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## India's export potential and competitiveness of selected dairy products with Nepal

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### Abstract

The study was an attempt to investigate India's Export Potential and Competitiveness of Selected Dairy Products with Nepal over the period 2012-2021. Statistical Tools Export Potential as Developed by International Trade Centre were used for analyzing Export Potential of Dairy Products, Revealed Comparative Advantage (RCA) and Bilateral Revealed Comparative Advantage (BRCA) were used to calculate an index of competitiveness of dairy products both at the global and bilateral level with Nepal respectively. It was found that the actual export of dairy products from India to Nepal exceeds the export potential, citing close proximity, open borders, and similar consumption of a variety of dairy products as major facilitators. Nearly 80% of Nepal's dairy imports originate from India. India has a comparative advantage in sweetened milk powder and low-fat milk powder globally. Milk powders are advantageous for long-distance transportation and extended storage, making them suitable for trade over extended periods or distances. Though India is the largest milk producer, the majority of Indian dairy products are less competitive worldwide. By emphasizing quality standards and conducting research, India can explore markets and increase the value of its dairy exports. The dairy products like Ice cream & other edible ice; Low-fat milk powder; Butter; Cheese; Milk & Cream (not concentrated nor containing added sugar); Concentrated Sweetened Milk and Cream; Buttermilk, curdled, or fermented milk, Kephir; High-fat milk & cream in which India had a Bilateral revealed comparative advantage in Nepal may be due to more popularity of this dairy products among consumers.

**Keywords:** Indian dairy sector, export potential, competitiveness, dairy products, Nepal

### Introduction

The 1991 economic policies implemented in India were reoriented towards liberalization and economic integration with the world's economy, which boosted market opportunities for the livestock sector. Over the past two decades, sustained growth in the economy and rising incomes have fuelled an alarming rise in demand for livestock products. There is no exception to this in the dairy industry.

India is the world's largest producer of milk, accounting for 24% of global milk production in the year 2021-22. Over the last eight years, India's milk production has increased by 51 percent. i.e., between 2014-15 and 2021-22, rose to 22 crore tonnes in 2021-22 (PIB, 2023). The emphasis is now shifting to value addition to boost the share of dairy products in global trade since milk production is self-sufficient. The milk market is segmented into many value-added products like Milk powder, butter, cheese, milk, buttermilk, whey, etc. During the year 2021-22, India's export of dairy products was 108,711.27 MT to the world worth Rs. 2,928.79 Crores/ 391.59 USD Millions (APEDA – Dairy Products, 2022).

In 2021, India's dairy market's total share was estimated to be Rs. 13.17 lakh crore. According to the International Market Analysis and Consulting Services Private Ltd. (IMARC) 2021 research, the dairy market has been expanding at a rate of around 15% per year over the past 15 years and is projected to reach a market size of approximately Rs. 30.84 lakh crore by 2027. Approximately half of the nation's dairy market is comprised of liquid milk. The organized sector is currently accounting for 41% of the market for liquid milk, up from 32% three years before. By 2026, it is predicted that the organized sector's share would rise to 54%. In the next five to six years, it is predicted that the market for liquid milk will increase by around 16%, while that of cheese, flavoured milk, lassi, buttermilk, whey, and organic milk is expected to increase by more than 20% annually. Other traditional dairy products like Paneer, ghee, ice cream, Khoa, curd, etc. would have an annual increase in the range of 11% to 20%. The total amount of milk and milk-products consumed by households was 16.1 crore tonnes. By 2030, this is projected to rise to 26.7 crore tonnes.

(Department of Animal Husbandry and Dairying, Annual Report, 2022-23).

Dairy products are also a traditional and nutritionally significant part of most people's diets. India's dairy sector has the potential to play a larger role as a dairy product exporter and importer, thanks to its huge and growing domestic market (Source: India's Dairy Sector: Structure, Performance, and Prospects Technical Report, March 2017). The Indian dairy market has risen rapidly in recent decades and is expected to continue to grow at a faster rate due to a shift in dairy product consumption among urban populations, with a focus on value-added products rather than liquid milk. With a steady rise in the supply of milk and dairy products since 1998, India has become the world's largest producer and consumer of dairy products. Dairy activities are an important element of the rural Indian economy, providing both employment and money. Additionally, all dairy products are consumed domestically in India, with fluid milk constituting the majority of sales. Therefore, there is enormous potential for value addition and overall growth in the Indian dairy sector.

Population growth, urbanization, and rising per capita income in India are the main drivers of milk demand. Due to changing food and lifestyle patterns, rising purchasing power, and demographic growth, milk consumption has been increasing. The country's mainly vegetarian population has no other option to obtain animal protein than milk, which offers a variety of benefits. Additionally, factors including rising consumer interest in high-protein diets and increasing awareness of and access to dairy products through retail locations like organized retail chains are fuelling this expansion.

Nepal imported \$18.7 million worth of milk in 2017. Almost 80% of Nepal's dairy imports come from India, the country that exports the most to Nepal. The key factors promoting trade between the two countries are the open border and proximity to markets. Dairy products are imported in large quantities from countries other than India, including New Zealand, Bangladesh, and Belgium. The estimated annual imports from India, which are mostly in the form of powdered milk, total 4,481 tonnes, or 19 million liters of whole milk. They have become vital because the nation's demand has outpaced domestic output in 2020. Because of this, processors rely on imports from India to meet demand and increase the utilization of their capacity. Even though Nepal's exports of milk and milk products have not been sustained, small volumes of them have been. Butter and ghee were the main products exported to India. (Dairy Sector Strategy – Nepal, April 2020)

Thus, a deeper understanding of the export of dairy products from India to Nepal would contribute to building the development strategy of this sector.

Ohlan (2014) <sup>[3]</sup> studied "Competitiveness and Trade Performance of India's Dairy Industry" and looked into the competitiveness, patterns, trends, and determinants of the export of dairy products from India. According to the findings, India possessed a comparative advantage and was price competitive in the production of milk. Bangladesh and the UAE were projected to overtake the other Indian dairy product importers in market share indicating that there was some instability in the export markets for Indian dairy products. The findings also showed that dairy export from India was elastic to the price divergence, world market size, trade policy, and exchange rate. According to the findings, it was recommended that India concentrate on raising the

quality of its dairy products in order to command a greater rate on the global market.

Kumar *et al.* (2016) <sup>[2]</sup> in their paper, "An Analytical Study on The Export Performance of Dairy Industry in India" examined the issues regarding the 'Export Performance of Dairy Industry of India': Challenges, Trends, and Suggestions for the improvement of the trade situation. This literature has been thoroughly evaluated, and it includes trade exports, imports, and the factors affecting milk production in the country. The objectives of this research were to determine the reasons for low per-unit production, imports, and negligible exports. In a nutshell, there were numerous unexplored areas in which researchers can explore the results that can help the Indian economy achieve a trade balance.

Sharma and Burark (2017) <sup>[5]</sup> studied "Export Behavior of Indian Dairy Products" which elucidated that Since the 1990s, India has been a net exporter of dairy products, including ghee and skimmed milk powder. Even though India's dairy sector has grown significantly over the past ten years and is now among the biggest milk producers in the world, India still only accounts for a relatively small portion of the global dairy trade. Dairy products from India are mostly exported to Bangladesh and Nepal. Due to the fact that New Zealand and Australia's cost of producing milk is similar to ours and that they would eventually control the market for milk and milk products overseas, it is necessary to protect the domestic dairy sector from competitors from abroad by implementing appropriate policy reforms.

Kaur and Brian (2020) <sup>[1]</sup> studied "Export of milk and milk products from India-Performance, competitiveness, and determinants." The study concluded that from an average of US\$1.41 thousand in TE 1992 to US\$6.38 thousand in TE 1994, the total foreign earnings from the export of milk and milk products increased. As export revenue consistently increased from US\$ 5.16 thousand to US\$ 130.30 thousand in TE 2014, the post-WTO period experienced a significant growth in the foreign earnings from the export of milk and milk products. In absolute and percentage terms, exports of all dairy products rose during the post-WTO era, but skimmed milk powder registered the highest share, followed by whole milk powder, cheese, whey dried, butter, and whole fresh cow milk. While world milk production had a negative impact, milk exports were significantly affected by the exchange rate, the GDP of the country importing the milk, and institutional credit. India's export competitiveness for dry milk was relatively low in the milk and milk product sector. NPCs for butter, however, were higher than unity both before and after the WTO, showing that India lacked a competitive advantage in butter export. India needs to improve the value added to its exports of livestock in order to increase its export supply capacity and competitiveness. To do this, it needs to boost public and private investment in processing facilities, cold chains, and refrigerated trucks. Additionally, strict adherence to a number of sanitary and Phytosanitary regulations should be observed to widen market access to developed countries, where India could earn a high value per unit of exports.

Parida *et al.* (2021) <sup>[4]</sup> in their paper, "Trade Competitiveness of the Indian Dairy Industry: An Empirical Analysis" examined major markets, direction of trade, and competitiveness of Indian dairy industry using RCA (Revealed Comparative Advantage) and NPC (Nominal Protection Coefficient). They discovered that the unit price for any dairy product traded from India was higher than other countries export pricing for the same product, implying that

Indian dairy products are less competitive in the global dairy market.

### Aim of the Study

The aim of the study is to examine the export potential of Indian dairy products in the Nepalese market, utilizing the formula Supply  $\times$  Demand (corrected for market access)  $\times$  Bilateral Ease of Trade. Additionally, the study aims to evaluate the export competitiveness of Indian dairy products in Nepal. The findings of this study will provide valuable insights for exporters and policymakers to enhance trade relations and capitalize on the opportunities in the dairy product trade between India and Nepal.

1. To examine the export potential of dairy products exported from India to Nepal
2. To study the export competitiveness of dairy products exported from India to Nepal

### Materials and Methods

The study was undertaken on a macro framework based on secondary data on various aspects of international trade between India and Nepal. The yearly data on export quantity, value, and unit value have been compiled from International Trade Centre (ITC) and UNCOMTRADE database. The time series data were collected from 2012 to 2021 for ten years. Many commodities are commonly exported from India to Nepal. Thus, as per data availability of major exportable dairy products like Sweetened milk powder; Ice cream & other edible ice; low-fat milk powder; Butter; Cheese; Milk & Cream (not concentrated nor containing added sugar); Concentrated Sweetened Milk & Cream; Buttermilk, curdled, or fermented milk, Kephir; High-fat milk & cream; Whey; Milk & Cream in solid forms; and Concentrated milk & cream have been purposively selected for the analysis. (Table 1)

**Table 1:** Selected dairy products with ITC HS code

Sr. No.	ITC HS Code	Products
1.	040229	Sweetened milk powder (Milk and Cream in solid forms, of a fat content by weight of > 1.5% Sweetened)
2.	210500	Ice cream & other edible ice
3.	040210	Low-fat milk powder (Milk and Cream in solid forms, of a fat content by weight of <= 1.5%)
4.	040510	Butter
5.	040690	Cheese
6.	040120	Milk (Milk and Cream of a fat content by weight of > 1% but <= 6%, not concentrated nor containing added sugar or other sweetening matter)
7.	040299	Concentrated Sweetened Milk and Cream (excluding solid forms)
8.	040390	Buttermilk, curdled, or fermented milk, Kephir
9.	0401XX	High-fat milk & cream
10.	040410	Whey
11.	040221	Milk Powder (Milk and Cream in solid forms, of a fat content by weight of >1.5%, Unsweetened)
12.	040291	Concentrated milk & cream

### Analytical tools and techniques employed

To fulfill the specific objectives of the study based on the nature and extent of the availability of data, the following analytical tools and techniques were adopted.

### Export potential as developed by international trade centre

#### Export potential indicator

Supply  $\times$  Demand (corrected for market access)  $\times$  Bilateral Ease of Trade is the formula used to determine the potential (or standard) export value of product k supplied by country i to market j in dollars. Based on the characteristics of the exporter, the target market, and the strength of the relationship between them, an economic model projected the export potential value. The estimated dollar value should not be considered a ceiling value but rather a benchmark for comparison with actual export performance. The actual trade value may actually be above or below the potential value.

### Actual exports

An arithmetic average of direct and mirror data from reliable reporters over the past five years is used to determine the value of actual exports. Only exports to markets where a country has export potential are considered actual exports to a region, including exports to the entire world. Therefore, actual exports can match or be lower than export values reported in other trade databases.

### Revealed Comparative Advantage (RCA)

The RCA Index indicates whether a country has export competitiveness in a particular product that it has to offer to

the World market. It helps to compare the share of a selected product in a country's total exports with the share of a selected product in world exports. It reveals whether the country has a relative advantage or disadvantage in exporting products. It is used to evaluate the competitiveness of the country in exporting certain products with respect to the world. (Balassa, 1965)

$$RCA_{ij} = (X_{ij}/X_{it}) / (X_{wj}/X_{wt})$$

#### Where,

$X_{ij}$  = Values of the country i's exports of product j

$X_{wj}$  = Values of the world exports of product j

$X_{it}$  = Country i's total exports

$X_{wt}$  = World total exports

(Note: country 'i' refers to India and commodity 'j' refers to the selected dairy products)

If  $RCA > 1$ , the Country has a Revealed Comparative Advantage in exporting the product to World

If  $RCA < 1$ , the Country has a Revealed Comparative Disadvantage in exporting the product to World

### Bilateral revealed comparative advantage (BRCA)

The index's value has the same meaning as the RCA index. The only small difference is that both destination (Nepal in this case) and the competing country (World in this case) (Balassa, 1965). It is given as:

$$BRCA^k_{ij} = (X_{ij}^k / X_{ij}) / (X_{wj}^k / X_{wj})$$

**Where,**

$X_{ij}^k$  = Export of commodity k from country i to its partner country j

$X_{ij}$  = Total exports from country i to country j

$X_{wj}^k$  = Total world exports of commodity k to country j

$X_{wj}$  = Total world exports to country j

(Note: country 'i' refers to India, country 'j' refers to Nepal, and commodity 'k' refers to the selected dairy products)

If  $BRCA > 1$ , the Country has a Bilateral Revealed Comparative Advantage in exporting the product in Nepal in competition with World

If  $BRCA < 1$ , the Country has a Bilateral Revealed Comparative Disadvantage in exporting the product in Nepal in competition with World

**Results and Discussion****Export potential of dairy products exported from India**

India has the export potential for Sweetened milk powder; Ice cream & other edible ice; Low-fat milk powder; Butter; Cheese; Milk & Cream (not concentrated nor containing added sugar); Concentrated Sweetened Milk and Cream; Buttermilk, curdled, or fermented milk, Kephir; High-fat milk & cream; Whey; Milk & Cream in solid forms; and Concentrated milk & cream with the world is 30 mn, 16 mn, 98 mn, 43 mn, 15 mn, 6.6 mn, 2.5 mn, 3.5 mn, 1.7 mn, 286 k, 2 mn, 364 k, respectively. (Table 2)

In dairy products to be exported from India to Nepal Sweetened milk powder has the highest export potential of 4200k followed by Ice cream & other edible ice; Low-fat milk powder; Butter; Cheese; Milk & Cream (not concentrated nor containing added sugar); Concentrated Sweetened Milk and Cream; Buttermilk, curdled, or fermented milk, Kephir; High-fat milk & cream; Whey; Milk & Cream in solid forms; and Concentrated milk & cream which have the export potential 652 k, 600 k, 505k, 197 k, 86 k, 7.3 k, 2.1 k, 768, 708, 129, 79, respectively.(Table 2)

India has actual export for Sweetened milk powder; Ice cream & other edible ice; Low-fat milk powder; Butter; Cheese; Milk & Cream (not concentrated nor containing added sugar); Concentrated Sweetened Milk and Cream; Buttermilk, curdled, or fermented milk, Kephir; High-fat milk & cream; Whey; Milk & Cream in solid forms; and Concentrated milk & cream with the world is 11 mn, 7.3 mn, 59 mn, 46 mn, 18 mn, 6.4 mn, 922 k, 2 mn, 2 mn, 618 k, 1.4 mn, 350 k, respectively. (Table 2)

India has actual export for Sweetened milk powder; Ice cream & other edible ice; Low-fat milk powder; Butter; Cheese; Milk & Cream (not concentrated nor containing added sugar); Concentrated Sweetened Milk and Cream; Buttermilk, curdled, or fermented milk, Kephir; High-fat milk & cream; Whey; Milk & Cream in solid forms; and Concentrated milk & cream with Nepal is 4500k, 1300k, 1700k, 759k, 1300k, 507k, 117 k, 34 k, 24 k, 97 k, 31 k, 47 k, respectively. (Table 2)

Here, the actual export of all dairy products from India to Nepal exceeds the export potential. Actual exports may exceed export potential if an exporter does exceptionally well in some markets while underperforming in others. India has cut down export to other countries and giving that to Nepal due to the close proximity, open borders, and similarity in variety of dairy food consumption have been major facilitators of increased India-Nepal actual export of dairy products. In addition to this, the export of perishable dairy

products takes a short time. Since about 80% of Nepal's imports of dairy products come from India (CASA, Dairy Sector Strategy – Nepal, 2020).

**India's revealed comparative advantage (RCA) of dairy products with World**

India's competitiveness in the export of dairy products was analyzed at the Global level through RCA. India's Revealed Comparative Advantage (RCA) of Dairy Products with the World is shown in Table 3. For revealed comparative advantage, the value of exports of Sweetened milk powder (ITC HS Code - 040229); Ice cream & other edible ice (ITC HS Code - 210500); Low-fat milk powder (ITC HS Code – 040210); Butter (ITC HS Code – 040510); Cheese (ITC HS Code – 040690); Milk & Cream (not concentrated nor containing added sugar) (ITC HS Code – 040120); Concentrated Sweetened Milk and Cream (ITC HS Code – 040299); Buttermilk, curdled, or fermented milk, Kephir (ITC HS Code – 040390); High-fat milk & cream (ITC HS Code – 0401XX); Whey (ITC HS Code – 040410); Milk & Cream in solid forms (ITC HS Code – 040221); and Concentrated milk & cream (ITC HS Code – 040291) from 2012 to 2021 was taken into consideration. India's revealed comparative advantage of dairy products was calculated from 2012 to 2021.

From Table 3 it can be stated that India had revealed comparative advantage globally in Sweetened milk powder during the years 2013, 2014, 2017, 2018, 2019, and 2020. Similarly, India had revealed comparative advantage in Low-fat milk powder globally for the years 2013 and 2014. Other dairy products like Ice cream & other edible ice; Butter; Cheese; Milk & Cream (not concentrated nor containing added sugar); Concentrated Sweetened Milk and Cream; Buttermilk, curdled, or fermented milk, Kephir; High-fat milk & cream; Whey; Milk & Cream in solid forms; and Concentrated milk & cream in which India had revealed comparative disadvantage during 2012-2021. So, Sweetened milk powder was more competitive at the global level than other dairy products during the consideration period.

Sweetened milk powder has a worldwide demand as India also has its revealed comparative advantage. It is more popular among the consumer because it has Increased shelf-life due to the extremely added sugar, used in place of conventional milk in recipes for drinks and sweets, Rich deserts are given their smooth, creamy texture by sweetened condensed milk, which also adds flavor and sweetness to the finished dish. It also has remarkable nutritional value and nutrients like calcium, potassium, magnesium, and vitamin A which support bone health, perfect for the consumer who wants to gain weight, increasing awareness regarding the benefit of the product. According to the survey conducted by the online dairy blog 70% of the children preferred flavored milk and 35% less milk was consumed when the flavor variety was not available (Market Research Future, 2023). The capacity of milk powders to be carried over great distances as well as these products are often produced only for storage and trade milk over a longer time period or distance, more than 50% of the world's Whole Milk Powder and Skim Milk Powder production is traded. (OECD-FAO Agricultural Outlook, 2022)

Though India is the largest milk producer, the majority of Indian dairy products are less competitive worldwide. There is a lot of potential and opportunity for India in the export of dairy products globally. The need is to explore the

opportunity. India can give more emphasis on maintaining the quality standards of dairy products to widen market access to developed countries, where India could earn a high value per unit of exports and can also explore the market for its dairy products through more research in this area.

### India's bilateral revealed comparative advantage (BRCA) of dairy products with Nepal

India's competitiveness in the export of dairy products exported from India to Nepal was analyzed through BRCA at the Bilateral level with Nepal's in competition with World. The Bilateral Revealed Comparative Advantage (BRCA) examination proposed dairy products where India enjoys a comparative advantage in Nepal over the World. India's Bilateral Revealed Comparative Advantage (BRCA) of Dairy Products with Nepal is shown in Table 4. For Bilateral Revealed Comparative Advantage (BRCA), the value of exports of Sweetened milk powder (ITC HS Code - 040229); Ice cream & other edible ice (ITC HS Code - 210500); Low-fat milk powder (ITC HS Code - 040210); Butter (ITC HS Code - 040510); Cheese (ITC HS Code - 040690); Milk & Cream (not concentrated nor containing added sugar) (ITC HS Code - 040120); Concentrated Sweetened Milk and Cream (ITC HS Code - 040299); Buttermilk, curdled, or fermented milk, Kephir (ITC HS Code - 040390); High-fat milk & cream (ITC HS Code - 0401XX); Whey (ITC HS Code - 040410); Milk & Cream in solid forms (ITC HS Code - 040221); and Concentrated milk & cream (ITC HS Code - 040291) from 2012 to 2021 was taken into consideration. India's Bilateral Revealed Comparative Advantage (BRCA) of Dairy Products with Nepal was calculated from 2012 to 2021. From Table 4 it can be stated that India had a Bilateral revealed comparative advantage in Nepal in Ice cream &

other edible ice over the years 2012-2021. Low-fat milk powder had a comparative advantage during the years 2012, 2013, 2014, 2015, 2016, and 2017. India had a Bilateral revealed comparative advantage in Nepal in Butter in the years 2012, 2013, 2014, 2015, 2016, 2019, 2020, and 2021. India had a Bilateral revealed comparative advantage in Nepal in Cheese in the years 2018, 2019, and 2020. Milk & Cream (not concentrated nor containing added sugar) had the comparative advantage from the years 2012-2020. Concentrated Sweetened Milk and Cream had a comparative advantage during the years 2013, 2014, 2015, 2016, 2017, 2018, 2020, and 2021. Buttermilk, curdled, or fermented milk, Kephir had a comparative advantage during the years 2012, 2013, and 2017. High-fat milk & cream had a comparative advantage during the years 2015, 2018, 2019, 2020, and 2021. Sweetened milk powder; Whey; Milk & Cream in solid forms; and Concentrated milk & cream which India had Bilateral revealed comparative disadvantage during 2012-2021. So, Ice cream & other edible ice was more competitive than other dairy products to be exported in Nepal from India in competition with World during the consideration period.

The dairy products like Ice cream & other edible ice; Low-fat milk powder; Butter; Cheese; Milk & Cream (not concentrated nor containing added sugar); Concentrated Sweetened Milk and Cream; Buttermilk, curdled, or fermented milk, Kephir; High-fat milk & cream in which India had a Bilateral revealed comparative advantage in Nepal may as the more popularity of this dairy products among the consumers. India had a Bilateral revealed comparative disadvantage in dairy products like Sweetened milk powder; Whey; Milk & Cream in solid forms; and Concentrated milk & cream from 2012 to 2021 may be due to the less popularity of these dairy product in Nepal.

**Table 2:** Export potential and actual export of dairy products exported from India

Dairy Products with ITC HS Code	Export Potential with World in \$	Actual Exports with World in \$	Export Potential with Nepal in \$	Actual Exports with Nepal in \$
Sweetened milk powder (040229)	30 mn	11 mn	4200k	4500k
Ice cream & other edible ice (210500)	16 mn	7.3 mn	652 k	1300k
Low-fat milk powder (040210)	98 mn	59 mn	600 k	1700k
Butter (040510)	43 mn	46 mn	505k	759 k
Cheese (040690)	15 mn	18 mn	197 k	1300k
Milk & Cream (not concentrated nor containing added sugar) (040120)	6.6 mn	6.4 mn	86 k	507 k
Concentrated Sweetened Milk and Cream (040299)	2.5 mn	922 k	7.3 k	117 k
Buttermilk, curdled, or fermented milk, Kephir (040390)	3.5 mn	2 mn	2.1 k	34 k
High-fat milk & cream (0401XX)	1.7 mn	2 mn	768	24 k
Whey (040410)	286 k	618 k	708	97 k
Milk & Cream in solid forms (040221)	2 mn	1.4 mn	129	31 k
Concentrated milk & cream (040291)	364 k	350 k	79	47 k

Source: ITC Trade map, 2022 Note: (k = in thousands, mn= in millions)

**Table 3:** India's revealed comparative advantage (RCA) of dairy products with World

Year	ITC HS Code that Indicates Particular Dairy Product											
	040229	210500	040210	040510	040690	040120	040299	040390	0401XX	040410	040221	040291
2012	0.013	0.020	0.875	0.056	0.021	0.060	0.013	0.015	0.000	0.016	0.000	0.001
2013	1.692	0.023	2.836	0.121	0.018	0.037	0.031	0.077	0.011	0.006	0.036	0.003
2014	1.321	0.024	1.209	0.123	0.024	0.085	0.126	0.012	0.026	0.001	0.014	0.003
2015	0.517	0.032	0.444	0.113	0.032	0.043	0.050	0.013	0.015	0.000	0.000	0.005
2016	0.275	0.052	0.518	0.081	0.064	0.039	0.221	0.032	0.009	0.001	0.000	0.010
2017	1.165	0.088	0.252	0.230	0.057	0.056	0.233	0.044	0.019	0.003	0.000	0.006
2018	1.632	0.090	0.751	0.473	0.049	0.032	0.039	0.034	0.050	0.085	0.001	0.004
2019	1.606	0.094	0.131	0.841	0.056	0.076	0.019	0.036	0.059	0.011	0.004	0.000
2020	1.654	0.087	0.100	0.226	0.081	0.096	0.048	0.050	0.009	0.010	0.007	0.004
2021	0.825	0.091	0.705	0.261	0.060	0.075	0.041	0.047	0.017	0.007	0.006	0.002

Source: Author's calculations based on ITC Trade Map, 2022

**Table 4:** India's bilateral revealed comparative advantage (BRCA) of dairy products with Nepal

Year	ITC HS Code that Indicates Particular Dairy Product											
	040229	210500	040210	040510	040690	040120	040299	040390	0401XX	040410	040221	040291
2012	0.003	2.166	3.163	1.726	0.540	3.318	0.131	241.900	0.000	0.531	0.000	4.018
2013	0.428	3.535	5.988	1.553	0.422	1.509	1.682	2.637	0.000	0.321	0.110	0.000
2014	0.170	1.586	4.759	1.767	0.442	1.382	1.195	0.367	0.000	0.373	0.000	0.137
2015	0.064	1.990	8.327	1.364	0.667	1.610	5.527	0.000	14.035	0.048	0.000	0.000
2016	0.101	1.931	3.233	0.941	0.802	1.068	4.796	0.293	0.000	0.327	0.000	0.107
2017	0.317	1.959	1.210	0.976	0.590	1.582	12.571	1.346	0.000	0.346	0.069	0.000
2018	0.734	1.485	0.579	1.160	1.602	7.988	1.205	0.460	4.218	0.331	0.050	0.000
2019	0.759	1.566	0.592	1.431	1.232	1.521	0.688	0.311	25.606	0.424	0.012	1.123
2020	0.681	1.350	0.130	3.826	1.074	8.230	1.800	0.568	5.660	0.699	0.000	0.000
2021	0.237	1.374	0.114	1.726	0.806	0.000	1.951	0.630	9.953	0.440	0.039	0.027

**Source:** Author's calculations based on ITC Trade Map, 2022

## Conclusions

The actual export of all dairy products from India to Nepal exceeds the export potential. If actual exports surpass export potential, this can be driven by an exporter's exceptional export performance in some markets while neglecting others. India has cut down export to other countries and giving that to Nepal due to the close proximity, open borders, and similarity in variety of dairy food consumption have been major facilitators of increased India-Nepal actual export of dairy products. In addition to this, the export of perishable dairy products takes a short time. As India is the main exporting country for Nepal and almost 80% of Nepal's imports of dairy products originate in India. Sweetened milk powder has a worldwide demand as India also has its revealed comparative advantage. It is more popular among the consumer because of its numerous advantages. Though India is the largest milk producer, the majority of Indian dairy products are less competitive worldwide. There is a lot of potential and opportunity for India in the export of dairy products globally. The need is to explore the opportunity. India can give more emphasis on maintaining the quality standards of dairy products to widen market access to developed countries, where India could earn a high value per unit of exports and can also explore the market for its dairy products through more research in this area. The dairy products like Ice cream & other edible ice; Low-fat milk powder; Butter; Cheese; Milk & Cream (not concentrated nor containing added sugar); Concentrated Sweetened Milk and Cream; Buttermilk, curdled, or fermented milk, Kephir; High-fat milk & cream in which India had a Bilateral revealed comparative advantage in Nepal may be due to more popularity of this dairy products among the consumers. India had a Bilateral revealed comparative disadvantage in dairy products like Sweetened milk powder; Whey; Milk & Cream in solid forms; and Concentrated milk & cream from 2012 to 2021 may be due to the less popularity of these dairy product in Nepal. From the study, it is suggested that the Indian exporter of dairy products to Nepal may explore ice cream & edible ice market by offering a variety of products, enhancing competitiveness in low-fat milk powder through technology and quality, and Improving market penetration for butter and cheese with targeted marketing and diversification.

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