are allowed to play a role in marketing, with them earning little as they only possess physical title and not ownership title to the agricultural products they market in the studied area. Therefore, the elasticity of being a male farmer will lead to an increase in technical efficiency in the production of sugarcane by 0.264. The negative sign and significance of the extension coefficient showed how access to farm innovations makes farmers with access to extension services to be technically efficient than their counterpart with not in sugarcane production in the studied. Therefore, the technical efficiency of farmers with extension services will increase by 0.326. The negative sign and significance of the credit coefficient depicts how access to timely delivery of farm productive inputs by farmers with access to credit makes them technically efficient than their counterparts with no credit access. Therefore, for farmers with access to credit, their technical efficiency will increase by 0.513. Despite the non-significance of the remaining idiosyncratic factors captured in the inefficiency model, to an extent their signs have little empirical implication. The positive coefficient of farmers' age shows how the decline in labour productivity and conservative attitudes towards adoption by aged farmers affect their technical efficiency. The negative coefficient of education shows how innovativeness and efficient decision on management by educated farmers makes them to be technically efficient in sugarcane production than their counterpart with non-formal education. The positive coefficient of household size is an indication that the large farming household is composed of weak people i.e. children and aged having poor labour efficiency, thus affecting their technical efficiency in sugarcane production. Farmers with adequate experience would be technically efficient in sugarcane production as they will take a tacit decision in the allocation of their productive resources as compared to their counterparts with little or no experience. The positive coefficient of farm acquisition shows how restriction or limitation in the use of land for cultivation of sugarcane in commercial quantity affects the technical efficiency of farmers with no title of farm ownership. The negative coefficient of non-farm income shows that farmers with diversified income base will be technically efficient due to capital augmentation of their sugarcane farm going concerns. The positive coefficient of co-operative membership indicates that farmers who did not belong to a social organization will be technical inefficient as they stand not to benefit from pecuniary advantages inherent in the co-operative organization, thus affecting their technical efficiency in sugarcane production. The positive coefficients for household ill-health situation and security threat indicate that farmers with ill-health challenges among their farm family and those facing security threats ranging from communal to herdsmen/farmers conflicts will be technically inefficient in sugarcane production. Farmers facing an ill-health challenge(s) among members of their farm family will have their slim capital base being affected by medical expenditure in an effort to revive the sick fellow, thus affecting their technical efficiency.

Table 3a: MLE of the stochastic production frontier for sugarcane production

Variable	Coefficient	Standard error	t-statistic
General model			
Constant	8.202762	0.403363	20.336***
Sucker	0.092342	0.061882	1.492^{NS}
NPK fertilizer	0.042138	0.041825	1.0074^{NS}
Urea fertilizer	-0.044746	0.040483	1.1053^{NS}
Herbicides	0.037087	0.032824	1.1299^{NS}
Family labour	0.086947	0.079788	1.0885^{NS}
Hired labour	0.099262	0.044041	2.2539**
Depreciation on cap.	0.027137	0.025672	1.0571^{NS}
Farm size	0.876115	0.055227	15.864***
Inefficiency model			
Constant	0.112892	0.254783	0.4431^{NS}
Age	0.007033	0.005867	1.1987^{NS}
Marital status	-0.263795	0.152027	1.7352*
Education	-0.051049	0.063133	0.8086^{NS}
Household size	0.004849	0.009519	0.5094^{NS}
Farming Experience	-0.012908	0.011964	1.0789^{NS}

Land ownership	0.012284	0.069201	0.1775^{NS}
Non-farm income	-0.051415	0.179566	0.2863^{NS}
Extension contact	-0.325589	0.168591	1.9199*
Co-operative mem.	0.454666	0.451614	1.0068^{NS}
Access to credit	-0.512793	0.291142	1.7613*
Sickness	0.014016	0.027794	0.5043^{NS}
Security threat	0.281034	0.405844	0.6908^{NS}
Variance parameters			
Sigma squared(σ^2)	0.022507	0.005422	4.15083***
Gamma (γ)	0.401783	0.163080	2.46373**

Source: Field survey, 2018

, **, * and NS means significance at 10%, 5%, 1% and non-significant respectively*

Table 3b: Generalized Likelihood ratio test of hypothesis for parameters of SPFF

H_o	Log likelihood function	λ	Critical (5%)	Decision
$\gamma = 0$	61.066	19.797	16.91	$\gamma \neq 0$

Farm-Specific Resource Efficiency Indices of Sugarcane Producers

The summary statistics of the predicted technical efficiencies of the sugarcane farmers ranged from 0.730 to 0.988, with the mean technical efficiency score been 0.8956 (Table 4). Therefore, it means that the least, best and the average inefficient farmers operated at 73%, 98.8% and 89.56% efficiency levels, respectively. Furthermore, it can be inferred that gap still exists for these farmers to increase their efficiency levels to attain the frontier surface. For the least, best and average inefficient farmers, a gap of 27%, 0.20% and 10.44% respectively, need to be close in order to achieve the optimum level i.e. to be on the frontier. All these can be achieved by the non-frontier farmers by adopting the available improved farm technologies and techniques in sugarcane production. However, for the least inefficient farmer to attain the levels of average and best inefficient farmers, he needs to increase his technical efficiency by 26.11% [1-(0.730/0.8956)*100] and 18.49% [1-(0.730/0.988)*100] respectively. Furthermore, for the average inefficient farmer to attain the level of the best inefficient farmer he needs to increase his technical efficiency by 9.35% [1-(0.8956/0.988)*100]. Though, it is worth to note that anything short of the frontier (optimum) surface is not recommended for the sugarcane farmers in the studied. The frequency of occurrence of the predicted technical efficiency above the mean efficiency value is 89.5%, indicating that majority of the sugarcane farmers were relatively efficient in producing at a given level of output using the available sugarcane technologies and techniques in the studied area.

The potential output loss by the least, average and best inefficient farmers due to technical inefficiency associated with inappropriate adoption of available sugarcane technologies and techniques in the studied area were 2589.04 (36.99%), 3284.92(11.73%) and 272.07 (1.22%) respectively (Table 4b)(Individual farm loss shown in Appendix).

Table 4a: Frequency distribution of technical efficiency scores of sugarcane farmers

Efficiency level	Frequency	Relative efficiency %
0.70-0.79	11	10.5
0.80-0.89	33	31.4
0.90-0.99	61	58.1
Total	**105**	**100**
Mean	**0.8956**	
Maximum	**0.988**	
Minimum	**0.730**	
Standard deviation	**0.064**	

Source: Field survey, 2018

Table 4b: Sugarcane output loss due to technical inefficiency

Farms	Least inefficient	Averagely inefficient	Best inefficient
Observed output	7000	28000	22400
Frontier output	9589.04	31284.92	22672.07
Output loss	2589.04	3284.92	272.07
Loss %	36.99	11.73	1.22

Source: Field survey, 2018

Conclusion and Recommendations

Based on these findings, it can be inferred that all the farmers where technically inefficient due to inadequate adoption of sugarcane technologies and techniques in the studied area, thus resulting in potential loss of sugarcane output in the area. However, the salient idiosyncratic factors which affect farmers' technical efficiency were old age, failure to participate in social organizations, vulnerable large household size, illness of farm family member and security threats. Therefore, both government and non-governmental organizations should adequately support the farmers in order to adopt the available sugarcane farm techniques adequately in the studied area. The required supports should be the provision of adequate extension services, adoption of farmers to farmers' extension approach, encourage social capital pooling and linking the farmers' social capital pool with the input markets, credit markets and off-takers.

References

1. *Ali, A. and Jan, A.U.(2017).Analysis of technical efficiency of sugarcane crop in Khyber Pakhtunkhwa: A stochastic frontier approach. Sarhad Journal of Agriculture, 33(1):69-79.*
2. *Coelli, T.J.(1995).Recent developments in frontier estimation and efficiency measurement. Australian Journal of Agricultural Economics, 39:219-245*
3. *Goyal, S.K., Suhag, K.S. and Pandey, U.K.(2006).An estimation of technical efficiency of paddy farmers in Haryana state of India. Indian Journal of Agricultural Economics 61(1):108- 122.*
4. *Kalirajan, K.P., Obwona, M.B. and Zhao, S.(1996).A decomposition of total factor productivity growth: The case of Chinese agricultural growth before and after reforms. American Journal of Agricultural Economics, 78(2):331-338.*
5. *Murali, P. and Prathap, D.P.(2017).Technical efficiency of sugarcane farms: An econometric analysis. Sugar Tech, 19(2):109-116*
6. *Omotesho, A.O., Muhammad-Lawal, A., Olatinwo, K.B., Adenuga, A.H. and Bello, A.J.(2013).Technical efficiency of sugarcane (Saccharum officinarum) in Niger State, Nigeria. Journal of Agriculture, Forestry and Social Sciences, 11(1)*
7. *Samarpitha, A., Vasudev, N. and Suhasini, K.(2016).Technical, economic and allocative efficiencies of rice farms in Nalgonda district of Telangana state. Economic Affairs, 61(3):365-374*

Table 1a: Socio-economic profile of the sugarcane farmers

Variables	Frequency	Percentage	Variables	Frequency	Percentage
Age			Marginal	7	6.7
20-29	5	4.8	Small	53	50.5
30-39	24	22.9	Medium	42	40.0
40-49	44	41.9	Large	3	2.9
50-59	28	26.7	**Total**	**105**	**100** [34.51***]
≥60	4	3.8	**Seed variety**		
Total	**105** (44.09 ± 8.6)	**100** [53.91***]	Local variety	105	100
Household size			Improved variety	-	
4-6	2	1.9	**Total**	**105**	**100**
7-9	13	12.4	**Extension contact**		
≥10	90	85.7	Yes	14	13.3
Total	**105** (13.53 ± 4.48)	**100** [131.37***]	No	91	86.7
Experience			**Total**	**105**	**100** [56.46***]
≤3	28	26.7	**Social participation**		
4-6	41	39.0	Yes	9	8.6
7-9	26	24.8	No	96	91.4
≥10	10	9.5	**Total**	**105**	**100** [72.08***]
Total	**105** (5.58 ± 3.39)	**100** [18.54***]	**Credit access**		
Gender			Yes	9	8.6
Male	105	100	No	96	91.4
Female	-	-	**Total**	**105**	**100** [72.08***]
Total	**105**	**100** [51.97***]	**Non-farm income**		
Marital status			Yes	12	11.4
Married	100	4.8	No	93	88.6
Single	5	95.2	**Total**	**105**	**100** [62.48***]
Total	**105**	**100** [85.95***]	**Sickness**		
Education			1-2	38	36.2
Illiterate	21	20.0	3-4	60	57.1
Quranic	14	13.3	≥5	7	6.7
Primary	7	6.7	**Total**	**105**	**100** [40.51***]
36	34.3	25.7	**Security threat**		
Tertiary	36	34.3	Yes	7	6.7
Total	**105**	**100** [24.09***]	No	98	93.3
Farm size			**Total**	**105**	**100** [78.86***]

*Source: Field survey, 2018 Note: *** NS; are 1% risk level and Non-significant; while values in ( ); [ ] are mean and standard error; and, Chi2 respectively*

Appendix: Sugarcane output loss due to technical inefficiency

Farm	FS	ES	Observed	Frontier	Loss	% Loss	Farm	FS	ES	Observed	Frontier	Loss	% Loss
FM1	2	0.829	9800	11821.47	2021.472	20.62726	**FM31**	5	0.925	31500	34054.05	2554.054	8.108108
FM2	3	0.98	21000	21428.57	428.5714	2.040816	**FM32**	4	0.918	22400	24400.87	2000.871	8.932462
FM3	4	0.9655	22470	23272.92	802.9156	3.573278	**FM33**	2	0.953	14700	15424.97	724.9738	4.931794
FM4	3	0.9479	18900	19938.81	1038.812	5.49636	**FM34**	2	0.73	7000	9589.041	2589.041	36.9863
FM5	2	0.89	11200	12584.27	1384.27	12.35955	**FM35**	2	0.866	9800	11316.4	1516.397	15.47344
FM6	7	0.939	44100	46964.86	2864.856	6.496273	**FM36**	2	0.936	14000	14957.26	957.265	6.837607
FM7	1	0.879	5600	6370.876	770.876	13.76564	**FM37**	3	0.902	14700	16297.12	1597.118	10.86475
FM8	5	0.972	31500	32407.41	907.4074	2.880658	**FM38**	2	0.911	11200	12294.18	1094.182	9.769484
FM9	4	0.988	22400	22672.06	272.0648	1.214575	**FM39**	4	0.926	22400	24190.06	1790.065	7.991361
FM10	5	0.976	31500	32274.59	774.5902	2.459016	**FM40**	3	0.75	12670	16893.33	4223.333	33.33333
FM11	2	0.893	12600	14109.74	1509.742	11.98208	**FM41**	4	0.87	19600	22528.74	2928.736	14.94253
FM12	4	0.947	26600	28088.7	1488.701	5.596621	**FM42**	2	0.816	11200	13725.49	2525.49	22.54902
FM13	2	0.905	9800	10828.73	1028.729	10.49724	**FM43**	2	0.757	9730	12853.37	3123.369	32.1004
FM14	1	0.798	4900	6140.351	1240.351	25.31328	**FM44**	5	0.98	31500	32142.86	642.8571	2.040816
FM15	8	0.983	50470	51342.83	872.8281	1.7294	**FM45**	2	0.923	11200	12134.34	934.3445	8.342362
FM16	5	0.883	28000	31710.08	3710.079	13.25028	**FM46**	5	0.875	28000	32000	4000	14.28571
FM17	2	0.973	14000	14388.49	388.4892	2.774923	**FM47**	5	0.975	31500	32307.69	807.6923	2.564103
FM18	3	0.964	18900	19605.81	705.8091	3.73444	**FM48**	6	0.795	29400	36981.13	7581.132	25.78616
FM19	3	0.974	21000	21560.57	560.5749	2.669405	**FM49**	1	0.742	4900	6603.774	1703.774	34.77089
FM20	4	0.791	19600	24778.76	5178.761	26.42225	**FM50**	2	0.845	8400	9940.828	1540.828	18.3432
FM21	7	0.837	34300	40979.69	6679.689	19.47431	**FM51**	1	0.936	7000	7478.632	478.6325	6.837607
FM22	3	0.981	18900	19266.06	366.055	1.936799	**FM52**	1	0.898	5600	6236.08	636.0802	11.35857
FM23	2	0.85	9800	11529.41	1729.412	17.64706	**FM53**	3	0.931	21000	22556.39	1556.391	7.411386
FM24	4	0.911	25200	27661.91	2461.91	9.769484	**FM54**	4	0.934	22400	23982.87	1582.869	7.066381
FM25	3	0.942	18900	20063.69	1163.694	6.157113	**FM55**	2	0.901	11200	12430.63	1230.633	10.98779
FM26	2	0.853	11200	13130.13	1930.129	17.23329	**FM56**	2	0.915	11200	12240.44	1040.437	9.289617
FM27	4	0.941	22400	23804.46	1404.463	6.269926	**FM57**	4	0.854	22400	26229.51	3829.508	17.09602
FM28	3	0.985	18900	19187.82	287.8173	1.522843	**FM58**	3	0.85	14700	17294.12	2594.118	17.64706
FM29	1	0.933	5600	6002.144	402.1436	7.181136	**FM59**	3	0.935	18900	20213.9	1313.904	6.951872
FM30	3	0.911	17850	19593.85	1743.853	9.769484	**FM60**	5	0.899	28000	31145.72	3145.717	11.23471

Source: Farm survey, 2018

Appendix: Sugarcane output loss due to technical inefficiency

Farm	FS	ES	Observed	Frontier	Loss	% Loss	Farm	FS	ES	Observed	Frontier	Loss	% Loss
FM61	6	0.919	37800	41131.66	3331.665	8.813928	**FM84**	2	0.974	21000	21560.57	560.5749	2.669405
FM62	5	0.827	28000	33857.32	5857.316	20.91898	**FM85**	3	0.836	14000	16746.41	2746.411	19.61722
FM63	3	0.883	16800	19026.05	2226.048	13.25028	**FM86**	2	0.919	12600	13710.55	1110.555	8.813928
FM64	3	0.933	19950	21382.64	1432.637	7.181136	**FM87**	5	0.922	31500	34164.86	2664.859	8.45987
FM65	4	0.975	28000	28717.95	717.9487	2.564103	**FM88**	5	0.771	21000	27237.35	6237.354	29.70169
FM66	2	0.914	11200	12253.83	1053.829	9.40919	**FM89**	3	0.976	18900	19364.75	464.7541	2.459016
FM67	2	0.732	8400	11475.41	3075.41	36.61202	**FM90**	3	0.912	18900	20723.68	1823.684	9.649123
FM68	4	0.776	19600	25257.73	5657.732	28.86598	**FM91**	2	0.875	11200	12800	1600	14.28571
FM69	2	0.915	12600	13770.49	1170.492	9.289617	**FM92**	5	0.833	24500	29411.76	4911.765	20.04802
FM70	2	0.869	11200	12888.38	1688.377	15.0748	**FM93**	6	0.889	29400	33070.87	3670.866	12.48594
FM71	1	0.857	4900	5717.62	817.6196	16.68611	**FM94**	2	0.961	21000	21852.24	852.2373	4.058273
FM72	2	0.884	12600	14253.39	1653.394	13.12217	**FM95**	2	0.917	14000	15267.18	1267.176	9.051254
FM73	5	0.837	24500	29271.21	4771.207	19.47431	**FM96**	5	0.916	31500	34388.65	2888.646	9.170306
FM74	4	0.91	25200	27692.31	2492.308	9.89011	**FM97**	8	0.823	44800	54434.99	9634.994	21.50668
FM75	6	0.741	25200	34008.1	8808.097	34.95277	**FM98**	4	0.916	25200	27510.92	2310.917	9.170306
FM76	6	0.904	33600	37168.14	3568.142	10.61947	**FM99**	7	0.975	44100	45230.77	1130.769	2.564103
FM77	3	0.817	16800	20563.04	3763.035	22.39902	**FM100**	4	0.866	22400	25866.05	3466.051	15.47344
FM78	5	0.911	24500	26893.52	2393.524	9.769484	**FM101**	3	0.982	18900	19246.44	346.4358	1.832994
FM79	4	0.91	25200	27692.31	2492.308	9.89011	**FM102**	3	0.901	14700	16315.21	1615.205	10.98779
FM80	5	0.895	28000	31284.92	3284.916	11.73184	**FM103**	3	0.953	17850	18730.33	880.3253	4.931794
FM81	3	0.931	18900	20300.75	1400.752	7.411386	**FM104**	3	0.87	14700	16896.55	2196.552	14.94253
FM82	4	0.905	25200	27845.3	2645.304	10.49724	**FM105**	7	0.914	44100	48249.45	4149.453	9.40919
FM83	3	0.821	14700	17901.99	3201.991	21.80268							

Source: Farm survey, 2018

Note: FS = Farm size (hectare); ES= Efficiency score; Observed output; Frontier output; and, Loss (Output loss).

Guidelines for Authors

JIM QUEST - A peer reviewed journal of Jaipuria Institute of Management invites original research papers, case studies, perspectives and book reviews on themes/issues of current concern in all areas of management and information technology.

The contributors are requested to adhere to the following guidelines-

- The selection of papers for publication is based on their originality, knowledge content and application. The journal endeavors to maintain balance between purely research oriented papers and those derived mainly from the experiences of practitioners involved in different areas of management.

- Authors are encouraged to contribute the empirical and analytical research or case research. In case of case studies, contributors are required to provide the teaching notes of the case along with brief description of the real life situation faced and the decision or action taken by the manager or organization. The perspectives need to be based on emerging issues and ideas. The journal encourages the contributors to review the current management books.

- The manuscript should normally not exceed 20 double spaced, single sided typed pages, 12 font size in Times New Roman font, leaving 1.5 inches margin on all sides of A-4 size paper.

- All manuscripts and related correspondence should be mailed to jimquest@jaipuria.edu.in. The contributions received will be acknowledged immediately by e-mail. The manuscripts not considered for publication will not be sent back. The acceptance or rejection of the contributions will be informed to the contributors through email only.

- The journal follows a policy of blind peer review.

- The contributors are required to attach a separate title page which should include the title of the paper, name(s) of the author(s) and relevant biographical information. The second page should carry the title of the paper and 100 to 150 word- single paragraph abstract of the paper.

- All tables, charts, and graphs should be black, not in colour. Authors must acknowledge all the sources they have drawn upon and the sources should be indicated at bottom.

- References should be complete in all respects and arranged in alphabetical order as per the standard pattern of research.

- The authors should provide a declaration along with the manuscripts, stating that the article is an original work of author(s) and the same has not been published earlier in any other publication.

- The Editorial board reserves the right to accept or reject any article for publication.

- The authors will receive a complimentary copy of the journal in which their articles are published.

- The research papers, complete in all respects, should be received at jimquest@jaipuria.edu.in latest by 31st December, 2019.

JIM QUEST

Journal of Management and Technology

SUBSCRIPTION FORM

Please accept the enclosed cheque/demand draft No_____dated_____drawn on_____bank favouring Jaipuria Institute of Management Ghaziabad for (Rs._____/ US$_____) towards subscription of JIM QUEST for one/two/three years (Please Tick).

Name:_____

Organisation:_____

Mailing Address:_____

_____

_____

City_____Pin/Zip_____Country _____

E-mail:_____

SUBSCRIPTION RATE

One Year Print	Institutions: Rs. 1000/-	Individuals: Rs. 750/-	Overseas: 150 USD
Two Year Print	Institutions: Rs. 1800/-	Individuals: Rs. 1300/-	Overseas: 200 USD
Three Year Print	Institutions: Rs. 2600/-	Individuals: Rs. 2000/-	Overseas: 250 USD

Mail to:
Chief Editor
JIM QUEST
Jaipuria Institute of Management
Block A, Gate No 2, Shaktikhand IV,
Indirapuram, Ghaziabad
Ph: 0120-4550100, 9958077088
e-mail: jimquest@jaipuria.edu.in
ashwanivarshney@gmail.com
Website: www.jaipuria.edu.in/jim

Please Note:-

1. The subscription will be from January to December, i.e. for complete set of volumes for one year.
2. Please send Rs. 50 extra for outstation cheque.
3. Any change in address should be informed immediately.
4. The subscription should be sent on the given address.

NOTE

NOTE

JAIPURIA INSTITUTE OF MANAGEMENT

EMPOWER • ENTHUSE • EXCEL

INDIRAPURAM, GHAZIABAD

VISION

To become a Fully Integrated, Socially Responsible, Contextually relevant, and Value-Based Management Institute of National Reckoning by meeting the growing and emerging needs of industry and business through contemporary innovative management Teaching, Training, Research and Consulting.

MISSION

We intend to provide and develop the capabilities of the young managers by raising their level of competence and intellect to face various challenges in the global environment. In pursuit of excellence, we provide training and development services, foster research and disseminate knowledge through publication of books, journals and magazines for the development of society at large.

QUALITY POLICY

We, at Jaipuria Institute of Management, Ghaziabad dedicate ourselves to providing High Quality education in Management and Software and to promote Indian values, positive attitude & Team Spirit amongst all students, faculty and staff members.

We shall harness latest technological advances & conduct relevant Research & Consultancy to enrich Our education base which will enable participants in solving real life problems scientifically.

We shall strive for continual improvements in all spheres of our activities and maintain Quality Management System within the framework of ISO 9001:2008.

JAIPURIA INSTITUTE OF MANAGEMENT

EMPOWER • ENTHUSE • EXCEL

Block A, Gate No 2, Shaktikhand IV, Indirapuram,
Ghaziabad - 201 012, Ph: 0120-4550100

www.jaipuria.edu.in/jim

Jaipuria Institute of Management:

Jaipuria Institute of Management was set up by Seth Anandram Jaipuria Education Society in 2001. It has sprawling campus spread over 5 acres within NCR. During this short span of 18 years , JIM has been acclaimed as a leading business school in Northern India. Jaipuria Institute of Management, Ghaziabad, was established by fulfilling all the norms regarding academic, financial and social aspects set by concerned statutory bodies.

The Institute started a full time 2 years master degree program in Business Administration (MBA), in the year 2001. This program is duly approved by AICTE, Ministry of HRD (Govt. of India) and affiliated to Dr. APJ Abdul Kalam University, Lucknow (U.P.). Moreover, Seth Anandram Jaipuria Trust and Seth Anandram Jaipuria Education Society run various reputed schools and colleges in the country.

Jaipuria Institute of Management, Indirapuram, (formerly located at Vasundhara), Ghaziabad, aims to provide quality management education to transform individuals into Business Leaders, Skilled Managers & Entrepreneurs.

Jaipuria Institute of Management intends to provide and develop the capabilities of the young managers by raising their level of competence and intellect to face various challenges in the global environment. In pursuit of excellence, the institute provides training and development services, foster research and disseminates knowledge through publication of books, journals and magazines for the development of society at large. Jaipuria Institute of Management has established itself as a leading management institute in the Northern India.