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An Antecedents of Export Performance of Food and Beverages MSMEs in India

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ABSTRACT

The Food and Beverages (F&B) sector has evolved as a sunrise sector of India. It is gearing-up its business at a rapid rate after the pandemic shocks. India is one of the largest foods producing nation in the world but due to its perishable nature the surplus food articles are converted to processed food and beverages products and exported to other countries. Even though the sector has good prospects to grow and attract foreign investment but most of the enterprises are micro, small, and medium. However, MSMEs are performing better in food and beverages exports. The present study has empirically investigated the export antecedents of India's F&B MSMEs by using Random Effects Tobit Model in a firm level dataset. The study also analyzed the region-wise F&B export performance. The findings reveal that F&B industry is highly labour-intensive which requires more capital investment in physical assets like plant and machinery, cold storage facilities, warehousing, packing and packaging centers and so on. To stimulate the export performance, the F&B firms require to enhance the labour productivity by investing on the employees' welfare and training activities as well as create awareness among them about the rules and regulations of WTO and FAO like food standard and safety regulations and packing and packaging standards etc. The region-wise analysis indicates that in F&B exports the Northern and Eastern regions have performed better whereas the North-Eastern region is more oriented towards the domestic market rather than the export market.

Keywords: Export Intensity, Random Effects Tobit Model, MSMEs, Food and Beverages, WTO
JEL Code: F10, F14, L66, C51

I. INTRODUCTION

In India, the Food and Beverages (F&B) sector has emerged as a sunrise sector due to its rapid growth and high profit-making especially the food processing enterprises. During the post pandemic shocks, the sector poised a robust growth where the market size has reached to ₹4.5 million crore of which 65 percent is contributed by unorganized MSMEs. The F&B market size has increased at a CAGR of 11.05 percent and projected to reach USD 504.92 billion by 2027. The sector contributes 3 percent in country's GDP, 11.6 percent of total employment (i.e., above 7.3 million people), 10.4 percent of country's total export, 20.2 percent of GVA in agriculture and allied sector and shares 2/3rd of India's retail market. The sector has great potential to fetch higher profit due to its large market size and thereby attracts vast foreign investment within it (CIRIL Report, Aug 2022).

Globally, India is one of largest food producing nation which has attained self-sufficiency in 1970s. The country has transformed the 'ship-to-mouth' status into an exporter status. Due to its perishable nature and low value addition, the surplus foodgrains have been transformed into processed food and beverages

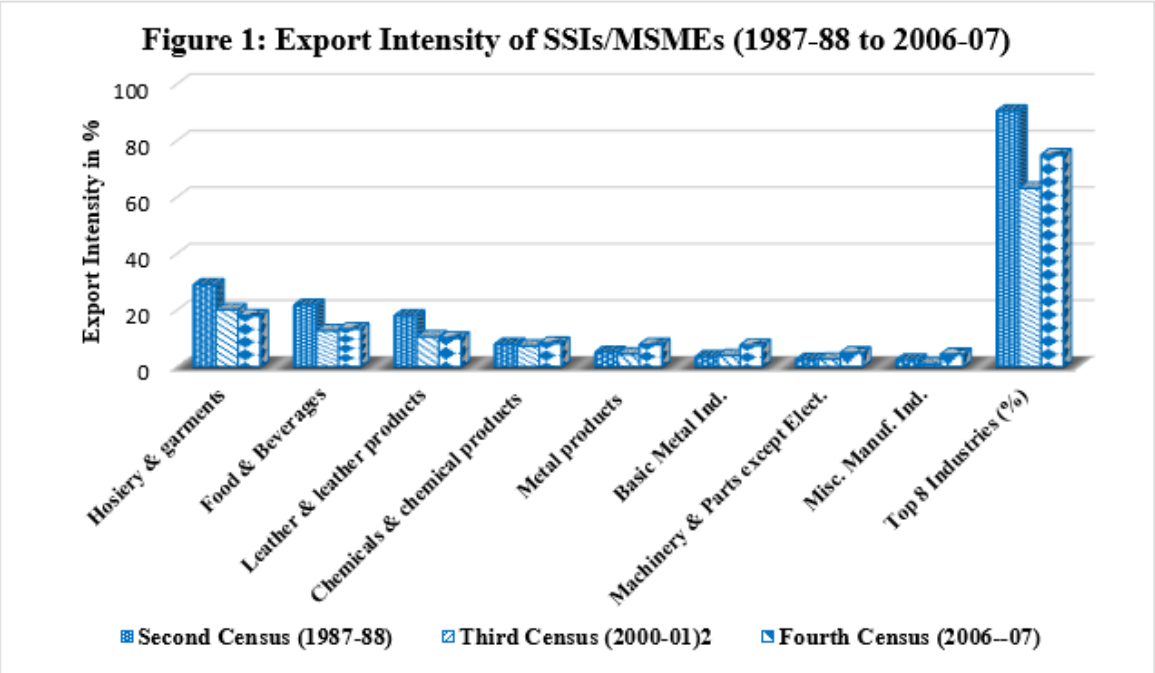
products and exported to other countries. Since last two decades, the food processing industry has emerged as one of the largest sectors in the world, but it was limited to food preservation, packing, packaging, and transportation. However, with technological advancements such as cold storage facilities, packaging centres, food parks, irradiation centres as well as modern slaughterhouses few industries within the sector have met the global standards. All these developments have fostered the exports of F&B products in India. Exports acts as a key propulsion to economic growth of the country (Meier 1976; Biswas and Singh 2018). In FY 2021-22, the country's overall export declined by 7.03 percent (i.e., from US$ 313 billion to US$ 291 billion) while the share of F&B exports in total exports raised from US$ 32 billion to US$ 38 billion i.e., a rise of 18.75 percent (Annual Report of MoFPI, 2021-22). Nevertheless, the export value of processed F&B products constitutes US$ 8.54 billion which accounts for 22.3 percent of the total food exports in 2021-22 (Annual Report of MoFPI, 2021-22). The sector accounts for 9.87 percent in India's manufacturing GVA during 2019-20 at 2011-12 prices (MoFPI Annual Report, 2021-22). However, due to global pandemic and consequent global lockdown the industry reflects a downward spiral. Moreover, the industry constitutes the largest number of firms which employs the largest number of labour forces in the country. The sector is highly labour-intensive and use less fixed capital. The registered food processing sector employs 1.93 million (12.38 per cent) workforce (ASI 2017-18) while the unregistered sector employs 5.11 million (14.18 per cent) people (NSSO 73rd Round, 2015-16) and most of the firms are micro, small, and medium enterprises (MSMEs). The registered MSMEs comprises 2,23,018 number of food processing units which contributes ₹ 1,37,28740 million in Gross Output and shares ₹ 42,6592.4 million in country's GVA. The Food Processing MSMEs employs 1.468 million labour force into its ambit (All India Census of MSME, 2006-07) as the latest data has not been updated by the government after 2010-11.

The growing population of India, rapid urbanization, rising household consumption, changing food habits and lifestyle etc. have boosted the food and beverages market in the country. The sector has good prospects for innovation, value addition and value creation by reducing the waste. Food processing industry acts as a linkage between agriculture and industry. It has emerged as a potential and profitable sector due to its increasing value addition. Based on its growing relevance in country's economy and total exports the present study will focus on the export performance of F&B MSME enterprises in India. The F&B sector has been selected for the study because of the higher export performance of SSIs/MSMEs based on the latest three All India Censuses of SSIs/MSMEs as given below in sub-section 1.1:

1.1 INDUSTRY-WISE EXPORT PERFORMANCE OF SSIs/MSMEs IN INDIA

As per the latest All India Censuses of SSIs/MSMEs, the export performance of the top 8 SSIs/MSMEs has been measured based on *export intensity* calculated as a sector's export value in total SSIs/MSMEs export values. Figure-1 clearly reflects the top 8 manufacturing SSIs/MSMEs in total SSIs exports that constitutes 90.51 percent during second SSI census (1987-88), 63.21 percent during third SSI census (2001-02) and 75.01 percent during fourth MSME census (2006-07).

Figure-1 clearly indicates that Wearing Apparel (Hosiery & Garments) and Food and Beverages industries leads in all the three censuses of SSIs/MSMEs exports intensity. Hence, it's imperative to understand the factors that determine the highest F&B export intensity by MSME in India. Therefore, the present study will focus on investigating the determining factors that foster the export performance of F&B MSMEs and the regions which are performing better and why?



Source: All India Censuses of SSIs/MSMEs.

1.2 SCOPE AND LIMITATION OF THE STUDY

The scope of the study is limited to only registered F&B MSMEs listed on Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) markets. Hence, the study didn't capture most of the micro enterprises whose investment limited is very low as per MSME Act 2006. The study is only concentrated on the supply side factors due to lack of demand side data. Major limitation is lack of data from government sources.

II. REVIEW OF LITERATURE

A systematic and extensive literature review has been done for this study. There are many factors which effects the export performance including the demand side as well as supply side factors. The literature review will help to identify those factors which effect the export performance of F&B MSMEs in India. The section is divided into export intensity, Tobit model and supply side determinants of export performance.

2.1 EXPORT INTENSITY

Many studies have used export intensity to measure the export performance as shown in Table- 1. Das and Pradhan (2010) used export intensity to investigate the factors that affect the SMEs manufacturing firms by using Censored Quartile Regression model and found SMEs export intensity mainly concentrated on low technology products rather than high-tech products. In another study by Abraham and Sasikumar (2010) examined the determining factors that affects export intensity of India's textile and clothing (T&C) industry subsequent to the rollout of Multi Fibre Agreement (MFA). The study found that T&C export intensity and export competitiveness can be attained either through *'low road route'* i.e., by employing the large number of cheap labours which is unsustainable and have adverse welfare effects or through '*high road route'*, i.e., by using latest technology and enhance efficiency that has positive and significant

sustainable welfare effects. Biswas and Singh (2020) have used export intensity to examine the region wise factors that affect the MSMEs export performance. The findings indicates that firm size, labour cost, labour productivity, share of gross output and capital investment were the significant factors that affects the MSMEs export intensity. The study concludes that North-Eastern India has huge prospects to exports due to its unharnessed natural resources and connected to South-East Asian nations. The study recommends that the policy makers should focus on this region by developing infrastructure, SEZs, EPZs and by providing other necessary supports.

Table 1: Determining Factors of Export Performance

S.No	Variables	Measurements	Studies
1	**Export Intensity**	Ratio of export sales to total sales. Export intensity is a parameter to measure export performance	Pradhan and Zohair (2014); Wang, X. (2013); Abraham, V. and Sasikumar, S.K. (2010); Das and Pradhan (2009, 2012); Hall, E. H. and Lee, J. (2008); Caparas, D. (2006); Lages and Lages (2004); Leonidou, Katsikeas, and Samiee (2002)
2	**Firm age**	Firms' incorporation year	Adams, F.G. and Ichimura, S. (1998); Caparas, D. (2006); Maurel, C. (2006); Das and Pradhan (2009, 2015); (Lefebvre and Lefebvre (2001); Abraham and Sasikumar (2010)
4	**Firm Size square**	Square of total sales (in ₹ Mn)	Lall and Kumar (1981); Cooper and Kleinschmidt (1985); Czinkota and Johnston (1983); Cavusgil and Naor (1987); Christensen, Rocha, and Gertner (1987); Diamantopoulos and Inglis (1988); Grinsrud (1990); Wagner, J. (1995); Wakelin (1998); Dholakia and Kapur (1999); Lefebvre and Lefebvre (2001); Wagner (2001); Caparas, D. (2006); Das and Pradhan (2009); Gyamfi and Korneliussen (2013); Pradhan and Zohair (2014);
5	**Labour Cost**	Expenses on wages/salaries, allowances, bonus and gratuity (in ₹ Mn)	Amable and Verspagen, 1995 and Van Dijk, 2002; Gereffi and Memedovic, 2003; Caparas, D. (2006); Kaplinsky and Morris (2008); Abraham and Sashikumar (2010); Wang, X. (2013); Biswas and Singh (2020)
6	**Capital Cost/Cap. Investment**	Expenses on Net Fixed Assets (in ₹ Mn)	Abraham and Sashikumar (2010); Faruq (2010); Caparas, D. (2006); Banjeree, P (2001); Adams, F.G. and Ichimura, S. (1998); Rho and Rodrigue (2012); Peluffo, A. (2016); Hassan, Kausar and, Arshed (2022).
7	**Capital Intensity (K-Intensity)**	Capital-Labour Ratio	Bernard and Wagner (1997); Pant (1993); Kumar and Siddharthan (1994); Montassar, K. (2017); Caparas, D. (2006); Van Dijk (2002);
8	**Welfare and Training Expenses (WTE)/ Labour Productivity**	Welfare and Training expenses (in ₹ Mn). Labour productivity is proxy for WTE.	Duenas Caparas (2006)
9	**Regional Dummies**	Assume 1 for jth Region, otherwise 0	Pradhan and Zohair (2014)

Source: The Author developed for the study.

2.2 TOBIT MODEL

Abraham and Sasikumar (2010) investigated the 'high road' as well as 'low road' export routes of textile and clothing industry in India by using Tobit model on pooled data i.e., Random effects model. Biswas and Singh (2020) have empirically investigated the region-wise factors of MSMEs exports in India by using Tobit model.

2.3 DETERMINANTS OF EXPORT PERFORMANCE

Many studies utilized firm level datasets to investigate the determining factors of export performance on various sectors like textile and clothing (Abraham and Sasikumar 2010); manufacturing firms (Duenas-Caparas 2006; Das and Pradhan 2009; Biswas and Singh 2020) and regions (Das and Pradhan 2009; Biswas and Singh 2020).

2.3.1 IMPACT OF FIRM AGE ON EXPORT PERFORMANCE

Firm age is estimated as the number of years of its incorporation. As the firm matures, the accumulated knowledge it gained from the years of experience in the market has better leveraged the firm to compete in the foreign market and it is expected to positively affect the export performance of the firm (Abraham and Sasikumar 2010). However, younger firms with more aggressive, flexible, and proactive enter the market to cater the global demand (Lefebvre and Lefebvre 2001). Although, the cumulative learning as well as training enhances the firm's export performance but after a certain age limit the firms export returns decreases i.e., the cumulative experience of the firms faded away after a certain point of time (Duenas-Caparas 2006).

Hypothesis 1 (H0a): Firm age doesn't affect the export intensity of F&B MSMEs in India

2.3.2 IMPACT OF FIRM SIZE ON EXPORT PERFORMANCE

Traditionally, it is considered that large firm positively affects the export performance (Christensen, et.al, 1987; Cavusgil and Naor, 1987; Lefebvre and Lefebvre, 2001; Das and Pradhan, 2009; Gyamfi and Korneliussen, 2013; Biswas and Singh, 2020) as they better leverage the economies of scale. Bigger firms are more competent for large investments and can bear higher risks associated with the exports (Lall and Kumar, 1981; Wagner, 1995; Dholakia and Kapur, 1999 and Duenas-Caparas, 2006). In another study by Reid (1983) reveals that larger firm size significantly affects the firms' decision to enter the foreign market. However, many studies also reveal negative (Cooper and Kleinschmidt, 1985; Gripsrud, 1990) or no relationship (Czinkota and Johnston, 1983; Diamantopoulos and Inglis, 1988) between firm size and export performance. The most probable reason is non-linear relationship between firm size and export performance i.e., large size firms after a certain limit do not significantly influence the exports (Lefebvre and Lefebvre, 2001; Wagner, 2001; Duenas-Caparas, 2006) and big firms more likely to dominate in the domestic market rather than international market (Wakelin, 1998).

Hypothesis 2 (H1b): Firm size square positively affects the export intensity of F&B MSMEs

2.3.3 IMPACT OF LABOUR COST ON EXPORT PERFORMANCE

Labour cost is a crucial factor in supply-driven exports (Amable and Verspagen, 1995 and Van Dijk, 2002) as well as it significantly effects the buyers' decision and suppliers' competitiveness (Gereffi and Memedovic, 2003). It has also been argued that Indian and Chinese firms enhance the export performance by exploiting the labourers. Indian exporters gained the competitive advantage in US and European market through low labour cost and flexibility (Kaplinsky and Morris, 2008; Abraham and Sasikumar, 2010). In another study Abraham and Sasikumar (2010) found labour cost per output negatively affects the export performance of T&C companies and concludes that T&C companies has improved its export performance owing to labour exploitation (i.e., low road route) rather than technology-oriented factors (i.e., high road route). Similarly, Wang (2013) also found the average and minimum monthly wages of 11 Asian

developing nations including India negatively effects the export performance, but it is not true for China (Biswas and Singh, 2020).

Hypothesis 3 (H1c): Labour cost negatively affects the export intensity of F&B MSMEs

2.3.4 IMPACT OF CAPITAL COST ON EXPORT PERFORMANCE

Many studies found that higher capital cost in terms of interest rate can hinder the export performance by reducing the investment expenditure (Hassan, Kausar and Arshed, 2022) but very few studies were mainly conducted to examine the effect of capital investment in physical assets on firm's export performance. The investment in physical assets may enhance the firms' capability and attain the economies of scale. Rho and Rodrigue (2012) investigate the effect of physical capital investment on export decisions of Indonesian manufacturing firms. They found that new exporters invested in physical capital much higher than non-exporters through which they create entry barriers for other firms. Peluffo (2016) attempts to analyse the role of physical capital investment on the export growth of Uruguay manufacturing firms. The study found a rise in physical capital positively impacts the export performance and export market entry of the firms.

Hypothesis 4 (H1d): Capital investment positively affects the export intensity of F&B MSMEs

2.3.5 IMPACT OF CAPITAL INTENSITY ON EXPORT PERFORMANCE

Capital intensity refers to the capital-labour ratio. According to Heckscher-Ohlin theory, capital endowment country exports more of capital-intensive goods whereas labour abundant country exports more of labour-intensive goods. German exporting firms are highly capital intensive which clearly indicates positive export performance with capital intensity and hence, supported H-O theory (Bernard and Wagner, 1997). In contrast, Indian firms contradicts with H-O theory as the firms found negative effect of capital intensity with export performance (Pant, 1993; Kumar and Siddharthan, 1994). Although, capital-intensive firms have higher export performance because of past technological innovation and knowledge which reflects through economies of scale (Van Dijk, 2002) however, various studies found capital intensity positively affects the export performance of different firms differently based on the industries like electronic sector requires more capital than labour while food sector requires more labour (Duenas-Caparas, 2006).

Hypothesis 5 (H1e): Capital intensity significantly affects the export intensity of F&B MSMEs

2.3.6. IMPACT OF WELFARE AND TRAINING EXPENSES (LABOUR PRODUCTIVITY) ON EXPORT PERFORMANCE

Labour Productivity strongly impacts the export intensity of a firm. It is generally calculated as gross output divided by number of labours (Van Dijk, 2002; Duenas Caparas, 2006; Ottaviano and Martincus, 2011; Amornkitvikai, 2012 and Pickernell, et.al. 2016). However, by providing skill training to the workforce enhances the learning and add skills which improves the labour productivity. As trained and skilled manpower have the capability to understand the foreign market demand and other criterion better and hence, positively affects the export performance (Duenas Caparas, 2006). Hence, the welfare and training expenses (WTE) incurred by the firm is proxied for labour productivity.

Hypothesis 7 (H1g): Labour productivity (Welfare and Training Expenses) positively affects the export intensity of F&B MSMEs

Table 2 provides a glimpse of the determinants of export performance and their measurement used in the literatures in a nutshell.

2.4 RESEARCH GAP

A plethora of studies have been done on identifying and testing the internal and external determinants of export performance, but no studies were focused on the determining factors of Food and Beverage (F&B) MSMEs. Hence, the present study will fill this gap by identifying the key export determinants that boost the F&B MSMEs in India as well as the regions which are performing better in F&B exports.

2.5 RESEARCH QUESTION

1. What is the reason behind higher export performance of Food and Beverage MSMEs in India despite the F&B industry produce perishable and low value goods?
2. Which region is performing better in MSMEs F&B exports and why?

2.6 RESEARCH OBJECTIVES

The major objectives of the research are as following:

1. To analyse the industry-wise export performance of SSIs/MSMEs in India
2. To investigate the determining factors that affects the export intensity of Food and Beverage MSMEs in India.
3. To ascertain which regions are performing better in export intensity of Food and Beverage MSMEs in India.

III. RESEARCH METHODOLOGY AND DATA COLLECTION METHOD

The study uses analytical and quantitative research methods based on secondary survey. To empirically investigate the export determinants of Food and Beverage MSMEs the study employed Random Effects Tobit Model from 2006-2022.

3.1 RANDOM EFFECTS TOBIT MODEL

The Tobit Model is a type of regression model that contains right or left censoring besides within-cluster dependence of the response variable. The coefficients of Tobit model have conditional interpretations on a constructed latent dependent variable (Y*).

A firm's export decision can be better analysed based on two stages – first, whether the firm exports and second, if they decide to export then what is their export intensity. To investigate the above two questions the study employed Tobit Model in panel data. The Random Effects Tobit Model is used where in one hand response variable follows a mixed probability distribution of mass points clustered at zero i.e., EXPINT=0 while on the other hand there is a continuous values greater than zero i.e., EXPINT>0. The zero and non-zero values form a corner solution where the data is left-censored at zero. Under these conditions the OLS (Ordinary Least Square) method is inconsistent and hence, Tobit model has been considered as the most preferable and valid model to estimate (Wooldridge, 2002, pp.524-525). Although, handling panel data is a difficult task while handling Panel Tobit model is the most herculean tasks.

However, to identify the behaviour of Food and Beverages MSMEs the study has employed Random Effects Tobit Model along with McDonald and Moffitt decompositions as proposed by McDonald and Moffitt (1980) and used by Abraham and Sasikumar in their study. The Random Effects Tobit Model is

an extension of Tobit Model in longitudinal and cross-sectional data where dependent variable is inflated at zero i.e., left censored on one hand and, above zero and positive on the other hand over the period of time from 2006-2022. The Random Effects Tobit Model is given in equation 1 below:

$$EXPINT_{it} = X_{it}\beta + u_{it} \quad if\ X_{it}\beta + u_{it} > 0$$
$$EXPINT_{it} = 0 \quad if\ X_{it}\beta + u_{it} = 0 \qquad equ\ 1.$$

Whereas,

$EXPINT_{it}$ denotes export intensity of i^{th} firm in t^{th} time period.

X^{it} denotes vector of k^{th} independent variables.

β represents the unknown Tobit coefficient

u_{it} denotes the error term assumed to be normally distributed with zero mean and constant variance.

The McDonald-Moffitt decomposition fused the two kinds of marginal effects – one, the marginal effects of X_{it} on the probability to export and two, the marginal effects of X_{it} on the export intensity if the firm determines to export. The McDonald-Moffit decomposition has considerable implications from the policy making perspectives. The Type-I McDonald-Moffitt decomposition for Panel Tobit model on the expectation of export intensity (EXPINT) is shown in equation 2:

$$E(EXPINT)_{it} = P(EXPINT>0)\ E(EXPINT|EXPINT>0) \qquad equ.\ 2$$

The effect of change in k^{th} variable of X_{it} on E(EXPINT) is expressed in equation 3 below:

$$\partial E(EXPINT)_{it} / \partial X_k = P(EXPINT > 0)\ \partial E\ (EXPINT|EXPINT>0)/\partial X + E(EXPINT|EXPINT>0)\ \partial P(EXPINT>0/\ \partial X_k \qquad equ.\ 3$$

Hence, the total change on the unconditional expected value of export intensity indicates by EXPINT is decomposed into two stages:

1) the change in the expected value of EXPINT above the limit 'zero' (y>0) weighted by the probability of being above zero.
2) the change in the probability of being above the limit 'zero', weighted by the conditional expected value of EXPINT.

In the present study we have employed Random Effects Tobit Model with McDonald-Moffitt decomposition on the firm level dataset.

3.2 DATA SOURCE

The datamining technique has been used to explore the database of CMIE Prowess IQ to collect the firm level dataset of F&B MSMEs from 2006 to 2022. The micro, small and medium enterprises have been selected as per the definition of MSMEs. From 2006-2020 (till 30th June 2020) the MSMEs has been selected according to the investment limit in plant and machinery as per the definition mentioned in MSMED Act 2006 and from 1st July 2020 to 30th Dec 2022, MSMEs have been selected based on the annual turnover and investment limit as per the New Definition of MSMEs. Based on the above definitions the total number of F&B MSME firms analysed for the study is 4746.

3.3 EMPIRICAL MODEL

The supply side factors identified for the study to investigate the export intensity of F&B MSMEs in India are firm age, firm size square, labour cost, capital investment/cost (in physical assets), capital intensity

and WTE-Welfare and Training Expenses (proxied for labour productivity) as given in Table 2. The empirical Random Effects Tobit Model is expressed as:

$$EXPINT_{it} = \beta_0 + \beta_{1t}\,(Firmage) + \beta_{2t}\,(firmsize) - \beta_{3t}\,(firmsize2) + \beta_{4t}\,(Lcost) + \beta_{5t}\,(Kcost) - \beta_{6t}\,(Kintensity) + \beta_{7t}\,(WTE) + \beta_8\,(WTEDummy) + \sum_j \beta_j\,(Regions) + \sum_t \beta_t\,(TimeDummy) + u_i \quad \text{equ. 4}$$

Dependent Variable: The dependent variable to measure export performance of F&B MSMEs is Export Intensity. It is measured as the ratio of export sales of Food and Beverage MSMEs to total export sales of the States/UTs respectively. Export sales are proxied for export values.

Independent Variables: The determining factors examined in the study are ***Firm age*** which is calculated as number of years from its incorporation. ***Firm size*** is estimated as total sales (in ₹ Million) and ***squaring of firm size*** has been taken in the study to test the non-linearity effects of the variable (Duenas-Caparas 2006). ***Capital investment or capital cost*** is estimated as firms' Net Fixed Assets (in ₹ Million) while ***capital intensity*** is estimated as capital-labour ratio (capital cost divided by labour cost) where labour cost is estimated for salaries/wages, bonus, allowance, and gratuity (in ₹ Million) and ***labour productivity*** is measured based on welfare and training expenses incurred by MSME firms. If the firm incurred any expenses on the welfare and training programmes to enhance the skills of their employees', then the labour productivity will increase. WTE dummy variables are created for missing values (Hilmer, Hilmer and Sharma 2020) where 1 denotes missing WTE else 0. The study divided the States/UTs of India into five geographical and zonal regions represented by Eastern, North-Eastern, Northern, Southern and Western respectively. Five regional dummies have been created for each region denoted by 1 for the respective States/UTs otherwise 0 i.e., Region dummies is assumed to be 1 for j^{th} region else 0. Similarly, 15-time dummies have been created for the time-period between 2006 and 2022. If the firm operates in a particular year, then the value is 1 otherwise 0.

III. EMPIRICAL RESULTS & INTERPRETATION

The empirical results show that the total number of original observations was 6001 but due to missing values the total number of observations is 4746 F&B firms. However, total number of WTE is 3052 due to missing values and hence, dummy variable has been created to investigate WTE for missing values.

The study first employed the panel regression model to investigate the factors responsible for highest export intensity of F&B MSMEs in India. Then the model checked for endogeneity by using Hausman-Taylor test. The study found all the variables are exogenous i.e., the estimated coefficients doesn't diverge significantly and hence, Random Effects model is considered as an appropriate model. Furthermore, the study checked the stationarity of data by using Augmented Dickey Fuller (ADF) test and found that there is no unit root and hence, data is stationarity except firm age. Afterwards, the study employed Random Effects Tobit model and then tested for heteroscedasticity and normality of the error terms and found the errors are normally distributed and homoscedastic. Finally, the study tested for multicollinearity and found that the Variance Inflation Factor (VIF) for all variables are less than 2 which shows there is no multicollinearity between the variables. The results of Random Effects Tobit estimation of export intensity of F&B MSMEs in India is shown in Table 2.

Table 2: Results of Random Effects Tobit Estimation of Export Intensity in Food and Beverages MSMEs in India

	Random Effect Tobit Coefficients	Marginal Effects	
	Unconditional Expected Value	Probability Censored	Conditional on being Uncensored
Predicator Variables	d*E*(*EXPINT*) / d*Xk*	*P*(*EXPINT* > 0) E(expin*|expin>0) predict(ystar(0,.))	*E*(*EXPINT*| *EXPINT*> 0) E(expint|expint>0), predict(e(0,.))
Firmage	.1889829	.0181177	.0315312
Firmsize	.0014263	.0001367	.000238
Firmsize^2	-1.49e-08	-1.43e-09	-2.49e-09
Kcost	.4595***	.044052***	.076666***
LCost	.0126284	.0012107	.002107
Kintensity	-.3827954***	-.0366984***	-.0638682***
WTE	-.3974093	-.0380994	-.0663065
WTEDummy	18.5911***	1.782319***	3.101866***
Region1 Dummy	18.70971**	1.793691**	3.121657**
Region2 Dummy	-43.47841**	-4.168252**	-7.254235**
Region3 Dummy	31.52864***	3.022634***	5.260454***
Region4 Dummy	4.053262	.3885841	.6762738
Region5 Dummy	0 (omitted)	0 (omitted)	0 (omitted)
T1	1.20357	.11539	.20081
T2	2.48902	.23862	.415285
T3	-3.78077	-.36246	-.630809
T4	-2.40670	-.23073	-.401550
T5	-1.77075	-.169761	-.295445
T6	-8.86748	-.850121	-1.47951
T7	-5.91794	-.567350	-.98739
T8	-7.23759	-.693864	-1.2076
T9	-8.56117	-.820754	-1.42840
T10	-6.82728	-.654527	-1.13911
T11	-1.78832	-.171446	-.298376
T12	-8.25335	-.791244	-1.37705
T13	-9.57234	-.872553	-1.48752
T14	-4.76542	-.154962	-.754730

T15	-7.34523	-7.04671	-1.32570
T16	-3.67482	-2.54871	-1.56421
T17	0 (omitted)	0 (omitted)	0 (omitted)
_cons	-96.78241***		
Observations	4746	4746	4746
left-censored obs	4127		
Uncensored obs	619		
No. of Groups	856		
Sigma_u	68.5773***		
Sigma_e	29.55492***		
Log likelihood	-3805.5459		
Wald chi2(24)	100.44		
Prob >chi2	0.0000		
Rho	.8433572		

Source: The Author's Own Estimation.
****1%, **5%, *10% significance level*

Table-2 clearly reflects the results of Random Effects Tobit estimation of export intensity in F&B MSMEs in India over a period of 15 years i.e., 2006-2022. The significance level of overall Random Effects Tobit estimation is very high which can be reflected from high Wald chi2 (100.44) with 24 degrees of freedom and very small Prob >chi2 (0.0000). The findings clearly reveal that capital cost, capital intensity and labour productivity (WTE dummy) significantly affect the export intensity of F&B MSMEs while firm age, firm size square and labour cost doesn't affect the export intensity of F&B MSME firms. Regionally, the Eastern, North-Eastern, and Northern regions are significantly influencing the export intensity of F&B MSMEs.

Firm age is expected to affect the export intensity of F&B MSMEs. It signifies the years of experience of F&B firms in the market. The study does not reject the null hypothesis that firm's accumulated knowledge and experience doesn't impacts the export intensity of F&B MSMEs.

Firm size square is anticipated to influence the export intensity. Although, it contemplates the resource base of the firms and plays a crucial role in boosting the export performance however showed insignificant in fostering export intensity of the F&B MSMEs. ***Labour cost*** is expected to negatively influence the F&B MSMEs exporting i.e., by lowering the labour cost F&B firms can increase their exports. However, the study found labour cost doesn't affect the F&B exports.

Capital investment is positively and significantly affecting the export intensity of F&B firms by one percent significance level. The Random Effects Tobit coefficient reveals that by raising the net fixed assets by ₹ One Million the export intensity increased by 46 percent. The marginal effects shows that the probability of exporting increases by 0.044 percent while the expected value of export intensity raised by 0.077 percent once decided to export. ***Capital intensity*** has found to be negative and significant relationship with export intensity of F&B MSMEs with one percent significance level. The Random Effects Tobit coefficient clearly reflects that by raising the capital-labour ratio by one unit the firms export

intensity declines by -38.28 percent while McDonald-Moffitt decompositions reveals that the F&B firms' probability to export declines by -03.37 percent and the expected value of export intensity by exporting firms decreases by -06.39 percent. While **labour productivity** which is measured by *welfare and training expenses (WTE dummy)* is positively and significantly affects the export intensity of F&B MSMEs at one percent significance level. The Random Effects Tobit coefficient clearly indicates that by raising the welfare and training expenses by ₹ one million, the F&B firms export intensity increases by 186 percent while the probability to exports increases by 17.82 percent and expected export intensity of exporting F&B firms' increases by 31.12 percent. On the other hand, the study found that ***Eastern*** and ***Northern regions*** positively and significantly affect export intensity of F&B firms while ***North-Eastern region*** is negatively and significantly affects the export intensity of F&B firms. ***Southern region*** is positive but insignificant in influencing export intensity while ***Western region*** is omitted due to dummy variable rules of (n-1).

IV. FINDINGS, CONCLUSIONS and SUGGESTIONS

Firm age i.e., the firm's gathered knowledge and experience doesn't raise the export performance of F&B firms as the experienced and matured firms like to capture the domestic market instead of exploring the foreign markets. Hence, firm age reflects insignificant results. ***Firm size and Firm size square*** are found insignificant in influencing export intensity of the F&B MSME firms which reveals that the F&B firms are not gained from economies of scales because the food and beverage products are highly perishable in nature and cannot be stored for long time and hence, raising the size of F&B firms will not increase the export performance of the firms. ***Capital investment*** has positive and significant relationship with export intensity of F&B MSMEs which shows that to boost the food and beverage export sales the firm have to invest more in physical capitals like cold storage, warehouses etc as the products are perishable and hence, need to preserve for long time while exporting. ***Capital intensity*** negatively and significantly influences the export performance of F&B MSMEs which clearly reflects that F&B products are mainly labour-intensive and hence, export intensity increased by raising the labour-intensity rather than capital intensity. ***WTE*** reflects positive and significant in influencing export intensity of F&B firms. It shows that by providing skills and training to the employees enhances the ***labour productivity*** which further boosts the export sales of the F&B firms. Skills and trainings related to food sanitation and phytosanitary measures of WTO (World Trade Organisations), food safety standards of FAO (Food and Agricultural Organisation, UN), packing and packaging leads to foreign demand for Indian food and beverages products and hence, raises the export sales of the MSME firms.

Region-wise analysis shows that Eastern and Northern regions performed better in food and beverages exports while North-Eastern region is found to be significant but negative export intensity. Although, in North-Eastern region almost all the enterprises are micro and small with very few big enterprises in oil refineries and hence export intensity of food and beverages is significant but negative due to very low exports (only 0.7 percent) from the region (MSMEs Annual Reports). It clearly shows that F&B MSMEs are mainly capturing the domestic market rather than foreign markets. The most probable reasons being that due to insurgency problem, poor infrastructures, rugged and mountainous terrains, landslides, floods, and the region was long ignored by the government and hence, export has not been promoted in this region despite huge potential to grow.

The study concludes that to enhance the export performance of F&B MSMEs in India the MSME enterprises should increase the capital investment, increase labour forces, and enhance the labour productivity by providing welfare and training to the employees. The F&B MSMEs should investment in

tangible and physical assets like plant and machineries, cold storage, and warehousing facilities. The sector is highly labour-intensive and hence, export intensity will increase by raising the number of labours while MSME firms should provide trainings related to standards of food safety (FAO), food sanitation regulations (WTO) and standard packaging to enhance the export performance of F&B MSMEs in India. The study suggested that the policy makers should formulate region-specific policies based on the performance of the particular region in specific goods such as Northern and Eastern regions have performed better in MSMEs F&B exports. The study recommends providing the support to F&B MSMEs to increase capital investment in advance technology mainly warehousing and cold storage facilities to preserve perishable goods from decaying. To create foreign demands for India food and beverage products the government should provide trainings related to packing and packaging standards and create awareness on food sanitation and safety regulations as per WTO and FAO regulations.

DECLARATION OF INTEREST STATEMENT

There is no potential conflict of interest reported by the author.

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