



**JOURNAL OF SCIENTIFIC RESEARCH
IN ALLIED SCIENCES**
ISSN NO. 2455-5800



Contents available at: www.jusres.com

THE COMPARATIVE STUDY OF ECONOMIC RESEARCH IN DAIRY AND NON-DAIRY PRODUCTS IN DIFFERENT - DIFFERENT STATES OF MADHYA PRADESH

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ARTICLE INFO

ABSTRACT

ORIGINAL RESEARCH ARTICLE

Article History

Received: Sept 2019

Accepted: Oct 2019

Keywords:

Milk production, Dairy products, Non-Dairy Industrial Areas, Dairy Industrial Areas.

India is the world's largest producer and consumer of milk. The share of dairy products in the food basket has expanded drastically among both rural and urban consumers. The study found large regional discrepancies in milk production and per capita availability. Milk products should be included in the Midday Meal Schemes diet for primary school pupils. India produces and consumes more than half of the world's milk.

In 2011, it produced 121.8 million tonnes of milk or 16% of global milk output. The dairy subsector accounts for over 70% of India's agricultural GDP. Dairy exports from India have significant potential as a major source of foreign exchange profits. In 2009–10, dairy products were second after cereals in terms of total food expenditure among urban Indian consumers, at 19.16%. Dairy farming contributes significantly to agricultural revenue and employment in states like Punjab, Haryana, Jammu & Kashmir, Himachal Pradesh, Kerala, Gujarat, and Rajasthan.

Demand for dairy products is expected to skyrocket due to population and economic expansion. The OECD and FAO predict global milk output to grow by 2% year from 2012–21. The majority of this expected growth will come from developing countries, with India and China accounting for about 40% of the global economy's expected growth. Understanding India's dairy distribution and consumption dynamics is critical for academic study and policy development. In many emerging countries, rising incomes and urbanization are leading to increased food consumption and dietary composition. Between 1961 and 2007, the amount of dietary energy and protein derived from livestock products in developing nations more than doubled. The USDA reports that production has increased at a steady 4.2% yearly pace. The current work has done with the aim of analyzing the pattern of milk production and its related parameters in Bhopal (Non-Dairy Industrial Areas) and Malwa region (Dairy Industrial Areas).

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2019, www.jusres.com

INTRODUCTION

India is the world's largest producer and consumer of milk. The share of dairy products in the food basket has expanded drastically among both rural and urban consumers, according to this study's empirical analysis of changes in demand and supply for dairy products in India. While the demand for dairy products in India is highly elastic and connected with wealth, the study found large regional discrepancies in milk production and per capita availability. The paper explores numerous aspects of dairy consumption and production trends in India before recommending policy changes. For the dairy sector to develop and for dairy product consumption equity in India, it suggests that milk and milk products be included in the Midday Meal Schemes diet for primary school pupils. Overall, the Indian government should strive for ongoing expansion to fulfill the rising demand for dairy products, which are vital to food security. [1]

Dairy Industry's Importance

In terms of income, employment, equity, socioeconomic development, nutritious food security, women's empowerment, and foreign exchange gains, India's dairy industry is undeniably important. Agriculture has given rural families new economic opportunities and is an important instrument in the fight against poverty and improving rural family nutrition (Government of India, 2011). In 2009–10, dairy products made up 6.4% of total calorie intake in rural India and 8% in urban India.

Rural areas contributed 9% of total protein intake, whereas metropolitan areas contributed 13%. (NSSO, 2012). Millions of Indians rely on milk and dairy products for affordable, nutritious nourishment [2].

India's dairy business has had unprecedented growth, driven by consumer demand, inclusiveness, and pro-poorness. India produces and consumes more than half of the world's milk. In 2011, it produced 121.8 million tonnes of milk or 16% of global milk

output [3]. In 2010–11, the livestock sector generated 29.64 percent of India's agricultural GDP, with the dairy subsector accounting for over 70%. The vast volume of livestock in India greatly improves the socio-economic conditions of rural people. Aside from that, the dairy business is a great place for women to work for themselves. Moreover 60% of dairying families are tiny and marginal farmers, with some even working as field laborers. According to government estimates, animal husbandry employs roughly 11.44 million people in principal and 11.01 million in subsidiary roles or 5.50 percent of the total workforce. Women make up 16.84 million (75%) of the 22.45 million persons involved in animal husbandry, illustrating the dairy industry's importance in promoting women's empowerment and inclusive growth. Dairy exports from India have significant potential as a major source of foreign exchange profits in the evolving liberalized agriculture trade arrangement. In 2010–11, India's dairy exports were worth Rs 54,797.42 lakh, indicating considerable potential as a key source of foreign exchange gains [3].

In addition to increased disposable money, improved health and nutrition are key factors.

Because of these causes, plus the growing popularity of dairy products, milk and milk products demand in India has risen substantially in recent years. Dairy goods like butter, ghee, cheese, skim milk, and others are still in high demand. In recent years, food demand in India has shifted away from staple grains and toward high-nutrition, higher-value commodities including fruits, vegetables, dairy, meat, and eggs [4-6]. In 2009–10, dairy products were second after cereals in terms of monthly total food expenditure among urban Indian consumers, at 19.16%.

Dairy is vital to India's food security because it is the primary source of income and nutrition for the great majority of rural poor [8]. Around 70% of India's population lives in rural

areas. In 2007–08, around 73% of rural families had pets. Small and marginal farmers make up three-quarters of these livestock-owning households, raising 56% of the cattle and 66% of the sheep populations. Dairying is one of the activities that might assist alleviate poverty by giving jobs in rural areas, especially rainfed and drought-prone areas. Dairy farming contributes significantly to agricultural revenue and employment in states like Punjab, Haryana, Jammu & Kashmir, Himachal Pradesh, Kerala, Gujarat, and Rajasthan. It also provides drought-resistant energy and organic fertilizers to help small and marginal farmers enhance crop productivity while lowering costs. Dairy meals may help minimize the risk of a number of medical disorders due to their nutritious value [9-13]. Milk has a significant nutritional value when fed to infants and nursing moms. Demand for dairy products is expected to skyrocket due to population and economic expansion.

India boasts the world's largest dairy herd, consisting of cows and buffaloes, due to the rising demand for animal and food products. Given India's vast dairy herd, the dairy sector is expected to contribute to agricultural growth in the 12th Five-Year Plan (2012–17). Agriculture will considerably benefit from India's rural development and economic liberalization programs, which will open up new market opportunities. The Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA), for example, offered income prospects at the bottom of the economic pyramid, presumably contributing to a rise in demand for milk and dairy products in general. Generally, as Indians prosper, their demand for dairy products will grow. India's milk production must be increased to fulfill the fast-rising demand for milk and milk products. Milk and dairy products are vital to our life.

The OECD and FAO predict global milk output to grow by 2% per year from 2012–21, which is slightly less than the preceding decade's 2.1 percent growth rate. The majority of this expected growth will come

from developing countries, with India and China alone accounting for about 40% of the global economy's expected growth. Population expansion, rising incomes, and the growing influence of retail chains and multinational businesses all contribute to the expected 30% increase in dairy consumption by 2021. As these cross-sectoral interactions show, understanding India's dairy distribution and consumption dynamics is critical for academic study and policy development.

Increasing milk output to meet expected demand is a major developmental challenge for the Indian dairy industry today (Government of India). But how might this expansion be accelerated? And, even if India achieves its desired milk production levels, will milk be equally available throughout the country? Is dairy consumption evenly distributed among different socioeconomic groups? Do you know the latest developments in dairy pricing in India? Is it desirable to see changes in cattle population composition? In the absence of a comprehensive study, the most recent available data must be used to assess India's milk and milk product consumption habits. Because the Indian dairy sector is highly fragmented and unorganized, comprising 70 million rural households, it will be important to examine how the unorganized sector might be organized. The current study's modest purpose is to accomplish two things amid a flurry of concerns and questions. This study will first examine important structural changes and inequality patterns in dairy consumption in India over the previous decade, before looking at supply-side developments in the dairy sector. Finally, we intend to propose some novel ways to increase access to dairy and dairy products.

Millions of people are switching from largely starch-based diets to diets that incorporate growing amounts of dairy and meat. We expect the underlying drivers to persist, and there is substantial potential to grow the demand for animal products in many emerging countries. Growing dairy and other livestock consumption benefit huge

percentages of the developing world's population, even if many millions of people cannot afford better food.

Higher-quality diets are available due to the extra cost. However, the rapid expansion in livestock production and consumption threatens human and animal health, the environment, and the economic viability of many poor smallholders, while simultaneously allowing small and medium-sized dairy farms to reach new markets.

Milk is high in minerals such calcium, magnesium, selenium, riboflavin, vitamin B12, and pantothenic acid (vitamin B5). However, milk lacks iron and folate to satisfy the needs of growing children, and the low iron content of cow milk is one of the reasons why it is not recommended for infants under 12 months. Consumption patterns are shifting, and cattle and dairy products are becoming more vital.

In many emerging countries, rising incomes and urbanisation are leading to increased food consumption and dietary composition, with a rising share of high-value foods, notably animal-derived meals. Energy consumption in developing countries increased from 1 861 kcal/day in 1961 (64%) to 2 651 kcal/day in 2007 (78%).

During the same time span, the consumption of cattle products has risen considerably. During this time period, milk consumption approximately doubled, meat consumption tripled, and egg consumption nearly five folded. However, intake of roots and tubers has dropped. Between 1961 and 2007, the amount of dietary energy and protein derived from livestock products in developing nations more than doubled, albeit it remained much lower than in developed countries. The fall in calorie and protein intake from foods derived from animals in the industrialised countries throughout the 1990s was mostly due to reduced supply chain waste and the absence of subsidies in the old centrally planned economies. This has resulted in a considerable reduction in the proportion of cattle in total calorie and protein intake between the two

country groups. In general, industrialised and developing countries' food consumption and dietary trends are growing more comparable. This is also true for dairy products, though at a slower rate than for cattle products in general. A minor increase of only 0.1 percent from 1961 to 2007 in industrialised countries, whereas the percentage of total dietary energy derived from dairy products climbed only marginally from 3.4 percent in underdeveloped countries. Between-area differences in dairy consumption and dairy energy % were found (Figure 2.6). Between the late 1960s and 2007, dairy products' share to dietary energy consumption increased in South Asia, whereas it increased in East and Southeast Asia after 2001, albeit from a low base.

Dairy Product Production India is the world's largest milk producer, much outpacing the United States, which is second. Among the world's major milk producers, India produces more milk from water buffalo than cow. The world's largest dairy herd includes both dairy cows and water buffaloes. The US Department of Agriculture (USDA), the FAO, and the Indian Government (GOI) all offer estimates of total Indian milk output that are similar but not identical. The USDA reports that agricultural output has risen at a steady yearly rate of 4.2%. The Integrated Sample Survey is commissioned by the country's Department of Animal Husbandry, Dairy and Fisheries (DAHDF) and carried out by state governments. Despite having a lesser population than cows, water buffalo milk is the largest and fastest growing component of India's milk supply. Water buffalo milk currently accounts for around 53% of total milk output, with a 4.4 percent annual growth rate compared to 4.1 percent for cattle milk.

MATERIAL AND METHODS

The purpose of this research is to conduct a comparative analysis to determine the economic impact of dairy versus nondairy industrial regions in the state of MP.

According to the objectives of the current study, the price difference between Non

Dairy Industrial Area (NDIA) and Dairy Industrial Area (DIA) for 40 litres of milk against the standardised price of 40 litres of milk was determined (DIA).

The survey was performed using a questionnaire that was created by the participants. The information was gathered from various Dairy Industrial Area – DIA – and Non Dairy Industrial Area – NDIA – districts throughout the state of MP. A total of 200 milk farmers from various MP regions were surveyed. Milk producers in the M.P. region participated in a survey and completed a questionnaire, which yielded the information. Hypothesis testing was carried out using a one-sample t-test and a basic linear regression model, both of which were used.

RESULTS AND DISCUSSION

The Dairy Industrial Area (DIA) was represented by Malwa, whereas the Non-Dairy Industrial Area (NDIA) was represented by Bhopal and its surroundings. We calculated Bhopal's milk production and cattle/buffalo population. As stated in Table 1, Bhopal and its environs produce approximately 3.7 million tonnes of milk annually, while the cattle/buffalo population is roughly 1.4 million. Based on Bhopal's low milk output, it is estimated that only 30% of rural resources are now being used, while 70% of production components are idle. However, Malwa farmers produce three times the amount of milk as farmers in the same geographical area and with the same resources. According to tradition, all farmers in Bhopal and its neighbouring districts sell milk in raw form, and middlemen buy it for a fraction of its worth, preventing dairy farmers from producing milk on a big scale. To make up for this, middlemen get around 59 percent of milk in each UC described in Table 6. Because most people in each UC indicated in Table 6 make their own milk, the demand for milk is lowered.

The Contingency Table for Bhopal and its Surrounding Regions shows the

government's conservative approach to total milk output. In 2010, milk output in Bhopal and its environs totalled 1.64 million tonnes, based on an illustrative assertion. A one-sample t-test was used to evaluate if Bhopal and its surroundings produce 1.6 million tonnes of milk annually. The test results validated the assertion, as the typical level of total milk production is 1.61 million tonnes per year. The mean level of milk production is 1.61, SD =01.218, N =082 was not significantly different from the hypothesised value of milk production of 1.75 million tonnes per annum at, $t(81) = 0 - 12.50$, $p = 0.000$." As a result, Bhopal and its surroundings produce 1.75 million tonnes of milk annually. The theory adjusts a fixed milk output in million tonnes in Bhopal and its surroundings. It also helps spread information about milk wastage, unemployment, low milk pricing, and the expected increase in milk output if a dairy industry is established in Bhopal and its surrounding regions or suburbs. "The idea is that rural dairy producers receive a 32 percent lower price of milk than the normal milk market," the table adds. The mean level of result is 31.64; the standard deviation is 1.34; N = 91, which is not statistically different from the hypothesized value of 32 percent reduced milk price at $t(91) = -1.3$; $p = 0.000$. As a result, dairy producers in Bhopal and its surroundings earn a 32% lower milk price than the ordinary Bhopal and its surroundings milk market. The study found a downward trend in the low value of milk relative to the standardized price of Rs2435 across 11 milk production districts in Bhopal and its environs. This situation affects the entire dairy farming business, causing low productivity and unemployment. Dairy farmers are traditional entrepreneurs in their communities, investing in dairy cows, taking chances, working hard, and struggling. So, they hope their efforts will pay off, but the poor profit margins make even basic expenses like animal nutrition, health care, and labour compensation tough to handle.

Table 1. An Analysis of Milk Production factors in Non Dairy Industrial Areas (NDIA) i.e. Bhopal and its surrounding regions

Table: 1-A						
	N	Mean	Std. Deviation	Std. Error Mean		
Milk Production	82	1.66	1.21949	0.13477		
Table: 1—B						
	Test Value = 1.75					
	T	df	Sig (2-ailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Milk Production	-12.507	81	0	-1.68293	-1.9507	-1.4152

Table 2 An Analysis of Milk Market Value in Non Dairy Industrial Areas i.e. Bhopal and its surrounding regions

Table# 02-A						
	N	Mean	Std. Deviation	Std. Error Mean		
Suitable Price	91	31.64	1.343	0.042		
Table-02-B						
	Test Value = 32					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Suitable Price	-1.3	90	0	-42.363	-42.44	-42.28

Table 02 shows that low milk prices result in 77.7% unemployment, 179.6 million tonnes of milk waste, and a Rs 9909 million loss in Bhopal and its environs. $t(95, 83, 85)$ shows $M=178.64$; $SD=1.3$; $N=97$; $N=86$; $P=000$. $M=178.64$; $SD=1.3$; $N=97$; and $N=86$ at $t(95, 83, 85)=6.6$; $SD=1.1$; $N=97$; and $P=000$. The statistical analysis shows that the hypothesised value and the t test findings are not significantly different. Specifically, the study demonstrated a negative trend in the low value of milk relative to the standardised price of Rs2435 in a total of 11 milk producing areas in Bhopal and its neighbouring territories. This condition has a negative impact on the entire dairy farming industry, resulting in low

productivity and unemployment in the region. As a dairy farmer, you hold the role of a traditional entrepreneur in your community, one who invests in dairy animals, takes risks, works hard, and endures constant struggle. As a result, they believe that their efforts will bring them success, but the low profit margins make it difficult to manage even basic expenses such as animal nutrition, health care, and labour compensation.

According to the data in Table # 03, low market value of milk results in 77.7% unemployment, 179.6 million tonnes of milk waste, and an economic loss of Rs9909 million in Bhopal and its surrounding areas. At $t(95, 83, 85)$, the statistical data show that the

M=178.64; SD=1.3; N=97; N=86; P=000. The statistical results also show that the M=178.64; SD=1.3; N=97; and N=86 at t=(95, 83, 85)=6.6; SD=1.1; N=97; and P=000. The

statistical analysis reveals that there is no statistically significant difference between the hypothesised value and the results of the t test.

Table 3. An Analysis of loss in Non Dairy Industrial Areas i.e. Bhopal and its surrounding regions

Table-03-A						
	N	Mean	Std. Deviation	Std. Error Mean		
Wastage of Milk	97	178.64	1.343	0.042		
Unemployed Labor	87	77.49	1.145	0.036		
Economic Loss	86	99.66	1.158	0.036		

Table-03-B						
Test Value = 0						
	t	df	Sig. (2- tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Wastage of Milk	6.511	95	0	2.637	2.56	2.72
Unemployed Labor	6.732	83	0	2.494	2.42	2.57
Economic Loss	4.224	85	0	2.658	2.59	2.73

Table 4 An Analysis Surplus Milk Production and Earning in Dairy Industrial Area (DIA) i.e. Malwa and its surrounding regions

Districts (Malwa Region--DIA)		
Districts/	Surplus Milk Production (ml)	Rs (m)
Dewas	0.2	11
Dhar	0.18	9
Indore	0.19	8
Jhabua	0.21	12
Mandsaur	0.18	8
Ratlam	0.21	12
Shajapur	0.21	13
Ujjain	0.2	11
04/04	1.58	84
*Surplus Milk Production=Tons/per annum, Rs = Value of milk production /per annum		
DIA=Dairy Industrial Area		

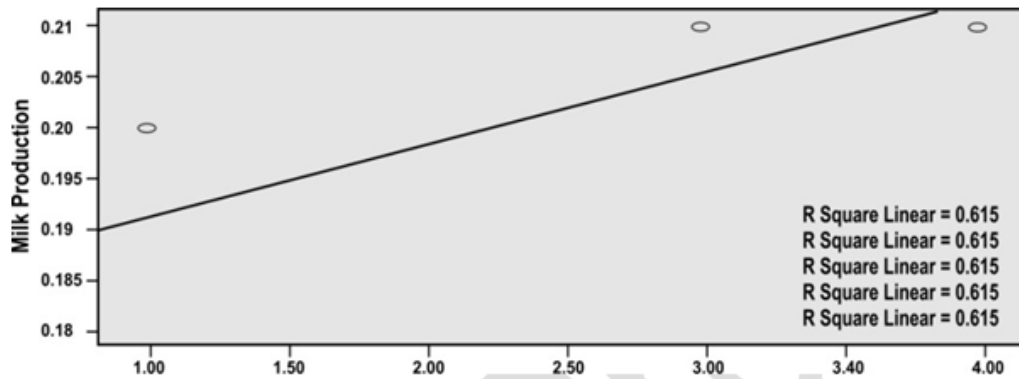


Figure 1. An Analysis Surplus Milk Production and Earning in Dairy Industrial Area (DIA) i.e. Malwa and its surrounding regions

According to the raw data, almost 7.9 million workers are out of work, milk is wasted at a rate of 179.6 million tonnes per year, and an estimated Rs9.94 billion in economic loss happens. Residents of Bhopal and the surrounding region are mostly trained in the dairy farming industry, and as a result, they have no other options for employment besides agriculture or farming. The majority of milk waste occurs when a middleman does not purchase milk from a farmer and the farmer instead decides to sell the milk directly in the city market. Farmers' lives are becoming increasingly stressful as a result of poor dairy conditions and a low market value for their milk. These are the facts that have compelled the dairy industry to adjust its selling practices, such as transforming raw milk into finished milk products such as skim/semi skim and pasteurised milk. Comparatively to Bhopal and its surrounding region, farmers who supply milk to the dairy sector in the Malwa region are more comfortable and create more milk and revenue. See Table 4 and Figure 1 for more information.

Figure#1 illustrates that if the farmers receive right price of milk then they can produce extra milk production which can go up to 21 ± 018 million tons per annum which can generate extra revenue Rs. 45.3 billion/per annum. In this contest, in Bhopal and nearby region the market value of milk and milk production is low comparatively to Malwa region. As a result, it is proved that there is a

significant positive impact of the dairy industry on milk production, employment and milking animal population. If the dairy industry is established at Bhopal and nearby region then this will boost up the milk wholesale price, reduce monopoly of middle man and support to allied dairy institutions like feed supplier, medical staff, and consumer health and so on. According to an economic point of view it is an ideal opportunity for investment for local and international investors.

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