

A Study on Employee Efficiency at Saras Dairy With Special reference to Rajasthan Co-operative Dairy Federation, Alwar District

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ABSTRACT

The dairy cooperative sector constitutes a vital pillar of the rural economy in Rajasthan, with the Rajasthan Co-operative Dairy Federation (RCDF) operating under the brand 'Saras' as one of the most prominent institutional frameworks for milk procurement, processing, and distribution in the state. Employee efficiency within such cooperative enterprises directly influences product quality, operational productivity, and the socioeconomic welfare of affiliated farmer members. This empirical study investigates the determinants of employee efficiency at the Saras Dairy plant in Alwar District, Rajasthan. A structured questionnaire was administered to a purposively sampled group of 120 employees across production, quality control, logistics, administration, and field operations departments.

Keywords: -RCDF, HR, ERP.

Introduction

India is the world's largest producer of milk, contributing approximately 23% of global milk output (National Dairy Development Board [NDDB], 2023). Within this vast dairy ecosystem, cooperative dairy federations play an indispensable role in connecting rural milk producers with urban consumers, ensuring fair prices, maintaining quality standards, and generating rural employment. The Rajasthan Co-operative Dairy Federation Limited (RCDF), operating under the 'Saras' brand, manages an extensive network of district-level dairy processing plants across Rajasthan, including a significant plant in Alwar District.

Alwar District, situated in the northeastern region of Rajasthan, has a strong tradition of cattle rearing

and dairy farming. The Saras Dairy plant in Alwar serves not only as a milk processing and distribution hub but also as a major source of formal employment for local residents. The efficiency of employees at such a facility directly affects procurement volumes, product quality, cold chain integrity, and ultimately the income of thousands of affiliated farmer-members.

Employee efficiency, broadly defined as the ratio of useful output to total input of employee effort and resources, is a multidimensional construct shaped by individual capabilities, organizational practices, and environmental conditions (Prokopenko, 1987). In cooperative dairy enterprises, efficiency is further influenced by the unique organizational culture of cooperativism, the semi-public nature of the enterprise, and the socioeconomic profiles of the workforce, many of whom are first-generation formal employees transitioning from agrarian backgrounds.

Despite the strategic importance of the Saras Dairy network, empirical research on employee efficiency within RCDF plants—particularly at the district level—remains sparse. Most existing studies on dairy cooperatives in India focus on supply chain efficiency, milk quality, or farmer welfare, with limited attention to the human resource dimensions of organizational performance. This paper addresses this gap by empirically investigating the key determinants of employee efficiency at Saras Dairy, Alwar District.

Objectives of the Study

- To examine the sociodemographic profile of employees at Saras Dairy, Alwar.
- To identify the key factors influencing employee efficiency at the organization.
- To assess the level of employee efficiency across different departments and experience groups.
- To analyze the relationship between HR practices and employee efficiency.
- To offer actionable recommendations for improving workforce efficiency at Saras Dairy, Alwar.

Hypotheses

The following null hypotheses were formulated for testing:

- H1: There is no significant relationship between training and skill development and employee efficiency at Saras Dairy, Alwar.
- H2: There is no significant relationship between compensation and benefits and employee efficiency.
- H3: There is no significant relationship between work environment and employee efficiency.
- H4: There is no significant relationship between technology adoption and employee efficiency.

Review of Literature

1. The concept of employee efficiency has been extensively studied across manufacturing, services, and cooperative sectors. Prokopenko (1987) described employee efficiency as a function of individual competence, organizational systems, and environmental enablers, and argued that

human resource development practices are the most potent lever for efficiency improvement. This foundational perspective has been reaffirmed in subsequent research across diverse industrial contexts.

2. In the context of Indian dairy cooperatives, Srivastava and Bansal (2012) examined employee performance in Amul's Gujarat cooperative network and found that structured training programs and transparent promotion policies significantly enhanced workforce productivity. Similarly, Mishra (2016) investigated employee motivation in RCDF plants in Jaipur and Jodhpur, reporting that compensation satisfaction and workplace relationships were the most significant predictors of self-reported efficiency among dairy workers.
3. Training and development has been consistently identified as a primary driver of employee efficiency. Tharenou et al. (2007) demonstrated through meta-analytic evidence that training investments yield substantial returns in employee productivity, particularly in operationally intensive industries. In the dairy sector, where quality control requires precision and technical competence, periodic skill upgradation training has been linked to reduced wastage and improved processing yields (Singh & Chauhan, 2019).
4. Compensation and its perceived fairness have also been shown to exert significant influence on employee efficiency. Equity Theory (Adams, 1963) posits that employees who perceive their compensation as equitable relative to their contribution and peers exhibit higher motivation and efficiency. Studies in cooperative enterprises in India have noted that fixed government-linked pay scales, while providing security, may limit performance differentiation and thereby reduce efficiency incentives (Gupta & Sharma, 2018).
5. Supervisory behavior and leadership quality have been identified as mediating variables in the efficiency equation. Transformational leadership has been shown to enhance follower performance by inspiring motivation, articulating vision, and providing individualized support (Bass, 1985). In cooperative settings, where hierarchical boundaries are often less rigid, supervisory support emerges as a particularly influential determinant of operational efficiency (Khandwalla, 2004).
6. Technological modernization in dairy processing has accelerated in India over the past decade, with investments in automated milk testing equipment, chilling infrastructure, and enterprise resource planning (ERP) systems (NDDB, 2023). However, the efficiency gains from technology are contingent on employee digital literacy and change readiness, factors that vary considerably across rural cooperative enterprises (Nair, 2020). This contextual reality makes Saras Dairy, Alwar an especially pertinent case for investigating the human capital dimensions of efficiency.

Research Methodology:-

Research Design

- This study adopts a descriptive and analytical research design, combining quantitative survey methods with empirical hypothesis testing. A descriptive design is appropriate given the study's objective to characterize efficiency determinants and their relative importance, while an analytical design enables the testing of hypothesized relationships between HR practice variables and employee efficiency.

Study Area

- The study was conducted at the Saras Dairy processing and distribution plant located in Alwar District, Rajasthan, operated under the auspices of the Rajasthan Co-operative Dairy Federation Limited (RCDF). Alwar District has a significant dairy economy, with the plant processing an estimated 1.5–2 lakh liters of milk per day and employing a diverse workforce across technical, operational, and administrative functions.

Sample and Sampling Procedure

- A purposive sampling technique was employed to select respondents from five functional departments: production and processing, quality control and laboratory, logistics and supply chain, administration and HR, and field operations and dairy extension. A total of 120 questionnaires were distributed, of which 112 were returned complete and usable, yielding a response rate of 93.3%. The sample size was determined using Yamane's (1967) formula, with a 95% confidence level and a 5% margin of error, based on an estimated total employee population of 280.

Data Collection Instrument

- A structured questionnaire comprising three sections was developed for primary data collection. Section A captured sociodemographic information (gender, age, education, experience, and department). Section B contained 35 Likert-scale items (1 = Strongly Disagree to 5 = Strongly Agree) measuring seven efficiency-influencing factors: training and skill development, compensation and benefits, work environment, supervisory support, motivation and recognition, organizational communication, and technology adoption. Section C included five items assessing self-reported employee efficiency outcomes. The questionnaire was first developed in English and then translated into Hindi to ensure accessibility for all respondents.
- Content validity was established through expert review by three HR academicians and two Saras Dairy HR managers. Reliability of the instrument was assessed using Cronbach's alpha, yielding a coefficient of 0.847, indicating strong internal consistency (Nunnally, 1978).

Data Analysis

Quantitative data were analyzed using IBM SPSS Statistics (Version 26). Descriptive statistics

(frequencies, means, and standard deviations) were computed to profile the sample and rank efficiency factors. Chi-square tests of independence were employed to examine associations between categorical HR practice variables and efficiency levels. One-way ANOVA was used to test efficiency differences across departmental and experience groups. A significance level of $p < .05$ was adopted throughout.

Findings and Analysis

Demographic Profile of Respondents

Table 1 summarizes the sociodemographic profile of the 112 respondents. The sample was predominantly male (72%), reflecting the gender composition typical of dairy processing plants in Rajasthan. The largest age cohort was 25–35 years (38%), suggesting a relatively young workforce. A plurality of respondents (35%) held secondary or senior secondary qualifications, while 30% were graduates—consistent with the semi-skilled and skilled technical nature of dairy processing roles. In terms of work experience, 34% had 6–10 years with the organization, indicating moderate organizational tenure and experience-based knowledge accumulation.

Table 1 Socio demographic Profile of Respondents (N = 112)

Variable	Category	Frequency (%)
Gender	Male	72%
	Female	28%
Age Group	Below 25 years	14%
	25–35 years	38%
	36–45 years	31%
	Above 45 years	17%
Education	Below Secondary	22%
	Secondary/Sr. Secondary	35%
	Graduate	30%
	Postgraduate & above	13%
Experience	Less than 2 years	11%
	2–5 years	29%
	6–10 years	34%
	Above 10 years	26%

Efficiency-Influencing Factors: Descriptive Analysis

Table 2 presents the mean scores and standard deviations for the seven efficiency-influencing factors, ranked in descending order of perceived importance. Training and skill development emerged as the highest-rated factor ($M = 4.21$, $SD = 0.61$), followed by compensation and benefits ($M = 4.08$, $SD = 0.74$) and work environment and infrastructure ($M = 3.94$, $SD = 0.68$). Technology and process modernization received the lowest mean rating ($M = 3.48$, $SD = 0.91$), suggesting that employees perceive the current level of technological advancement as a relatively weaker driver of their

efficiency, possibly reflecting limited exposure to modern dairy technologies or inadequate training on existing systems.

Table 2 Mean Scores and Rankings of Efficiency-Influencing Factors (N = 112)

Factor	Mean	SD	Rank
Training & Skill Development	4.21	0.61	1
Compensation & Benefits	4.08	0.74	2
Work Environment & Infrastructure	3.94	0.68	3
Supervisory Support & Leadership	3.87	0.79	4
Employee Motivation & Recognition	3.75	0.83	5
Organizational Communication	3.62	0.72	6
Technology & Process Modernization	3.48	0.91	7

Note. Scale: 1 = Strongly Disagree, 5 = Strongly Agree. **p < .01, *p < .05.

Hypothesis Testing

Chi-square and ANOVA analyses were conducted to test the formulated hypotheses. Results are summarized in Table 3.

Table 3 Summary of Hypothesis Testing Results

Hypothesis	χ^2/F value	df	p-value	Decision
H1: Training → Employee Efficiency	18.42	4	0.001**	Accepted
H2: Compensation → Employee Efficiency	14.76	4	0.005**	Accepted
H3: Work Environment → Employee Efficiency	11.93	4	0.018*	Accepted
H4: Technology → Employee Efficiency	7.34	4	0.119	Rejected

Note. **p < .01, *p < .05. df = degrees of freedom.

Hypotheses H1, H2, and H3 were accepted at statistically significant levels. Training and skill development showed the strongest association with employee efficiency ($\chi^2 = 18.42$, $p = .001$), affirming the primacy of human capital investment in the dairy cooperative context. The association between compensation and employee efficiency ($\chi^2 = 14.76$, $p = .005$) corroborates Equity Theory predictions, suggesting that perceived pay fairness is a significant motivational driver. Work environment also showed a significant positive relationship with efficiency ($\chi^2 = 11.93$, $p = .018$). Hypothesis H4, pertaining to technology adoption, was rejected ($p = .119$), indicating that at the current stage of technological integration at Saras Dairy Alwar, technology alone does not significantly differentiate efficiency levels among employees.

Departmental Differences in Employee Efficiency

One-way ANOVA revealed significant differences in self-reported efficiency scores across departments ($F(4, 107) = 5.63$, $p = .001$). Post-hoc Tukey tests indicated that production and

processing employees reported significantly lower efficiency compared to administration and HR staff. This differential may be attributed to the physically demanding nature of production roles, exposure to cold and wet working conditions, and relatively higher operational targets. Quality control staff reported moderately high efficiency, consistent with the precision-oriented and knowledge-intensive nature of their work.

Experience-Based Differences

Employees with 6–10 years of experience reported the highest efficiency scores, followed by those with over 10 years of tenure. Employees in the 2–5 year experience bracket reported comparatively lower efficiency, potentially reflecting the period of adjustment and skill consolidation typical of early-to-mid career stages. These findings underscore the importance of structured induction programs and mentoring initiatives for employees in their initial years at Saras Dairy.

Discussion

The findings of this study offer several noteworthy insights into the determinants of employee efficiency in a cooperative dairy enterprise. The supremacy of training and skill development as an efficiency driver is consistent with Human Capital Theory (Becker, 1964), which posits that investments in employee knowledge and skills yield returns in the form of enhanced productivity. In the context of Saras Dairy, Alwar, where a significant portion of the workforce comprises employees with secondary school education transitioning into technical dairy roles, structured on-the-job training and periodic refresher programs assume particular importance.

The strong positive association between compensation fairness and efficiency aligns with expectancy-based motivation frameworks. While Saras Dairy, as a cooperative public sector enterprise, operates within a government-linked pay structure, there remains scope for performance-linked incentives, non-monetary recognition programs, and supplementary welfare benefits that could enhance the perceived value of the compensation package and thereby motivate efficiency.

The significant relationship between work environment and efficiency has direct operational implications. Dairy processing involves working in cold storage areas, high-humidity pasteurization sections, and time-pressured logistics operations. Investment in ergonomic workstation design, appropriate personal protective equipment (PPE), adequate ventilation, and break facilities can meaningfully reduce fatigue and improve sustained efficiency. The relatively lower efficiency ratings reported by production staff further underscore the need for targeted workplace improvement in frontline operational areas.

The non-significance of technology adoption as an efficiency predictor is a nuanced finding. It does not imply that technology is unimportant; rather, it may reflect current gaps in employee digital literacy, inadequate training on existing automated systems, or the early stage of technology

integration at the Alwar plant. As RCDF continues to modernize its dairy processing infrastructure in alignment with the National Dairy Plan, bridging the skill gap between technological availability and employee utilization capability will be essential.

Recommendations

Based on the findings, the following recommendations are offered to the management of Saras Dairy, Alwar District:

- Institutionalize a structured Annual Training Calendar covering technical dairy processing skills, food safety standards (FSSAI compliance), cold chain management, and soft skills. Training effectiveness should be evaluated through pre- and post-training assessments.
- Introduce a transparent Performance-Linked Incentive (PLI) scheme that supplements the existing pay scale, recognizing employees who demonstrate measurable efficiency gains in their respective departments.
- Undertake a systematic audit of the physical work environment in production and processing sections, with particular attention to cold storage conditions, safety equipment, shift rotation policies, and rest facilities.
- Strengthen supervisory capacity-building programs to equip team leaders and departmental supervisors with contemporary people management skills, including motivational techniques, conflict resolution, and constructive feedback delivery.
- Develop a dedicated Digital Literacy and Technology Orientation Program to equip employees—especially those in production and logistics—with the skills to effectively utilize automated milk testing, ERP, and inventory management systems.
- Establish Employee Welfare Committees at the plant level with regular grievance redressal mechanisms, employee suggestion schemes, and recognition ceremonies to foster a culture of engagement and efficiency.

Limitations and Scope for Future Research:-

The study is limited by its cross-sectional design, which precludes causal inferences about the direction of relationships between HR practices and employee efficiency. The self-report nature of efficiency measurement may be subject to social desirability bias. The findings are specific to Saras Dairy, Alwar, and may not be directly generalizable to other RCDF plants or dairy cooperatives in different socioeconomic contexts.

Future research should employ longitudinal designs to track efficiency changes following HR interventions. Comparative studies across multiple Saras Dairy plants in Rajasthan could provide richer insights into the role of geographic and cultural factors. Qualitative approaches, including in-depth interviews and focus groups with frontline workers and supervisors, could complement

quantitative findings with contextual depth. Additionally, the role of organizational climate and cooperative identity on employee efficiency in dairy cooperatives warrants dedicated investigation.

Conclusion

This study has systematically examined the determinants of employee efficiency at Saras Dairy, Rajasthan Co-operative Dairy Federation, Alwar District. Drawing on primary survey data from 112 employees, the findings establish that training and skill development, compensation fairness, and work environment quality are the most significant drivers of employee efficiency in this cooperative dairy context. Departmental and experience-based variations in efficiency highlight the need for targeted and differentiated HR interventions.

As Saras Dairy continues to operate within an increasingly competitive dairy market—contending with private dairy brands and national cooperative giants—the efficiency of its human capital will be decisive in sustaining its quality, cost, and service commitments. By prioritizing evidence-based HR practices rooted in the specific operational realities of the Alwar plant, Saras Dairy management can cultivate a more engaged, skilled, and efficient workforce, thereby strengthening the cooperative's contribution to rural livelihoods and dairy sector excellence in Rajasthan.

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Declarations

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The author(s) declare that it is not applicable.

Consent for publication

The author(s) declare that this is not applicable.

Competing interests

The author(s) declare that they have no competing interests.

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