

## **Investigating Trade Performance of Indian Ready to Eat Food: Exponential Growth Analysis**

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### **Abstract**

Agriculture sector is one of the conventional occupations in Indian. The country occupies second position in agriculture production output and employed 50% of the Indian work force. The sector serves as a cushion and safety net by providing employment in the face of large economic shocks and significantly contributes to country's GDP but the contribution of agriculture sector in GDP is declining due to urbanization. India exports large number of agricultural products and processed food to worldwide. The present study is an attempt to see export growth of some of the ready to eat products. The study is focused on the export of 5 products. The secondary data of export quantity (in MT) and 2010-2018 has been extracted from official portal of Agricultural and Processed Food Products Export Development Authority (APEDA) Ministry of Commerce, Government of India. Growth rates have been estimated by Exponential Growth Curve Estimation Model. Results Shows that Biscuits and Confectionary, Breakfast Cereals, Wafers and India Sweets and Snacks have significant growth but Pan Masala & Betal Nuts etc. could not show considerable growth in the study period.

**Key Words:** Export, Growth, Food

### **1. Introduction**

Export is considered as one of the important aspects to measure the economic development. The ideas behind are that export growth reflects in the higher demand which again reflect in higher level of production and realize the economic growth. Another idea is that by increasing the level of export, foreign exchange is generated which facilitates the purchase of intermediate goods. Liberalization of trade is the main reason of revolution in the foreign trade in the developing economies. Particularity World Trade Organization played significant role in bringing the change in this direction. India's support of the Agreement on Agriculture was the main reason for changing in the stage of relative gain for various agricultural supplies

exported in the international food markets. Agriculture is considered as the third major sector contributing in the economy of India and backbone of the industrial production. Agricultural production is not only used for the domestic consumption but also catering to the industries for raw material. Another scope is the processed food industry. Processed food industry refers to the set of methods that direct to the conversion of raw materials to food or the alteration of food into other forms of consumption. Therefore monitoring the role of processed food industry in the economy could be one of the interest areas of policy makers and economists.

## **2. Review of Literature**

International trade plays essential role in the growth of any economy. Exports is an important source of foreign exchange and stimulates investment, profit and saving, employment generation etc. Global food processing sector experiencing rapid growth which in turns created the demand of agro products. Chemedra (2001) used Cobb-Douglas function and found the positive relationship between economic growth and exports of Ethiopian country. Dawson(2005) found the income-export relationship from 1960-1999. Study showed that in the long run both the variable do not co integrate but Granger-causality tests shows that in the short run 1% increase in export leads to .06% increase in income.

Huo (2014) studied the trade potential of agricultural sector in Chinese context and revealed that , irrigated land area, export of agriculture products and exchange rate against US dollars have encouraging factors with export competitiveness of agriculture industry but labor cost and domestic consumption have negative relationship with export competitiveness. Koundinya and Kumar (2014) studied growth in vegetable seed industry and the challenges. As the growth showed the positive impact on the economy in terms of income, employment generation and earning foreign exchange. India is one of the major exporters of fruit and vegetable seeds in the world there by earning good foreign exchange reserves. The major seed importing countries from India are Pakistan, Bangladesh, Saudi Arabia, Netherland and Korean Republic. Few constraints such as highly expensive, perishable nature of seed, contract farming and adverse effect of extreme climate are the main challenges of the industry. Another study conducted by Muthuswamy (2010) also supported and revealed that increased export growth of agro product not only increased the foreign exchange but large number of people involved in increased production, processing and export of agro product. Majumdar(2013) studied export of processed food industry and found insignificant contribution in the global trade due to old technology of production and process, lack of quality control, vain supply chain system, inadequate infrastructural facilities, inadequate inventory facility, high inventory cost etc. Processed food industry fail to attain economies of

scale and lack of funding. Effective supply chain, brand building through latest technology, quality management effective negotiation skills may lead to growth in this sector.

### **3. Research Gap**

After reviewing the past studies, it can be concluded that many studies have been done to see the export growth of agricultural, food, and other sectors in India and other countries and its relationship with the economic development, income and employment generation. However very few studies in processed food sector in Indian context have been done. Few studies in Indian context which tried to find the responsible factors which increases the export growth of agro products were studied. Growth in export of processed food sector is still under explored.

### **4. Objective**

To see the Export growth of ready to eat product from 2010-2018.

### **5. Research Method**

The study is focused on the export of 5 different product categories i.e. Biscuits Confectionary, Breakfast Cereals, Wafers, Indian Sweet and Snacks and Pan Masala and Betal Nuts.. The time series data of export of these selected products in quantity (in MT) from 2009-2018 has been extracted from official portal of Agricultural and Processed Food Products Export Development Authority (APEDA) Ministry of Commerce, Government of India on March 2, 2019. To investigate the trade performance of these products Growth rates following method has been used .

Annual Compound Growth Rates

Annual Compound Growth Rates of export quantity exported has been determined by the following exponential regression model. Where time is independent and export quantity is dependent variable.

$$Y = \alpha\beta^t$$

$$\text{Log } Y = \text{Log } \alpha + t \text{ Log } (\beta)$$

Where Y Export Quantity (Dependent Variable)

t = time (2009-2018) (Independent Variable)

$\alpha$  = Constant

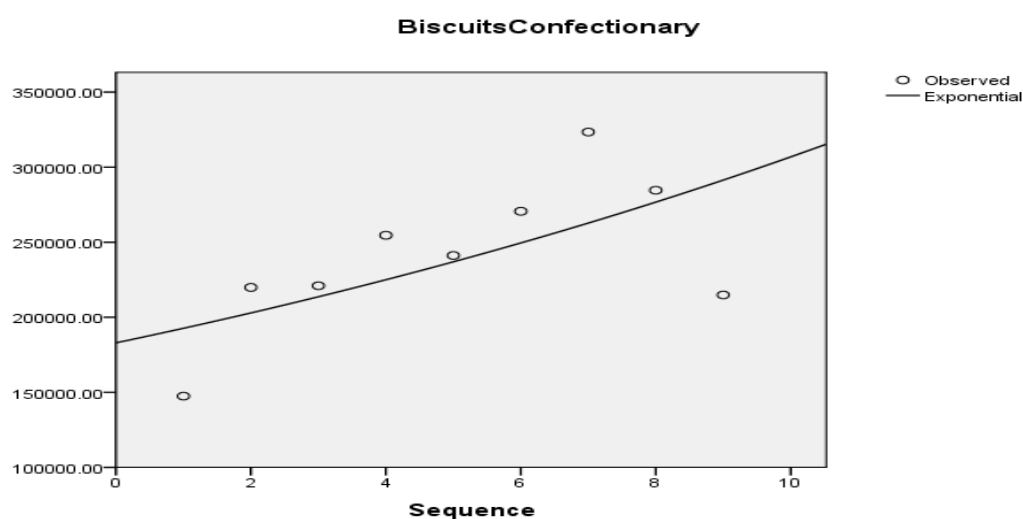
$\beta$  = Slope Coefficient measures the relative change in Y (Export) for a given absolute change in value of regressor (time)

Annual compound growth rate (r) was computed as:  $r = \{ \text{Antilog} (\beta_i) - 1 \} \times 100$

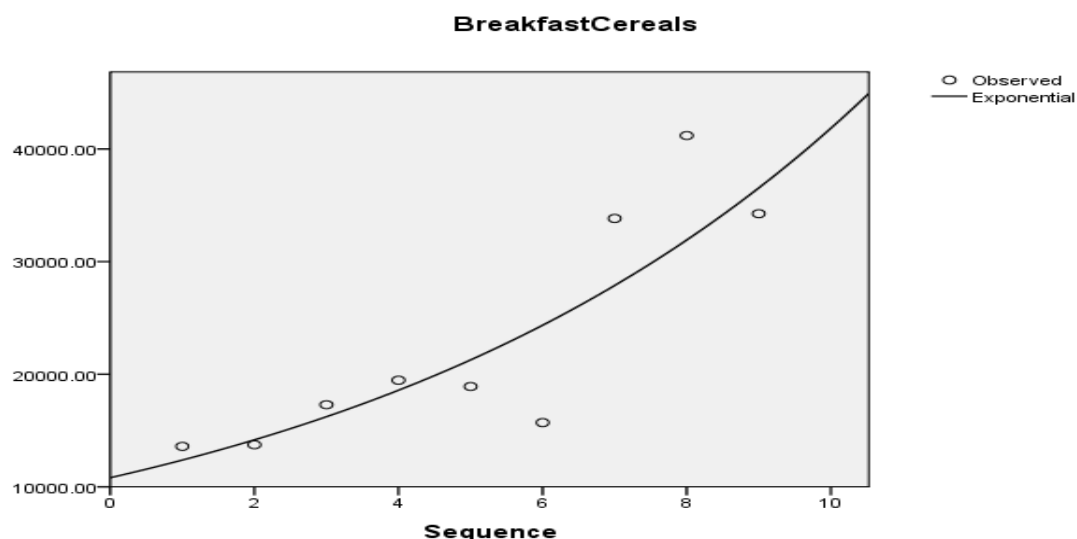
## 6. Results and Conclusions

| Table 1 : Showing Results of Exponential Regression Model and Growth Rates (QTY) |      |          |       |       |         |                    |  |
|--|------|----------|-------|-------|---------|--------------------|--|
| Product (QTY)  | R    | R Square | F     | Sig   | $\beta$ | Antilog( $\beta$ ) | CAGR%<br>={Antilog( $\beta$ )-<br>1}*100 |
| Biscuits<br>Confectionary  | 0.63 | 0.40     | 4.71  | 0.07  | 0.05    | 1.13               | 12.70                                    |
| Breakfast Cereals  | 0.88 | 0.77     | 23.37 | 0.00* | 0.14    | 1.36               | 36.40                                    |
| Wafers   | 0.69 | 0.47     | 6.25  | 0.04* | 0.09    | 1.23               | 23.00                                    |
| India Sweets and<br>Snacks   | 0.92 | 0.84     | 37.92 | 0.00* | 0.10    | 1.26               | 25.80                                    |
| Pan Masala &<br>Betal Nuts etc.  | 0.25 | 0.07     | 0.48  | 0.51  | 0.03    | 1.08               | 8.10                                     |
| <b>Aggregated<br/>Growth</b>   |      |          |       |       |         |                    | <b>21.20</b>                             |

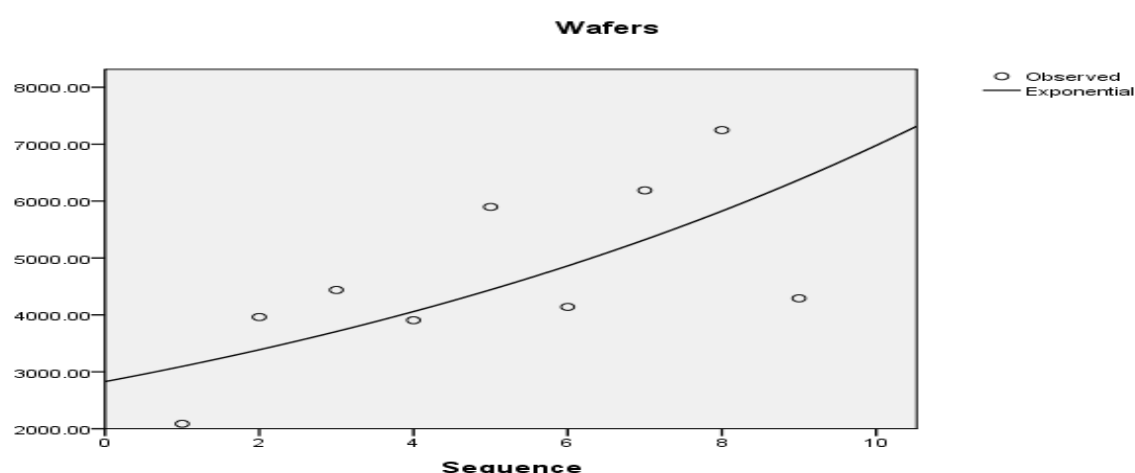
**6.1 Biscuits Confectionary:** Exponential regression Model derived  $R^2 = .40$  i.e. 40% variation can be explained with ( $F=4.71$ ,  $p=.07 > .05$ ) which is not significant. 12.70 % export growth of Biscuits Confectionary from 2010-2018 observed from the analysis. The product category consists of Sweet Biscuits, Bread, Pastry, Sugar Confectionery, Toasted Bread & Similar Toasted Products, Toffees, Caramels, Chewing Gum, Jelly confectionery, mixes and doughs, gingerbread etc.



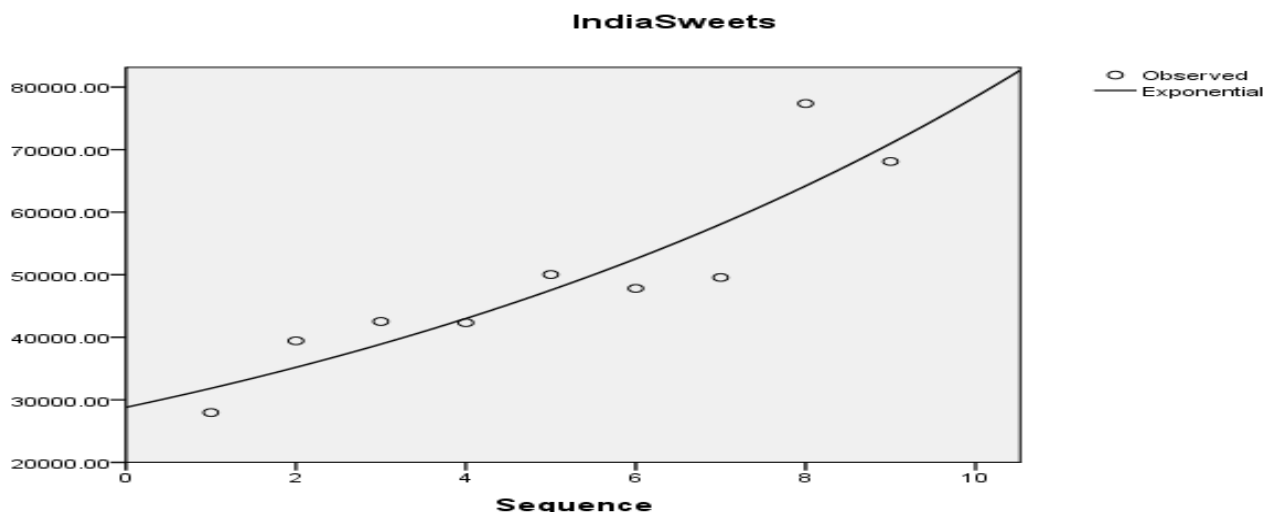
**6.2 Breakfast Cereals:** Exponential regression Model derived  $R^2 = .77$  i.e. 77% variation can be explained with ( $F=23.37, p=.00<.05$ ) which is significant. Highest growth 36.40 % export growth of Breakfast Cereals from 2010-2018 observed from the analysis. Breakfast cereals includes Other Worked Grains of Oats , Maize (Corn), Prepared Foods Obtained From Unroasted Cereal Flakes, Stuffed Pasta, Cooked/Otherwise Prepared, Flakes, Granules & Pellets Of Potatoes, Rolled/Flaked Grains Of Oats, Pellets of Cereals etc.



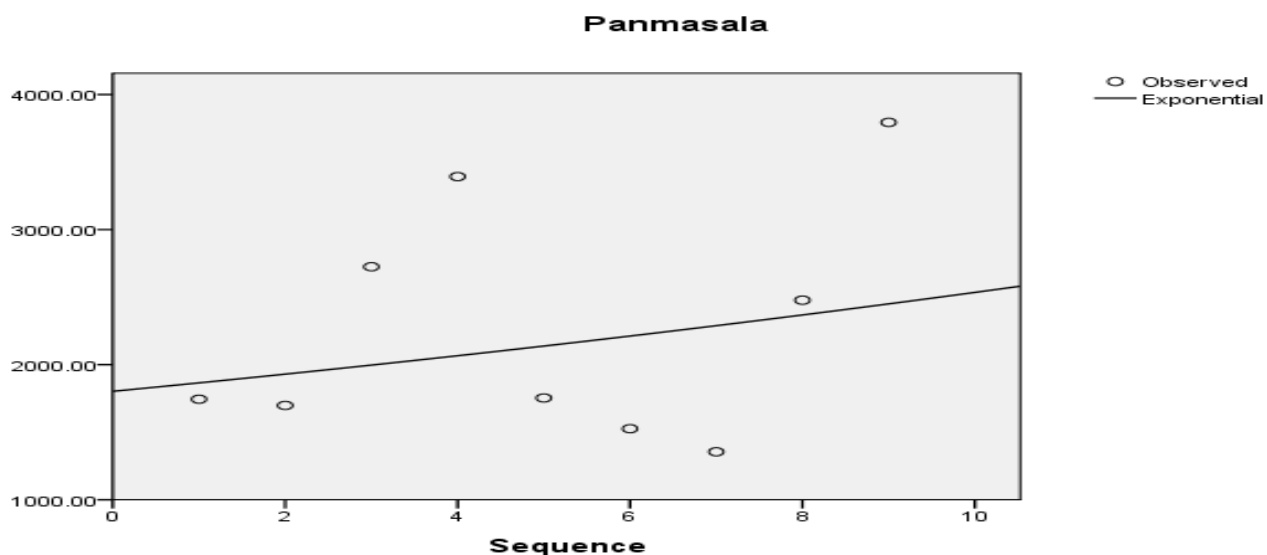
**6.3 Wafers:** Exponential regression Model derived  $R^2 = .47$  i.e. 47% variation can be explained with ( $F=6.25, p=.04<.05$ ) which is significant. 23 % export growth of Wafers from 2010-2018 observed from the analysis. The category includes Waffles and Wafers, Coated With Chocolate etc.



**6.4 India Sweets and Snacks:** Exponential regression Model derived  $R^2 = .84$  i.e. 84% variation can be explained with ( $F=37.92$ ,  $p=.00 < .05$ ) which is significant. 25.80 % export growth of India Sweets and Snacks from 2010-2018 observed from the analysis.



**6.5 Pan Masala & Betal Nuts etc:** Exponential regression Model derived  $R^2 = .07$  i.e. only 7% variation can be explained with ( $F=.48$ ,  $p=.51 > .05$ ) which is not significant. Only 8.10 % export growth of Pan Masala & Betal Nuts etc. from 2010-2018 observed from the analysis.



The aggregated export growth of ready to eat product category observed to be 21.20% for the study period. The Highest growth found in breakfast cereals. There is high demand of oats, corn flakes, stuffed Pasta, Granules & Pellets of Potatoes, Pellets of Cereals etc. therefore processed food industry should consider it as a potential product to earn foreign exchange.

India Sweets and Snacks are also exported in huge volume. Therefore more variety of snack and Indian sweets should be developed and export in the foreign market. Wafers and Biscuits confectionaries have relatively slow growth therefore more concentration processing of these products are required to be liked by the foreign market. Pan Masala showed the lowest growth rate. The reason could be that most of the western country may not preferred this product for consumption therefore other market having similar culture like India may be the potential market for the product.

The country has an opportunity to earn more foreign exchange in international market and employment generation by increased production, and liberated trade policy. Research and development and technological up gradation in the processed food industry may also contribute in export performance. The export growth is directly related with the economic growth of the country as increase in exports exerts a favorable effect on the growth process of an economy. Export growth depicts an increase in demand for country's production and thus causes an increase in the real GNP and productivity level.

Export earnings along with the export growth in terms of quantity may give deeper insight in the present study. Further impact of price fluctuation on export growth may also be considered for future research.

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Appendix

| <b>Showing the Products Category</b>    |   |
|---|---|
| <b>Biscuits<br/>&amp; Confectionary</b> |   |
| HSCode                                  | Products  |
| 19053100                                | Sweet Biscuits  |
| 19059090                                | Other Bread, Pastry, Rice Papad And Similar Products  |
| 17049090                                | Other Sugar Confectionery, Not Containing Cocoa   |
| 19059020                                | Biscuits Not Elsewhere Specified Or Included  |
| 19054000                                | Rusks, Toasted Bread & Similar Toasted Products   |
| 17049030                                | Toffees, Caramels And Similar Sweets  |
| 17041000                                | Chewing Gum, Whether Or Not Sugar-Coated  |
| 17019100                                | Refined Sugar Containing Added Flavouring Or Kg. Colouring Matter   |
| 19059010                                | Pastries And Cakes, Biscuits & Other Bakers' Wares N.E.S. In Ch.19, Whethe .  |
| 19012000                                | Mixes And Doughs For The Preparation Of Bakers' Wares Of Heading 1905   |
| 17029040                                | Caramel   |
| 17049010                                | Jelly Confectionery   |
| 19051000                                | Crispbread  |
| 19052000                                | Gingerbread And The Like Sweet Biscuits; Waffles And Wafers:  |
|   |   |
| <b>Breakfast Cereals</b>                |   |
| HSCode                                  | Products  |
| 11042300                                | Other Worked Grains Of Oats For Example (Hulled / Pearled / Sliced / Kibbled) Of Maize (Corn)   |
| 19042000                                | Prepared Foods Obtained From Unroasted Cereal Flakes Or From Mixtures Of Unroasted Cereal Flakes And Roasted Cereal Flakes Or Swelled Cereals |
| 19041010                                | Corn Flakes   |

|  |  |
|--|--|
| 11042900                               | Other Worked Grains Of Oats For Example (Hulled / Pearled / Sliced / Kibbled) Of Other Cereals |
| 19022010                               | Stuffed Pasta, Cooked/Otherwise Prepared   |
| 19059030                               | Extruded Or Expanded Products, Savoury Or Salted   |
| 11052000                               | Flakes, Granules & Pellets Of Potatoes   |
| 11041200                               | Rolled/Flaked Grains Of Oats   |
| 11041900                               | Rolled/Flaked Grains Of Cereals Other Than Oats  |
| 11032000                               | Pellets of Cereals   |
| 11072000                               | Malt, Roasted  |
| 11042200                               | Other Worked Grains Of Oats For Example (Hulled / Pearled / Sliced / Kibbled) Of Oats          |
|  |  |
| <b>Wafers</b>                          |  |
| HSCode                                 | Products   |
| 19053211                               | Waffles And Wafers, Coated With Chocolate Or Contng Chocolate                                  |
| 19053219                               | Other Communion Wafers   |
| 19053290                               | Other Waffles And Wafers   |
|  |  |
| <b>Indian Sweets and Snacks</b>        |  |
| HSCode                                 | Products   |
| 21069099                               | Other Food Preparation Not Elsewhere Specified   |
| 17049020                               | Boiled Sweets, Weather Or Not Filled   |
|  |  |
| <b>Pan Masala &amp; Betal Nuts etc</b> |  |
| HSCode                                 | Products   |
| 21069020                               | Pan Masala   |
| 21069030                               | Betel Nut Products Known As "Supari"   |
| 21069070                               | Churna For Pan   |