

MEASURING FINANCIAL PERFORMANCE OF DAIRY CO-OPERATIVES IN
RAJASTHAN BY REVISITING ALTMAN'S Z SCORE

Jyoti Swarankar,

Research Scholar, UCCMS,
Mohanlal Sukhadia University,
Udaipur.

Email: swarankarj@gmail.com)

Dr. O.P.Jain,

Ret. Assistant Professor, UCCMS,
Mohanlal Sukhadia University,
Udaipur.

Email: opjainpahadiya@gmail.com

Abstract

White revolution (Operation Flood), started the White Revolution in India and made our country self-sufficient in milk and this was achieved entirely through the cooperative structure. Today around 12 million farmers in more than 22 states across the country own around 250 dairy plants handling around 20 million litres of milk a day. This is a remarkable achievement. Thus in current time it is important to measure the current performance of the Dairy co-operatives of the Rajasthan Dairy co-operatives. This paper uses the secondary data of 3 dairy co-operatives of Rajasthan and by using Altman's Z score the performance is analysed. The results revealed that the performance of the dairy co-operatives is still in a good condition and they have a good future ahead.

keywords: *financial health, dairy co-operative, Altman Z-score, Rajasthan, Saras Dairy.*

INTRODUCTION

The India's milk production has increased from 6.78 % of the world to 21.32%. This growth reveals that there is a huge potential in our country which has been utilised in the past year significantly by the dairy industry. It also proves that as the share of India has increased the importance of dairy movement have also risen in the Indian economy for the purpose of reducing the milk and its product. The share of Rajasthan in India's milk production has increased during the year 2009-10 to 2017-18. it is raised from 10.59 percent to 12.72 percent. Although to increase is not continuous and there has decrease in the year 2011-12 and 2012-13 but that is very small degrees while the increase in the period of 9 years a significant. finally we can say that the share of Rajasthan in India's milk production has increased during the period of study and father this provide significant contribution of the dairy industry full stop does the importance of dairy industry in Rajasthan can be justified (national Dairy Development Board, NDDB, 2019; ToI, 2019).

Table-1: Share of India in in milk production

Country	1980	1985	1990	1995	2000	2005	2010	2015	2017
India	31.56	44.02	53.68	65.37	79.66	95.62	121.9	155.7	176.3
World	465.82	513	542.53	540.1	579.3	648.2	724.5	801.1	826.8
Share of India (%)	6.78	8.58	9.89	12.10	13.75	14.75	16.83	19.44	21.32

Source: FAOSTAT, 15 Feb 2019

As the India's share is increasing thus in current time it is important to measure the current performance of the Dairy co-operatives of the Rajasthan Dairy co-operatives. This paper thus analyses the performance of the dairy co-operatives of Rajasthan.

REVIEWS OF LITERATURE

Nema (2018)ⁱ examines the application of Solvency Forecasting models to evaluate the performance of a co-operative dairy company compared to the market leader in fresh milk, another local dairy company of similar volume and the dairy industry.

Grushniene (2016)ⁱⁱ applied Altman's Z-score model for bankruptcy prediction on the three listed Lithuanian agricultural companies. Agribusiness is an important industry in Lithuania and recent trends of consolidation and long-term government subsidies make evaluation of financial health of such companies important not only for the owners, but for the other stakeholders as well. The study has found that the model correctly places companies into "safe" and "grey" zones, which gives initial information for the stakeholders. Further exploratory study into the financial and non-financial factors constituting Z-score could provide additional information for forecasting firm's performance".

C sanesh (2016), described in his research paper titled " The analytical study of Altman Z score on NIFTY 50 companies", "Stock market investments are subject to market risks and there is a possibility for loosing of all the money invested. Investment decisions are so crucial for a successful investor. Investors are using different techniques for stock selection and for investment. The Altman Z-score is a widely used measure that applies an algorithm that has been found to have useful predictive value on the likelihood of a business going bankrupt. In this paper trying to assess the Altman Z-score of NIFTY 50 companies excluding banks and financial companies. The score tries to predict probability of default by the companies due to the financial distress based on the current financial statistics of the company".

Chadha (2016)ⁱⁱⁱ provided insight into the financial distress level in Kuwait. The level of distress shows that major changes are necessary within firms and operations are not running smooth. Bankruptcy laws are required for firms operating in distress. This exploration is a stepping-stone for potential investors by showing the most profitable sectors for investment and for future researchers to predict accurate bankruptcy rates in the State of Kuwait".

Sarbapriya (2016)^{iv}, assessed the financial soundness and stability of the said industry in terms of Altman Z score model for the period, 1991-92 to 2009-10. The analysis of the result reveals that dairy industry is either in grey zone or nearly safe zone during our study period. We hope that our research will help strategists align their business strategies as per market dynamics, and make sound investment decisions".

Kumar et.al., (2015)^v, made attempts to know the financial performance and also to predict the risk of bankruptcy for selected paramedical companies to achieve these objectives a few financial ratios are calculated viz, Liquidity Ratios, working capital ratios, solvency ratios and Altman z score analysis was made to diagnose the problem of bankruptcy".

Mascarenhas (1988)^{vi} analysed Altman's Z-score three listed Lithuanian agricultural companies. Agribusiness is an important industry in Lithuania and recent trends of consolidation and long-term government subsidies make evaluation of financial health of such companies important not only for the owners, but for the other stakeholders as well. The study has found that the model correctly places companies into "safe" and "grey" zones, which gives initial information for the stakeholders. Further exploratory study into the financial and non-financial factors constituting Z-score could provide

additional information for forecasting firm's performance.

Yogba et. al., (2015)^{vii} recommended that manufacturing companies in Nigeria should use the Altman discriminate analysis model to help them detect signs of bankruptcy several years before it occurs, as this lag allows time to take corrective measures.

Ilahi et.al., (2015)^{viii}, explored that commercial banks have financial difficulties. Data was gathered from commercial banks which were listed on Karachi Stock Exchange for the period 2009 to 2013. The results illustrate that all commercial banks in this model are in monetary troubles but in fact, those commercial banks are operating successfully. So, the Z score model is unable to predict bankruptcy (pecuniary Performance) of financial institutions (Commercial Banks).

Chotalia (2014)^{ix} evaluated Financial Health of sampled private sector banks with Altman Z score model. The current research paper deal in measuring financial health of private sector banks with the help of Altman Z-score Model and concluded that the private sector banks which are under study falls in 'Grey Zone' as per Z-score criteria and there is possibility of financial distress in some private sector banks.

Chouhan et.al.,(2014)^x Predicting Financial stability of select BSE companies revisiting Altman Z score. The primary goal of this paper is to analyze and re-examine the Altman Z score. In order to facilitate the current research, various ratios were taken from Altman's Z score. To fulfill our objective Z score ratios were used to divide sample firms into healthy and unstable among BSE-30 companies. First the Z score is calculated for 10 companies selected for this purpose for a period of 5 years each. And then it is divided as per z scores, later the significant in the changes in the ratio is calculated with the help of One sample Komogrov-Smirnow test, which resulted that the change in the z scores is not significant in case of all the companies.

Bushra and Mishra (2015)^{xi} revealed that Z scores for all the select automobile companies were more than 2.9 during the study period except Tata Motors which according to the study had Z score between 1.8 and 2.9 during the year 2010 and 2011. Hence, at present they all are financially sound, away from bankruptcy zone and are safe to invest".

RESEARCH METHODOLOGY

Research Type: The present study followed descriptive research approach by using quantitative approach of problem solving.

Population: The universe of present study consists of all dairies operating in geographical area of Rajasthan.

Sample unit: 3 Dairy plants i.e., Kota, Jodhpur and Pali Saras Co-operative Dairy were selected for the study.

Sample size: the period of 5 years from 2014-15 to 2018-19.

Sampling Technique: In present research, 3 dairy of Rajasthan named Kota, Jodhpur and Pali Saras co-operative limited by using convenient sampling method and their financial performance with Altman z scores to measure the growth of dairy industry in Rajasthan.

Data Source: Secondary data was collected from company and further by using Journals and Articles, Online and international research papers were accessed.

Data Analysis Technique: Analysis work after tabulation is generally based on the computation by using Altman Z score model.

DATA ANALYSIS

To analyses the data, the data is gathered from the annual report of the company and the same is managed to get the components of the Altman's ratio. The variables of Altman and Z-score are shown in the table-4 as under:

Table-2: Altman's Ratios of Kota Dairy

	WC/TA	RE/TA	EBIT/TA	MV OF QUILTY/ Debt+CL	Sales / TA
2018-2019	0.23307	0.05332	0.02362	0.15657	1.73868
2017-2018	0.21582	0.05327	0.00739	0.10029	1.86734
2016-2017	0.29201	0.10549	0.02241	0.17069	2.5978
2015-2016	0.17424	0.02003	0.00786	0.04689	2.14145
2014-2015	-0.499	0.02218	0.00727	0.04675	1.99485

It is clear from the above table and figure that the working capital total assets ratio is improving from negative to positive and increase during last two years, retained earnings to total assets ratio first decrease but later it is increasing, EBIT to total assets ratio is also improving in last two years and sales total assets ratio is also increasing from last 1 years. The overall growth of the Kota dairy is improving during the last 2 years period of the study.

For Kota dairy the ratio is calculated and presented with the Zones as per the Altman's model as under:

Table-3: Altman's Z Score for Kota Dairy

Year	Z score
2018-2019	2.26317
2017-2018	2.28358
2016-2017	3.26968
2015-2016	2.43049
2014-2015	1.47722

It is clear from the above table that the performance of the Kota dairy is not good as the Score of the dairy is in GREY zone for 3 out of 5 years. Although its performance was in green zone in the year 2016-17 but it was unable to keep the same level of their financial performances. The Altman's Z score is decreasing for the company during the last three years and it need to improve it.

To examine the financial health variables of the Jodhpur dairy are presented in the table-4. As under:

Table-4: Altman's Ratios of Jodhpur Dairy

	WC/TA	RE/TA	EBIT/TA	MV OF QUILTY/ Debt+CL	Sales / TA
2018-2019	-0.1269	1.20113	1.44905	0.15785	13.5017
2017-2018	0.02372	0.36181	0.45456	0.12552	4.22722
2016-2017	0.06555	0.35746	0.49733	0.13836	4.90653
2015-2016	0.16198	0.29293	0.44768	0.07746	4.18036
2014-2015	0.26864	0.219	0.00467	0.05502	3.59804

It is clear from the above table and figure that the working capital totals assets ratio is decreasing and in negative figures during last year. It has shown increasing trends in

retained earnings to total assets ratio first decrease but later it is increasing, EBIT to total assets ratio is also improving but decreased in last year. The market value of the equity has also increased during the last year and sales total assets ratio is increasing during the period of the study. The overall growth of the Jodhpur dairy is improving during the last 2 years period of the study.

For Jodhpur dairy the ratio is calculated and presented with the Zones as per the Altman's model as under:

Table-5: Altman's Z Score for Jodhpur Dairy

Year	Z score
2018-2019	19.8941
2017-2018	6.33335
2016-2017	7.20492
2015-2016	6.30449
2014-2015	4.27185

It is clear from the above table that the performance of the Jodhpur dairy is very good and the Score of the dairy is in GREEN zone for all 5 year's period. The score is also increasing and thus The Altman's Z score is showing a bright future for the performance of the company and its stability

To examine the financial health variables of the Pali dairy are presented in the table-4. As under:

Table-6: Altman's Ratios of Pali Dairy

	WC/TA	RE/TA	EBIT/TA	MV OF QUITTY/ Debt+CL	Sales / TA
2018-2019	-0.1279	0.28775	0.00611	0.08103	2.373
2017-2018	-0.3542	0.19571	0.00061	0.05158	2.8938
2016-2017	-0.0739	0.31334	-0.0812	0.08936	3.26114
2015-2016	0.22879	0.3115	0.0013	0.09768	6.19591
2014-2015	-0.1307	0.37143	0.06537	0.18906	7.93811

It is clear from the above table and figure that the working capital total assets ratio is increasing but in negative figures and not stable, retained earnings to total assets ratio is also increasing and with the same in its EBIT to total assets ratio. The market value of its equity is also improving during the last year. The sales total assets ratio is also decreased in the last year. The overall growth of the Pali dairy is improving during the last 2 years period of the study and its ratios are also in negative figures, thus they need to take immediate action for improving their financial performances.

For Pali dairy the ratio is calculated and presented with the Zones as per the Altman's model as under:

Table-7: Altman's Z Score for Pali Dairy

Year	Z score
2018-2019	2.68879
2017-2018	2.77282
2016-2017	3.39362

2015-2016	6.96327
2014-2015	8.62254

It is clear from the above table that the performance of the Pali dairy is not good as the Score of the dairy is in GREY zone for 3 out of 5 year's period. Although its performance was in Green zone for 2014-15, 2015-16 and 2016-17 but it was unable to keep the same level of their financial performances and it is in the GREY zone thereafter. The Altman's Z score is decreasing for the company during the last year and it need to improve it.

Conclusion

Altman's score revealed the financial health of the selected company and it revealed that the entire three dairy co-operative selected for the study company was in the GREEN zone for the 2018-2019 with stability as per financial health. This means that the current level of the dairy has improved in the last year of the study although the Pali dairy has gone down from the healthy Zone to the Grey zone. Further the change in the Altman's score is not due the sample but it has shown stable change. Thus, the Dairy co-operatives of Pali and Kota need to improve their financial health for its bright future.

REFERENCES

- ⁱ Nema, S. (2018). Financial analysis of the Fresh Milk Industries in Greece: The case of the Cooperative Company THESS GALA PIES.
- ⁱⁱ Grushniene, V. K. (2016). Altman Z score model for Bankruptcy forecasting of the listed Lithuanian Agricultural Companies . 5th International congerence on Accounting Auditing and Taxation (ICAAT2016) (pp. 0222-0234). At.Lantis press .
- ⁱⁱⁱ Chadha, P. (2016, May 03). Exploring the financial performance of the listed companies in kuwait stock exchange using Altman's Z score model. *International journal of Economics and Management Sciences*.
- ^{iv} Sarbapriya, D. (2016). Measuring Financial soundness of dairy industry in india: A critical study. *Journal of Poverty, Investment and development* , 29, 22-29.
- ^v Kumar, T. M., M, R., & Anand Shankar. (2015). Financial performance and Bankruptcy Analysis for select paramedical Companies and emperical Analysis . *International Journal of Commerce ,Business and Management (IJCBM)*, 4(ISSN:2319-2828), 1009-1017.
- ^{vi} Mascarenhas, R.C.. (1988). A strategy for Rural Development -Dairy Development in India . *Sage Publications*.
- ^{vii} Yogba, A. H., Okeji, I. F., & Bello Ayuba. (2015). Analyzing Financial Health of Manufacturing Companies in Nigeria using Multipal Discriminant Analysis . *International Journal of Managerial studies and research (IJMSR)* , 3(7), 72-81.
- ^{viii} Ilahi, I., Jamil , R. A., Kazmi, S., Ilahi, N., & Lodhi, M. S. (2015, March). Financial performance analysis of Pakistan Banking Sector using the Altman Z score model of corporate Bankruptcy . *Applied research journal* , 1(1), 34-40.
- ^{ix} Chotalia, P. (2014). Evaluation of Financial Health of sampled private sector banks with Altman Z score model. *International journal of Research in Management, Science & Technology* , 2(3), 42-46.

-
- ^x Chouhan, V., Chandra, B., & Goswami, S. (2014). Predicting Financial stability of select BSE Companies revisiting Altman Z score . *International letters of social and Humanistic science* , 26, 92-105.
- ^{xi} Bushra, M., & Kushendra, M. (2015). Efficiency of Altman's Z score to predict financial unassailability :A Multipal Discriminant Analysis (MDA) of select Automobile companies of india . *Golden Research Thoughts* , 4(7), 1-12.