

CO-OPERATIVE
PERSPECTIVE

सहकार संदर्श

October-December 2021

Volume 56 No. 3

ISSN No. 0302-7767



VAIKUNTH MEHTA NATIONAL INSTITUTE
OF CO-OPERATIVE MANAGEMENT

SAVITRIBAI PHULE PUNE UNIVERSITY ROAD, PUNE 411 007, INDIA

Focus

The Co-operative Perspective is a 'must' for co-operative executives, office-bearers, academicians and students. It provides in a capsule from latest thinking on all aspects of co-operative movement. The Journal provides a ready source of knowledge and information relating to rapidly expanding and diversifying co-operative enterprises.

Specific objectives of the Journal are:

- (a) To disseminate information through articles on latest developments in the co-operative movement in India;
- (b) To appraise the readers about the current co-operative literature through articles and book reviews.
- (c) To furnish library documentation of articles on co-operation / management and allied subjects derived from various sources of publication;
- (d) To give glimpse of training activities of the Institute to build up trained manpower for the co-operative movement; and
- (e) To provide opportunity to the readers and specially ex-trainees to exchange experience through feature 'Readers' forum'.

The journal is published quarterly (April, July, October, and January) of each year. Subscribers are enlisted from any issue. The non-receipt of the issue should be reported within 2 month's time to which the issue relates.

Co-operative Perspective

(October - December 2021)

Vol. 56 Issue No. 3

ISSN 0302-7767

Editor-in-Chief

Dr. Hema Yadav

Advisory Board

President, National Cooperative Union of India, (NCUI)

Dr. K.K. Tripathy, IES, OSD to Minister of Cooperation, Government of India, New Delhi and Former Director, VAMNICOM, Pune

President, All India Federation of Cooperative Spinning Mills Ltd

Chairman, National Fisheries Development Board (NFDB)

Chairman, National Federation of Urban Cooperative Banks and Credit Societies Ltd (NAFCUB)

Chairman, State Cooperative Bank Federation (SCBF)

Chairman, National Agriculture Cooperative Marketing Federation of India (NAFED)

Prof. H. M. Desarda, Former State Planning Commission Member, Maharashtra

Dr. Anirudh Prasad, Former Professor & HoD, Xavier Institute of Social Service, Ranchi

Representatives of Indian Farmers Fertilizers Cooperative Ltd. (IFFCO)

Editorial Board

Dr. Rajagopal, Distinguished Professor, EGADE Business School, Mexico City, Boston University, Boston

Dr. Harekrishna Misra, Professor, Institute of Rural Management Anand, Gujarat

Prof. N.R. Bahnumurthy, Professor, National Institute of Public Finance and Policy, New Delhi

Prof. Sudhir K. Jain, Adjunct Professor & Former HoD, DMS, IIT Delhi and Former Vice-Chancellor, SMVD University, Katra (J&K)

Dr. Alok Dixit, Associate Professor, Indian Institute of Management, Lucknow

Dr. K. Sudarsan, Associate Professor, Department of M.B.A., SITAMS, Chittoor

Dr. Leisa Armstrong, Edith Cowan University, Joondalup, Western Australia

Dr. Om Yadav, North Dakota State University, Fargo, USA

Dr. Luis Teran, Professor, Armed Forces University, Ecuador.

Editorial Team

Shri Anil Kumar Tiwary, Faculty Member, VAMNICOM

Dr. Anshu Singh, Faculty Member, VAMNICOM

Editorial Assistant

Ms. Rupali Gosavi and Mr. Mahadev Bobade

Web: www.vamnicom.gov.in

Co-operative Perspective

Website : www.cooperativeperspective.in

All data, views, opinions, etc. being published are the sole responsibility of the authors. Neither publishers nor editors are in any way responsible for them.

Contents

Editorial

Articles :

- Financial Inclusion and Bank Credit :
Perspectives from Small Borrowers
Anshu Singh 01
- Financial Performance Evaluation: A Case Study
of MAHA-Farmers Producers Company Ltd.
Sagar Wadkar, Pallavi Ingale, Bhargavi Thakur 14
- Deposit Mobilisation and Lending Performance of
Cheruvanur Service Co-operative Bank, Cheruvannur
G. Jeyanthi, Pallavi Ingale 27
- Corporate Governance and Cooperative Societies :
A Study of Cooperative Societies in Odisha.
C.Vijaya, & C. Lakshmi 36
- Industry 4.0 : Emerging Themes and
Future Research Avenues
Manisha Paliwal, Saba Sayed 57
- COVID-19 and Dairy Co-operatives -
A Qualitative Assessment using Focus Group Discussions
*Girish Mangleek, A. K. Tiwary,
Anshu Singh, Sonal Kadam* 81

Editorial

As economic activities start picking up, there are new business opportunities and avenues for growth in the cooperative sector. The newly formed Ministry of Cooperation with a grand vision of “Sahakar Se Samridhi” brings greater hope for cooperatives to ease out their governance, management and business related issues. Cooperatives function across various sectors and perform diverse set of activities. The work and functions of cooperatives in credit as well as non credit sectors spans around agriculture and agribusiness, housing, healthcare, handloom and handicrafts, social welfare, youth, environment and sanitation, technology and innovation, amongst several others.

The research around cooperatives deals with multidimensional issues and cross cutting themes of development. During this era of cooperative transformation, VAMNICOM has undertaken several initiatives to bring out contemporary research in the field of cooperation. The Cooperative Perspective journal has added immense academic value to cooperative literature over the years and provides space for scholarly writings and policy based research for academicians and practitioners. Realising the importance of case based research in the cooperative management domain, the institute has initiated a six months long National Level Faculty Development Workshop on “Management Cases Writing in the Area of Cooperatives” in collaboration with IIM Bangalore. The workshop includes faculty members of cooperative institutions from various parts of the country and is expected to give a great impetus to cooperative research and management education.

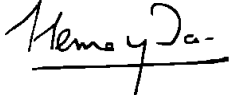
The present issue has a mix of articles from credit as well as non credit sectors where scholars have focused on financial inclusion, farmer producers organisations (FPOs), cooperative credit institutions, cooperative governance, technology and innovation and dairy cooperatives etc.

While most of the cooperatives play an important part in financial inclusion, there are persistent gaps in delivery of products and services to the small borrowers. *Singh* in her article has discussed the banking related factors which are critical in shaping up the level of banking satisfaction and its impact on financial inclusion thereof. The study uses an empirical analysis on survey data to derive the impact of financial inclusion parameters on the borrowers’ overall experience in rural areas of Maharashtra. The study on economic performance of FPO federation by *Wadkar et al.*, follows a case study approach and descriptive research design to analyse the financial performance of MAHA FPC federation in Maharashtra. The authors have used key financial analysis tools like liquidity, leverage, profitability and trend analysis to analyze the critical business performance factors. *Ingale and Jeyanthi* in their article have discussed the deposit mobilization and lending performance of

a cooperative credit institution in Cheruvannur, Kerala. The study is based on secondary data sources of five years, dovetailing important aspects of deposits and advances for small cooperative banks.

Another study by *Vijaya and Lakshmi* investigates into the governance issues of cooperative societies in the State of Odisha using an empirical study. The hypothesis testing results reveal that total accountability, adequate transparency, sound internal control and full disclosure are important parameters of cooperative governance in primary societies. The article on technological innovations by *Paliwal and Sayd* present the emerging themes on Industry 4.0 along with future research avenues. The authors have done a systematic review of studies to show how Industry 4.0 is being implemented in different industries. The findings generate a lot of awareness for cooperative institutions who can adopt innovative technologies for better business outcomes. Finally, the study by *Mangleek, et al.*, discusses the effect of covid-19 on dairy cooperatives in Maharashtra. The study has been completed through a primary survey approach of milk unions to analyse the coping strategies used by the dairy societies to deal with various issues arising out of the pandemic and the impact on society members thereof.

The cooperative perspective journal presents rich literature on cooperative organizations by bringing out their contemporary issues, challenges as well as their role in the changing economic scenario. Cooperative Perspective promotes articles which provide insights in cooperatives and how they can play an enabling role. Feedback and suggestions are invited for better outreach of the journal. Please write to crp@vamnicom.gov.in



Hema Yadav

Editor-in-Chief

ARTICLES

Financial Inclusion and Bank Credit : Perspectives from Small Borrowers

Anshu Singh¹

ABSTRACT

Financial inclusion has emerged as a major developmental goal across the world, especially for emerging economies like India. It has been identified as a key enabler of eight sustainable development goals. A close examination of the current financial inclusion situation in India reveals that supply side measures have expanded the banking outreach in semi urban as well as rural spaces. Considerable progress has been made in terms of “bank account ownership” and “financial access”. However, there are persistent gaps in usage of financial services and many demand side barriers need greater attention of bankers and policy makers. Moreover, the journey towards full financial inclusion entails key dimensions like credit, insurance and technology adoption and it’s time to address issues in these critical areas. Literature reveals that the level of financial inclusion in a country is shaped up by supply side as well as demand side parameters. At this stage, a microscopic view of the demand side barriers pertaining to financial inclusion can be useful to decode the challenges of banking for small and marginal clientele groups, particularly borrowers.

The present study has been conducted with the help of primary survey using structured schedules to collect data from rural and marginal households in the villages of Pune District in the State of Maharashtra in India. Since the district already has a good level of banking outreach, exploring the operational challenges and deriving insights from small borrowers has led to many meaningful findings in terms of financial inclusion challenges. The study was carried out with respect to one of the most critical dimension of financial inclusion that is “Credit”. The data analysis has been done using multiple regression and tests of association to find out the biggest set of barriers under each of the above heads. These factors are relevant in shaping up the level of

¹ Assistant Professor, Centre for Research and Publications, Vaikunth Mehta National Institute of Cooperative Management, Pune (anshuvamnicom@gmail.com)

banking satisfaction and the borrowers' overall experience. The findings can be useful for banks in order to craft financial inclusion plans and strategies to address the challenges for the clientele at the bottom of the pyramid.

Key Words : Financial Inclusion, Financial Access, Usage, Demand Side Barriers, Technology Adoption, Credit, Insurance, Small Borrowers

1. Introduction

“The test of our progress is not whether we add more to the abundance of those who have enough; it is whether we provide enough for those who have too little.” - Franklin Delano Roosevelt, former U.S. president.

Though several theories to poverty reduction have been put forth by economists all over the world, “Financial Inclusion” has been recognized as yet another approach that can address poverty related issues. For developing economies, “Financial Inclusion” has emerged as a powerful mechanism to strengthen the poverty eradication efforts, by countries across the world. This is evident from that fact that “Financial Inclusion” has been identified as a key enabler of eight Sustainable Development Goals. The very first in the list is SDG – 1 on eradicating poverty. Therefore, it has been established there is a strong interconnectedness between “poverty” and “financial inclusion”.

Park, Cyn-Young & Mercado, Rogelio, 2015 in their study titled “Financial Inclusion, Poverty and Income Inequality in Developing Asia”, have empirically established a strong correlation between “financial access and poverty rates”. Michael Chibbaa (2009), has documented case studies from several countries to highlight how deepening of financial sector is a pre requisite for financial inclusion and poverty reduction. According to him there is a strong nexus between financial inclusion, poverty reduction and developmental goals. Sanusi (2015), through his research states that by including lower segments of the society in the financial sector, there is a boost in domestic output and economic activity of the country. Sharma, D (2016) in her study establishes causality between financial inclusion and economic growth by using data on various dimensions of financial inclusion and indicators of economic growth. Thus, it is well established that financial inclusion

² According to UNDP, “The Sustainable Development Goals (SDGs), otherwise known as the Global Goals, are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. These 17 Goals build on the successes of the Millennium Development Goals, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities.” Retrieved from <https://www.undp.org/content/undp/en/home/sustainable-development-goals.html>

has strong interlinkages with broader developmental agenda, particularly with the poverty alleviation objectives.

It has occupied a prominent place in the developmental agenda of emerging economies and they are heading towards the goal of full financial inclusion by promoting effective usage of financial services and better customer experience through formal delivery channels. In this regards, various models have been analysed. Yet another study by Hussaini, Umaru & Chibuzo, Imo. (2018) asserts that there is a great need for robust initiatives in rural areas and models like microfinance should be supported by the government to achieve poverty reduction. AE Ageme, CA Anisiuba et al. (2018) study the impact of financial accessibility parameters and delivery channels on poverty reduction. He stated that although “financial access” is the first leg of financial inclusion goal, “usage” factor of services is a great concern and is largely dependent on the delivery models.

Even the World Bank has been measuring the state of financial inclusion from the “access” as well as “usage” perspectives (FINDEX 2017). The latest 2017 report stresses on the effective use of technology for upscaling the level of financial inclusion in the countries. Danielle White (2012), in his study identifies that the gaps of formal banking sector have been bridged through technological innovations like M-Pesa. According to McKinsey Global Institute’s Report in 2016, digital finance has the potential to lead to inclusive growth by adding \$3.7 trillion to the GDP of developing economies, over the next decade. Thus, technology has become a key focus of financial inclusion delivery models in order to expand customer outreach and lead to effective usage of services.

In the Indian context, the history of Financial Inclusion initiatives particularly expansion of credit in rural areas is extremely old and well documented. As rightly put by RBI, “The history of financial inclusion in India is actually much older than the formal adoption of the objective” .

According to Reserve Bank of India, “Financial inclusion may be defined as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low-income groups at an affordable cost” (The Committee on Financial Inclusion, Chairman: Dr. C. Rangarajan). The definition highlighted three important aspects namely *access to financial services, credit and factors like timeliness and affordability*. It is worthy to note here that it

³ Keynote Address by Dr. K. C. Chakrabarty, Deputy Governor, Reserve Bank of India at the BIS-BNM Workshop on Financial Inclusion Indicators at Kuala Lumpur on November 5, 2012, Retrieved from <https://rbidocs.rbi.org.in/rdocs/Speeches/PDFs/SDGKCC091112.pdf>

entails the fulfillment of financial needs as well as the delivery process (timeliness and adequacy). The scope of financial inclusion was subsequently broadened by “The Committee on Financial Sector Reforms, Chairman: Dr. Raghuram G. Rajan”. According to Raghuram Rajan committee report “financial inclusion refers to universal access to a whole range of financial resources at a reasonable cost. These include not only banking product but also other financial services such as insurance and equity product”. This included other dimensions of financial services apart from basic banking access. Such dimensions were insurance, savings and investments. It further added that products should be channelized based on the financial literacy and the risk appetite of the households.

Therefore, it can be well understood that full financial inclusion entails not just “access” but also “usage”. It encompasses savings, payments, credit and insurance services. It is important to note that in this technology driven era, many delivery models in the banking and financial services segment will emerge from technology enabled solutions.

The present study is a microscopic investigation on small and marginal borrowers who have had a good degree of “financial access” through a formal financial institution, such as a bank. The study attempts to bring out their perspectives on critical dimensions like “Credit”, “Technology Adoption”, and “Insurance”. Since “Financial Inclusion” essentially means delivery of financial services to the last mile, this study from the bottom of the economic pyramid gives meaningful insights into the barriers and drivers of financial inclusion for marginal communities.

2. Review of Literature

Credit has been considered a powerful tool to address poverty reduction. It has the potential to spur a virtuous cycle of financial prosperity provided it is utilized productively and efficiently. Time and again, academicians and researchers have highlighted the importance of credit delivery for agricultural as well as rural development. The Global Findex Database published by the World Bank in 2017 reveals that less than 10 % of the adults borrow through formal sources and the problem is greater amongst the rural sections of developing economies. Babych, Grigolia, and Keshelava (2018) have argued that even though supply side barriers have been addressed by developing nations, there are demand side issues like low-income levels, poor cash flows, indebtedness, poor planning, lack of financial literacy, lack of trust and few attitudinal barriers. Many a times, formal access to finance is blocked by a lack of relevant information and customer service infrastructure (Langat Weldon Kipngetich, 2013). Price related and

income related factors together are responsible for financial exclusion across the world (Vaughen R, 1999).

Adam Ikdal (2017) discussed that while few people in the low-income bracket don't use mobile and internet banking simply due to absence of familiarity, the fear of fraud including ATMs and mobile/internet banking was referred as the number one reason for preferring to transact in cash. Lack of technological advancements in remote locations is also a major factor that pushes up financial exclusion (Christabell and Raj, 2012). The formal financial sector is away from “mass banking” and there are several capability issues to be addressed beyond geographical reach. The technological platforms can be leveraged to foster large scale inclusion and to build consumer capabilities through education and literacy in financial decision making. Shafi and Medabesh (2012) have asserted that although a generation of reforms has been put in place for inclusive banking, still the unprivileged class is unable to access basic banking services. The issue is more intense in case of credit and micro insurance accessibility, although proper access to credit and insurance can augment livelihood opportunities (Goodwin et al., 2000). Private banks are reluctant to serve the bottom of the pyramid due to high operational costs and microinsurance is a very neglected area. In the Indian context, Mehrotra et al., (2009) have recognized demand side and supply-side barriers to be responsible for low stage of access to financial services/products. Microsave (2017) had stated the financial inclusion outstanding constraints in India and Bangladesh. There is still substantial unmet demand for traditional and micro- insurance products.

Technology, especially in the payments space such as Kenya's M-PESA can empower more money transfers & consumption smoothing (Jack, et.al 2013).

There are numerous other digital payments schemes across countries: more research is required on regulation, infrastructure, and design. In India, digital payments are conceptualized as one component of a 3-part strategy for financial inclusion utilizing digital technologies, specifically, JAM – Jan Dhan (banking), Aadhaar (identity), and Mobile (transactions). While there is proof that biometric identity cards can diminish corruption, there are concerns that the JAM framework might be too restrictive in thinking about financial inclusion by means of digital innovation. In the context of economies like India, it is established that technological advances as of now have shown real outcomes in improving access to financial services, prominently by lowering costs and broadening services into areas where bank branches may not exist (Mitsuhiro Furusawa 2016).

3. Research Objectives

The present study attempts to study the issues in financial inclusion with respect to critical dimension like “Credit Access”. It is a microscopic investigation has attempted to study the overall experience of small borrowers from banks with the primary objective of bringing out the major challenges of financial inclusion.

In this context, the following research objectives have been framed.

- i. To ascertain the specific barriers which impact credit access;
- ii. To analyze the relationship between banking satisfaction and credit access barriers; and
- iii. To propose suggestive measures to enhance financial inclusion and usage of banking services.

4. Methodology and Data Collection

The study *uses exploratory as well as descriptive research design*. Considering the objectives of the study, a mixed approach was found more suitable. While a descriptive research design tries to describe the present state of affairs and observed phenomenon of the population, exploratory research is an in-depth study which leads to extensive enquiry and in-depth analysis of the problem in hand. Several researches have argued that mixed methods can give better inferences in an investigation and more scope to validate qualitative findings with quantitative data (Greene, Caracelli, and Graham 1989, Creswell & Plano Clark, 2007, Molina-Azorin, 2011).

The data has been collected using primary survey, based on the respondents’ opinion on the challenges faced by borrowers in availing the services by banks. It describes the present state of affairs in the form of persistent challenges across a spectrum of products like savings, credit and insurance. However standardized tools to measure demand side financial inclusion is not available. Therefore, structured schedule had to be developed based on expert opinion and literature survey. Here the researcher made an in-depth analysis of the severity of various challenges faced in terms of financial inclusion. Since there was more scope for interaction with the respondent, the survey gave an opportunity to collect qualitative information as well. This was later corroborated with quantitative data so collected with the help of schedules. The idea was to explore the factors behind non usage of banking services.

5.1 Sampling Design

As per the research objectives as well as the geographical spread of the study area, a multi stage sampling approach where Purposive Random Sampling technique has been used for collection of primary data.

The study has been carried out in Pune district within the State of Maharashtra. The sampling unit (respondent) was a single household. Therefore a multistage approach was needed to arrive at household level through a series of sequential selections to constitute the sample of study (District level, Block level, Village level and Household level). Pune District fares quite well as far as supply side indicators of financial inclusion are concerned. So, it was apt to study the demand side issues as the district was adequately covered with branch banking, with significant outreach in the rural areas. Hence “Pune” district was selected for the study.

The sample size for the current study is 389. To select an adequate sample size, Morgan’s table for sample size determination was used. According to the Morgan’s table the suggested sample size for a population of more than 5,00,000 but less than 7,50,000 was 381. The researcher captured data of 405 households. However, only 389 households completed the survey properly and were taken for further analysis. Hence the final sample size for the study was 389.

The sample was drawn using Purposive Random sampling through a multi stage sampling approach. Since the population was broad, a narrow down approach was required to arrive at a sample in a logical manner. “Multi-stage sampling is a process of moving from a broad to a narrow sample, using a step-by-step process (Ackoff, 1953).”

The selection of study area was done through a multi stage sampling approach. In the first stage, eight blocks were selected. In the second stage 79 villages from eight blocks were selected randomly . In the third stage 405 households from 79 villages were selected randomly and finally a study sample was constituted for the population of interest. Due care was taken to include households from low income and marginal communities.

5. Hypotheses Testing Results and Discussion

In the light of the stated objectives, following hypotheses have been formulated.

Hypothesis 1

H_1 : There is no significant association between “Credit Experience” and “Credit Barriers”

H_{A1} : There is significant association between “Credit Experience” and “Credit Barriers”

The above hypothesis was tested using Chi Square test of association. The association of “Credit Experience” was tested with each of the “Credit Barriers”.

The “Credit Barriers” variable was operationalized using nine indicators as follows:

- | | |
|----------------------------------|--------------------------------|
| i. Multiple Branch visits | ii. Informal Source Dependency |
| iii. Preference for Loan Waivers | iv. Fear Psychology |
| v. Lack of Counselling | vi. Procedural Complexities |
| vii. Limit adequacy | viii. Repayment Issues |
| ix. Effective Loan Utilization | |

Table No 1 presents the results of hypothesis testing for each of the above-mentioned barriers (Indicators of Credit Barriers).

Table No 1: Results for Testing of Hypothesis 1

Variables (Barriers)	p value	Null Hypotheses	Statistically significant at 5% level of significance
Multiple Branch visits	2.70198E-11	Reject	Significant
Informal Source Dependency	0.000107135	Reject	Significant
Preference for Loan Waivers	1.73535E-05	Reject	Significant
Fear Psychology	1.31834E-12	Reject	Significant
Lack of Counselling	3.59006E-07	Reject	Significant
Procedural Complexities	1.10957E-06	Reject	Significant
Limit adequacy	0.476110107	Accept	Significant
Repayment Issues	9.78784E-10	Reject	Significant
Effective Loan Utilization	1.68303E-09	Reject	Significant

Source : Authors' Compilation of Results from Primary Data

Interpretation :

The results of hypothesis testing reveal that the Null Hypothesis is rejected in case of 8 credit barriers as the p value is less than 0.05.

Thus, it is stated that there is a statistically significant relationship between “Credit Experience” and 8 Credit Barriers that is “*Multiple Branch visits, Informal Source Dependency, Preference for Loan Waivers, Fear Psychology, Lack of Counselling, Procedural Complexities, Repayment Issues, Effective Loan Utilization*”.

The null hypothesis is accepted in case of “Limit Adequacy” barrier that is there is no relationship between “*Credit Experience*” and “*Limit Adequacy*” as the p value of 0.476 is greater than 0.05

Hypothesis 2

H_2 : There is no significant relationship of “*Banking Satisfaction*” with “*Banking Procedures*”, “*Financial Literacy*”, “*Affordability*” and “*Terms of Credit*”.

H_{A2} : There is a significant relationship of “*Banking Satisfaction*” with “*Banking Procedures*”, “*Financial Literacy*”, “*Affordability*” and “*Terms of Credit*”.

Therefore, the study has one dependent variable that is “*Banking Satisfaction*” and four predictor variables that is “*Banking Procedures*” (X1), “*Affordability*” (X2) “*Financial Literacy*” (X3), and “*Terms of Credit*” (X4).

The constituent indicators of each of the 4 predictor variables is as given below in Table No 4

Table No 2: Predictor Variables Under Study

Predictor Variables	Indicators
Banking Procedures	Number of Branch Visits
	Cooperation by Bank Officials
	Simplicity of Procedures
Affordability	High rate of interest
	Seasonality of cash flows
	Low savings due to other liabilities
Financial Literacy	Awareness on credit schemes
	Understanding of interest and overdue calculation
	Understanding loan requirements and application formalities
Terms of Credit	Documentation
	Collateral
	Sanctioned Limit

Source : Authors' Illustration

Each of the above 12 indicators were measured on a rating scale from 1 to 5. (5 – excellent, 4 – Good, 3 – Average, 2 – Bad, 1 – Poor)

The score of each predictor variable was divided into three levels viz “Good”, “Average”, “Bad” based on the summation of individual ratings. For instance, rating of 4 and 5 were grouped under “Good”, rating of 3 was considered as “Average” and rating of 2 and 1 were grouped under “Bad”.

The results obtained through Multiple Regression and F test has been presented below.

Regression Statistics

Multiple R	0.8222
R Square	0.7922
Adjusted R Square	0.7513
Standard Error	0.2286
Observations	389

ANOVA	df	SS	MS	F	Significance F
Regression	4	118.7747	19.7654	85.2123	0.0000
Residual	381	14.0980	0.6575		
Total	390	112.8727			

Regression

Results :

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	1.8821	0.3351	7.9778	0.0000	2.0092	3.3383	2.0092	3.3383
Total Banking Procedures Score	0.5621	0.0753	0.1306	0.0090	0.1591	0.1394	0.1591	0.1394
Total Affordability Score	0.4914	0.3788	1.0940	0.0028	1.1656	0.3367	1.1656	0.3367
Total Financial Literacy Score	0.2284	0.2843	1.4798	0.0014	0.9843	0.1430	0.9843	0.1430
Total Terms of Credit Score	0.3856	0.3715	1.9012	0.0006	0.0303	1.4430	0.0303	1.4430

Source : SPSS Output for Statistical Analysis

Interpretation

- The fit obtained in the model is good as the Coefficient of Determination R^2 is 0.7922 which is greater than the accepted value of 0.70. This implies that all the predictor variables have fitted well in the model.

- ii. The p values are much less than 0.05 for all the predictor variables. Thus, the null hypothesis is rejected. This explains that there is a strong relationship between “Banking Satisfaction” and four predictor variables that is “Banking Procedures” (X1), “Affordability” (X2) “Financial Literacy” (X3), and “Terms of Credit” (X4).
- iii. The coefficients of all the predictor variables are positive which indicate positive association with the response variable that is “*Banking Satisfaction*”.
- iv. The F statistic is significantly large and p value is less than 0.05 which further strengthens the association in the model. We reject the null hypothesis indicating that overall credit experience is closely associated with the crucial challenges related to operational convenience, affordability, financial awareness and lending terms.
- v. The regression equation can be written as $\text{Banking Satisfaction} = 1.88 + 0.56 (\text{Banking Procedures}) + 0.49 (\text{Affordability Score}) + 0.22 (\text{Financial Literacy Score}) + 0.38 (\text{Lending Terms Score})$

6. Conclusion

The study concludes that the various barriers explored in this survey impact the overall usage and experience of financial services. Financial “access” is the first milestone of financial inclusion. The full potential of financial inclusion in poverty reduction and economic development can be realized only when financial products and services bear some wellbeing to a person’s life. This calls for a close examination of the demand side issues that will determine the uptake of products and services along with supply side availability. In doing so, not just the policy drivers, but technological drivers shall have a critical role to play. Since, traditional models have largely addressed supply and outreach of financial services, many demand side barriers are left to adjust on their own. Going forward, new models, product designs and delivery channels will have to evolve so as to converge with the supply side efforts to make full financial inclusion a reality in India. Operational convenience, banking procedures, increased financial awareness, affordability and terms of credit play important role in determining the perception of borrowers and can become potential barriers in availing banking services.

⁴ Only villages with a population of more than 2000 were considered for the sample selection (According to the Central Bank of the Country that is RBI, banks are mandated to extend banking services in villages with population > 2000 branch banking or other stipulated delivery models).

References

- Adam Ikdal(2017), 6 challenges to financial inclusion in South Africa, World Economic Forum,27 Apr 2017,accessed from <https://www.weforum.org/agenda/2017/04/financial-inclusion-south-africa/>
- Asli Demirguc-Kunt & Leora Klapper & Dorothe Singer & Saniya Ansar & Jake Hess, 2018. "Global Findex Database 2017
- Babych, Y., Grigolia, M., and Keshelava, D. (2018). Financial Inclusion, Financial Literacy and Financial Education in Georgia (Rep. No. 849). Tokyo, Japan: Asian Development Bank Institute
- Chibba, Michael. (2009). Financial Inclusion, Poverty Reduction and the Millennium Development Goals. The European Journal of Development Research. 21. 213-230. 10.1057/ejdr.2008.17.
- Christabell, P. J., and Raj, V. A. (2012). Financial Inclusion in Rural India?: The role of Microfinance as a Tool. IOSR Journal of Humanities and Social Science (JHSS), 2(5), 21–25.
- Creswell and Plano Clark, 2007 Designing and conducting mixed methods research. Sage, (2007)
- Goodwin, D., Addleman, L., Middletons, and Ashworth, K. (2000). Debt, Money Management and Access to Financial Services: Evidence from the PSE Survey of Briton (PSE Survey Working Paper 8, Rep.). Centre for Research in Social Policy, Loughborough University
- Greene et al., 1989. Toward a conceptual framework for mixed-method evaluation designs. Educational Evaluation and Policy Analysis, 11 (1989), pp. 255-274
- Hussaini, Umaru & Chibuzo, Imo. (2018). The effects of financial inclusion on poverty reduction: The moderating effects of microfinance. 5. 188-198.
- Jack, William; Ray, Adam; Suri, Tavneet (2013), Transaction Networks: Evidence from Mobile Money in Kenya, American Economic Review 103, no. 3 (May 2013): 356–361.accessed from <https://dspace.mit.edu/handle/1721.1/88135>
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. Educational and psychological measurement, 30(3), 607-610).
- Langat Weldon Kipngetch (2013), Agency Banking And Financial Inclusion In Kisumu, Kenya, October 2013, School Of Business, University Of Nairobi, pp 1-72

- McKinsey Global Institute, DIGITAL FINANCE FOR ALL: POWERING INCLUSIVE GROWTH IN EMERGING ECONOMIES, September 2016. Retrieved from <https://www.unCDF.org/financial-inclusion-and-the-sdgs>
- Mehrotra, N., Puhazhendhi, V., Nair, G.G. and Sahoo, B. B.(2009), Financial Inclusion - An Overview, Department of Economic Analysis and Research, NABARD,India.
- Microsave(2017), Leveraging Technology for Meaningful Financial Inclusion in Asia, May, 2017 to October, 2017, pp 1-83.
- Mitsuhiro Furusawa(2016) , Financial Inclusion: Bridging Economic Opportunities and Outcomes, September 20, 2016, accessed from <https://www.imf.org/en/News/Articles/2016/09/20/sp092016-Financial-Inclusion-Bridging-Economic-Opportunities-and-Outcomes>
- Molina-Azorin, 2011. The use and added value of mixed methods in management research. *Journal of Mixed Methods Research*, 5 (2011), pp. 7-24
- Olofin, Olabode & Adejumo, Adetoye & Sanusi, Kazeem. (2015). Determinants of Poverty Level in Nigeria. *Journal of Sustainable Development*. 8. 10.5539/jsd.v8n1p235.
- Park, Cyn-Young & Mercado, Rogelio, 2015. "Financial Inclusion, Poverty, and Income Inequality in Developing Asia," ADB Economics Working Paper Series 426, Asian Development Bank.
- Rajan Committee, (2008), A Hundred Small Steps-Report of the Committee on Financial Sector Reforms, RBI.
- Rangarajan (2008), the final report of the committee of "Financial Inclusion" under the chairmanship of Dr. C. Rangarajan.
- Shafi, M., and Medabesh, A. H. (2012). Financial Inclusion in Developing Countries: Evidences from an Indian State. *International Business Research*, 5(8), 116-122.
- Sharma, D. (2016), "Nexus between financial inclusion and economic growth", *Journal of Financial Economic Policy*, Vol. 8 No. 1, pp. 13-36. <https://doi.org/10.1108/JFEP-01-2015-0004>
- White, Danielle, (2012) "The Social and Economic Impact of MPESA on the Lives of Women in the Fishing Industry on Lake Victoria" Independent Study Project (ISP) Collection. 1246
- Vaughen, R. (1999). Office of Fair Trading, Vulnerable Consumers and Financial Services (Rep.). London: The Report of the Director General's Inquiry and Appendices. □□□□

Financial Performance Evaluation: A Case Study of MAHA-Farmers Producers Company Ltd.

Sagar Wadkar¹, Pallavi Ingale²
and Bhargavi Thakur³

Abstract

In 21st century, Farmer Producers Organizations (FPOs) model has been seen as vehicle for agri-food system transformation. Despite two decades journey, the FPOs movement is in the nascent stage, where in the focus is on formation and promotion of a commodity specific FPOs under both cooperative and producers company act. Increasingly, the government of India is spending huge amount on creating the social capital and handholding them. However, their financial and long-term sustainability is a serious issue. The present study is an attempt to assess the financial performance of one such state level federation of FPOs i.e. MAHA-FPC, a state level producers company. The study follows the case study approach and descriptive research design. The primary data was collected through semi-structured interview schedule from the chairman and CEO of MAHA-FPC. The secondary data has been collected through company's previous six years annual report (2014-15 to 2019-20). The data was analyzed through ratio analysis - liquidity, leverage and profitability and trend analysis. It was found that the liquidity position of MAHA-FPC is stable, net profitability to revenue from operation of the company has a fluctuating trend over the last six years. Overall, MAHA-FPC is in the growing phase of the business cycle thus, the company would increase the profitability in the coming years.

Keywords : *FPOs, Liquidity, Profitability, Returns on Capital Employed, MAHA-FPC.*

1. Introduction

A sustainable business requires effective planning and financial management. It is further becomes imperative in the case of community-based and community-driven social enterprises, where the focus is on addressing the

¹ Assistant Professor, VAMNICOM

² Assistant Professor, VAMNICOM

³ Research Assistant, VAMNICOM

common socio-economic, cultural and aspirational needs of members. Social enterprises are businesses that trade to tackle social problems, improve communities, people's life chances, or the environment (Social Enterprise UK, 2014). The social entrepreneurs play a key role as change agents in the social sector, including an emphasis on their '*recognizing and relentlessly pursuing new opportunities to serve that mission*' (Dees, 2001). According to McGill and Sachs (2013) social enterprises are generally more connected to the societies they work with than traditional businesses. In the recent development of the view of social enterprises, more emphasis has been put on the entrepreneurial dimension, whereas associated entrepreneurial features, such as seizing the opportunity of value creation and a pressure to innovate, have been used to complement the creation of social value by social enterprises (Perrini et al., 2010).

There are different forms of social enterprises in agriculture like cooperatives (since 1900s), Self-Help Groups (since 1980s) and Farmers Producers Organizations (FPOs) since 2000s (Tripathy and Wadkar, 2021). FPOs is a hybrid form possesses the altruistic characteristics of a cooperatives and the attributes of a private limited company (Murray 2008). FPOs can be registered as cooperative society under State cooperative society act or multi-state cooperative society act 2002 and producer's company act 2002 & 2013.

The performance and viability of FPOs depend on the kind of governance & management structure followed access to & control over resources & technology, business model & operating system, critical linkages with value chain actors, insularity from internal & external threats, producers/ members' participation in business activities and financial performance (Tripathy et al., 2020).

Though FPOs is almost two decades old, there are some empirical research studies, but there are very few studies about the financial performance of FPOs have been done. Sustainability of these companies is very important for the livelihood of the farmers in the long run.

The present study focuses on financial performance parameters to assess the viability of one of such FPOs i.e. MAHA-Farmer Producers Company (MAHA-FPC), a state level consortium of FPOs in Maharashtra. The financial performance with the help of 'Ratio analysis', a management tool that analyses financial results, trends over time, and provide key indicators of organizational performance. It also showcase the achievement of company goal in terms of its profitability, investment etc.

This helps decision makers (board members and management staff) understand strengths and weaknesses and devise strategies to undertake required business. This would also help investors and other rating agencies to measure financial growth against other organizations or make judgments concerning management effectiveness and organisational impact.

2. Review of Literature

Financial statement is a mirror of company as on date to current performance and growth of stakeholder's wealth. Financial statement provides complete information from sales to gross profit, gross profit to net profit and all summary of liability and assets. This financial information presented in trading account, profit and loss account and balance sheet. This information useful to internal management and decision makers like managers, employees and external parties like creditors, banks, debtors, government, etc. Financial statement based on year wise data is useful for forecasting future accurately and provides complete information regarding business operations as per Schedule VI of the Companies Act, 1956.

The financial information would be useful if analysis of financial data done with specific objective by comparing some financial data with other financial data i.e. ratios to know the change in company's performance or loan fund. The ratios are financial analysis tool to analyze past financial statement to forecast past trends and impact on company. The ratios are used by external parties and internal parties to check current performance of company or to check impact of any strategy on company or check impact of company's/ government decision etc. As per interest of user different ratios like liquidity ratio, profitability ratio, working capital ratios, leverage ratio etc., can be worked out. In the process of financial analysis, the financial data, investment, and business activities are analyzed. This process led to find probable crises which may arises if business deviated from the proposed guideline of work (Andelic, Slavica & Vesic, Tamara, 2017).

It is very difficult to gauge the performance of social enterprises (Arena et al., 2014). The measurements are costly, time-intensive and often do not depict all of the reality regarding social impact (Arena et al., 2014; Luke, 2016). Since focus often lies on building sustainable operations that will bring the enterprise success and stability to grow (Blank, 2013), there might be an associated difficulty for social enterprise start-ups to account for measurements of impact at all. Thereby measurement is often focused on growth rather than achievement of the social mission. Additionally there is no "one size fits all" measurement for social enterprises due to their various different operating contexts, missions and goals (Arena et al., 2014; Hadad & Gauca, 2014).

Iyakaremys (2015) assessed the trend of financial performance in agricultural companies listed on the Nairobi Security Exchange. In this study, Iyakaremye used Return on Assets, Return on Equity and Return on Sales for measuring financial performance and current ratio, debt to equity, and debt ratio. Altman's Z score model (2000) was used to measure financial risk. It was found that financial performance and financial risk ratios were the prime indicators to determine the financial health of agricultural companies and also efficient predictors for financial performance and financial risk of agricultural companies.

Odalo (2016) also studies the relationship between liquidity and financial performance of agriculture firms listed in Nairobi Security Exchange, Kenya, to measure financial performance the researcher used Return on Assets, Return on Equity and Earnings per share as the variables. The liquidity of the company has a positive impact of the profitability, return on assets, return on equity and earnings per share of the company. He further emphasized that key attention should be given to liquidity and profitability of the listed agriculture companies to create wealth maximization of shareholders, long time survival and sustainability. Therefore, liquidity and profitability of listed agriculture companies in Kenya should be given key attention in view of their connection with the company's shareholders wealth maximization necessary for the long term survival and sustainability.

FPOs movement help farmers to strengthen their backward (access to inputs, technical information, etc.) and forward linkages (economies of scale, transportation, marketing, processing, etc.) in several countries and thereby have provided a cordial level playing field for cooperation with business outlook and have restored the passion of cooperative movement initiated with the aim of empowering the farming community (Tripathy et al., 2020). Many scholars have also demonstrated the issues and challenges in the formation & promotion of FPOs, establishing connects with markets, financial and technical institutions (Shah, 2016; Chauhan, 2015; Trebbin, 2014; Hassler and Trebbin, 2012; Murray, 2008; Singh, 2008; Dwivedi and Joshi, 2007). However, as on date, there is no any study, which measured the performance of FPCs. Financial performance evaluation is crucial to determine the growth and success of any business entity and accordingly would help in taking corrective action. This research aims to contribute to this field and add to the insufficient literature on financial performance of FPCs in India.

3. Research Methodology

The research methodology is a plan for smooth conduct of research to achieve its stated objectives. The study follows the "descriptive research design", to explain the financial health of MAHA-FPC. The study aims to test

the basic concepts through data analysis. The data was collected through both primary and secondary sources. The primary data was collected through semi-structured interview schedule from the chairman and CEO of MAHA-FPC. The secondary data has been collected through company's previous six years annual report (2014-15 to 2019-20). The data was analyzed through ratio analysis and trend analysis.

4. Results and Discussion

4.1 About MAHA-FPC

MAHA-FPC Pvt. Ltd. is a state level producers company (SLPC) promoted by Small Farmers Agribusiness Consortium (SFAC), registered under Indian Companies Act 1956, as amended in 2002 and 2013 on 3rd September, 2014 in Pune district of Maharashtra State. The company started its operation with 11 member FPOs and in a short time span, its presence has now reached to 247 member FPOs of the State. The company mainly facilitates the business development of member FPOs by undertaking operations like procurement on behalf of National Agricultural Cooperative Marketing Federation (NAFED), marketing, selling, storage, processing, packaging, distribution, and trading of all agriculture and other produce. In addition, help in strengthening the backward and forward linkages to induce market driven agriculture with primary producers.

4.2 Financial Performance of MAHA-FPC

4.2.1 Trend Analysis of Sales

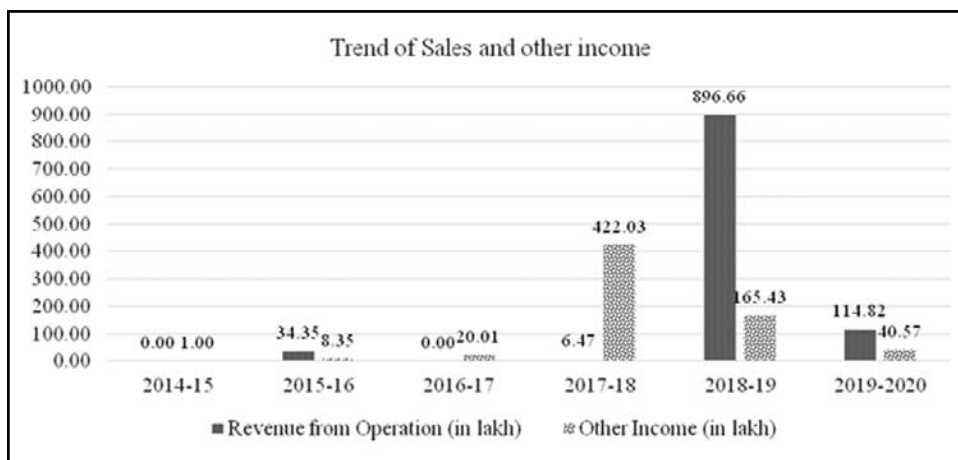


Figure 1: Trend analysis of sales and other income of MAHA FPC

Figure 1 indicates the trend analysis of sales and other income. It was observed that every year both sources of income is fluctuating. A FY 2014-15 has been considered as a base year. Sales trend in 2015-16 it increased to Rs. 34.35 lakhs in next year again it was zero and again, in the year 2017-18 it increased up to Rs. 6.47 lakhs. Now in 2018-19 it has been drastically increased to Rs. 896.66 lakhs and in the year 2019-20 revenue decreased to Rs. 114.82 lakhs.

In the other sources of income, the grant & interest received from SFAC as well as commission received from NAFED against the procurement activities undertaken. The company has continuous other income but has a fluctuating trend. In 2014-15 it was Rs. 1 lakh. In next year it rose to Rs. 8.35 lakh. Again in 2016-17 it rose to Rs. 20.01 lakhs. But in 2017-18 it has increased drastically to Rs. 422.03 lakhs. Afterwards the other income started decreasing in 2018-19 (Rs. 165.43 lakhs) and in the year 2019-20 it was Rs. 40.57 Lakhs.

4.2.2 Liquidity Ratio

Current Ratio : is calculated to analyze the company's capability to cover debts/ payables of the company. This ratio also shows liquidity position the company.

$$\text{Working Capital Ratio Analysis} = \frac{\text{Current Assets}}{\text{Current Liability}}$$

A table 1 show that in the year 2014-15, 2016-17 and 2019-20 the current ratio was maintain at 1:0. It means the company has current assets & current liabilities both in an equal proportion. This current ratio indicates company position is not risky, but it is not even safe. The current ratio was slightly increased in the year 2015-16, 2017-18 and 2018-19. But still, it's not satisfactory as per ideal current ratio (2:1). This is a good sign for the company. It presents company has sufficient balance to meet current obligations.

Cash Ratio: is calculated to measure the liquidity of a company. If an emergency came and company need to all current liabilities on urgent basis, at that time this ratio shows the company's ability to pay current liabilities without selling or liquidating other assets.

$$\text{Cash Ratio} = \frac{\text{Cash} + \text{Cash Equivalent} + \text{Marketable securities}}{\text{Current Liability}}$$

MAHA-FPC has maintained cash ratio more than one in the year 2014-15, 2015-16 and 2017-18. For these three years, the company had sufficient cash to repay current liability. On opposite side cash ratio drastically fall up 0.43 in 2016-17 whereas in the year 2019-20 and 2018-19 the cash ratio was maintained at 0.88 and 0.87 respectively. Current position of cash ratio is not favorable to the company and in the coming years, company has to improve their cash position.

Table 1: Liquidity Ratios

Year	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Current Ratio	1.0	1.3	1.0	1.2	1.1	1.0
Cash Ratio	1.04	1.10	0.43	1.09	0.87	0.88

4.2.3 Leverage Ratio

Equity Ratio : is calculated to analyze equity share capital investment in assets. This ratio has been used by an equity shareholder to know the usage of share capital in growth of the company.

$$\text{Equity Ratio} = \frac{\text{Total Equity}}{\text{Total assets}}$$

Table 2 shows that, the equity ratio has declining trend. From the year 2014-15 to 2019-20 the equity ratio is decreasing from 0.086 to 0.041. MAHA-FPC is a leveraged company, the company has a very low equity ratio in the last six years. The company is more relied on equity share capital. In the year 2016-17 equity ratio became -0.0014 because the company was having negative reserve and surplus. In the year 2017-18, MAHA-FPC has received a matching equity grant of Rs. 10 lakhs from SFAC, Government of India. In year 2014-15 and 2015-16, the MAHA-FPC was having only current asset and thereafter company began to increase fix-assets as per requirements.

Assets to Proprietorship Ratio: is calculated to support equity ratio to measure company investment in fixed-assets. This ratio gives clarity about the utility of equity share capital in fixed-asset procurement.

$$\text{Assets to proprietorship Ratio} = \frac{\text{Fixed Assets}}{\text{Total equity shares}}$$

Equity Ratio has supporting percentage to Proprietorship Ratio. In year 2014-15 and 2015-16, the company does not have any fixed assets.

In 2016-17, the company has a huge procurement of fixed-assets and in subsequent two year purchase of fixed-assets was maintained appropriately by the company.

Table 2: Leverage Ratios

Year	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Equity Ratio	0.0868	0.1862	-0.0014	0.1221	0.1029	0.0413
Proprietorship Ratio	0	0	-0.26	0.03	0.03	

4.2.4 Profitability Ratio :-

Net Profit to Revenue Ratio (NPR) : This ratio used to measure the profitability of company. This ratio shows relationship between net profit and sales. The other income earned by company is ignored. All operating expenditures and incomes are considered in this ratio because the main objective of this ratio is to calculate actual profitability of the company from business operations.

$$\text{Net profit Ratio} = \frac{\text{Net Profit (PBT)}}{\text{Net Sales}}$$

Table 3 represents that, net profitability over the period was decreasing toward below zero. In 2014-15 and 2016-17 the company has maintained no profit no loss. In 2017-8, the company did its procurement business but they didn't received payment in same year due to which the Company has booked huge losses in 2017-18. Nonetheless, in 2019-20 the company was able to overcome from loss up to 27%. In the year 20018-19 and 2019-20, the company has earned good amount of revenue from operations but simultaneously the other expenses were also increased. Company had huge expense in stock in trade, change in inventory and other expenses which result in decrease in the net profitability ratio of company.

Net profit to Other Income Ratio (NPO): is calculated to support net profit ratio of the company. This ratio used to measure a company's profitability with respects to other income received. This ratio gives clarity about how much percentage of other income source contributes to profit of the company.

$$\text{PBT to Other income} = \frac{\text{PBT}}{\text{Other income}}$$

Table 3 indicates the percentage of profit received through other sources of income. In the year 2014-15 the ratio was only 0.33%, but it was drastically increased up to 32.85%. In the year 2016-17 company has booked huge loss as a result other income ratio became -35.24%. However, in subsequent three years other income have contributed continuously in net profit. This indicated that other income plays important role in the functioning of MAHA-FPC.

Net Profit (NP) : This ratio helps to calculate actual earn profit by company in a year. Total revenue encompasses other incomes and revenue from operations. This ratio helps to identify future prospects of the company.

$$\text{Net profit with other income} = \frac{\text{PBIT}}{\text{Total revenue}}$$

Table 3 shows that the company has started earning profit from initial year's i.e., 2014-15. But in 2016-17 the company has recorded a loss. Because revenue from operations was zero and other income earned by the company was not sufficient to cover expenses. But in the year 2017-18 and 2019-20 the company has gained sufficient profit. This ratio indicates that in coming years the company would grow and can earn good profit.

Return on Capital Employed

Return on Capital Employed (ROCE), it is a profitability ratio. It is calculated to judging a company's profitability and capital efficiency. This ratio signals about the funds employed for the expansion of company or generating profit. This ratio is used by investors to determine risk in business as per that they can decide about investment in company.

$$\text{Return on capital Employed} = \frac{\text{EBIT}}{\text{Capital employed}}$$

Table 3 shows that the return on capital employed in the last six years. The company has maintained fluctuating return on capital employed. In the year 2016-17 ratio was -2.53 because the company had recorded a loss in this year, so returns were also recorded in negative. In the year 2015-16 and 2017-18 the capital return ratio was good but in the year 2018-19, the ratio drops to 0.11 followed down to 0.07 in the year 2019-20.

Table 3: Profitability Ratios

Year	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Net Profit to Revenue Ratio	0	7.99%	0.00	369.92%	0.50%	8.73%
Net Profit to other income Ratio	0.33%	32.85%	-35.24%	5.67%	2.73%	24.71%
Net Profit	0.33%	6.43%	-35.24%	5.58%	0.42%	6.45%
Returns of Capital Employed	0.002	0.82	-2.53	0.74	0.11	0.07

4.3 Discussion

- ☞ In the last six years, the liquidity position of MAHA-FPC is stable, but they are not able to achieve the ideal Current Ratio i.e 2:1. As well as the cash ratio was slightly decreased in the year 2018-19.
- ☞ The equity ratio and assets to proprietorship ratio indicated the decline in the year 2019-20. This ratio indicates future implications on the profitability of MAHA-FPC in the long term period because the company may need to take a more loan and it will lead to financial costs in the form of interest.
- ☞ The net profitability to revenue from operation ratio of the company has a fluctuating trend over the last six years. The revenue of the company has very high variations, which results in a very high loss in some years.
- ☞ It is suggested that the company should focus on stabilizing the revenue for better performance in the coming years and build trust in shareholders. The net profit to other income has indicated a significant contribution to the overall profit of MAHA-FPC. Overall net profitability of MAHA FPC is proved that the company has started making a profit. Presently, MAHA-FPC is in the growing phase of the business cycle thus, the company may increase the profitability in the coming years.
- ☞ Return on Capital Employed (ROCE) indicates that the company has a good return against capital employed in business operations. It is a signal of the prosperity of the company in near future.
- ☞ In the previous six years company was not in a position to keep the required liquidity. The company has to focus on cash management.

- ☞ Equity capital indicates the contribution of members in capital formation. MAHA-FPC is in a growing stage, a company needs finance for expansion.

5. Conclusion and Recommendations

The FPOs model is still in the nascent stage. FPOs are struggling to establish themselves in the market. The case of MAHA-FPC, as a state level Federation of FPOs has established a good example for other FPOs of State and the Country. The financial analysis of MAHA-FPC indicated the company has a bright future, the share capital is in the increasing trend as new FPOs are becoming shareholders. In addition, the trade receivable has also shown increasing trend. It is recommended that the MAHA-FPC must focus on stabilizing revenue from operation and net profitability. As per phases of business cycle company is in expansion phase and in near future company would reach to a peak.

Cash management plays important role in strategic planning. A company needs to focus on operations of a business concerning debtor's turnover and creditor's turnover. High equity capital contribution in a company's capital structure signifies a strong capital mix, which will lead to a boost in profitability. Accordingly, the company needs to promote themselves to attract new shareholders to kick the overall growth of a company.

It is recommended that there is need to have two-pronged approach – Formation & Promotion of FPOs as well as creating enabling ecosystem for strengthening FPOs, particularly during post-handholding period. More integrated efforts are required on capability enhancement of board of directors & management staff of FPOs on different aspect of management of business entity and sensitization & orientation of financial institutions on financing FPOs on the other.

References

- Andelic, Slavica & Vesic, Tamara. (2017). The importance of financial analysis for business decision making., Finance, banking, insurance, Publisher: Faculty of business economics and entrepreneurship, pp.9-25
- Arena, M., Azzone, G. & Bengo, I. (2014). Performance Measurement for Social Enterprises. *Voluntas: International Journal of Voluntary and Nonprofit Organizations*, 26 (2): 649-672.
- Altman, E. I. (2000). *Predicting financial distress of companies: revisiting the Z-Score and ZETA® models*. In Handbook of Research

Methods and Applications in Empirical Finance, DOI: 10.4337/9780857936097.00027 (pp.428-456). Edward Elgar Publishing.

- Blank, S. (2013). Why the lean start-up changes everything. *Harvard Business Review*, 91 (5): 64-68.
- Chauhan, S. (2015). Producer companies in Madhya Pradesh: An evaluative study. *International Journal of Recent Research Aspects*, 2 (3): 66-77.
- Dees, J. G. (2001). The meaning of social entrepreneurship. Working Paper, Kauffman Center for Entrepreneurial Leadership. Available online at https://centers.fuqua.duke.edu/case/wp-content/uploads/sites/7/2015/03/Article_Deess_MeaningofSocialEntrepreneurship_2001.pdf
- Dwivedi, Y. K. and Joshi, A. R. (2007) Producer company—a new generation farmers institution. *Leisa India*, pp. 16–17.
- Hadad, S. and Gauca, O. (2014). Social impact measurement in social entrepreneurial organizations. Management & Marketing. *Challenges for the knowledge society*, 9 (2): 119-136.
- Hassler, M. and Trebbin, A. (2012). Farmers’ producer companies in India- a new concept for collective action. *Environment and Policy*, 44 (2): 411 – 427
- Iyakaremye, A. (2015). Analysis of financial performance and financial risk in agricultural companies listed on the Nairobi security exchange. Nairobi: United States International University Africa.
- Kakati. S. (2017). A Study on the Financial Performance of Farmer Producer Companies with special reference to North East India. *Amity journal of Agribusiness*. 2 (1): 37-56.
- Luke, B. (2016). Measuring and Reporting on Social Performance: From Numbers and Narratives to a Useful Reporting Framework for Social Enterprises. *Social and Environmental Accountability Journal*, 36 (2): 103-123.
- McGill, R. and Sachs, D. (2013). The Fireflies next time: The rise of social entrepreneurship suggests a possible future for global capitalism. In R. McGill (Ed.), *The art and science of delivery* (Vol. 1, pp. 64-69). Retrieved from McKinsey on Society.
- Murray, E. V. (2008). Producer company model-current status and future outlook: Opportunities for bank finance. *Financing Agriculture*, 40: 18–26.

- Odalo, S. K. (2016). Liquidity and Financial Performance in Agricultural Firms listed in the Nairobi Securities Exchange in Kenya. *International Journal of Business and Social Science*, 7 (7): 57-65.
- Perrini, F., Vurro, C. and Contanzo, L. A. (2010). A process-based view of social entrepreneurship: From opportunity identification to scaling-up social change in the case of San Patrignano. *Entrepreneurship & Regional Development*, 22 (6): 515-534.
- Shah, T. (2016). Farmer Producer Companies. *Economic & Political Weekly*, 51 (8): 15.
- Singh, S. (2008) Producer companies as new generation cooperatives. *Economic and Political Weekly*, 43: 22–24.
- Social Enterprise UK (2014). Impact Report 2013-14. Available online at [https://www. socialenterprise.org.uk/wp-content/uploads/2019/05/seuk_social_impact_report_2013-1.pdf](https://www.socialenterprise.org.uk/wp-content/uploads/2019/05/seuk_social_impact_report_2013-1.pdf)
- Trebbin, A. (2014). Linking small farmers to modern retail through producer organizations: Experiences with producer companies in India. *Food policy*, 45: 35–44.
- Tripathy, K. K. and Wadkar, S. K. (2021). Social Enterprises: An Instrument for Sustainable Development. *Agricultural Extension in South Asia (AESAs) Blog* 157 - August 2021.
- Tripathy, K. K., Deshpande, D. V., Wadkar, S. K., and Lokhande, J. (2020). Catalyzing Development through Collectives: Status and Issues of Cooperatives, SHGs and Farmer Producers Organizations in India. *VAMNICOM Working Paper Number 3*, 2 (1): 1 - 42.



Deposit Mobilisation and Lending Performance of Cheruvannur Service Co-operative Bank, Cheruvannur

G. Jeyanthi¹
Pallavi Ingale²

Abstract

Deposit mobilization is an integral part of financial institutions. By mobilizing deposits they ensure continued service to members needs and build financial strength. Hence, deposit mobilization is vital to the local economic development and is a key for financial sustainability they foster local economic development by mobilizing deposits and lending these out to individuals, families, farmers, and small businesses in the same area. The study is based on secondary data obtained from annual report o Cheruvannur Service Cooperative Bank for the period of 2015-16 to 2019-20. The study of the bank's deposit mobilization along with lending practices provided to the customers here with undertaken. The analysed data reveals that growth of term deposit registered a fluctuating tend during the study period whereas saving and current deposit showed a decrease in its growth rate. Loans and advances of agricultural loans increasing trend where as Gold loan showed fluctuating trend. The trend further predicted for the deposits and advances of Cheruvannur Service Cooperative Bank for the year 2025 shows on increasing in its trend.

Key words : *Deposit, Deposit Mobilization, Lending performance, Loans and advances*

1. Background of the study

Co-operative movement has been recognized as an important instrument towards achieving socio-economic transformation of rural masses. Primary Agriculture Credit Societies (PACS) are pillars of co-operative credit movement as these societies are intended to promote the economic interest of its members its accordance with the co-operative credit movement as these societies are intended to promote economic interest of its members in accordance with the co-operative principles.

1 Lecturer, Institute of Cooperative Management Kannur, Kerala sgjyanthi@gmail.com 9842505829

2 Assistant professor, Vaikunth Mehta National Institute of Cooperative Management, Pune-7 pallavingale7207@gmail.com 9850861405

Currently, PACS are transient through crisis. PACS are not efficient to sustain themselves in this global environment. Occurrence of non-viability is one of the major setbacks. PACS are able to fetch small amount of deposit that result in slight progress in over all deposits in PACS. The repaying capacity of the PACS has been dwindled considerably, as a result of mounting over dues in the loan outstanding against members. Along with the increasing volume of business the number of PACS running into loss and the amount of loss has increased considerably over the years.

The comparative performance of PACS in Kerala with respect to their counterparts in the rest of the country is remarkable. Kerala had the highest rank with regard to membership, population coverage, borrowing members, loans and advances, deposits mobilization and share capital contribution. Despite the phenomenal outreach and volume of operation, the health of the cooperatives has deteriorated significantly. (Vinaikumar and VeeraKumaran, 2016)

2. Objective of the Study :

The objective of the study is to analyze the Deposits mobilization and Lending performance of Cherruvannur Service Cooperative Bank

3. Methodology :

This research study do not have any primary data analysis. The analysis and findings are based on the secondary data collected from the financial statements of Cheruvannur Service Cooperative Bank (CSCB) from last 5 years ie. (2015-16 to 2019-20). This study done with respect to study the deposit mobilization and credit deployment done in Cheruvannur Service Cooperative Society.

Tools Used for the Study :

For the analysis of deposit mobilization and credit deployment the growth rate and trend analysis tools are used.

4. Literature review

Jayalakshmi and Muthulakshmi (2012) done a research study of Sriviliputhur Primary Agricultural Co-operative Society. It has been found that the society mobilized 49.795 % of the average saving deposit, 0.935 average of recurring deposits, and 49.35 % of the average fixed deposit, during the previous 10 years. It was identified that the society provided 14.63 % of agriculture jewel loan during the study period. It has been suggested to

conduct many deposit mobilization programmes and adequate supervision after the loan was sanctioned, which will support to develop of society's better effective operations.

Rajashekarappa and KundanBasavaraj (2012) have examined the mobilization of deposits of banks, loans, and investments of the bank. The data analysis represents that the bank's performance has been gradually increased, and as well as the bank's network has expanded to the extent.

Rajni and Dhaliwal (2013) examined the deposit mobilization scheme in State Cooperative Agricultural Development Bank from Punjab, in study it was found that the growth rate of fixed deposits were high due to the high rate of interest paid by PADB during the study period of eleven years i.e, 1999-2000 to 2011-12.

Selvaraj and Balaji Kumar (2015) conducted a study on the deposits mobilization pattern of the Dindigul District Central Co-operative Bank Limited. Data analysis indicates that DCCB mobilizes resources by taking deposits and loaned fund from the State Co-operative Bank. During the study period, the total deposits show a positive growth of 7.184%.

5. Results and Discussion:

Table – 1: Term Deposits

(Rs in Lakhs)

YEAR	Term Deposits	Percentage to Total	Increase/ Decrease	Growth Rate	Total Deposits
2015 – 16	2521.29	79.01	----	---	3191.17
2016 – 17	2923.04	80.80	401.75	15.93	3617.77
2017 – 18	3366.75	81.72	443.71	15.18	4119.75
2018 – 29	4007.25	83.89	640.5	19.02	4776.72
2019 – 20	5103.08	86.95	1095.83	27.35	5868.88

Source: Annual Reports of CSCB.

The above table shows that the term deposits mobilized by bank represents growing trend during the last five years. The term deposits with bank were Rs. 2521.29 lakhs in 2015-16 and over the period it got grown up to Rs.5103.08 lakhs in 2019-20. It indicates a two-fold increase. Term Deposits shows increasing trend of growth rates. The trend indicates variations between 15.93 % to 27.35 %.

Table – 2: Saving and Current Deposits of CSCB

(Rs. in Lakhs)

YEAR	SB, CA & Others (Rs in Lakhs)	Percentage to Total	Increase/ Decrease	Growth Rate	Total Deposits
2015 – 16	669.73	20.99	---	---	3191.17
2016 – 17	694.73	19.20	25	3.73	3617.77
2017 – 18	753.00	18.28	58.27	8.38	4119.75
2018 – 29	769.47	16.11	16.47	2.19	4776.72
2019 – 20	765.80	13.05	-3.67	-0.48	5868.88

Source : Annual Reports of CSCB.

The above table number 2 indicates that savings and current deposits mobilized by CSCB, which raised at Rs.669.73 lakhs in 2015-16, had progressively improved to 765.80 lakhs in 2019-20. The growing rates varies between -0.48% and 8.38%. Growth rate was fall down in the year 2019-20.

Table – 3 : Total Deposits of CSCB

(Rs in Lakhs)

Year	Total Deposits (Rs in Lakhs)	Increase / Decrease	Growth Rate
2015 – 16	3191.17	---	---
2016 – 17	3617.77	426.6	13.37
2017 – 18	4119.75	501.98	13.86
2018 – 29	4776.72	656.97	15.95
2019 – 20	5868.88	1092.16	22.86

Source : Annual Reports of CSCB.

The above table number 3 displays an increasing trend of total deposits mobilized by CSCB. In the year 2015-16, the total deposits were Rs. 3191.17 lakhs, which raised to 5868.88 lakhs in the year 2019-20. On an average the growth rates of deposits was 13.20%.

Table – 4: Details of Gold Loan

(Rs in Lakhs)

Year	Gold Loan	% of Gold Loan to Total Loan	Increase/ Decrease	Growth Rate	Total Deposits
2015 – 16	959.52	29.66	---	----	3235.38
2016 – 17	778.66	24.81	-4.84	-18.85	3137.97
2017 – 18	813.00	22.03	-2.78	4.41	3690.41
2018 – 29	820.14	19.30	-2.73	0.88	4249.18
2019 – 20	1045.18	20.96	1.66	27.44	4985.78

Source : Annual Reports of CSCB.

Table number 4 represents the Gold Loans lend by CSCB were Rs. 778.66 lakhs in 2016-17 and in the year 2019-20 it was Rs.1045.18 lakhs. The growth rates of gold loan have fluctuating trend. The growth rate was -18.85% and highest growth rate was 27.44%.

Table – 5: Details of Agriculture Loan

(Rs in Lakhs)

Year	Agricultural Loan	% of Agriculture Loan to Total Loan	Increase/ Decrease	Growth Rate	Total Deposits
2015 – 16	436.63	13.50	---	---	3235.38
2016 – 17	684.48	21.81	8.32	56.76	3137.97
2017 – 18	827.61	22.43	0.61	20.91	3690.41
2018 – 29	1106.42	26.04	3.61	33.69	4249.18
2019 – 20	1425.31	28.59	2.55	28.82	4985.78

Source : Annual Reports of CSCB.

Table number 5 shows the Agricultural advances of CSCB. In the year 2015-16 the agricultural advances were Rs. 436.63 lakhs and it got raised to Rs.1425.31 lakhs in the year 2019-20. This represents an increasing trend of agricultural advances in CSCB. The same growth rates also showed a fluctuating trend ranging between 20.91 percent in 2017-18 and 56.76 percent in 2016-17.

Table –6: Other Loans

(Rs in Lakhs)

Year	Other Loan	% of Other Loans to Total Loan	Increase/ Decrease	Growth Rate	Total Deposits
2015 – 16	1839.23	56.85	---	---	3235.38
2016 – 17	1674.83	53.37	-164.4	-8.94	3137.97
2017 – 18	2049.80	55.54	374.97	22.39	3690.41
2018 – 29	2322.62	54.66	272.82	13.31	4249.18
2019 – 20	2515.29	50.45	192.67	8.30	4985.78

Source : Annual Reports of CSCB.

Table number 6 represents the other loans and advances allotted by CSCB. In the year 2015-16 other loans and advances were Rs. 1839.23 lakhs and it got raised to Rs.2515.29 lakhs in 2019-20. The other loans and advances allotted by CSCB has an increasing trend over the last five years. Average growth rate was 7%. The growth rates has a fluctuating trend the lowest growth rate was -8.94% in 2016-17 and highest growth rate was 22.39 % in 2017-18.

Table – 7 : Total Loans and Advances

(Rs in Lakhs)

Year	Total Loan	Increase/ Decrease	Growth Rate
2015 – 16	3235.38	---	---
2016 – 17	3137.97	-97.41	-3.01
2017 – 18	3690.41	552.44	17.61
2018 – 29	4249.18	558.77	15.14
2019 – 20	4985.78	736.6	17.34

Source : Annual Reports of CSCB.

The above table number 7, shows the total advances of CSCB held during last five years. The trend of total advances was increasing over the period. In the year, 2016-17 total advances were Rs. 3137.97 lakhs and in the year 2019-20, it got slightly increased to Rs. 4985.78 lakhs. Average growth rate of Loans and Advances was 9.41%.

Trend Analysis :

To predict future year 2025, Trend Analysis was conducted to analysed the trend of Time deposits, trend of saving and current deposits, trend of

total deposits, trend of Gold Loans, trend of Agricultural advances, trend of other loans and advances and trend of total advances. For calculating the straight-line trend of the deposits and advances of CSCB, the data in the previous tables have been used.

By using a linear trend equation, the estimation of the trend values of different loans like Gold Loans, other loans and advances, Agricultural advances, total advances was calculated. As well as trend, values of different deposits like time deposits, total deposits, saving and current deposits have calculated with following formula:

$$Y_t = a + bx \text{ Where}$$

Y = Deposits/Advances /Net Profits in lakhs of rupees.

X = Time Variable

'a' and 'b' are parameters to be estimated. Y_t = Computed trend figure for period X.

The method of least squares has estimated the above trend equation. The values of 'a' and 'b' are determined by solving the following two normal equations.

$$\sum y = Na + b \sum x \quad \text{----- (1)}$$

$$\sum XY = a \sum X + b \sum X^2 \quad \text{----- (2)}$$

Where N = number of years for which data are given that is five years.

With the help of the above linear trend equation, the trend values for Gold Loans, Agricultural advances, other loans and advances and total advances, Time deposits, saving and current deposits, total deposits, are calculated and displayed in the table number 8.

Table 8 : Trend Values of Deposits and Advances of CSCB

Sr. No.	Particulars	Trend Value forecasted for 2025 (Rs. in Lakhs)
1	Time Deposits	7957.735
2	Saving and Current Advances	917.36
3	Total Deposits	8874.92
4	Gold Loans	1032.26
5	Agricultural Loans	2575.60
6	Other Loans and Advances	3480.29
7	Total Advances	7088.15

Source: Annual Reports of CSCB.

As per the calculation, forecasted total deposits in the year 2025 will be Rs. 8875.09 lakhs that indicates 51.22% growth rate in coming five years. The forecasted total loans and advances will be Rs. 7088.15 lakhs that indicates 42.16% growth rate in coming five years.

Findings

- ☞ The term deposits indicate of CSCB had a two-fold increase in the last five years. The trend indicates variations between 15.93 % to 27.35 %. Term Deposits show an increasing trend of growth rates.
- ☞ On average the growth rate of saving and Current Deposits of CSCB is only 2.76%. In the year 219-20, the deposit under this category have decreased drastically bank need to concentrate on opening more account as well as saving schemes.
- ☞ The total deposits of CSCB has a growing trend. The highest growth of 22.86 percent was recorded in 2019-20, and the lowest was 13.37 percent in 2016-17. On average the growth rate of total deposits of CSCB is only 13.02%.
- ☞ Overall the loans and advances for Gold loans shows a decreasing trend, year on year gold loan lend have decreased as compared to 2015-16. The growth rate of the Gold Loan of CSCB reported a high downtrend as well as some positive trends also in the last five years.
- ☞ Overall the CSCB agricultural advances have raised in the last five years. The CSCB indicates an overall growth rate of 28.03% in agricultural advances.
- ☞ The other loans and advances were Rs. 1839.23 lakhs in the year 2015-16 which touched Rs. 2515.29 lakhs in the year 2019-20. It presents an average growth rate of 7.01%. The other loans and advances of CSCB reported a downtrend as well as some positive trends also in the last five years.
- ☞ The CSCB has grown deposits by 13.02% in a studied period. Similarly, CSCB has risen total loans and advances by 9.14%. This indicated efficient mobilization of deposits done by CSCB.

Conclusion :

To sustain itself in the global financial market era CSCB need to continue with efficient management of funds to grow in the coming future. Cheruvannur Service Cooperative Bank should adopt new technology to serve

the best financial services to its members. The adaptation of information technology and the computer will result in transparent governance and a reduction in operating cost. The bank should focus on the training and development of staff. Bank should employ skilled human resources as per the new information system to increase the efficiency of the bank's operations.

The present study indicates that the Cheruvannur Service Cooperative Bank did a good balance between deposits and loans. CSCB should concentrate on rising the net worth of a bank, which will offer incremental profit share to members. CSCB needs to make an effort to upturn farmer's Service centers to render financial services. CSCB has developed confidence in people by delivering financial services to a low-income section of society. The bank should offer attractive loans to small-scale businesses. The bank has successfully removed private moneylenders.

References

- Jayalakshmi & Muthulakshmi(2012), A Study on Performance and Challenges of the D.C.C Bank Ltd., Salem, Indian Cooperative Review, Vol. 50, No. 2, October 2012, Pp. 99 – 110
- Rajni and Dhaliwal (2013), Financial Performance Evaluation – A Case Study of Chathannur Regional Cooperative Bank Ltd., Indian Cooperative Review, Vol.51, No.1, July, Pp: 16-27
- Rajshekarappa and KundanBasavaraj (2012), “Performance Evaluation of Pragathi Grama Bank in Karnataka”. Southern Economist, November, Vol. 51, No. 13, November, Pp. 10-14.
- Selvaraj N, Balaji Kumar P (2015) A Study on the Deposit Mobilization Pattern of the Dindigul District Central Co-operative Bank Limited. Journal of Tourism and Hospitality, Vol. 4, Issue.1, Pp:1-8.
- Vinaikumar E and Veerakumaran G (2016) “Financial Performance of Vilvattam Service Co-operative Bank, Co-operative Perspective, Quarterly Issue, Vol. 50, No.2, July-September -, Pp: 21 to 37.



Corporate Governance and Cooperative Societies : A Study of Cooperative Societies in Odisha.

C.Vijaya ¹
& C. Lakshmi ²

ABSTRACT

The cooperative movement, in recent times, appears to have started addressing the issue of corporate governance. Sequel to this development, some resources to promote good governance can reasonably be expected within the movement itself. This paper therefore was set out to examine whether lack of transparency is a feature of most cooperative societies, to ascertain whether the executives of cooperative societies show good commitment towards accountability and to assess the significance of members' participation in the democratic process giving room for the emergence of incompetent individuals on the executive and board of cooperatives in Odisha. It was also meant to evaluate the need for cooperative societies to engage in sound internal control and risk management and to investigate whether weak corporate governance is solely responsible for the maladministration of cooperative societies in the State. The source of data was primary and the five hypotheses formulated were tested using descriptive statistics and analysis of variance. Essentially, the study found that the executives of cooperative societies are not committed to transparency and accountability. The principal recommendations of the study are that the executives should demonstrate high level commitment towards the sustainability of cooperative societies and that these societies should embrace the principles of good corporate governance that is capable of fostering total accountability, adequate transparency, sound internal control and full disclosure of their activities.

Keywords : Cooperative Societies, Corporate Governance, Accountability, Sustainability, Internal Control, Transparency and Disclosure

Introduction :

Co-operatives are member-owned businesses founded on the International Co-operative Alliance's Statement of Co-operative Identity and agricultural co-operatives have long been among the most successful of these in India in

¹ Deputy Director, Madhusudan Institute of Cooperative Management, Bhubaneswar

² Reader in Economics, Choudwar College, Choudwar

general and Odisha in particular. Agricultural co-operatives are legal entities in which farmers work together to achieve some commercial objective that they cannot achieve working independently of each other.

Key to the success of the model is governance. A neglect of governance weakens the framework of accountability and carries multiple risks to the business and its strategy over time. Conversely, good governance supports the board of the co-operative in its task of creating and maintaining a strong and sustainable business.

The financial sector reforms have been initiated in the Indian Banking industry since 1993. Banks have been guided and directed to improve their asset quality, capital adequacy and efficiency in order to improve their productivity and profitability. The Cooperative banks were given a greater amount of time and opportunity to adapt themselves to the new regimen. The PACS however were not subjected to these norms. With the implementation of recommendations of Vaidyanathan committee on STCCS, the prudential norms of Income recognition, asset classification, provisioning and capital adequacy are being made applicable to PACS forthwith. By adopting these norms, the PACS operations will become transparent, reflecting the true picture of the organisation. The future efforts will be to improve efficiency of the systems and operations of the PACS.

PACS are democratic organizations. The PACS are governed as per the provisions of Cooperative Societies Act / Rules and bye-laws of PACS in a democratic manner. The members of PACS are owners of the society. They elect a Committee for providing directions to the affairs of the Society. The Board of PACS in terms of Vaidyanathan Committee Recommendations (VCR) will consist of elected members only. (There will not be any nominated member on the Board of PACS). The elected Members would in turn elect one among themselves as President of the Society. It is the responsibility of the President to direct and run the Society in a proper and constructive manner. Some societies have a Vice President too. In the absence of a President, the Vice President will discharge duties of the President. The General Body is the highest / supreme authority of the society. The Board functions within the boundaries of the bylaws, policy decisions taken by the General Body and as per the provisions of the Cooperative Societies Act /Rules. Important policy decisions are taken by the General Body only. Thus, the President, the Board of Directors and the General Body are the important components of governance structure of PACS. The

day-to-day work of the society and also the implementation of the decisions taken by the Board, are carried out by the Secretary of the society, who is also the Chief Executive of the Society.

The Short Term Cooperative Credit Structure (STCCS) in Odisha comprises of 2709 PACS (including 212 LAMPS and 6 FSS) at the grassroots level, 17 District Central Cooperative Banks (with 322 Branches) at the middle tier and Odisha State Cooperative Bank (with 14 Branches) at the apex level. Out of about 55 lakh agricultural families, 53.69 lakh families have been enrolled as members of the PACS taking the coverage to 97.6%.

Impact of the implementation of the revival package in certain areas like :

- ☞ Institutional and legal reforms including amendments to Cooperative Societies Acts, Rules, and Byelaws, thus creating the basis for autonomy to the banks and PACS.
- ☞ Release of recap assistance leading to improve liquidity of PACS which enabled them to re-commence lending and restore cash flow and income streams.
- ☞ The assisted PACS could attain CRAR of 7% after recapitalisation and many of them were able to maintain the same.

Post implementation of the revival package, financial indicators has shown varying degrees of improvement in all the three tiers of CCS. Loans disbursed by PACS, annual average growth and small and marginal farmer coverage was a priority with the CCS and continued to be over 97.6%. The performance of PACS is as detailed below:

Performance of PACS

(Rs. in crore)

Particulars	2007-08	2008-09	2009-10	2010-11	2011-12
1. Own fund	349.01	356.44	429.86	517.68	528.60
2. Deposits	723.94	733.03	817.00	1027.13	1296.15
3. Loans & Advances	1605.34	1648.22	2882.32	3500.76	4542.14
4. Working Capital	2988.07	3396.79	3764.91	5120.97	6181.35
5. Borrowings	2165.82	2057.18	2675.69	3271.70	3927.82
6. Per PACS loan business	0.54	0.58	1.007	1.29	1.67

7. Profit (No. / Amount)	718/9.02	602/35.28	1067/43.10	845/ 39.04	763/ 37.47
8. Loss (No. / Amount)	1966/49.63	2085/77.07	1597/86.96	1864/ 122.57	1943/99.23
9. Recovery percentage	58%	77%	72%	73%	76%

Source : Various Annual Reports of PACS.

WHAT IS CORPORATE GOVERNANCE ?

Basically, corporate governance concerns all the steps taken by the owners of a company to ensure that it produces for them the best possible benefit. One detailed definition of the concept is that used by the OECD, which is available on their website.

The corporate governance structure specifies the distribution of rights and responsibilities among different participants in the corporation, such as, the board, managers, shareholders and other stakeholders, and spells out the rules and procedures for making decisions on corporate affairs. By doing this, it also provides the structure through which the company objectives are set, and means of attaining those objectives and monitoring performance.

Corporate Governance is a simple practice of “just doing things fairly”. As a rational human being each one of us expects good quality product and service, as a fall out of proper governance, in every facet of our life- in politics, in economy in the social and small cultural life. The same practiced in the corporate entity level can be broadly understood as Corporate Governance. If ethical practices and building up long term relationships leading to more profitable outcomes are factored in the Corporate Governance policies of an organization, business growth would be an automatic follow through.

THE CONCEPT

The Corporate Governance as the expression is not capable of being precisely defined but can broadly be understood as denoting direction and control of the affairs of the company. As an inclusive definition it covers the policies and practices adopted by a corporate entity in achieving its objectives in relation to its shareholders. Corporate Governance is not a destination, but a journey to be covered by a commercial entity. The concept has more significance at contextual and operational level rather than conceptual level.

The fundamental objectives of Corporate Governance are the enhancement of the long term values of shareholders and at the same time protecting the interest of other stakeholders. It is a process of constant endeavor to ensure equilibrium amongst all stakeholders, by harmonizing their rights and interest. In essence it stands for effective accountability to all stakeholders. In a normative sense, Corporate Governance is prescribed as a code of corporate conduct in relation to all the stakeholders, external as well as internal.

The Corporate Governance presently in vogue was introduced as a remedial measure for fall out of corporate which was outcome of unethical behavior of management of the company. It is the Cadbury Committee in UK which recommended the Corporate Governance in the form of code of conduct for management for directing and controlling the affairs of the company. It was the point of emergence of the concept of present Corporate Governance.

CORPORATE GOVERNANCE – RESPONSIBILITY OF TOP MANAGEMENT, ESPECIALLY OF BOARD OF DIRECTORS.

The responsibility towards Corporate Governance is exclusively of Board of Directors, and which has to be performed ethically and diligently. Mere drafting of code or framing the rules will not serve the purpose of Corporate Governance. What is needed is sincerely practicing it.

In India, Shri Kumarmangalam Birla Committee appointed by SEBI made very useful recommendations which have been accepted and implemented in form of Listing Agreement Clause–49, in respect of listed companies. Subsequently other committees viz. Nareshchandra Committee, Narayanmurti Committee, also made their vital contribution for the cause.

CARDINALS OR HALLMARKS OF CORPORATE GOVERNANCE:

The cardinal features or hallmarks of Corporate Governance are -

1. Well defined objectives / values of the organization in the form of Vision Statement. The Board of Director should establish strategic objectives and corporate values for itself, senior management, and other employees of the organization and frame policies to achieve them, in clear and unambiguous terms.
2. Endeavour of management for protection of interest and enhancement in long term values of stakeholders and harmonizing their interests.

3. Competent Board of Directors with independent deposition: The board of directors should have clear understanding of their role. They should be free from fear and favour. They should perform diligently with support of various committees, with delegated powers.
4. Accountability and transparency at Board and all operational levels.
5. Effective system of internal control and vigilance mechanism, with prime thrust on internal audit.
6. Remuneration policy consistent with organizational values and objectives.

These factors with high standards constitute pathological tests for good Corporate Governance. Higher the standard, higher is the quality of Corporate Governance.

PRESENT SCENARIO :

Even in spite of introduction and implementation of Corporate Governance, both at national and international level, the hick-ups and scams are not uncommon. Satyam Computers, Global Trust Bank in India, while Enron, Sub-prime crisis in USA, reveal the limitations of the Corporate Governance merely introduced as a regulatory measure.

Barring few honorable exceptions, the Corporate are gratified with its purely technical compliance. But one must be can did enough to admit that Corporate Governance, even though introduced as a regulatory measure has been successful in sensitizing the stakeholders. Various provisions in Company's Act, guidelines issued by SEBI, have made the stakeholders aware of their legitimate rights. Of course, these are only few initial steps of course in the journey in the right direction.

CORPORATE GOVERNANCE: IT'S RELEVANCE WITH CO-OPERATIVES.

THE CO-OPERATIVE IDENTITY:

By definition itself, the Cooperatives are an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations though jointly owned and democratically controlled enterprise. The main object of the co-operative is the economic up-liftment of common man. The distinct feature of co-operatives is the member of co-operative institution has only one vote, irrespective of his shareholding. This regularity provision differentiates the Cooperatives from Corporate.

The Cooperatives have to operate very much like other businesses. They must serve a market efficiently and effectively. They have to be well managed and they must survive financially. However, there are important distinctions that make Cooperatives unique in nature. For any organization there are three types of persons i.e.(i) the persons who own (owners/investors / share holders), ii)the persons who control (the policy/decision makers/ management) and iii) the persons who use them (the customers). In case of corporate especially large enterprise or multinational, these three are separate and distinct groups. In a small retail business, for example the first two components are often identical. But users/ customers are separate. However, in Cooperatives all the three come together to form a unity, Those who own, those who control and those who use are One.

In Corporate enterprises , the responsibility and accountability is indirect and difficult to trace. In case of Cooperatives responsibility accountability are direct. The Cooperatives aim at reducing disparities, improving social conditions and ensuring social justice, sustainable growth, and concern for the society.

THE COOPERATIVE VALUES AND PRINCIPLES

The Values of co-operatives viz. Self-help, Self Responsibility, Honesty, Equality Solidarity Openness, Social Responsibility and Caring for Others are the Vision Statements of Co-operatives. Co-operative Values and Principles enunciated in 1925, by the International Co-operative Alliance are Mission Statement for the Co-operatives. The Seven Principles, popularly called as Co-operative Rainbow are:

1. Voluntary & Open Membership
2. Democratic Member Control
3. Members Economic Participation
4. Autonomy & Independence
5. Education, Training & Information
6. Co-operation Among the Co-operatives
7. Concern for the Community

The values and a Principles of co-operatives symbolize the aims and ideas of cooperative movement. The seven colored flag embodies in it cooperative principles. The Cooperatives by their own effort inspired by a sense of fraternity, equity and love of the social justice, strive to remedy the past

and create new economic system a system in which capital plays the role of servant instead of master. The object of production is organized self-help instead of profit. The human dignity is given the pride place for achieving a more equitable and efficient economy, social reforms, and more equitable system of democracy.

The cooperatives have very strong foundation of its ethical values and principles which are hallmark of good governance. The principles of Corporate Governance are not alien to cooperatives but they are innate with it. The Corporate Governance in vogue is modern concept of management while Co-operative Governance, for doyens and seers of cooperatives are their “Articles of Faith”. Unlike today’s Corporate Governance the cooperative governance is not a remedial measure to cure the disease.

In this paper, authors have made an attempt to examine whether lack of transparency is a feature of most cooperative societies, to ascertain whether the executives of cooperative societies show good commitment towards accountability and to assess the significance of members’ participation in the democratic process giving room for the emergence of incompetent individuals on the executive and board of cooperatives in Odisha. It was also meant to evaluate the need for cooperative societies to engage in sound internal control and risk management and to investigate whether weak corporate governance is solely responsible for the maladministration of cooperative societies in the State. Primary Agricultural Cooperative Societies (PACS) are being taken into consideration.

ISSUES AT STAKE

Despite the existence of a considerable literature on co-operatives, all too frequently they remain poorly understood institutions (Cuevas & Fischer, 2006). Co-operatives have succeeded in being both familiar and yet little understood for the general public and the academic world alike. There are many reasons for this. All too frequently the co-operative sector has been viewed through the prism of a specific enterprise, institutional form or a single country. Many studies have failed to capture the heterogeneous and diverse nature of co-operatives and downplayed their position as part of a sector with global reach and frequently operating as part of a global movement (Shaw, 2006). The main problems addressed in corporative governance are similar to those faced by the majority of organizations - where there is no one single owner who is also in-charge of executive management. In large

organizations, there are managers that are not owners, or there is a plurality of owners with ability to influence and different interests. Cooperatives also feature specific issues associated to their governance (Brasilia, 2008).

Cuevas & Fischer (2006) identify the principal source of failure for Cooperative Financial Institutions (CFIs) as deriving from member/owner conflict with management. The growth of a cooperative inevitably expands (or dilutes) ownership and managers become subject to weaker controls. The development of managerial dominance within the cooperatives has been a strong theme within the literature on non-financial cooperatives as well. An influential model has linked cooperatives to a process of democratic degeneration. Meister (1984) identifies four stages in the internal transformation of democratic organizations into manager-led enterprises. This relates to the growth in size and complexity of the enterprise which enables management to take advantage of growing member apathy and distance from the original core cooperative values.

OBJECTIVES OF THE STUDY

This study is carried out to achieve the following objectives

- a) To examine whether lack of transparency is a feature of most PACS.
- b) To determine whether the executives of PACS show good commitment towards accountability.
- c) To assess the significance of members' participation in the democratic process giving room for the emergence of incompetent individuals on the executive and board of cooperatives.
- d) To evaluate the need for cooperative societies to engage in sound internal control and risk management.
- e) To investigate whether corporate governance is solely responsible for the maladministration of cooperative societies in Odisha.

2 LITERATURE REVIEW AND THEORETICAL FRAMEWORK

CONCEPTUAL CLARIFICATIONS

A cooperative is a business organization owned and operated by a group of individuals for their mutual benefit (O'Sullivan & Sheffrin, 2003). A cooperative is a business owned and controlled by the people who use its services. They finance and operate the business or service for their mutual benefit. By working together, they can reach an objective that would be

unattainable if acting alone. The purpose of the cooperative is to provide greater benefits to the members such as increasing individual income or enhancing a member's way of living by providing important needed services. The cooperative, for instance, may be the vehicle to obtaining improved markets or providing sources of supplies or other services otherwise unavailable if members acted alone (Proceedings Report, 2007). The unique characteristic that differentiates co-operatives from other enterprise structures is its dual nature: they are business enterprises based on a membership- owned model. The associate aspect of a co-operative takes place to pursue the social goals of its members. As such, co-operatives form an integral part of the private sector, pursuing successful commercial business practices based on the values of self-help, self-responsibility, solidarity, and democracy. In relation to other enterprise structures, co-operatives are an alternate way of doing business but at equally profitable levels.(Proceedings Report, 2007)

In Discussion Paper (2004), the vast amount of literature available on the subject ensures that there exist innumerable definitions of corporate governance. To get a fair view on this subject, it would be prudent to give a narrow as well as a broad definition of corporate governance. In a narrow sense, corporate governance involves a set of relationships amongst the company's management, its board of directors, its shareholders, its auditors and other stakeholders. These relationships, which involve various rules and incentives, provide the structure through which the objectives of the company are set, and the means of attaining these objectives as well as monitoring performance are determined. Thus, the key aspects of good corporate governance include transparency of corporate structures and operations; the accountability of managers and the boards to shareholders; and corporate responsibility towards stakeholders. In a broader sense, however, good corporate governance- the extent to which companies is run in an open and honest manner- is important for overall market confidence, the efficiency of capital allocation, the growth and development of countries' industrial bases, and ultimately the nations' overall wealth and welfare. It is important to note that in both the narrow as well as in the broad definitions, the concepts of disclosure and transparency occupy centre-stage. In the first instance, they create trust at the firm level among the suppliers of finance. In the second instance, they create overall confidence at the aggregate economy level. In both cases, they result in efficient allocation of capital.

According to Claessens (2003), corporate governance would include the relationship between shareholders creditors and corporations; between financial

markets, institutions and corporations; and between employees and corporations. Corporate governance would also encompass the issue of corporate social responsibility, including such aspects as the dealings of the firm with respect to culture and the environment. One detailed definition of the concept is that used by the OECD, which is available on their website. The corporate governance structure specifies the distribution of rights and responsibilities among different participants in the corporation, such as, the board, managers, shareholders and other stakeholders, and spells out the rules and procedures for making decisions on corporate affairs. By doing this, it also provides the structure through which the company objectives are set, and means of attaining those objectives and monitoring performance. Put simply therefore, corporate governance concerns all the institutional structures that help to maximize efficiency, ie, legislation, company organizations, agreements, etc. A division is often made between internal and external control, as, for example, between legislative and capital market control. The organization of corporate governance is more widely concerned with ownership structures as a company's success is affected by the type of ownership structure and owners it has. (Pellervo, 2000)

The issues of corporate governance continue to attract considerable national and international attention. Corporate governance is about effective, transparent and accountable governance of affairs of an institution by its management including the board conduct. Governance of financial institutions should aim at protecting the interests of all stakeholders, i.e. shareholders, creditors, regulators, depositors and the public. Corporate governance is particularly important in countries where a number of financial failures, frauds and questionable business practices have adversely affected investor confidence. Investors as well as depositors want safety of their investments, deposits and funds, which need to be ensured by the management of a company, bank or financial organization entrusted with soliciting investments or deposits. In short, corporate governance is really about process, in particular, a decision-making process that (a) hold individuals accountable, (b) encourage stakeholder participation, (c) facilitate the flow of information, and (d) rely on open and clear rules that are fairly and uniformly enforced. It is not the policies and decisions themselves, but how polices and decisions are implemented.

LITERATURE REVIEW

Specific studies into corporate governance issues as they impact on co-operatives in the developing world are very few and this, of course, presents considerable difficulty in reaching any definitive conclusions. However there are

some clear starting points for an analysis of the key issues which can be derived from existing studies of the co-operative sector in general, several useful case studies, and discussions with co-operative leaders from the developing world. Given the nature of the evidence, and the general characteristics of co-operatives in the developing world, a region by region approach has been adopted (Shaw, 2006). According to Brasilia (2008), the use of good practices of governance has proved to be fundamental in the success and perennality of organizations, mainly in what regards security and returns to members. In congruence with this line of thought and with the increasing recognition that corporate governance is a critical element for sustainable economic growth, a working meeting was organized in London in on February 8, 2007. The participant met with an agenda; to build consensus on the corporate governance priorities and technical assistance needs of co-operatives in developing countries.

Brasilia (2008) also observes that every type of organization, not limited to private companies, may benefit from advancements in the field of governance. Indeed, international organizations have taken the lead in disseminating governance practices in organizations such as pension funds, state-owned companies, and cooperatives. As in the majority of contemporary organizations, these also exhibit a set of owners or financiers and a set of managers - either owners or otherwise. Accommodating the interests involved, streamlining differences between expectations of groups of owners and guiding and monitoring the managers are the main concerns of governance in organizations. A well-developed system of governance yields more transparent relations, reducing several risks and improving security in all organizations of the system. Brasilia (2008) further contends that with the severance between business ownership and management, issues of governance start arising, involving alignment of interest of the parties, motivation, asymmetry of information and risk propensity. The main function of corporative governance practices is to ensure that executives pursue the goals determined either by owners or by those responsible for strategic decisions, and not their own goals. In order to avoid these problems - described in the literature as agency problems, individuals in charge of preparing and conducting strategic issues shall monitor the behaviour of those who carry out, exemplified by a Board of Administration, monitoring the management and requiring transparency in information and accountability.

Pallervo (2000) notes that in deciding upon the composition of the board, the members of a cooperative should pay particular attention as to who is appointed chairperson. The qualities of a good chairperson should- include

enjoying the widespread confidence of the owners and the necessary respect both within and outside the board. The board and particularly its chairperson, should have the know-how and experience that gives authority vis-à-vis the chief executive. Although members of the board are expected to have a reasonable ability to interpret statistical information relating to the company, they are not expected to be concerned with its day-to-day operations. On the other hand, the board should have the resources to use outside experts when necessary. The attributes of board members can be listed as follows:

- (i) Foresight and extensive knowledge
- (ii) Criticality, independent judgment and autonomy
- (iii) Cooperative
- (iv) Diligence and time-effective
- (v) Specialized know-how in some part area.

Malo & Vezina (2004) propose a model of five management and governance roles within co-operatives. They also link the tendency for the diminishing role of membership in governance to the expansion of the cooperatives and a growing domination of commercial values fostered by a professional management distanced from cooperative values. Spear (2004) identifies this problem as prevalent within larger co-operatives in the United Kingdom. He argues that the co-operative systems of governance contribute to the development of powerful and entrenched managers who have more control than in similar private-sector companies. He attributes this to managers greater degree of insulation from pressure from external stakeholders together with weaker signals from external markets. Internally, pressure on managers is also weak because of low levels of member participation as evidenced by the situation in UK Consumer Co-operative.

Chaves & Sajardo-Moreno (2004) on the other hand argue that the empirical evidence for the hypothesis of a tendency towards increasing management control is mixed. In their own study, they emphasize the importance of the selection and training of managers in tune with core social enterprise values. This process could be aided by the development of appropriate training courses and educational institutions together with a code of conduct. These processes are critical to the survival of the democratic enterprise. Spear (2004) also suggests a series of measures to limit managerial power by enhancing the commitment to and involvement in the running of the cooperative by the wider membership. Particular issues for co-operative boards derive from their elected

status which provides no certainty that the director will hold the right skills mix and knowledge to effectively scrutinize management decisions. This situation is worsened by low levels of member participation in the democratic processes and the extent to which the board of the cooperative societies are perceived to be transparent as a result of executive and management dominance which often trails these institutions (Shaw, 2006).

TRANSPARENCY AND ACCOUNTABILITY :

According to Bhasin (2009), one of the major pillar of good corporate governance is ‘transparency’ which incorporates a system of checks and balances between key players-board of directors, senior level of management, auditors and other stakeholders. Steger & Amman (2008) observe that every organization has a governance system which concerns the distribution of power and responsibilities and consequently, accountability for its performance. Alo (2008) observes that the rise in interest in the subject of corporate governance could be traced to the fact that there is now an increasingly clear separation of ownership from management. The disconnection between the ownership of a business and its management which shields the management from the day to day activities of the business has created the need for the installation of an appropriate and effective framework for insuring transparency and accountability in the management of businesses.

INTERNAL CONTROLS : Sulaiman (2003) observes that the role of internal controls is to ensure that appropriate financial, operational and compliance controls are in place. It is the board’s responsibility to report on the effectiveness of these controls. Lack of internal controls often causes fraudulent activities to go unchecked and inevitably result in the downfall of the organization. The internal control function, which is invariably linked to the risk management function, is associated with the internal audit division in most organizations.

DISCLOSURE OF INFORMATION : According to Healy and Palepu (2001), disclosure comprises all forms of voluntary corporate communications, for example, management forecasts, analyst’ presentations, the annual general meetings, press releases, information placed on corporate websites and other corporate reports, such as, stand-alone environmental or social reports. Appropriate corporate governance disclosure systems means that a good company is able to impress the markets with its integrity. Bhasin & Manama (2009) note that it is universally accepted that all material issues relating to corporate governance of the enterprise should be disclosed in a timely fashion; the disclosure should be clear, concise, precise and governed by the “substance over form” principle.

THEORETICAL FRAMEWORK

STAKEHOLDER THEORY

Stakeholder theory was embedded in the management discipline in 1970 and gradually developed by Freeman (1984) incorporating accountability to a broad range of stakeholders. Wheeler, Colbert & Freeman (2003) argue that stakeholders theory was derived from a combination of the sociological and organisational discipline. Indeed, stakeholders theory is less of a formal unified theory and more of a broad research tradition, incorporating philosophy, ethics, political theory, economics, law and organisational science. Stakeholder theory can be defined as “any group or individual who can affect or is affected by the achievement of the organisation’s objectives”. Unlike agency theory in which the managers are working and serving for the stakeholders, stakeholder theorists suggest that managers in organisations have a network of relationships to serve – these include the suppliers, employees and business partners. It was argued that this group of network is important other than owner-manager-employee relationship as in agency theory (Freeman, 1999). On the other end, Sundaram & Inkpen (2004) contend that stakeholders theory attempts to address the group of stakeholders deserving and requiring management’s attention.

Whilst, Donaldson & Preston (1995) claim that all groups participate in a business to obtain benefits, Clarkson (1995) suggests that the firm is a system, where there are stakeholders and the purpose of the organisation is to create wealth for its stakeholders. Freeman (1984) contends that the network of relationship with many groups can affect decision making processes as stakeholders theory is concerned with the nature of these relationships in terms of both processes and outcomes for the firm and its stakeholders. Donaldson & Preston (1995) argue that this theory focuses on managerial decisions making and interests of all stakeholders have intrinsic value and no sets of interest is assumed to dominate the others. This theory is therefore relevant to the system of cooperative societies which are supposedly financial organizations, owned and controlled by the members, for the provision of small scale financial services. Every member of the society is a stakeholder and is expected to participate in the running of the cooperative with a view to ensuring its survival.

METHODOLOGY

The data used for this study were basically primary in nature. A sample size of 60 respondents were taken from 4 Cooperative Societies from good working societies of Khordha, Bhubaneswar and Cuttack districts of Odisha.

Questionnaire were administered to 15 members of each of these 4 societies. The members were stratified into executive and non-executive staff. Because there are always more of non-executive staff in tertiary institutions and usually much more in cooperative societies of such institutions, 5 executive staff and 10 non-executive staff/memebrs were selected randomly. Out of the 60 sampled respondents, only 44 duly filled and returned the instrument. The study also made use of 5 point Likert scale ranging from Strongly Agree = 5 Agree = 4 Hardly Agree =3 Disagree = 2 to Strongly Disagree = 1

Five hypotheses were formulated for the study and these were :

1. Lack of transparency is not a feature of most PACS.
2. Executives of PACS do not show good commitment toward accountability.
3. Most members do not participate in the democratic process giving room for the emergence of incompetent individuals on the executive and board of directors of PACS.
4. PACS do not engage in sound internal controls and effective riskmanagement.
5. Poor corporate governance does not solely account for the maladministration of PACS.

DATA PRESENTATION AND ANALYSIS

Table 1

Lack of transparency is not a feature of most PACS

Response	X	F	Fx	X	S	%
Strongly Agree	5	5	25			11.11
Agree	4	6	24			13.33
Hardly Agree	3	6	18	2.42	1.8404	13.33
Disagree	2	14	28			31.11
Strongly Disagree	1	14	14			31.12

Using a 5 point Likert scale, Table 1 depicts a simple descriptive statistics with a mean score of 2.42 and a standard deviation of 1.8404. This indicates that majority of the respondents do not agree with the view that lack of transparency is not a feature of most PACS under survey.

Table 2
Descriptive Statistics

	N	Mean	Standard deviation	Percentage
Lack of transparency is not a feature of most cooperative financing in Odisha	45	2.42	1.8404	62.23

Thus with a mean score 2.42 from a maximum point of 5 (i.e. below the midpoint of 5) using the Likert scale, and a cumulative percentage of about 62.23% (higher than the average percentage of 50%), the null hypothesis is rejected. Hence, lack of transparency is a feature of most of the societies under study.

Table3
Executives of PACS do not show good commitment towards accountability

Response	X	F	Fx	X	S	%
Strongly Agree	5	12	60			26.67
Agree	4	17	68			37.78
Hardly Agree	3	8	24	3.64	1.5071	17.77
Disagree	2	4	8			8.89
Strongly Disagree	1	4	4			8.89

Using a 5 point Likert scale, Table 3 depicts a simple descriptive statistics with a mean score of 3.64 and a standard deviation of 1.5071. This indicates that majority of the respondents agree with the view that executives of cooperative societies do not show good commitment towards accountability.

Table 4: Descriptive Statistics

	N	Mean	Standard deviation	Percentage
Lack of transparency is not a Executives of cooperative societies do not show good commitment towards accountability	45	3.64	1.5071	64.45

Thus with a mean score of 3.64 from a maximum point of 5 (i.e. above the midpoint of 2.50) using the Likert scale, and a cumulative percentage of about 64.45 % (higher than the average percentage of 50%), the null hypothesis is accepted. Hence, the executives of cooperative societies do not show good commitment towards accountability.

Table 5

Most members do not participate in the democratic process giving room for the emergence of incompetent individuals on the executive and board of PACS

ANOVA

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
Between Groups	1.389	4	0.347		
Within Groups	21.722	40	0.543	0.639	0.637
Total	23.111	44			

From the result, it is shown that the sum of squares for between groups and within group are 1.389 and 21.722 respectively. The mean square shows a value of 0.347 and 0.543 respectively. However, the F-statistic values which helps to tell about the overall significant of a model and its goodness of fit shows a value of 0.639. This result is below the tabulated value of 2.61 with V1=V2 degree of freedom. The result from the significance table shows it is not highly significant. Hence, we accept the null hypothesis that most members do not participate in the democratic process giving room for the emergence of incompetent individuals on the executive and board of cooperatives in Odisha.

Table 6

PACS do not engage in sound internal controls and risk management

ANOVA

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
Between Groups	3.177	4	.794	.388	.816
Within Groups	81.801	40	2.045		
Total	84.978	44			

From the result, it is shown that the sum of squares between groups and within group are 3.177 and 81.801 respectively. The mean square shows a value of 0.794 and 2.045 respectively. However, the F-statistic values which helps to tell about the overall significant of a model and its goodness of fit shows a value of 0.388. This result is below the tabulated value of 2.61 with $V_1=V_2$ degree of freedom. The result from the significance table shows it is not highly significant. Hence, we accept the null hypothesis that the societies do not engage in sound internal controls and risk management.

Table 7

Poor corporate governance does not solely account for the maladministration of PACS

ANOVA

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
Between Groups	2.058	4	0.515	0.390	0.814
Within Groups	52.742	40	1.319		
Total	54.800	44			

From the result, it is shown that the sum of squares for between groups and within group are 2.058 and 52.742 respectively. The mean square shows a value of 0.515 and 1.319 respectively. However, the F-statistic values which helps to tell about the overall significance of a model and its goodness of fit shows a value of 0.390. This result is below the tabulated value of 2.61 with $V_1=V_2$ degree of freedom. The result from the significance table shows it is not highly significant. Hence, we accept the null hypothesis that poor corporate governance does not solely account for the maladministration of cooperative financing in the State.

EMPIRICAL FINDINGS

From the five hypotheses tested above the following observations were revealed and these are:

- ☞ Lack of transparency is a feature of cooperative financing in PACS of Odisha;
- ☞ The executives of cooperative societies do not show good commitment towards accountability;
- ☞ Most members do not participate in the democratic process giving room for the emergence of incompetent individuals on the executive and board of directors of PACS in Odisha;

- ☞ PACS in Odisha do not engage in sound internal controls and risk management;
- ☞ Poor corporate governance does not solely account for the maladministration of PAC Sin Odisha.

CONCLUSION AND RECOMMENDATION

The study was carried out to investigate the role of corporate governance practices in corporative financing in Odisha. Three of the most important corporate governance mechanisms such as transparency, accountability, internal controls and risk management were examined. The survey was meant to examine whether lack of transparency is a feature of cooperative financing in the State, to determine whether the executives of cooperative societies show good commitment toward accountability and to assess the significance of members' participation in the democratic process giving room for the emergence of incompetent individuals on the executive and board of directors. It was also designed to evaluate the need for cooperative societies to engage in sound internal controls and risk management and also to investigate whether poor corporate governance is solely accountable for the maladministration of cooperative societies in Odisha. Five hypotheses were stated in their null form and were also tested using descriptive statistics and analysis of variance. The outcome of the hypothesis testing was that while only hypothesis 1 was rejected, hypothesis 2, 3, 4 and 5 were accepted. Essentially, the study revealed that poor corporate governance does not solely account for the maladministration of cooperative societies. The study therefore makes the following recommendations that will enable cooperative societies in Odisha to run their affairs as smoothly as possible and also engender trust and confidence in the cooperative system.

1. That the members must be deeply interested in the activities of the cooperative societies and be ready to serve in various capacities whenever the situation arises.
2. That the executive should demonstrate a high level of commitment towards the sustainability of cooperative societies.
3. That these societies should embrace the principles of good corporate governance that is capable of fostering total accountability, adequate transparency, sound internal controls and full disclosure of their activities.
4. State Government in general and Cooperation department in particular should endeavour to beam its searchlight on the administration and operation of cooperative societies in each of the districts in Odisha.

REFERENCES

- Alo, O (2008). Ethics and corporate governance: Issues in technology driven economy. The Director, July Edition: 7
- Adenikinju, O. (2005). Managerial characteristics, corporate governance and corporate performance: The case of Odishan quoted companies. Being Draft Final Report submitted to the AERC, November, 2005.
- Bhasin, M (2009). Corporate governance and transparency scenario: An empirical Study of Asia. International Review of Business Research Papers, 5(6), 269-297.
- Bhasin, M. & Manama, A (2009). Corporate governance disclosure practices in India : An empirical study www.docjac.com/document/view.shtml?id...title.
- Bond, J. K. (2009). Cooperative financial performance and board of director characteristics: A quantitative investigation. Journal of Cooperatives, 22, 22-44.
- Brasilia (2008).Corporate Governance. Guidelines for Good Practices of Financial Cooperative Governance. Banco . Central Do Brasil. <http://www.bcb.gov.br/?PUBLICATIONSALPHA>
- Chaves, R. &Sajardo-Moreno (2004). Social Economy Managers : Between Values and Retrenchment. Annals of Public and Cooperative Economics, 76(1), 139-161.
- Claessens, S. (2003).Corporate governance and development. Global Corporate Governance Forum Focus 1 Washington: World Bank.
- Clarkson, M. B. E. (1995). A Stakeholder Framework for Analyzing and Evaluating Corporate Social Performance. Academy of Management Review, 20(1), 92-117.
- Cuevas, C & Fischer, K. (2006).Cooperative Financial Institutions: Issues in Governance, Regulation and Supervision, World Bank Working Paper No 82.
- Discussion Paper (2004). Corporate Governance in India: Theory and Practice. National Foundation for Corporate Governance, September, 2004.
- Sulaiman A. (2003). Corporate governance and organizational performance. In O.Alo (Ed) Issues inCorporate Governance(pp 131–148) Lagos, Financial Institutions Training Centre.
- Sundaram, A. K. and Inkpen, A. C. (2004). The Corporate Objective Revisited” OrganizationScience, 15(3), 350-363.
- US Congress, Senate Report (2003). “The Role of the Board of Directors in Enron’s Collapse”. Washington DC:Senate Report 107-70, 107th Congress 2nd Session, July, p3. □□□□

Industry 4.0 : Emerging Themes and Future Research Avenues

Manisha Paliwal¹

Saba Sayed²

Abstract

The fourth industrial revolution has received much interest in the last few years from all over nation. There are still no comprehensive reviews of the state of the art in this new industrial revolution phase in the existing studies. The goal of this research is to close this gap by looking into intellectual advancements in Industry 4.0.

A comprehensive literature study was conducted to examine scholarly publications released online between 2013 and 2020 on the topic of Industry 4.0. This research uses a bibliometric strategy based on a thorough assessment of the literature to investigate the influence of Industry 4.0 from a macro viewpoint. The major focus of this study is to conduct comprehensive evaluation and analysis of academic development in issues linked to the industry 4.0 for giving knowledge into the topic's past, present, and future. Our findings have significant theoretical and research consequences. They highlight the conceptual framework and narrative growth of this study area, allowing people to the field to have a critical view of the foundational articles as well as how the study topics have progressed till date.

A summary of Fourth industrial revolution is obtained by (1) listing notable publications and powerful conferences that publish Industry 4.0-related data, (2) illustrating the relevance of Industry 4.0 using keyword classifier, (3) the detection of existing studies initiatives as well as places in the present literature that have been overlooked recently; (4) an outline of Industrial 4.0 industry norms, technology, and infrastructure that are being utilised quite often. The study shows that there were 33 articles during 2016, followed by 687 in 2018 but increased rapidly during 2020 containing 2853 articles based on

¹ Professor, IFFCO Chair Vaikunth Mehta National Institute of Cooperative Management, Pune, mnpliwal@gmail.com

² Research Officer, Vaikunth Mehta National Institute of Cooperative Management, Pune, sbsayed17@gmail.com

Industry 4.0. During the research period, the Relative Growth Rate (RGR) and Doubling Time (DT) shows higher and declining trend.

Our investigation may be used by experts to learn more about how Industry 4.0 is being implemented in different industries. Experts may understand the benefits of Industry 4.0 and bring awareness to respective business units.

Keywords : *Industry 4.0; meta - analysis; big data; IoT; Cyber Physical System; forth Industrial Revolution*

1. Introduction :

Ever since the early evolution in the 18th century, the industry has seen significant progress. Majority of the items, including food, clothes, shelter, weapons, equipment, and have been produced by hand or by working animals for centuries. With the advent of industrial technologies towards the end of the 18th century, this situation improved. The development of Industry 1.0's had been an enormous quick challenge leading up to the fourth revolution of industry, the future modern age.

The fourth industrial revolution is referred to as Industry 4.0, next step of a technology's life cycle in the enterprise and management of the whole value chain.

1.1 Industry 1.0 to 4.0 : The History of the Modern Ages

Industry 1.0 The late eighteenth century opened the industry of mechanical manufacturing plants. Machines powered by water and steam were built to aid laborer in the mass processing of products (Chaitanya, 2020). In 1784, the first weaving loom was introduced. With the growth of manufacturing Productivity and size, small companies have evolved from servicing a smaller range of clients to vast organizations providing a greater number of owners, administrators, and workers. Industry 1.0 can also be considered to be the emergence of an industry community that emphasizes consistency, Productivity, and scale in equal measure.(Nardo et al,2020,Thangaraj et al.,2018)

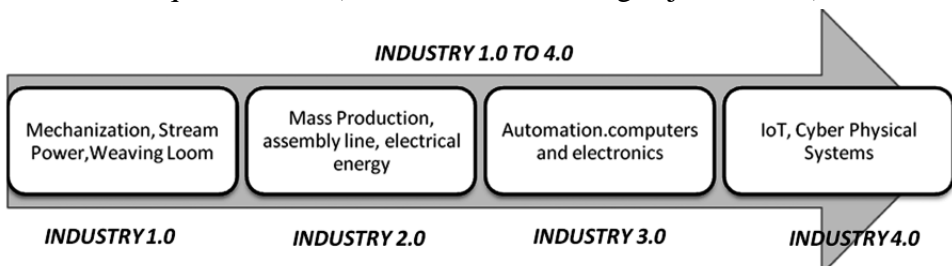


Figure 1: Evolution of Industrial Revolution.

Industry 2.0 The second revolution, Industry 2.0, began at the start of the twentieth century. The invention of computers operating on thermal power was the principal contributor to this revolution. As the main fuel source, electrical power has always been used. In terms of expense and skill, electrical devices were more effective to run and sustain versus water and steam-based machines that were comparatively slow and starving for energy. During this period, the first assembly line was also constructed, further streamlining the mass manufacturing process. A common practice was the mass manufacturing of products using the assembly line (Yin et al., 2018).

This period also saw the growth of the culture of business incorporated into the management curriculum of Industry 1.0 to increase the performance of production lines. The fundamental mechanisms contributing to higher efficiency and performance were enhanced by numerous supply management methods, such as labour division, just-in-time production, and lean manufacturing concepts.

Industry 3.0 Over the latter few years of the twentieth era, the second technological revolution leading to Industry 3.0 was driven and motivated by developments in consumer electronics. The innovation and development of a range of electronic components namely as circuits and transistors, automatically mated the devices, resulting in less work, faster processing, high accuracy, and indeed complete elimination of the human agent. One of the landmark developments that created automation through electronics was the Programmable Logic Controller (PLC), created in the 1960s. The introduction of electronic hardware into production processes has also produced a need for information systems to allow this electronic equipment to boost the demand for application development (Chen et al., 2017). The digital systems have also allowed many management processes, in addition to managing the machines, such as enterprise resource planning, inventory management, shipping logistics, inventory flow scheduling, and factory-wide monitoring. Using electronics and I.T., the entire business was more industrialized. With the developments in the electronics and I.T. industry ever since, development processes and technological systems have continually developed.

Industry 4.0 In the 1990s, the Internet and telecommunications industry boomed, which transformed the way we interacted and shared data. This also resulted in technological breakthroughs in the automotive sector and conventional development practices that combined the real and virtual world boundaries. This frontier has been further disrupted by Cyber-Physical Systems (CPSs), resulting in several recent technical disruptions in the sector

(Saldivar et al., 2015). With virtually minimal physical or spatial boundaries, CPSs empower devices to interact more smartly with one another. Industry 4.0 uses cyber-physical networks to exchange, evaluate and direct intelligent behaviour for different industrial operations. CPPs often allow an industry from a remote location to be digitally visualized, tracked and controlled, thereby bringing a new dimension to the development process (S. Wang et al., 2016). It brings computers, individuals, systems, and processes into a common interconnected framework that made it extremely effective for smooth functioning. If the cost-of-technology curve gets wider each day, technological disruptions can occur at many reduced costs and fundamentally change the manufacturing environment even more rapidly. Industry 4.0 is still in its initial days, and businesses are already in the process of the new systems' implementation. To remain competitive in the market, industries must implement new technologies as soon as possible. This paper reviews various collective action efforts were undertaken to understand how features of Industry 4.0 can be effectively used in cooperatives. The goal of this research is to understand the extend of digitalization through Industry 4.0 also to explore the logic in the application of Industry 4.0 in the working of cooperatives for their development with the help of Indian cooperative cases.

Review of Literature

All selected articles are subdivided into three sections, according to the contents available in the literature: 1) Articles related to the definition and description of Industry 4.0. 2) Articles about the technology and operations in Industry 4.0.

Industry 4.0 description

This part of the literature presents the paper, which includes what exactly is Industry 4.0 and how it aims at creating a transparent, smart manufacturing infrastructure for the implementation of technologies. It also focuses on issues and challenges in various sectors.

To boost operating performance and maintenance control, conventional equipment is being turned into self-aware and self-learning devices by Industry 4.0 with the communication around them (J. Lee et al., 2014). Industry 4.0 aims at creating a transparent, smart manufacturing infrastructure for the implementation of industrial knowledge networks (Bahrin et al., 2016). The key criteria of Industry 4.0 are real information management, inventory availability and positions tracking, as well as maintaining guidelines for managing manufacturing processes. (F. Almada-Lobo, 2015)

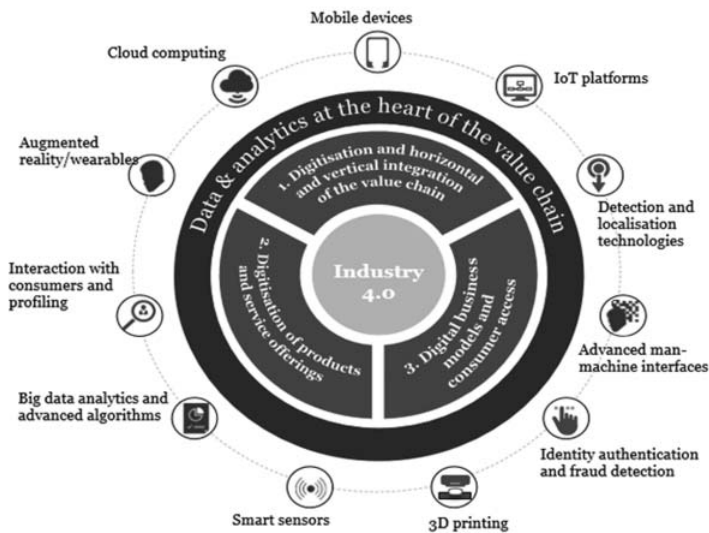


Figure 2: Features of Industry 4.0 technology and contributions to digitalization

Source : Industry 4.0 : Building the digital enterprise, 2016 global industry 4.0 survey, PwC engineering, & construction

The definition of Industry 4.0 encompasses not only direct production in the sector but also the whole supply chain from suppliers to consumers, as well as all business operations. Industry 4.0 is a 21st-century technological innovation that allows industries to produce intelligent goods and services while cutting prices and rising performance. The human aspect is critical for the process, and the research is focused on the current study in the field. The paper introduces the smart factory concept for automated services, thus increasing the efficiency of operations (Chaitanya Vijay Bidnur,2020)

The aim of Industry 4.0 is not only to reach a better degree of organizational efficiency and competitiveness but also to greater automation (Haseeb et al., 2019). This research intended to overcome a number of issues and challenges about technology advancement in the area of Industry 4.0. Based on the findings, the paper reveals that industry 4.0 aspects such as big data, the Internet of Things, and the smart factory play a constructive part in supporting I.T. adoption, which leads to long-term market success.

The basic notion of Industry 4.0 is still in infancy, with the incorporation of physical networks on a cyber network (Aulbur and Singh, 2014) in India. A substantial chunk of the industrial sector is under development process, with

technologies restricted to devices that run independently of one another. A lack of maturity is a big factor for the poor acceptance and deployment of Industry 4.0 technologies (Oesterreich et al, 2016). The benefits of Industry 4.0 through sustainable business models are manifold (Machado et al., 2020). It focuses on the discussion of sustainable production and Business 4.0, as well as the relations between the two principles. The results suggest that the Industry 4.0 area is real but not established and that it is developing as a result of the emergence of modern business frameworks and the incorporation of value chains.

2.2 Technology and Industry 4.0

The literature in this section describes the various aspects of Industry 4.0, such as, the IoT, big data as well as the smart factory, and how they play a beneficial impact in encouraging the adoption of information technology (I.T.), that contributes to long-term productivity.

Vaidya, Ambad, Bhosle (2018) explored the nine pillars of Industry 4.0, including Big data and analytics, Industrial of Things, cloud computing, artificial intelligence, autonomous robots, etc. These pillars will change independent and improved operations to a highly integrated, automatic, and optimized method. As a result, conventional relationships among suppliers, users, and consumers, including humans and computers, become more productive and improve. Faster processors, intelligent devices, compact sensors, and less costly equipment for storage and transmission of data could enable devices to connect and benefit from one another. The nine pillars will help in identifying the obstacles and problems that will face Industry 4.0 adoption. It also suggests that as this concept of Industry 4.0 increases, new streams of research in this field should be built, including recent analysis sources, such as open and coordinated supply chain, data gathering from production, and information utilization for the usage of efficient equipment.

To boost operating performance and maintenance control, conventional equipment is being turned into self-aware and self-learning devices by Industry 4.0 with the communication around them. The key criteria of Industry 4.0 are Reliable data monitoring, inventory availability and positions tracking, as well as maintaining guidelines for managing manufacturing processes (J. Lee et al.,2014).

With the introduction of Information and communication technologies (ICT), the industries have got opportunities to compete in international markets (Bahrin et al.,2016). Along the lines of such developments, the automation

industries are playing a vital role in the introduction of technologies about industry 4.0. In industries, automated robots have recently been developed and used to perform risky tasks for individuals, accomplish quicker and more efficient manufacturing procedures, and minimize the price of goods. Since competition is growing in today's market, manufacturers want smarter systems to make smarter decisions. The Indian automobile industry is at the forefront of introducing Industry 4.0's main elements. Automotive industries have been compelled to implement important elements of Industry 4.0, such as robotics, due to emerging technologies, growing innovation, and cost of manpower. In India's automotive sector, there are 58 robots per 10,000 workers (Roehrich, K., 2016)

The Internet of Things

In the twenty-first century, Industry 4.0 combines the Internet of Things (IoT) and industrial strategy to enable devices to communicate, evaluate, and apply data to guide human intelligence. Advanced engineering, automation, intelligent systems, virtual reality, and other computational technologies are frequently used (Atzori, 2010). In the growing wireless communication environment, the Internet of Things (IoT) is a novel idea that is growing rapidly. The central principle related to this theory is the ubiquitous existence of several items or artefacts around us, such as Radio-Frequency Identification (RFID) tags, sensors, actuators, smartphones, etc., which can communicate with special addressing schemes (Hozdic, 2015).

Big Data and Analytics

Manufacturing equipment and applications, and also company and consumer management systems, would all benefit from the analysis and methodical evaluation of data via numerous studies in order to improve ultimate decision (M. Rüßmann et al., 2011). Big Data consists of four aspects, according to Forrester's definition: the amount of data, data variety, the frequency with which fresh data is produced and analyzed, and also the significance of the information (K. Witkowski, 2017). Previous evidence was statistically analyzed to classify the threats that occur earlier in the industry in different industrial methods, as well as to identify existing problems and potential solutions to eliminate them from arising in the future. (Bagheri et al., 2015).

The Cloud

The cloud-based I.T. interface acts as the technological pillar for linking and communicating the various components of the Industry 4.0 Technology

Centre (Landherrer et al., 2016). Organizations require improved information sharing for business 4.0 i.e. attainment of response times in milliseconds or much faster across platforms and businesses (M. Rüßmann et al., 2015). 'Smart manufacturing' is the concept of connecting many computers to the same cloud in order to share information, which may be enhanced to include systems from the production line as well as the entire facility. (E. Marilungo, 2017).

Autonomous Robots

In industries, automated robots have recently been developed and used to perform risky tasks for individuals, accomplish quicker and more efficient manufacturing procedures, and minimize the price of goods. Since competition is growing in today's market climate, manufacturers want smarter systems to make smarter decisions (Bahrin et al., 2016).

Table 1.

Autonomous robots used in different industries (Sipsas et al., 2016)

Sr.No.	Robot Name	Company	Feature of Robot
1	Kuka LBR iiwa	Kuka	Light and delicate robot for critical manufacturing activities
2	Baxter	Rethink Robotics	Intelligent robot as a means of packaging
3	BioRob Arm	Bionic robotics	Usage for humans in the near vicinity
4	Roberta	Gomtec	6-Axis industrial robot used to automate flexibly and efficiently.

Simulations :

In operation, simulations may be utilized to explore the real-time data including technologies, commodities, and people to replicate the actual environment, thereby minimizing system startup periods and boosting performance (M. Rüßmann et al., 2015). 2D and 3D simulations may be created for virtual designing and visualisation of cycle durations, energy use, and durability aspects of a manufacturing plant. In addition to reducing and altering downtimes, the adoption of manufacturing process models helps reduce production mistakes during the starting phase (Simons et al., 2017). With simulations, decision-making efficiency may be technically improved effectively and quickly (G. Schuh et al., 2014).

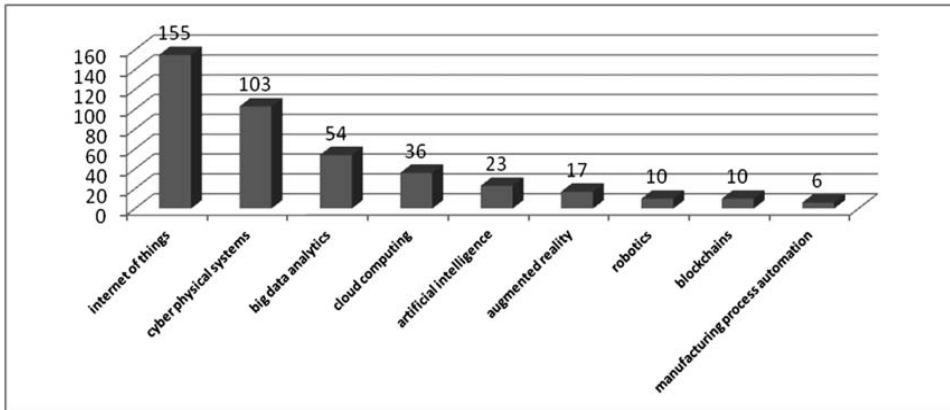


Figure 3 : Industry 4.0 technology contributions towards digitalization.

As shown in figure 3, the Internet of Things (IoT) is discussed many times in these documents, followed by Cyber-Physical Systems (CPS), and then Big Data. Also, in subject areas, big data, CPS, and the IoT are perhaps the basic elements in Industry 4.0, implying that they are also the significant key features for Industry 4.0. The research will help researchers evaluate the needs of market growth and enhance mutual trust between academia and enterprises.

Various academics had studied Industry 4.0. (S. Wang et al., 2016) proposed a comprehensive architecture of IoT, CPS, IoS, and RFID. Similarly, (Lu et al., 2017) published a survey paper focusing on Industry 4.0 technologies and applications. In a systematic review on Industry 4.0, (Colantoni et al., 2019) reviewed the present state and future possibilities of farming with in perspective of Industry 4.0. (Lezzi et al., 2018). (Dallasega et al., 2018) looked into the ways in which the technologies may help to facilitate in building supply chains. (Li et al., 2015) reviewed commercial wireless network research in the context of Industry 4.0. The work on industrial 4.0 cyber security was filtered out by (Lezzi et al., 2018). (Ding, 2018) conducted a study on pharmaceutical supply chains that are sustainable. (Dallasega et al., 2018) looked into how industry may help to facilitate creating the supply chains. (Li et al., 2015) reviewed commercial wireless network research in the context of Industry 4.0. (Pereira et al., 2018) exclusively looked at the Industrial 4.0 research between 2011 and 2017.

Trappey et al., (2017) categorised the patents and normal framework of IoT into four layers: perception, transmission, computation, and use. Each layer has its own set of technical specifications and patent eligibility requirements. The main actors in the Internet of Things and the technology's

implementation matrix were explored in depth during the patent landscape review. According to the paper, it will take approximately ten years to fully streamline Industry 4.0 technology. To bridge the gap between mass customization and mass personalization,

Through a comprehensive literature analysis of the research article, Yin et al. (2018) discuss the gap in the advancement of Industry 4.0. The article was searched using the phrases "the fourth industrial revolution," "the fourth industrial revolution," "Industry 4.0," and "Industry 4.0." To discuss the prospective research agenda, the reviewer examined a maximum of 224 articles. The author concentrated on identifying the most basic Industry 4.0-related terms, as well as the technology that is most commonly used to describe the phrase.

3. Methodology

The knowledge utilized and generated as a result of study determines the consistency of scientific publications. Metrics analyses are critical for studying the evolution of a field and enhancing the quality of study. This research uses a bibliometric strategy based on a thorough assessment of the literature to investigate the influence of Industry 4.0 from a macro viewpoint. Our analysis is split into three steps: first, determine what Industry 4.0 is; second, define the fundamental technologies of Industry 4.0; and third, examine the present status of Industry 4.0 research and practise.

4. Results and Discussion

4.1 Industry 4.0 : Across the globe

The notion of Industry 4.0 has caught the interest of several nations across the world. Here's a look at a few of the nations that are attempting to adopt Industry 4.0.

Germany

The Industry 4.0 paradigm was founded in Germany in the early part of the 21st century. Existing factories are transformed into self-contained, self-adaptive scientific and technical structures under Industry 4.0. (Smart Factories) through the use of technology and automation of industrial applications, enabling intellectual value chains to be developed. The idea of Industry 4.0 also has an impact on environmental issues (Olah,2020).

In 2012, the German Government introduced an implementation strategy identified as 'High-Tech Policy 2020.' Annually, this initiative

provides billions of euros to implement the new developments in the automotive sector (Liao et al., 2017). In 2018, for its latest cars, Volkswagen launched the 48V radical electric and diesel engines that are mild hybrids.

South Korea

South Korea's "Innovation in Manufacturing 3.0" plan, launched in 2014, defined goals and objectives for the country's manufacturing growth as reported by Ministry of Trade Industry and Energy of South Korea in 2014. A new automated vehicle, the Hyundai Genesis sedan, has been developed by Hyundai, which is good at detecting moving vehicles, preventing crashes, operating on limited lanes, identifying traffic signals and road speed indicators.

China

In 2015, two actions were initiated simultaneously by China's Government, i.e. the 'Internet Plus' and 'Made in China 2025' policies. To improve China's industrialization, ten main facets of the manufacturing industry are given priority (Chen et al.,2017). The Government, in 2018, declared the abolition of legislation forcing car makers like General Motors to partner with a local group to establish industries. China hopes the action would help international firms in bringing other sophisticated technologies into China to satisfy electric transportation requirements.

Malaysia

By conducting numerous strategies to enable market players to adopt Industry 4.0 through the introduction of automation and smart manufacturing, the Malaysian Government has taken proactive steps. The Government put light on several new incentive programs in the 2017 budget to boost the development and acceptance of Industry 4.0 and innovation in Malaysia. Supermax Company Bhd, for example, was a gloves production sector that will be funded by the Government under automation by stimulus schemes to stimulate industry growth. Malaysia's former Prime Minister, Datuk Seri Najib Razak, has launch a proposal to introduce TVET (Technical and Vocational Education and Training) in the industry. This would be to facilitate the future growth of Business 4.0 by growing the workforce's skills. Within the scheme, the Government contributed RM50 million to increase their quality and Productivity of the workforce that will assist in the economic growth of the country. Thirty per cent of the Human Resources Development Fund (HRDF) funds are committed to this Plan solely for TVET.

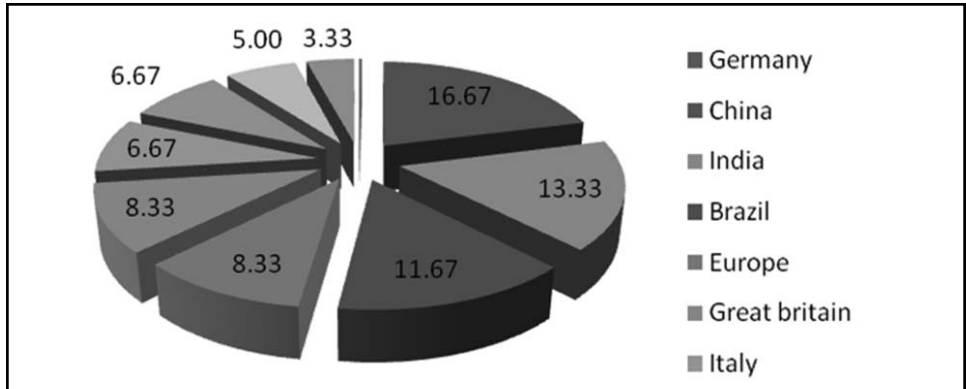


Figure 4: Distribution of the publications across different countries

The research demonstrates the distribution of the published articles throughout different nations. The database has 7 countries that published several publications (figure 4). As per the articles in our database, Germany attributed 20% of publications that ran above the list. It is the first nation to follow the Industry 4.0 definition. Germany is followed by China (16.67%), India (13.33%), Brazil (11.67%) and other countries as shown in figure.

4.2 Status of Industry 4.0 in India

Based on a strong emphasis on Industry 4.0 as part of the “Make in India” strategy for future growth, India is the sixth-largest manufacturing country. By 2022, the Government plans to grow the Manufacturing's proportion of GDP from the existing 16-17 per cent to 25 per cent. Many regulatory changes, such as GST adoption and FDI policy liberalization are implemented by the Government.

India is reportedly lagging behind its global counterparts where Industry 4.0 implementation is considered. The basic notion of Industry 4.0 is still in infancy, with the incorporation of physical networks on a cyber network (Aulbur and Singh, 2014).

India is on the way of building the right model of establish its "small factories" on, as shown by its success in two crucial supporting Industry 4.0 innovations, namely IoT and Big Data. In the manufacturing sector, the use of the IoT industry accounts for 60% of the IoT market of India.

The concept of “Make in India” occupied 32% of the total global market share (Nishimura, T, 2018). About \$2 billion markets have emerged in India for big data analytics. This number is increasing at a faster pace making it around \$1.6 billion by the year 2025.

In India, the big data analysis industry is projected to rise at a CAGR of 26%, hitting around.

The Indian automobile industry is at the forefront of introducing Industry 4.0's main elements. Automotive industries have been compelled to implement main features of Industry 4.0, such as robotics, due to emerging technologies, new innovation, and increasing cost of workers. In India's automotive sector, there are 58 robots per 10,000 workers (Roehrich, K. 2016).

Table 4: 2019 Robot Count in Manufacturing Industries (Count of Installed Industrial Robots per 10,000 employees)

Name of country	Count	Name of country	Count
South Korea	855	China	187
Japan	364	UK	71
Germany	346	Brazil	10
United States	200	India	4
Canada	165		

Source : International Federation of Robotics, Industrial Robots.

The Indian automobile sector has started to adopt Industry 4.0. Bajaj Auto, for example, started automating its activities in 2010. It currently employs 100 to 120 "collaborative robots" (Co-bots) in its manufacturing operations. Maruti Suzuki hires approximately 1700 robots to operate seven process shops and five assembly lines. With the aid of 437 robots, Ford can run its assembly lines at its Sanand factory. Hyundai has implemented 400 robots in order to decrease labour expenses. Tata Motors has over 100 robots on its Tata Nano production lines. Renault is trying to avoid accidents by automation. An intelligent system is used by a multinational corporation headquartered in Mumbai to link all devices and analyze the pace of work and performance. The system facilitates waste avoidance and production flow organization. Another packaging company in Bengaluru has linked machines across a network that offers a monthly report of machine status.

Matrix Tools and Solutions (Matrix), a firm based in Pune, develop product prototypes and assists with the implementation of emerging technology for the transformation of manufacturing methods. Kirloskar Brothers (KBL) employs 3D printing and the Internet of Things (IoT) in its manufacturing processes,

especially casing in foundries. They also hire tonne in the handling of water in factories. The plants are managed from a distance using a remote management system. Raymonds' enterprises are rapidly incorporating emerging technology. To produce textiles, the organization has introduced robots, big data, and material science technology (TNN and Agencies, 2016).

Healthcare has benefited from emerging technologies in a variety of aspects. The growing utilization of electronic health records, telemedicine, the system for health management and online health resources has enhanced the usage of patient data and facilitated visualization of health information and electronic medical records digitization trends. At Fortis and Max hospitals, robot-assisted surgery is practised.

Although the nation was quickly changing, industries in India tend to be optimistic about their growth prospects. According to the eighth Digital I.Q, in a survey conducted by PwC, 71 per cent of Indian respondents are optimistic about digital development shortly. In India, as in the rest of the world, there is a heavy emphasis on technology for increasing sales, improving consumer service, and reducing costs. The survey revealed that while industries are extremely focused on organic growth and cost reduction initiatives, many industries in India tend to be solely focused on growth.

This indicates that businesses are progressing to digitalization but have yet to incorporate technology to enhance their growth as per the recent Global Digital I.Q. The survey, the challenge now is how to work effectively in a digital environment.

Table 5: Technologies that are making substantial investments in India

Technologies	Per cent
Internet of Things	64 %
Robotics	27 %
Artificial intelligence	42 %
Virtual reality	16 %
Blockchain	7 %
3-D printing	10 %
Augmented reality	10 %
Drones	3 %

Source : PwC, Global Digital IQ® Surveys

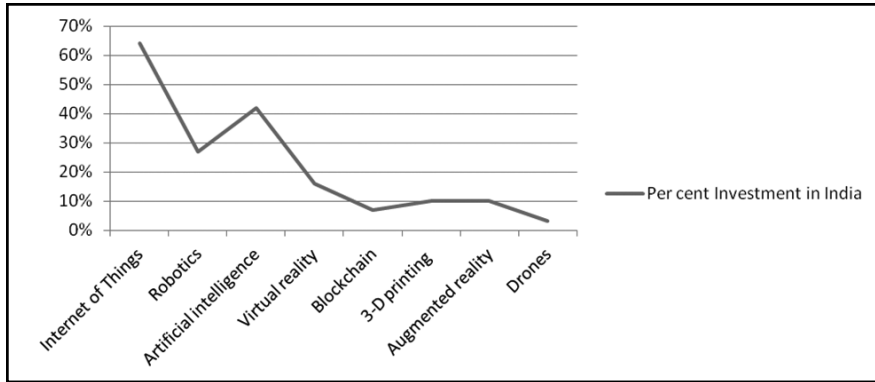


Figure 5 : Technologies making substantial investments in India

As shown in the figure 5, in India, businesses started to be investing heavily in artificial intelligence (A.I.), the Internet - of - things (IoT), and robotic systems, but, in the next three years, the emphasis would undoubtedly turn to virtual reality and blockchain. The growing emphasis on IoT and robotics also suggests a shift of attention toward cost reduction.

4.3 Analysis and Interpretations

The data for this study were collected from EBSCO and Google scholar databases, in the years 2013-2020, using search terms namely ‘Industry 4.0’ in title. To increase the accuracy of the content we get, researchers narrowed the search to documents that are more relevant to the topic and of higher quality. We were unable to locate any papers prior to 2013; therefore we examined those published between 2013 and 2020.

4.3.1 Literature statistics

A total of 5289 records were downloaded as under. Figure 6 shows how the trend of Industry 4.0 has been more popular in recent years.

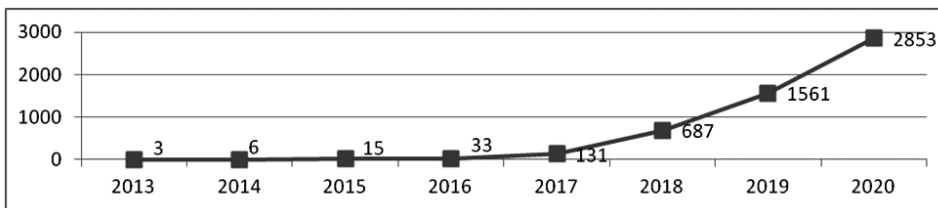


Figure 6 : Growth in publications

Out of 5289 articles from the literature, 956 articles are taken from well known publications like elsevier, taylor & francis, emerald publishing limited, thomas publishing company, springer nature and others as shown in figure 7.

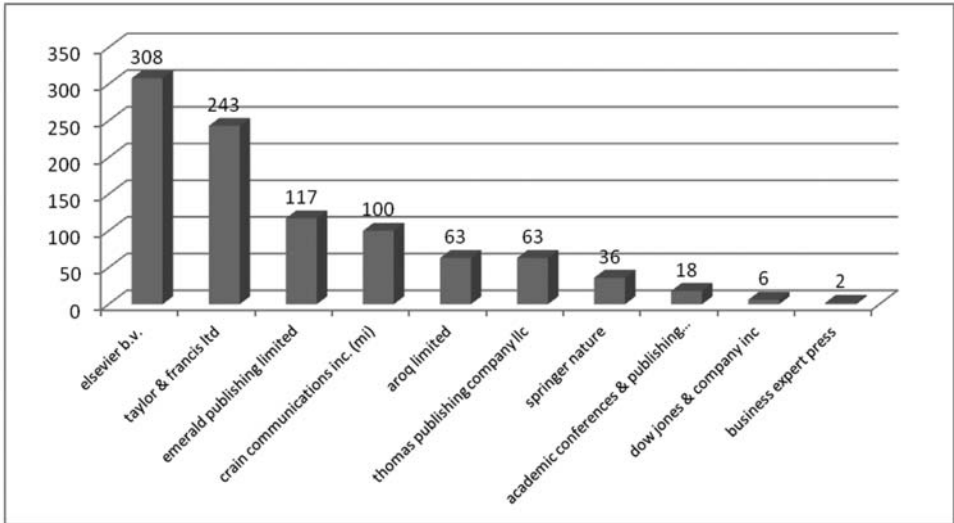


Figure 7 : Number of publications in various journals

It's quite important to mention which terms were most frequently included in the text fragments grouped together in the study. A tag cloud of the most frequently cited terms is depicted in Figure 8.



Figure 8 : Word cloud involving various technologies in Industry 4.0

4.3.2 Forms of Publications

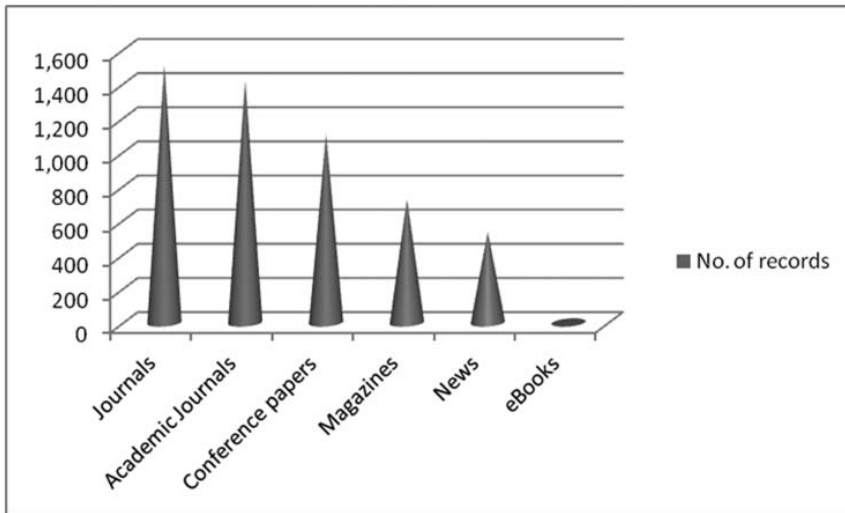


Figure 9 : Forms of Publication

The figure 9 reveals that the main source of publication in EBSCO database on Industry 4.0 is Journals and academic journals each with 1,507 publications (28.34%) followed by conference papers with 1,076 publications (20.23%). Publications in magazines and news are 13.41% and 9.61% respectively followed by e-books which are less than one percentage.

4.3.3 Relative Growth Rate (RGR) and Doubling Time

Two parameters namely; Relative Growth Rate and Doubling Time are identified to analyze the growth in publications. The rise in the amount of posts or pages per unit of time is referred to as the Relative Growth Rate (RGR). The following expression can be used to measure the relative growth rate (R) over a given span of interval. (Mahapatra, 1985):

$$\text{Relative Growth Rate (RGR)} = \frac{X_2 - X_1}{T_2 - T_1}$$

X_1 = Log X_1 (log of initial number of articles)

X_2 = Log X_2 (log of final number of articles after a specific period of interval)

$T_2 - T_1$ - the unit difference between the initial time and the final time

The year can be taken here as the unit of time.

Doubling time is characterised as the time it takes for articles to double from their current level and is directly related to relative growth rate (RGR). It is therefore defined that if the amount of literature in a context doubles in a

given time, the difference between logarithms of numbers at the beginning and end of that period must be the logarithm of 2. The value of

Loge2 by using the Napier Logarithm is 0.693.

Doubling Time (DT) = $0.693/R$. Table 3 shows Relative growth rate (RGR) and Doubling time (DT) of publications

Table 3: Calculation of RGR and DT for the publications

Year of publication	No. of records	Total (Cumulative)	X1	X2	RGR	DT
2013	3	3	0	0	0.00	0.00
2014	6	9	1.10	2.20	1.10	0.63
2015	15	24	2.20	3.18	0.98	0.71
2016	33	57	3.18	4.04	0.86	0.80
2017	151	208	4.04	5.34	1.29	0.54
2018	696	904	5.34	6.81	1.47	0.47
2019	1561	2465	6.81	7.81	1.00	0.69
2020	2853	5318	7.81	8.58	0.77	0.90

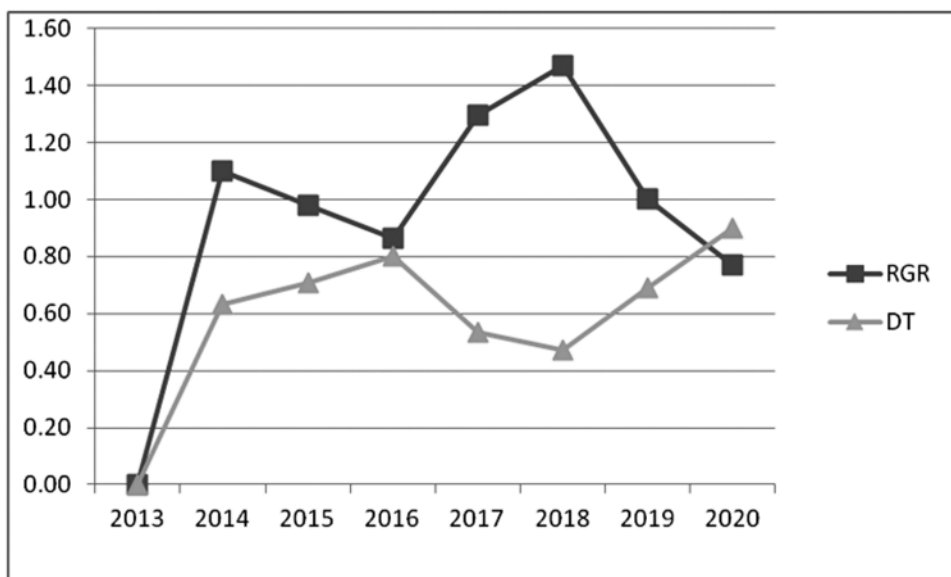


Figure 10 : Graph showing RGR and DT

The above figure shows many variations in the Relative Growth rate (RGR) and the doubling time (DT) of the published literature in the journals undertaken for the study. It indicates that the RGR decreased from 2013 to 2016. It increased in 2017. In 2018, the RGR was high, further which decreased in 2020. It can be noticed that during the year 2017 to 2019, there was a tremendous increase in the growth of literature. The DT increased from 2013 to 2016. Furthermore, it began decreasing from 2017 which further increased in the year 2020.

As a result, the relative growth rate is declining; this indicates that the pace of expansion is poor in terms of volume, as evidenced by the fact that the doubling time of articles is greater than the relative growth rate. It is observed that there is double in the rate of publications related to the technologies in Industry 4.0 each year.

8. Findings & Implications of study

To discuss the prospective research agenda, the reviewer examined a maximum of 5289 articles. By evaluating 956 relevant articles from the EBSCO database released between 2013 and 2020, this research implemented a bibliometric method to examine the research on Industry 4.0 and its status in various sectors. The article was searched using the phrases "the fourth industrial revolution," "the fourth industrial revolution," "Industry 4.0," and "Industry 4.0." The author concentrated on identifying the most basic Industry 4.0-related terms, as well as the technology that is most commonly used to describe the phrase.

A summary of Fourth industrial revolution is obtained by (1) listing notable publications and powerful conferences that publish Industry 4.0-related data, (2) illustrating the relevance of Industry 4.0 using keyword classifier, (3) the detection of existing studies initiatives as well as places in the present literature that have been overlooked recently; (4) an outline of Industrial 4.0 industry norms, technology, and infrastructure that are being utilised quite often.

The major aim of this study is to conduct a comprehensive evaluation and analysis of academic development in issues linked to the industry 4.0 for giving knowledge into topic's past, present, and future. Our findings have significant theoretical and research consequences. They highlight the conceptual framework and narrative growth of this study area, allowing people to the field to have a critical view of the foundational articles as well as how the study topics have progressed till date.

Practical Implications

This research added to the base of information by evaluating the function of Industry 4.0 in various fields. As this study is one of the few to examine the role of Industry 4.0 in technology innovation, it expands avenues for academics to explore. A rather multidisciplinary approach to future study on Industry 4.0 might also be beneficial. The majority of the explanations are techno-centric, mentioning a variety of contemporary technology techniques. Complicated possibilities and comprehensive evaluations of what these changes may indicate for individuals or the society are lacking from reviewed body of research. Our investigation may be used by experts to learn more about how Industry 4.0 is being implemented in different industries. Experts may understand the benefits of Industry 4.0 and bring awareness to respective business units.

Conclusion

As a result, Industry 4.0 has been identified as a method for independent process operations in the manufacturing and service industries. Furthermore, it has the potential to transform labour-intensive enterprises into technology ventures and to transform large-scale production into high-volume product design. Furthermore, Fourth industrial revolution has a wide space ranging from social insurance to communication industry; development to bring industries along; and collaboration to protect industries. Big data, the Internet of Things, and the smart factory are all aspects of Industry 4.0 that help to encourage the use of information technology (IT), which leads to long-term business effectiveness. Diversifying the practice, innovating and collaborating with others, and using emerging technology are all essential to perform more effectively and sustainably.

Industry 4.0 is clearly a collection of technology that businesses may use to improve their operations. Various limitations should be considered when assessing the findings of this study. To begin, publications were gathered from the largest abstract database for peer-reviewed literature, as well as multidisciplinary database (Google scholar) as supplements. Second, current Industry 4.0 studies conducted in certain languages was omitted due to the search parameters restricting the language of gathered papers to English. From a comprehensiveness standpoint, this evaluation might be more thorough if other databases and languages were considered. Nevertheless, in order for a systematic literature review to be viable, suitable limits must be defined.

References

- Atzori, Luigi, Antonio Iera, and Giacomo Morabito. (2010). "The Internet of Things: A survey." *Computer Networks* 54 (15): 2787–2805.
- Aulbur, W. and H.V. Singh (2014), *Next Generation Manufacturing: Industry 4.0: A Look at the Changing Landscapes in Manufacturing*, CII and Roland Berger, New Delhi, September.
- Bagheri, S. Yang, H.A. Kao, J. Lee (2015), *Cyber-physical Systems Architecture for Self-Aware Machines in Industry 4.0 Environment*, IFAC Conference 38-3 1622–1627.
- Bahrin, M., Othman, M., Azli, N.H., & Talib, M.F. (2016). *Industry 4.0: A Review on Industrial Automation and Robotic*.
- Colantoni, A., Cecchini, M., Egidi, G., Saporito, M.G. and Zambon, I. (2019), "Revolution 4.0: Industry vs. Agriculture in a Future Development for SMEs", *Processes*, Multidisciplinary Digital Publishing Institute, Vol. 7 No. 1, p. 36.
- Chaitanya Vijay Bidnur (2020), *A Study on Industry 4.0 Concept*, *International Journal of Engineering Research & Technology (IJERT)* Volume 09, Issue 04 (April 2020),
- Chen, J. Y., Tai, K. C., & Chen, G. C. (2017). Application of programmable logic controller to build-up an intelligent industry 4.0 platform. *Procedia CIRP*, 63, 150-155.
- Dallasega, P., Rauch, E. and Linder, C. (2018), "Industry 4.0 as an enabler of proximity for construction supply chains: A systematic literature review", *Computers in Industry*.
- E. Hozdic (2015), *Smart Factory for Industry 4.0: A Review*, *International Journal of Modern Manufacturing Technologies*, ISSN 2067–3604, (Vol. VII, No. 1 / 2015) 28-35.
- F. Almada-Lobo (2015), *The Industry 4.0 revolution and the future of Manufacturing Execution Systems (MES)*, *Journal of Innovation Management JIM* 3, 4 16-21.
- G. Schuh, T. Potente, C. Wesch-Potente, A.R. Weber (2014), *Collaboration Mechanisms to increase Productivity in the Context of Industry 4.0*, *Robust Manufacturing Conference (RoMaC 2014)*, *Procedia CIRP* 19 51 – 56.

- Haseeb, M., Hussain, H. I., Slusarczyk, B., & Jermisittiparsert, K. (2019). Industry 4.0: A solution towards technology challenges of sustainable business performance. *Social Sciences*, 8(5), 154.
- J. Lee, H.A. Kao, S. Yang (2014), Service innovation and smart analytics for Industry 4.0 and big data environment, *Product Services Systems and Value Creation. Proceedings of the 6th CIRP Conference on Industrial Product-Service Systems*, *Procedia CIRP* 16 3 – 8.
- K. Witkowski (2017), Internet of Things, Big Data, Industry 4.0- Innovative Solutions in Logistics and Supply Chains Management, 7th International Conference on Engineering, Project, and Production Management, *Procedia Engineering* 182, 763-769.
- K. Sipsas, K. Alexopoulos, V. Xanthakis, G. Chryssolouris (2016), Collaborative maintenance in flow-line manufacturing environments: An Industry 4.0 approach, 5th CIRP Global Web Conference Research and Innovation for Future Production, *Procedia CIRP* 55 236 – 241.
- Landherr, M., Schneider, U., & Bauernhansl, T. (2016). The Application Center Industrie 4.0-Industry-driven manufacturing, research and development. *Procedia Cirp*, 57, 26-31.
- Li, X., Wan, J., Lai, C.-F., Wang, S., Vasilakos, A. V. and Li, D. (2015), “A review of industrial wireless networks in the context of Industry 4.0”, *Wireless Networks*, Springer US, Vol. 23 No. 1, pp. 23–41.
- Liao, Y., Deschamps, F., Freitas, E.D. and Loures, R. Past (2017), present and future of Industry 4.0 - a systematic literature review and research agenda proposal. *International Journal of Production Research* 55 (12), 3609–3629.
- Lezzi, M., Lazoi, M. and Corallo, A. (2018), “Cybersecurity for Industry 4.0 in the current literature: A reference framework”, *Computers in Industry*, Elsevier, Vol. 103, pp. 97–110.
- Lu, Y. (2017) ‘Industry 4.0: a survey on technologies, applications and open research issues’, *Journal of Industrial Information Integration*, Vol. 6, pp. 1-10.
- Machado, C. G., Winroth, M. P., & Ribeiro da Silva, E. H. D. (2020). Sustainable manufacturing in Industry 4.0: an emerging research agenda. *International Journal of Production Research*, 58(5), 1462-1484.

- Mahapatra, G. (1994). Correlation between growth of publications and citations: A study based on growth curves: *Annals of Libraries and Information Studies* Vol.41(1), March 1994, 8-12
- MAK. Bahrin, MF. Othman, NH. Nor, MFT. Azli (2016), Industry 4.0: A Review on Industrial Automation and Robotic, *Jurnal Teknologi (Sciences & Engineering)*, eISSN 2180–3722 137–143.
- Marilungo, E., Papetti, A., Germani, M., & Peruzzini, M. (2017). From PSS to CPS design: a real industrial use case toward Industry 4.0. *Procedia Cirp*, 64, 357-362.
- M. Rüßmann, M. Lorenz, P. Gerbert, M. Waldner. (2015), *Industry 4.0: The Future of Productivity and Growth in Manufacturing Industries*, 1-14.
- Nardo, M. D., Forino, D., & Murino, T. (2020). The evolution of man-machine interaction: The role of human in Industry 4.0 paradigm. *Production & Manufacturing Research*, 8(1), 20-34.
- Nishimura, T. (2018), “Big Data Analytics Market – Future Scope in India”, *Silicon India*, September, 12.
- Oesterreich, T. D., & Teuteberg, F. (2016) ‘Understanding the implications of digitization and automation in the context of Industry 4.0: A triangulation approach and elements of a research agenda for the construction industry’, *Computers in Industry*, Vol. 83, pp. 121-139.
- Olah, J.; Aburuman, N.; Popp, J.; Asif, M.K.; Haddad, H.; Kituktha, N. (2020), *Impact of Industry 4.0 on Environmental Sustainability. Sustainability* 2020, 12, 4674.
- Pereira, G.B., Santos, A., de P.L. and Cleto, M.G. (2018), “Industry 4.0: glitter or gold? A systematic review”, *Brazilian Journal of Operations & Production Management*, Vol. 15 No. 2, pp. 247–253.
- Roehrich, K. (2016), *Study of Emerging Markets, with Special Focus on Asia*, RockEU, August 16.
- Simons, P. Abé, S. Naser (2017), *Learning in the AutFab – the fully automated Industrie 4.0 learning factory of the University of Applied Sciences Darmstadt*, 7th Conference on Learning Factories, CLF 2017, *Procedia Manufacturing* 9, 81 – 88.
- S. Wang, J. Wan, D. Li, C. Zhang (2016), *Implementing Smart Factory of Industry 4.0: An Outlook*, *International Journal of Distributed Sensor Networks*, Article ID 3159805, 1-10.

- Saldivar, A. A. F., Li, Y., Chen, W. N., Zhan, Z. H., Zhang, J., & Chen, L. Y. (2015, September). Industry 4.0 with cyber-physical integration: A design and manufacture perspective. In 2015 21st international conference on automation and computing (ICAC) (pp. 1-6). IEEE.
- TNN and Agencies (2016), "Raymond to Replace 10000 Jobs with Robots in Next 3 Years," The Economic Times, September 16.
- Thangaraj, Jeevitha & Lakshmi Narayanan, Ramya. (2018). Industry 1.0 To 4.0: The Evolution of Smart Factories.
- Trappey, A. J., Trappey, C. V., Govindarajan, U. H., Chuang, A. C., & Sun, J. J. (2017) 'A review of essential standards and patent landscapes for the Internet of Things: A key enabler for Industry 4.0', Advanced Engineering Informatics, Vol. 33, pp. 208- 229.
- Vaidya, S., Ambad, P., & Bhosle, S. (2018). Industry 4.0–a glimpse. Procedia
- Yin, Y., Stecke, K. E., & Li, D. (2018). The evolution of production systems from Industry 2.0 through Industry 4.0. International Journal of Production Research, 56(1-2), 848-861.



COVID-19 and Dairy Co-operatives - A Qualitative Assessment using Focus Group Discussions

Girish Mangleek¹

A. K. Tiwary²

Anshu Singh³

Sonal Kadam⁴

ABSTRACT

To restrict the spread of COVID-19, country wide lockdowns were imposed by governments across the countries impacting export, import and consumption of milk & milk products in different ways. In India, imposition of restrictions for the control of COVID-19 pandemic affected supply as well as demand of the milk for dairy co-operatives.

The research conducted was exploratory and qualitative in nature. The research relies on both, primary as well as secondary data. Focus Group Discussion was used to collect primary data. FGDs were divided into two groups. First group included Board of Directors and Managing Directors along with Employees of selected milk unions. Further, Dairy Farmers of respective milk unions formed second group. Two rounds were conducted of each FGD with 19 questions.

Though, during lockdown, milk production, collection, processing and marketing did not stop, negative consequences were seen on the business of co-operative milk unions, private dairies and dairy farmers. Co-operative milk unions, village level milk societies and dairy farmers collectively tackled this pandemic situation.

It was observed that, there have not been any major policy changes undertaken by milk unions after COVID-19 pandemic. Therefore, it is suggested that, they should make strong policy changes like maintaining special funds to face such unprecedented events in future.

Keywords : COVID-19, Dairy co-operatives, Pandemic, Supply chain FGD.

¹ Associate Professor, Head of Centre for Management Development, VAMNICOM, Pune.

² Faculty Member & Head of Centre for Research & Publication & Entrepreneurship Development, VAMNICOM, Pune.

³ Associate Professor, VAMNICOM, Pune

⁴ Research Associate, VAMNICOM, Pune

1. Introduction

Dairy is the most important agricultural commodity in India. Dairy farming plays a crucial role in socio-economically uplifting the lives of rural household in the country. Dairy farming is considered as an important secondary source of income especially for women and marginal farmers. It plays a vital role in generating income for small farmers (1-2 ha land), marginal farmers (below 1 ha land) and landless labourers. Dairy accounts 5% of the national economy and directly employing over 8 crore farmers (*Economic Survey, 2021-22*). As stated by National Investment Promotion & Facilitation Agency, India is the largest producer of milk in the world. India ranks first among world's milk producing nations accounting for 23 percent of total global milk production followed by the United States, China, Pakistan and Brazil.

As mentioned in the annual report of Department of Animal Husbandry and Dairying (2021-22), there were currently 228 dairy co-operative milk unions, 172.63 lakh dairy farmers under 1.96 lakh village level dairy co-operative societies present in India. In Maharashtra, the number of Milk Co-operative Societies present were 20.897 thousand. According to FSSAI licenses (till May 2019), there were 1944 Private Dairies (Milk Processing Units) with a total capacity of 901.6 LLPD.

According to the Committee for the Promotion and Advancement of Co-operatives (copac coop), there were over 2.6 million co-operatives operating globally. As per the World Co-operative Monitor data of 2014, out of top 300 co-operatives in the world, 32% were from agriculture and food industries sector. There were 12.41 lakh agricultural co-operatives worldwide with 1121.20 lakh members.

The World Health Organization (WHO) declared coronavirus disease a pandemic on 11th March, 2020. To restrict the spread of COVID-19, country wide lockdowns were imposed by governments. The pandemic created social and economic disruptions, disrupted demand and supply chains around the world.

COVID-19 virus spread across the globe impacted trade and reduced international price for SMP (Skimmed Milk Powder). Shut down of schools, restaurants and foodservices reduced the domestic demand for milk and milk products worldwide. Decrease in the income of households resulted into decreased demand for milk and milk products. COVID-19 pandemic affected export, import and domestic consumption in different ways. Pandemic

forced small scale dairy business to exit the market due to increase in input costs and compliance with more stringent environmental and safety regulations. The impact of shock on domestic demand varied country wise, depending on family income and the price elasticity of demand for dairy products (*Acosta A. et al., 2021*). In India, imposition of restrictions for the control of COVID-19 pandemic affected supply as well as demand of milk. During the first months of the lockdown, the availability of feed and fodder decreased, making it the most affected supply chain. Dairy farmers suffered double losses as a result of rising milk production costs and a drop in milk prices. The fall in demand, particularly for ice cream and milk-based beverages, posed a significant challenge for dairy processors (*Bhandari G. et al., 2021*).

2. Literature Review

According to WHO, COVID-19 outbreak was more than just a public health crisis; it was a crisis that affected every sector. As a direct consequence, every sector and every person must participate in this battle (*WHO, 2020*).

COVID-19 pandemic has damaged the informal sector of the rural economy. (*Rawal V. et al., 2020*), (*NABARD, 2020*). Around 400 million workers in India working in informal sector were at the edge of falling into deep poverty. Majority of farmers in India are small land holders (*Singh B. P., 2020*). First few weeks of the lockdown were very critical for the farmers. Producers of perishables such as milk, eggs, poultry, fresh fruits and vegetables suffered losses due to crash of export and domestic demand (*Rawal V. et al., 2020*). Widespread fear regarding safety of non-vegetarian food resulted in significant decline in demand for poultry, fish, and sheep/goat/pig (*NABARD, 2020*). The disturbed agricultural marketing system and delayed public procurement forced producers to sell their produce at low prices to whoever was ready in their villages to purchase the produce. Supply of inputs such as seeds, fertilizers, pesticides for crops and cattle feed for dairy animals were disturbed (*Rawal V. et al., 2020*). Those farmers who were suppliers for hospitality sector, those whose farm activities depended on seasonal or migrant workers affected the most (*Phillipson J. et al., 2020*). Return of migrant worker to their villages along with local villagers, created dependency on employment available in their villages. Poor peasants, landless households, dalits, adivasis and women workers were the worst victims in the crisis (*Rawal V. et al., 2020*). Rural economies with large number of entrepreneurs as well as small and micro-enterprises with limited solvency and cash reserves were less prepared to withstand the COVID-19 disruptions

(Phillipson J. et al., 2020). Impact of COVID-19 varied between genders. For rural women entrepreneurs and farmers it was very challenging to handle business and farm and family (Phillipson J. et al., 2020).

Self Help Group is a mean to women empowerment (Dr. George J. et al., 2021). SHGs are the only source of income for rural poor women (Deepak G., 2022). COVID-19 impacted this informal sector unevenly (Dr. George J. et al., 2021). Members of SHGs had access to credit during crisis like COVID-19, but it was of previous savings for a short term. In long term, future savings disrupted. Length of the lockdown had effect on savings of members of SHGs and farmers (De Hoop T. et al., 2020). COVID-19 had a negative impact on daily working and financial aspects of SHGs (Singh M., 2020). Initial period of COVID-19 lockdown was very harsh on SHGs of Kerala. Some units shut down for the whole year generating losses to its members (Deepak G., 2022). Family pressure to not go to office due to fear of COVID-19, having not enough demand for products they were manufacturing, therefore not having enough money to pool into SHGs, not receiving money from customers, unavailability of raw material and supply of finished goods to the market etc. were the challenges SHG members faced. Some SHGs were afraid that they could lose few members permanently (Singh M., 2020). Physical meetings happen in SHGs and work from home was not an option to SHG members. To maintain social distancing and to comply with COVID-19 norms, SHG members could not physically meet each other. 51% of rural women faced issues of domestic violence and debt crisis. SHGs meeting were only places for such women to share and to listen. COVID-19 affected SHG members monetarily as well as emotionally (Deepak G., 2022). Even though their income declined, these members helped Govt. of Kerala by working as frontline workers. They started community kitchens to provide food for quarantined and isolated people (Dr. Tiwari D., 2022). SHGs played a vital role in delivering community based responses, such as door step delivery of dry ration, food, manufacturing PPE kits, masks etc. There were chances of reduced efficiency of SHG members during the time of social distancing due to low mobile phone ownership and less digital literacy (De Hoop T. et al., 2020). If growth parameters like market expansion, infrastructural and technological growth were considered, SHGs were not able to significantly contribute to the growth of women entrepreneurs in India. COVID-19 pandemic brought both challenges and opportunities to members of SHGs (Dr. Tiwari D., 2022).

Financial independence gives certain level of dignity to women entrepreneurs. But COVID-19 pandemic threatened this status of women (*Jaim J., 2021*). Women are involved in business related to tourism, education and beauty. Lockdown and social distancing had a huge impact on these businesses making women business owners vulnerable (*Sangem M., 2020*). Raw material prices, delivery charges increased making hard to do business. Increased burden of domestic duties and maternal role made women difficult to operate their business activities from home. Some women entrepreneurs had to shut down the business, as their businesses were not online (*Jaim J., 2021*). In Vietnam, enterprises led by women faced more challenges during pandemic than men. Women business owners already had issues of financial constraint, lack of motivation, low digital literacy, fear of failure, lack of family support; COVID-19 pandemic added more stress into it (*Maheshwari G. et al., 2021*). In Nigeria and Ghana, most businesses that temporarily closed were of women. It was because, their businesses fell into informal sector. Access to agricultural inputs, information and liquidity was lower for female farmers, affecting their farm productivity and food security. Closure of schools, social distancing increased burden of care related tasks on women and girls. There was possibility of permanently affecting women by making them exit from labour market or education. Women also have to face gender based violence which surges during crisis, isolation and lockdown. Impact of COVID-19 varied for people from different backgrounds. Crisis mostly affects those who are vulnerable, intensifying already existing inequalities across countries, communities, household and individuals (*Copley A. et al., 2020*).

Stable supply chains are essential to a country's enhanced economic growth (*Goel R. K. et al., 2021*). Because all processes and stages in supply chain are inextricably linked, a minor delay or errors can cause a butterfly effect, resulting in a significant loss in a yield and outcome (*FAO, 2020*). As a consequence of COVID-19 and lockdown, there was unavailability of labourers and truck operators. Due to this, food distribution system severely affected. Along with food distribution, MSME sector also had a worst impact of COVID-19 (*Singh S. et al., 2021*), as these were largely depended on logistics and supply chain sectors (*OECD, 2020*). In case of food inventory network, COVID-19 affected entire cycle from the field to the customers (*Barman A. et al., 2021*). The COVID-19 prevention policies had the greatest impact on demand in the supply chain (*Grida M. et al., 2020*). Demand for some specific items decreased, showing a temporary surplus supply

(for example, milk for cheddar, potatoes for French fries). Parallely, buyers observed empty shelves in stores at the beginning of the epidemic, as the sudden swollen demand disrupted food supply (OECD, 2020). The lockdown hampered both domestic and international supply chains. As an outcome, this pandemic caused significant job losses, which ultimately reduced demand, resulting in a serious global economic crisis (De Vito et al., 2020). If distributors and processors are disrupted, the entire nation is at danger (Staniforth, 2020). The COVID-19 pandemic caused significant disturbance in certain labour intensive industries such as livestock farming, horticulture, planting, harvesting and crop processing (Stephans et al., 2020). Disrupted supply chain and reduced demand followed reduction of dairy production and horticulture. Prices of agricultural inputs were estimated to be increased due to closure of shops, markets and disruption in supply chain. Though banking activities like loans, deposit and recovery were severely impeded, digital transactions increased (NABARD, 2020). Due to restrictions, farmers were forced to destroy food essentials on the farm. Dairy farmers dumped litres of milk due to the impeded supply chain. Tea plants were impacted due to logistical issues. Maintaining logistical continuity is a critical component in the food industry during global disaster. The supply chain was considerably affected by shutdown when workers were absent from work due to illness or travel restrictions (Barman A. et al., 2020). To achieve United Nation's Sustainable Development Goals (SDGs 2) of ending hunger through achieving food security and improved nutrition; agriculture supply chain is vital. It was found that, supply risks demand risks, financial risks, logistics and infrastructure risks, management and operational, policy and regulation and biological and environmental factors have major impact on agriculture supply chain (Sharma R. et al., 2020).

Co-operative societies help members for better standard of living (Enwa S. et al., 2020). 80 percent of milk is marketed through unorganized sector and 20 percent through organized sector which included government and co-operative societies. Dairy co-operatives help in eliminating rural poverty by generating employment in dairy sector. Co-operatives also provide training to the individuals in respective fields. Strengthening the co-operatives can alleviate challenges such as producer's bargaining power, lack of proper infrastructure for milk collection, storage, processing, marketing-local as well as global etc. (Rajendran K. et al., 2004).

The dairy sector was affected by COVID-19 from both demand and supply sides in several waves. Depending on region and nation, economic profiles, relative resource shortage, income per capita, and market structure, these waves have had various effects on the dairy industry. Researchers were expecting more milk producers to leave dairy business for medium or long period of time (Acosta A. *et al.*, 2021). COVID-19 severely affected dairy sector in US and China in a way such as reduced farmgate prices, closing of roads, schools, restaurants, hotels leading to difficulty in milk supply chain and shutdown of several dairy processing units, scarcities of worker, increased production costs and lack of working capital (Qingbin W. *et al.*, 2020). At the start of the pandemic, feed and fodder availability decreased as a result of lockdown. The milk producers had to bear losses from increased cost of production as price of cattle feed increased and reduced prices of milk supplied as demand from customers- individual as well as institutional, decreased. Dairy processors faced a challenge of drop in the demand for processed milk products such as ice-creams and other milk based beverages (Chandel B. *et al.*, 2021).

3. Objectives of the Research -

1. To understand the implications of COVID-19 on the lives and livelihoods of Dairy Farmers.
2. To understand the coping strategies and mechanisms adopted by Milk Unions to manage the disruptions caused by COVID-19.

4. Milk Unions Undertaken for Study

Two milk unions from Pune district and one milk union from Ahmednagar district were selected for the research. Those were - **Pune Zillha Sahakari Dudh Utpadak Sangh, Katraj (Pune), Baramati Taluka Sahakari Doodh Utpadak Sangh, Baramati (Pune) and Sangamner Taluka Sahakari Dudh Utpadak & Prakriya Sangh, Sangamner (Ahmednagar).**

4.1 Pune Zillha Sahakari Dudh Utpadak Sangh, Katraj (Pune) :

Pune Zillha Sahakari Dudh Utpadak Sangh, Katraj also known as Katraj milk union was established in the year 1960 to facilitate village level farmers located at Pune district organized facility of milk collection. It sales milk and milk products as well as cattle feed under the brand 'Katraj'. During the year 2020-21, 827 societies were members of Katraj milk union.

Katraj milk union manufactures and distributes milk and milk products such as pasteurized/ homogenized-cow milk, toned milk, double toned milk, standardized milk, full cream milk, cow & buffalo cream milk and ghee, shrikhand, amrakhand, malai paneer, dahi, flavoured milk, lassi, jeeratak, table butter, milk powder, softy ice cream, pedha, khoa, sterilized milk in 200 ml bottle and hard ice-cream with different flavours in different pack sizes and mango, anjeer&malaiburfi, kalakand&kajukatali.

Along with milk and milk products, Katraj milk union provides following technical input services to dairy farmers- Artificial insemination for cow and buffalo, arrangement of camps to check infertility among milch animals, sale of cattle feed, chaff cutter, fodder seed, mineral mixture, vaccination of milch animals, deworming etc.

4.2 Baramati Taluka Sahakari Doodh Utpadak Sangh, Baramati (Pune) :

Baramati Taluka Sahakari Doodh Utpadak Sangh incorporated on 1st December, 1977. Its products are sold under the popular brand 'Nandan'. At the end of the 31st March, 2021, 264 primary societies were members of Baramati milk union.

Baramati milk union manufactures and sales wide range of milk and milk products- pasteurized homogenized milk, pasteurized homogenized toned milk, shrikhand, amrakhand, paneer, dahi, lassi, buttermilk, full cream milk, basundi, khoa, ghee.

It provides following services to dairy farmers- cattle feed and chelated mineral mixture, fodder seeds, chaff cutter, milking machine, artificial insemination on subsidy and vaccines to milch animals.

Along with these products and services, Baramati milk union also started petrol and diesel pumps.

4.3 Sangamner Taluka Sahakari Dudh Utpadak & Prakriya Sangh, Sangamner (Ahmednagar):

Sangamner Taluka Sahakari Dudh Utpadak & Prakriya Sangh was established on 12th November, 1977 by Sahakar Maharshi Bhausahab Thorat at Sangamner, Ahmednagar. Its products are sold under the brand name 'Rajhans'. Till March 31, 2022, 203 primary co-operative milk societies were members of Sangamner milk union.

Its range includes the following products- milk, ghee, pedha, shrikhand, amrakhand, lassi, paneer, buttermilk, masala buttermilk, dahi, flavoured milk,

khoa, gulabjamun, sonpapdi, rasgulla, berry, ice-cream, burfi, cheddar cheese, processed cheese, mozzarella cheese, whey cheese, skimmed milk powder, butter, packaged drinking water (Rajhans Aqua), mango drink, carbonated drink (orange, jeera, lemon etc.), amrutraj tea (green tea, masala tea, dust, premium tea).

Additional services provided by milk union were- artificial insemination, vaccination, preventive healthcare scheme, cattle feed, chelated mineral mixture, chaff cutter, modern dairy farm, loose housing for cattle, fodder seeds, milking machine, cow lifting machine, veterinary diagnostic laboratory, veterinary medical shop, etc.

5. Research Methodology

The research study was exploratory and qualitative in nature. The research relies on both primary as well as secondary data. Focus Group Discussion (FGD) method was used to collect primary data. FGDs were divided into two groups. First group included Board of Directors and Managing Director along with Employees of selected milk unions. Further, Dairy Farmers of respective milk unions formed second group. Two rounds of each FGD were conducted. Number of research papers, official websites, and annual reports of selected milk unions, NDDDB, DAHD, etc. were studied to collect secondary data.

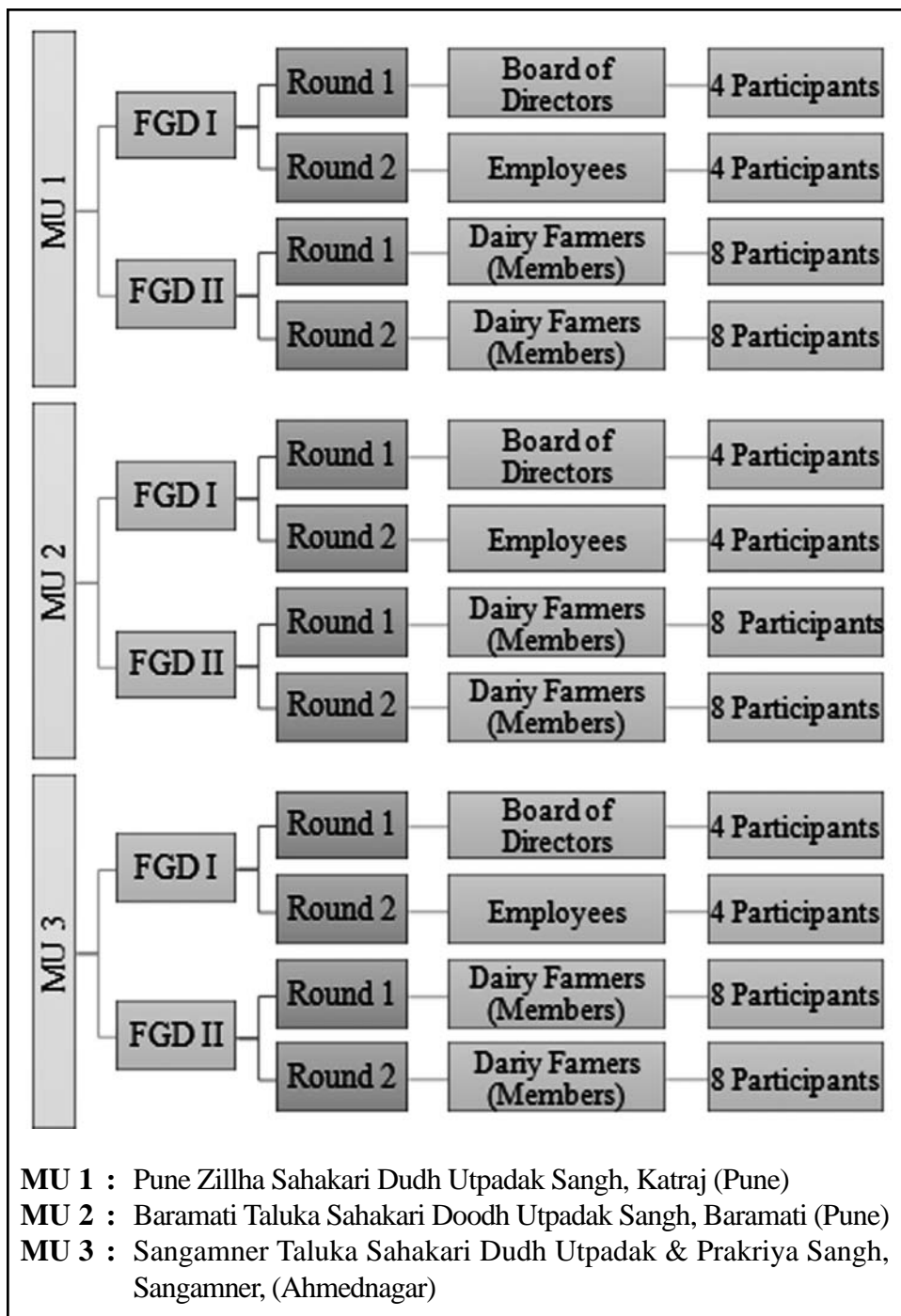
5.1 Focus Group Discussion

Focus Group Discussion is a strategy used in qualitative analysis wherein a free and open discussion is organized between groups of members on a particular research topic. Here, researcher plays a role of moderator (interviewer) or a group facilitator. Researcher stimulates discussion where participants share their experiences and influence each other and are influenced.

Focus Group Discussion is a low cost, simple and effective method to collect specific data in a short period of time.

5.1.1 FGD Tools and Questions

Fig. No. 1 Structure of FGD



Three milk unions (MUs) were selected to collect primary data through FGD. Six FGDs were conducted, 2 from each milk union. Each FGD group had 2 rounds. In FGD I, first round included discussion of Board of Directors, and second round included discussion of employees. In FGD II, both the rounds included dairy farmers (members) of the respective milk union. There were total 72 participants participated in Focus Group Discussion.

Table No. 1 Questions asked to Participants

FGD	Round	Question No.	Questions
1	1	1.	How COVID-19 impacted Milk Unions?
		2.	What were the challenges faced by Board of Directors?
		3.	What kind of measures were adopted by the board to tackle the challenges arising out of the pandemic during lockdown period?
		4.	What major policy changes Board of Directors have made post COVID-19?
	2	1.	According to you what was the impact of COVID-19 on your department?
		2.	What were the challenges faced by you?
		3.	What kind of financial and marketing support given to members during lockdown?
		4.	How did you tackle the challenges faced by you?
2	1	1.	During COVID-19, what challenges you faced while doing dairy business?
		2.	How COVID-19 and lockdown impacted your economic situation?
		3.	How dairy co-operative societies and Dudh Sangh helped you during pandemic?
	2	1.	What problems you faced while supplying milk to the dairy co-operative society?
		2.	What was the impact of COVID-19 lockdown on your payments?
		3.	What kind of special arrangements society made for their members?

		4.	How dairy co-operative societies and milk unions helped in taking care of your cattle during pandemic?
		5.	What were the other services that you received from your society / union?
		6.	What are the other livelihood sources you have?
		7.	How COVID-19 impacted these livelihood sources?
		8.	According to you, when did the financial situation start improving?

6. Analysis and Discussion

Analysis and discussion is divided into two parts. First part includes FGD result for Board of directors and Employees and second part includes FGD result for dairy farmers (members).

6.1 FGD Result for Board of Directors and Employees

Majority of the board members said that, movement restrictions had a slight impact on milk procurement at the start of the lockdown. It was further added that, milking animals were not affected by pandemic, milking of animals was an unavoidable and continuous process; therefore, it did not affect the milk collection/ availability. Pandemic and lockdown hampered the marketing and distribution of milk and milk products. In the global market, rates of milk powder dropped from Rs. 210-215/- per kg to Rs. 195-210/- per kg. In the domestic market, cow milk powder prices reduced to Rs. 190-205/- per kg from Rs. 210/- per kg (Narute A., 2021). Board members approached district administration and sought government support for the co-operation for excess milk marketing, transportation and distribution.

It was realized that, milk unions faced challenges of milk procurement, marketing and distribution of milk and milk products, human resource, non-co-operation from administration and government bodies at initial stage of lockdown, shortage of raw material to manufacture cattle feed, quality testing and packing material and increased transportation cost.

In March, 2020, after lockdown, dairies in Maharashtra claimed that, out of 1 crore litres of milk collected per day, around 10 lakh litres remained unsold on a daily basis. To tackle this situation, Government of Maharashtra announced plan under apex body of cooperative milk union-MRSDMM

(Maharashtra Rajya Sahakari Dudh Mahasangh Maryadit- Mahanand). Under this plan, the excess milk of 10 lakh litres produced daily would be processed into skimmed milk powder (SMP). This plan was implemented from 6th April, 2020 to 31st May, 2020. While processing milk into SMP, butter is also produced. Under this plan, it was announced that, for excess milk processing, SMP projects would compulsorily get expenses of packaging including GST Rs. 25/- for SMP per kg and packaging including GST Rs. 15/- for Butter.

To get rid of the fear of employees one of the milk unions provided following facilities:

- Provision of disinfection chambers at two parlours
- Facility of wash basin to wash hands and sanitizers for employees and customers
- Provision of face shield to employees and guards
- Provision of masks and sanitizers to all the employees
- Temperature and oxygen level check on the gates of dairy
- Provision of disinfectant solution with pumps to spray on every vehicle coming into the dairy.
- Provision of turmeric milk at affordable rates in the dairy canteen

According to the opinion of board members, to protect the losses of members, firstly board members created awareness about COVID-19 and its protocols among members. At village level, all the three milk unions continued procuring milk from members, although there was excess collection of milk and less demand, to support members financially. Board of directors said that, they gave maximum price per litre of milk to members, according to the quality of milk. Payment of dairy farmers was done timely and milk unions supplied good quality cattle feed to members through societies so that milk production and procurement would not hamper.

COVID-19 pandemic enabled us to use technology more efficiently. It was found from the discussion of board of directors that, instead of offline meetings, virtual meetings increased. Emphasis was given on cashless transactions in societies. Importance of planning, alertness, inventory management, hygiene and sanitation increased. It was discovered that, apart from this, there were no major policy changes made by milk unions.

Supply chain disruption caused disturbance in milk procurement as well as milk marketing at the initial stage of pandemic. It was not possible for dairy workers to work from home during pandemic. Due to movement restrictions, people for loading and unloading were not available. Non-availability of public transport made employees difficult to attend office. Therefore, in some cases milk union offices had to function with less staff and had to work overtime. Employees were afraid of COVID-19 and were hesitant to come to work. It was difficult to reach to dealers and shopkeepers as they were closed due to lockdown. Impact of availability of raw material required for cattle feed manufacturing increased the cattle feed prices. Transportation cost increased because demand for milk from institutional buyers decreased therefore delivery truck operated at lower capacity. Supply of raw material such as chemical for quality testing of collected milk and milk products, packaging material was difficult. Sale of ice-cream decreased because people were afraid to catch cold. Due to lockdown, institutional buyers such as, restaurants, roadside tea vendors, sweet shops, schools, colleges, offices etc. were closed, as a result of which sale decreased.

The board members did not employ any strict measures in terms of cutting down staff salary and payments. In reality, one of the milk unions gave extra daily allowance of Rs. 300/- to employees on attending office and other milk union gave one month salary in advance during lockdown. Employees were allowed to come on alternate days during pandemic to avoid the rush and stop the spread of infection. Stickers mentioning essential worker and milk union's logo were provide to employees for their vehicles. Employees also provided with special identity cards so that Police would not stop them in the middle of the road.

As shops were closed, to reach to the customers, door to door milk distribution started by two milk unions. Other milk union provided water to draught prone areas for cattle so that it would not hamper the milk production.

6.2 FGD Result for Dairy Farmers (Members)

When asked about the challenges faced by dairy farmers (members), it was found that, some of the farmers could not supply milk to BMC (Bulk Milk Coolers). COVID-19 impacted dairy farmer's payments, there were restrictions on movement in their villages and perishability of milk was one of the serious problems dairy farmers had to face during pandemic. As it affected payments received from DCS (Dairy Co-operative Societies), their family income suffered. Cattle feed prices increased and rates per litre of milk decreased. As a result of increased production cost and reduced milk prices, some dairy farmers closed

down their dairy business. It was noted that, some of the DCS helped dairy farmers to collect milk from door to door.

As majority of the dairy farmers said they did not face any difficulty while supplying milk to the BMC, few of the dairy farmers said, at the initial period of lockdown, petrol was not easily available to them. Dairy farmers had to show milk kettles to Petrol Pump workers to purchase petrol and travel to BMC. There were some incidences where, villagers of other villages did not allow dairy farmers to cross village borders and travel to BMC. Some of the dairy farmers said that there was disruption in collection of milk from BMC and milk union. The number of days of disruption varies from 1-5 days to 5-10 days. In such cases, dairy farmers had to throw away kettles of milk on roads, in rivers, use at home or distribute to neighbours. Payments to dairy farmers from DCS were delayed after supply of milk. Rates of milk were reduced during lockdown due to which their income reduced but production cost remained same or increased. Some of the farmers received as low as Rs. 15/- per litre of milk during lockdown. Workers of dairy co-operative societies would help members and whose family members came out COVID-19 positive by collecting their milk from their home. At one instance, when payments of supplied milk from milk union delayed, dairy co-operative society paid members to sustain its member's dairy business. Though demand was decreased, milk unions continued collection of milk from dairy farmers through BMC so that dairy farmers would not suffer. There were incidences where co-operative milk societies accepted 75% or 70% or 60% of milk and rejected 25% or 30% or 40% milk respectively supplied by members during COVID-19 pandemic. Facilities like artificial insemination were provided to dairy farmer members at discounted rates. There were veterinary medical centres of milk unions where medicines were available at discounted rates. Dairy co-operative societies provided loans to needy dairy farmers for dairy business, to purchase green fodder and perform other farming activities. The point to be noted here is that, those dairy farmers who already had a loan in their account were again given loans during pandemic. Some dairy co-operative societies provided masks and sanitizers to their members. Majority of the dairy farmers were doing farming. Dairy was an allied business. Others were having poultry business, sheep rearing business, grocery stores, farm development business, renting out machineries such as JCP, wage labourers, etc. When lockdown happened and supply chain disrupted, it was difficult for farmers to sale their agricultural produce in wholesale markets. There was hardly any income from agricultural produce initially as this produce perished in the farms only with no potential buyers. Due to social distancing, daily wage labourers did not get work. In such cases, dairy was the only source of income to them. Dairy farmers experienced improvement in their financial situation from January to March 2022, as prices of milk started increasing.

7. Suggestions and Conclusion

7.1 Suggestions:

In this section suggestions are given on the basis of data collected through questionnaires, interaction with respondents and observation by researchers. It also includes suggestions given by participants.

- It was found from the research that, there were less women dairy farmers than men. Milk unions can conduct programmes or activities to boost women participation in dairy business, can reward women dairy farmers and help women empowerment.
- As mentioned earlier, dairy farmers received minimum Rs. 15/- per litre of milk. The reason behind this low price might be oversupply, reduced demand for milk in the market and quality of the milk supplied. Members can be trained to maintain or increase the quality of milk supplied to the co-operative milk societies. It will help members to receive better prices.
- It was found that, milk union gives subsidy for building gobar gas plant to its members. This project is implemented by NDDDB through milk union. Dairy farmers can build this gobar gas plants in a group if do not have enough number of cattle. It will help them to have good quality manure for their farms, fuel for house and will also reduce environmental degradation.
- Research also revealed that, many of the dairy farmers were not aware of the government schemes beneficial for them. Milk union as well as co-operative milk societies can conduct awareness programmes for dairy farmers.
- Milk unions or co-operative societies at village level can work on making members digitally literate. For example, teaching members how to use ATM cards and ATM machines, so that, they will not face difficulties if situations like COVID-19 pandemic happen again.
- It was observed that, there have not been any major policy changes undertaken by milk unions after COVID-19 pandemic. Therefore, it is suggested that, they should make strong policy changes like maintaining special funds to face such unprecedented events in future.
- Co-operative milk societies can help members who grow surplus green fodder to store and provide it to landless dairy farmers or those who do not grow it. Focus should be on uninterrupted supply of green fodder to cattle.

- One of the milk union suggested that, there should be an awareness campaign implemented to increase consumption of milk as it is conducted for Eggs.
- It was recommended by dairy farmers that, they should receive above Rs. 30/- per litre of price for cow milk they supply. Prices under Rs. 30/- does not help dairy farmers to have surplus amount in hand to take care of cattle and their family, to invest it further into dairy farm mechanization, farm mechanization or any other business.
- Members also suggested that, there should be Minimum Support Price decided for Milk as it is for other commodities.

7.2 Conclusion :

The unprecedented effects of COVID-19 pandemic and lockdown were faced by all the individuals, communities and countries differently making them less or more vulnerable. It impacted every business including dairy business. Dairy processors as well as dairy farmers had to face various risks and challenges. When it comes to dairy processors –including private as well as co-operative milk unions faced an issue of drop in demand which declined sharply for ice-creams and milk based beverages. Fall in demand for liquid milk created mismatch between demand and supply, it resulted into reduced milk prices, directly affecting livelihoods of dairy farmers throughout the country (Bhandari G. et al., 2021). Apart from reduced milk prices, increased production cost (since cattle feed prices increased due to unavailability of raw material, increased transportation cost as a result of supply chain disruption etc.), unavailability of green fodder etc. were main challenges dairy farmers had to face making some of them to sale their cattle or leave the dairy business.

Most of the private dairies and milk vendors reduced or completely stopped procurement of milk from dairy farmers immediately after demand came down. But co-operatives tried to procure same quantity of milk in spite of fall in sales (Rawal et al., 2020, Jena et al., 2021).

Milk is among the essential commodities. Though during lockdown, milk production, processing and marketing did not stop, negative consequences were seen on the business of co-operative milk unions, private dairies and dairy farmers.

8. References

Acosta, A., Mccorrison, S., Nicolli, F., Venturelli, E., Wickramasinghe, U., Arcediaz, E., ...&Steinfeld, H. (2021). Immediate Effects Of COVID-19 On The Global Dairy Sector. *Agricultural Systems*, 192, 103177.

- Akyildiz, S. T., & Ahmed, K. H. An Overview Of Qualitative Research And Focus Group Discussion. *International Journal Of Academic Research In Education*, 7(1), 1-15.
- Annual Report Of Pune Zilha Sahakari Dudh Utpadak Sangh, Katraj (Pune) (2020-21).
- Barman, A., Das, R., & De, P. K. (2021). Impact Of COVID-19 In Food Supply Chain: Disruptions And Recovery Strategy. *Current Research In Behavioral Sciences*, 2, 100017.
- Chandel, B. S., Dixit, A. K., SINGH, A., & DEVI, A. (2020). Economic Analysis Of The Impact Of COVID-19 Lockdown On Indian Dairy Sector. *Agricultural Situation In India*, 21-27.
- Committee for the promotion and advancements of co-operatives. <http://www.copac.coop/data-explorer>
- Copley, A., Decker, A., Delavelle, F., Goldstein, M., O'Sullivan, M., & Papineni, S. (2020). COVID-19 Pandemic Through A Gender Lens.
- De Hoop, T., Desai, S., Siwach, G., Holla, C., Belyakova, Y., Paul, S., & Singh, R. J. (2020). Women's Groups And COVID-19: Challenges, Engagement, And Opportunities.
- De Vito, A., & Gómez, J. P. (2020). Estimating The COVID-19 Cash Crunch: Global Evidence And Policy. *Journal Of Accounting And Public Policy*, 39(2), 106741.
- Deepak, G. A Qualitative Inquiry Into Coping Mechanism Adopted By Kudumbashree SHG In Northern. *Economic Survey, 2021-22*. Available Online At- <https://www.indiabudget.gov.in/economicsurvey/Enwa>, S., & Ewuzie, P. (2020, October). Assessment Of Agricultural Cooperative Societies Role In Poverty Reduction And Welfare Provisions For Members Amidst Extant Covid-19 Pandemic Of Selected Ecowas Countries. In *AEC International Conference 2020* (P. 191). Department Of Agricultural Economics, University Of Nigeria, Nsukka, Nigeria.
- FAO (Food And Agriculture Organization Of The United Nations). (2020). Responding To The Impact Of The COVID-19 Outbreak On Food Value Chains Through Efficient Logistics [Online]. [Http://Www.Fao.Org/3/Ca8466en/CA8466EN.Pdf](http://Www.Fao.Org/3/Ca8466en/CA8466EN.Pdf).
- George, J. A Socio Economic Impact Study Of Rural Women Self Help Groups In Methukummal Village In Tamil Nadu.

- Goel, R. K., Saunoris, J. W., & Goel, S. S. (2021). Supply Chain Performance And Economic Growth: The Impact Of COVID-19 Disruptions. *Journal Of Policy Modeling*, 43(2), 298-316.
- Grida, M., Mohamed, R., & Zaied, A. N. H. (2020). Evaluate The Impact Of COVID-19 Prevention Policies On Supply Chain Aspects Under Uncertainty. *Transportation Research Interdisciplinary Perspectives*, 8, 100240.
- Jaim, J. (2021). Exist Or Exit? Women Business-Owners In Bangladesh During COVID-19. *Gender, Work & Organization*, 28, 209-226.
- Kumar R. (2014). *Research Methodology*. SAGE Publication. Pg. No.156-157.
- Maheshwari, G., & Maheshwari, A. (2021). Growing Inequalities In The Covid-19 Pandemic And Their Effect On Women Entrepreneurship: A Case Of Vietnam. *International Entrepreneurship Review*, 7(4), 65-73.
- Mishra, L. (2016). Focus group discussion in qualitative research. *Techno Learn*, 6(1), 1.
- NABARD (2020), 'Impact Assessment Of COVID-19 On Indian Agriculture And Rural Economy'. Available online at- <https://www.nabard.org/auth/writereaddata/Flipbook/2020/impact-assessment-of-covid-on-indian-agriculture-and-rural-economy/index.html>.
- OECD, Supporting Livelihoods During The Covid-19 Crisis: Closing The Gaps In Safety Nets, <Http://Www.Oecd.Org/Coronavirus/En>.
- OECD. 2020. SME Policy Responses-OECD. Organisation For Economic Co-Operation And Development. May 19. Https://Read.Oecd-Ilibrary.Org/View/?Ref = 119_119680-Di6h 3qgi4x&Title = Covid 19_SME_Policy_Responses
- Phillipson, J., Gorton, M., Turner, R., Shucksmith, M., Aitken-Mcdermott, K., Areal, F., ... & Shortall, S. (2020). The COVID-19 Pandemic And Its Implications For Rural Economies. *Sustainability*, 12(10), 3973.
- Qingbin, W. A. N. G., Liu, C. Q., Zhao, Y. F., Kitsos, A., Cannella, M., Wang, S. K., & Lei, H. A. N. (2020). Impacts Of The COVID-19 Pandemic On The Dairy Industry: Lessons From China And The United States And Policy Implications. *Journal Of Integrative Agriculture*, 19(12), 2903-2915.
- Rajendran, K., & Mohanty, S. (2004). Dairy Co-Operatives And Milk Marketing In India: Constraints And Opportunities. *Journal Of Food Distribution Research*, 35(856-2016-56967), 34-41.

- Rawal, V., Kumar, M., Verma, A., & Pais, J. (2020). COVID-19 Lockdown: Impact On Agriculture And Rural Economy. *Society For Social And Economic Research*, 13(2), 34.
- Sangem, M. (2020). Challenges For Women Entrepreneurs In The Wake Of COVID-19 Pandemic. *Journal Of Interdisciplinary Cycle Research*, 12(11), 279-284.
- Sharma, R., Shishodia, A., Kamble, S., Gunasekaran, A., & Belhadi, A. (2020). Agriculture Supply Chain Risks And COVID-19: Mitigation Strategies And Implications For The Practitioners. *International Journal Of Logistics Research And Applications*, 1-27.
- Singh, B. P. (2020). Impact Of COVID-19 On Rural Economy In India. Available At SSRN 3609973.
- Singh, M. Analysing The Impact Of Novel Corona Virus (Covid 19) On Self Help Groups. Singh, S., Kumar, R., Panchal, R., & Tiwari, M. K. (2021). Impact Of COVID-19 On Logistics Systems And Disruptions In Food Supply Chain. *International Journal Of Production Research*, 59(7), 1993-2008.
- Staniforth, J. (2020). COVID-19 Update: Worker Health, Absenteeism Present Largest Risks To US Food Supply Chain. *Food Quality And Safety*. Available Online: <https://www.foodqualityandsafety.com/article/covid-19-update-worker-health-and-absenteeism-present-largest-risk-to-us-food-supply-chain/> (Accessed On 15 March 2020).
- Stephens, E. C., Martin, G., Van Wijk, M., Timsina, J., & Snow, V. (2020). Impacts Of COVID-19 On Agricultural And Food Systems Worldwide And On Progress To The Sustainable Development Goals. *Agricultural Systems*, 183, 102873.
- Tewari, D. B., Gautam, U., Saxena, C., & Verma, A. (2022). Self-Help Groups (Shgs) Role In Promotion Of Women Entrepreneur: A Saga Of Pandemic Era. *Journal Of Positive School Psychology*, 6(2), 936-947.
- WHO (World Health Organization). (2020c). WHO Director-General's Opening Remarks At The Media Briefing On COVID-19 [Online]. <https://www.who.int/dg/speeches/detail/who-director-general-s-openingremarks-at-the-media-briefing-on-covid-19---11-march-2020>.



GUIDELINES TO CONTRIBUTIONS

1. Two copies of the manuscript typed in double space and soft copy along with an abstract of 100 words should be sent to the Managing Editor, Co-operative Perspective, VAMNICOM, University Road, Pune 411 007.
2. The articles are sent for review to the Referees.
3. Name (s) and affiliation (s) of author (s) should be provided in a separate page along with title of the article.
4. Papers sent for publication should not have been published or sent for publication elsewhere.
5. Five off prints of the article and a copy of the journal are provided.
6. All remittances may be sent to Director, Vaikunth Mehta National Institute of Co-operative Management, University Road, Pune 411 007 or it can be transferred at Saraswat Cooperative Bank Ltd., VAMNICOM Branch, Pune 411007 A/c. No. 110200100001763 / IFSC Code SRCB0000110 and details sent by email.

