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Factors impacting export intensity of SMEs in India

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Abstract

The aim of the paper is to explore the factors impacting export intensity of SMEs in India. It examines the influence of various firm level variables on export intensity. The sample considered for the study includes 50 SME firms from different industries ranging from equipment and manufacturing to textile. Data for ten years (2011–2020) has been analyzed for drawing relevant results. For regression, Least Square Dummy Variable corrected (LSDVC) estimates have been used to address the issue of heteroskedasticity and autocorrelation issue present in the data. The results arrived at indicate that the expenditure incurred on research and development, selling and distribution acts as an investment which provides returns in terms of better export performance. Also, top managers having international experience can be an important asset for a firm looking for expanding in international market. These results have substantial implications for the management of SME firms.

Keywords

- exports
- SMEs
- India
- LSDVC regression
- international exposure of management

JEL codes: F10, F18, M16

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Introduction

In the process of the internationalization of firms, the most common and convenient entry mode is exporting. Nearly 25% of the worldwide gross domestic product is contributed by global export trade (World Bank, n.d.). In spite of the tremendous growth of foreign direct investments, firms from emerging economies prefer exporting as it is simplest mode for entering into foreign markets (Singh, 2009). Exporting does not require high financial and human resources which makes it a favourable mode of entry into foreign markets specifically for small firms wherein there is low resource commitment and high flexibility. Therefore, analysis of factors impacting the export intensity of small firms is significant as export intensity is a measure which is commonly considered to study the export performance. Considerable research has been done to understand the ability of the such small firms (Castellani et al., 2022; Esteve-Perez & Rodriguez, 2013; Gashi et al., 2014; Love et al., 2016; Pacheco, 2016).

Small and medium-sized enterprises (SMEs) are regarded as an economy's backbone. They play a significant role in the world economy in generation of employment. An understanding of the internationalization process of SMEs, specifically those from emerging economies, is required in order to help such firms in their growth process and also maintain the economic vitality of these economies. SMEs in emerging economies consider exporting as the most favourable mode for entering into foreign markets. The share of Micro, Small and Medium Enterprises (MSME) in 2019–2020 towards India's GDP was 30%, MSME share in India's total industrial production was 36.9% and MSME accounted for 49.5% of India's total exports (Ministry of MSME, 2021). SMEs usually start with exporting as their first step towards internationalization as it helps them in the accumulation of relevant markets, institutional and product knowledge which is further beneficial in international expansion for them (Love et al., 2016). Despite the potential relevance of this subject area, our comprehension of the factors impacting export competitiveness of SMEs is still limited. In the past the majority of research has been done based on the experiences of developed countries (Galati & Crescimanno, 2014; Love et al., 2016; Majocchi et al., 2005). A search in the Scopus database showed that there are some 600 studies which explore the area of export intensity.

Out of these about 10% are India specific; of which less than one fourth are based on SMEs. Therefore, a study of the factors impacting the export performance of SMEs in a developing economy such as India can provide a significant contribution to the export literature.

Export performance is impacted by number of variables which could be related to managerial (e.g., education of managerial team, commitment to exports, international exposure, perceived export barriers), physical (size of the firm, financial resources and location of the firm), organizational (e.g., experience and capabilities of the firm, general export strategy, strength of products), and relational resources (supply chain links, interpersonal research, distribution channels, foreign market visits and customer relationships) (Ibeh & Wheeler, 2005;Rodríguez & Orellana, 2020). In the current study, for delimitation purposes, the focus is on factors related to a firm and top managerial team. The main question addressed in this paper relates to how the firms' size, experience, propensity to innovate, advertisement expenditure and top managerial teams' international experience influence the export activity of SMEs. An extensive literature review showed that there has not been much research regarding the export performance of SMEs in India which is highlighted in the later sections. There have been very limited studies on the contribution of top managerial teams' international exposure on exporting activities of an SME firm in a developing economy as most of the studies have focused on other firm specific factors (Oura et al., 2016; Tajeddin & Carney, 2019). The current study investigates the effects of the top managerial teams' international exposure along with other firm level variables on export intensity considering it as an equally important variable. Also, in past studies, firm specific and management related variables were researched in separate papers but to the best of the authors' knowledge this is the one of the pioneering studies including both the category of variables in one paper on Indian SMEs.

The paper is structured as follows. The first section lays the conceptual framework and theoretical review of the relationship between export intensity and the other independent variables mentioned in the previous paragraph. The second section sets out the research methodology. In the third section, results are presented, which are followed by the conclusion of the paper.

1. Conceptual framework and review of literature

Export intensity is a well-researched area especially in developed countries and many different variables have been considered as its determinants. Most important and relevant variables have been identified and included in the present study and they are discussed in this section.

1.1. Export intensity and innovation

Product innovation in an organization can be explained as working upon an idea to bring about features which are new to a product or to create a new product f. It can be stated that a firm which innovates is the one which introduces technologically new or substantially improved products for the period under review (OECD, 1997). Success of innovative products depends upon its newness and utility. The innovation process involves research and development efforts, specialized human resources or technical equipment and it results in new or substantially improved products (Pla-Barber & Alegre, 2007).

The impact of innovation on exporting has received a lot of attention in literature on international business. It has been proven in a large number of empirical studies that innovation has an essential role in determining the volume of a firm's international sales and how many different markets it serves. The majority of the research on innovation and export performance points to a positive relationship of innovation and exporting (Charoenrat & Amornkitvikai, 2021; Fernández-Mesa & Alegre, 2015; Ossorio, 2018; Radicic & Djalilov, 2019; Spuldaro et al., 2021; Tavassoli, 2017). Literature on innovation management and technology in general predicts that firms which innovate have a propensity to enter international markets in order to boost sales volume and disperse the fixed expenses of innovation across more units (Rogers, 2004). Esaku (2020) suggested that providing smaller firms with technological capabilities increases their chances of entering into the export markets. Though there have been few exceptions in the past (Becchetti & Rossi, 2000) previous research has been able to consistently support that innovation encourages exports. It is important for firms to innovate in order to achieve and uphold the competitive advantage as well as for increasing their growth potential. Innovation is an important dimension of a firm's growth strategy as per the theory of Krugman (1979). Its envisaged impact on export performance provides a reason for firms to invest more in research and development as organizations which innovate are more likely to export to cover their cost of research. Therefore it can be said that the technologically advanced products have a wider geographic range.

Previously research has been done to explore how SMEs deal with the limited resources in order to compete abroad (Brouthers et al., 2015). Rogers (2004) asserts that the firms which innovate are inclined towards entering foreign markets with the purpose of increasing their sales' volume. This growth strategy helps SMEs which usually encounter substantial disadvantages in the domestic marketplace because of a lack of management prowess, financial resources and the experience curve effect. Thereby with help of innovative strategies SMEs can enhance their volume of exports. Rodríguez and Rodríguez (2005) researched the influence of technological capacities of Spanish ma-

nufacturing firms over its export intensity. Their results indicated that both innovation inputs (R&D spending) and outputs (product innovations and patents) had a positive and considerable effect on export intensity. Pla-Barber and Alegre (2007) examined the link between innovation and export volume in the French biotechnology industry. They found that in this science-based industry the aforementioned relationship is strongly positive due to its high technology profile. Kumar and Siddharthan (1994) examined the association of technology with trade behaviour of Indian enterprises and found that the technology plays a crucial role in explaining the export habits of firms in industries with low and medium technology.

For firms to be able to compete in the marke , R&D intensity for technological innovation is an important business strategy. It has been shown in the past research that firms which allocate a large proportion of their revenue on R&D are likely to experience more growth than those firms which do not. Increased R&D intensity in domestic firms has a positive impact on their domestic sales and exports (Sun & Anwar; 2015).

On the basis of above theory it has been hypothesized that:

H1: There is a significant positive relationship between R&D intensity and export intensity of Indian SMEs.

1.2. Export intensity and firm experience

Another important determinant factor of export intensity is the experience of the firm. Any firm which intends to enter new markets has to face new cultures, political regimes, distribution systems and languages, all of which can be learned by allocating more time and resources. A firm's experience is assessed in terms of age of the company and the number of years the firm has been exporting. The relationship between firm experience and exports has been studied by many researchers. Analysis of these two variables suggests a positive relationship between them (Behmiri et al., 2019; Reis & Forte, 2016; Revindo & Gan, 2018). Esaku (2020) signalled that the exporting experience of the firm has a substantial influence on the firm's choice to invest in regard to upgrading production technologies which in turn has a positive effect on export intensity among small firms. Majocchi et al. (2005) studied firm experience as an important factor having a bearing on export performance as it provides the firm with more wisdom regarding management, international trade and business partnerships. Researchers discovered that Italy's older businesses are more export intensive. Hence a firm's age is often considered as a key determinant of its international activity. As studied by Suárez-Ortega and Álamo-Vera (2005), in their research on the wine industry

of Spain the experience of a firm in market development can be considered as a significant variable in explaining both the propensity to engage in exporting as well as the intensity of export activity. However, on the contrary few studies have also shown insignificant and even opposite results (Charoenrat & Amornkitvikai, 2021).

Accordingly, it has been hypothesized that:

H2: There is significant positive relationship between the age of the firms and export intensity of Indian SMEs.

1.3. Export intensity and advertisement

One of the ways to increase sales in the globalized world market is to spend more on marketing activities. A number of empirical studies to assess the relationship between export intensity and advertising expenditures have been done time and again. It has been found that expenditures on advertising exert a positive effect over export intensity. A favourable correlation between advertising and geographical diversification has been shown in a number of studies (Kim & Mathur, 2008). Galati and Crescimanno (2014) studied Italian wineries and concluded that allocating funds for advertising is an important strategy for ensuring the entry of firms in new markets, for their survival and for their success. Advertising helps in enhancing the firms' competitive position in the market by either increasing its value appropriation opportunities or by decreasing the same for the competitors of the firm (Chu & Keh, 2006).

A number of theoretical studies show that the firms which invest more in advertising are likely to have more geographical spread as they possess intangible assets such as brand name recognition and a reputation premium which can be passed on to new countries without difficulties (Rondi et al., 2004).

Thus the current study presents hypothesis as:

H3: There is a positive relationship between advertisement expenditure and export intensity of Indian SMEs.

1.4. Export intensity and firms' size

Size of the firm is amongst one of the most significant factors influencing export operations. It has also been one of the most widely analyzed factors having an impact on exporting in international business literature. There is substantial evidence showing a positive effect of size on export intensity (Behmiri et al., 2019; Cancino & Coronado, 2014; Majocchi et al., 2005; Reis & Forte,

2016; Wagner, 1995). However, some studies revealed negative or no relationship between size and export performance (Pla-Barber & Alegre, 2007). Wagner (1995) suggested that with greater size the availability of financial and managerial resources increases which increases the ability of firms to absorb the risk related to exporting. The business of exporting incurs a lot of fixed costs such as assembling a committed team for managing export operations, costs of extensive market research and redesigning the products to suit the requirements of foreign customers. Larger firms have more resources to easily handle such costs. Firms which are larger in size have a greater ability to increase the resources, handle the risks better than smaller firms and also have a greater bargaining power. Calof (1994) asserted that the impact of international mistakes is more substantial for smaller firms than it would be for larger firms and in addition due to lack of information smaller firms may be more risk averse.

Preece et al. (1998) argued that entering into a number of foreign markets is more challenging than entering into a single-country which makes global diversity positively influenced by firm size. The resource-based view of the firm also highlights a favourable relationship between the firm's size and export performance (Barney, 1991). It explains that the size of the firm represents its resource base for the purpose of several growth and development activities such as diversifying the products and geographic markets. Firm size indicates the availability of managerial and financial resources within a firm. When a company has an excess of these resources it is more inclined to explore expansion opportunities. According to Bernard and Jensen (1999) the larger size of a firm implies that it has a strong domestic position which gives it a leverage in international markets as well. For the firms in emerging markets size becomes more important as there most of the enterprises are small and still in their growth phase in the domestic market. Smaller firms in such markets often face constraints on technological, financial and personnel resources which makes it difficult for them to venture into risky activities such as exporting.

All the above-mentioned arguments direct to a positive association of size with export sales. Accordingly, it is hypothesized that:

H4: There is a positive relationship between size of a firm and export intensity of Indian SMEs.

1.5. Export intensity and international exposure of top management

One of the explanatory variables of growth of the company in the globalization process is the international experience (Oura et al., 2016). Export

experience of managers is one of the key drivers of export decisions in firms. Exposure to international business environment helps in enhancing the ability of the top leaders to analyze various influencing factors in international markets such as culture, taste and preferences of consumers and the economic environment of different countries. Such leaders are also better equipped to identify international opportunities and use them to their best advantage (Casillas et al., 2015; De Clerq et al., 2012; Love et al., 2016; Masso et al., 2015). Working for the international companies or attaining education in a foreign land helps the managers to obtain exposure to international markets (McDougall et al., 2003). Therefore managers with international experience add to the knowledge pool of the firm and directly contribute to the export potential of the business (De Clerq et al., 2012). It also helps the executives in developing external ties and relational capital which makes the access to and processing of information much simpler in comparison with top executives who lack international exposure (Gulati, 1995). Hence it is hypothesized that:

H5: There is a positive relationship between international exposure of top management and export intensity of Indian SMEs.

2. Research methodology

The primary objective of this study is to investigate the influence of various factors on the export patterns of Indian firms. Thus this section specifically discusses the variables taken under consideration, the relationship studied, techniques used for drawing the results anda description of the data sources and sample selection.

2.1. Research framework and variables

A research model (Figure 1) has been laid out to address the research gap and explore how the firms' size, experience, propensity to innovate, advertisement expenditure and top managerial teams' international experience influence the export activities of SMEs. The variables used in the analysis are listed in Table 1. The primary objective of the work is to study export intensity in Indian SMEs which is why export intensity has been considered as the dependent variable, Export is the first stage of internationalization and is the main variable studied in this paper. It is calculated as the ratio of total export sales to total sales.

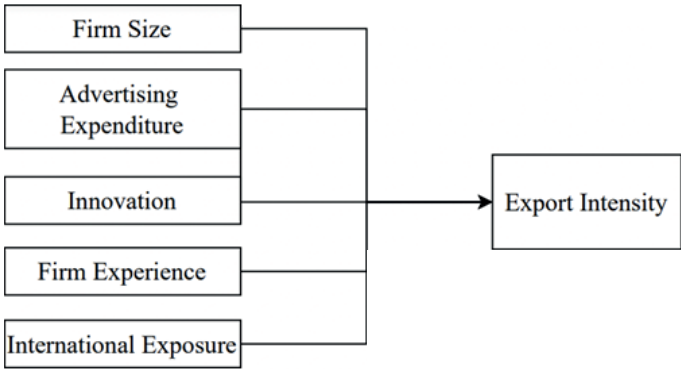

Figure 1. Proposed research framework

Source: authors' compilation.

On the basis of an extensive literature review five independent variables are considered to explain the export behaviour of SME firms of India. Firm size is taken by many studies as the explanatory variable (Behmiri et al., 2019; Cancino & Coronado, 2014). Firms which are larger in size have a greater ability

Table 1. Variable description and estimation

Variable	Description	Formula
Dependent variable		
Export intensity (ExP_Int)	The percentage of exports out of total sales.	$\frac{\text{Total Exports}}{\text{Total sales}} \times 100$
Independent variables		
Firm size (Size)	The logarithm of total sales	Log of Total Sales
Advertising expenditure (SD_Int)	Selling and Distribution (S&D) expenditure as the percentage of total sales	$\frac{\text{Selling and distribution expenses}}{\text{Total sales}} \times 100$
Innovation (RD_Int)	Research and Development (R&D) intensity measures the R&D expenditure as percentage of total sales.	$\frac{\text{R\&D expenditure}}{\text{Total sales}} \times 100$
Firm Experience (FExp)	A firm's age, i.e., number of years from year of incorporation	Time since the incorporation (in years)
International Exposure (Int_Exp)	A dummy variable which shows whether any person from the top management has worked or studied in any other country out of India.	Dummy values are allotted as follows: 1 – presence of foreign exposure 0 – absence of foreign exposure

Source: authors' compilation.

to increase their resources, handle the risk better than smaller firms and also have better bargaining power. Similarly advertising expenditure is considered an important explanatory variable in the past studies as advertising expenses facilitate the entry of firms into new markets. The firms which spend more on advertising are likely to generate more sales in foreign markets especially with growing globalization. Advertising expenses are a part of a larger group of expenses, that is 'selling and distribution expenses'. Since most of the SMEs did not provide data for advertising expenditure hence selling and distribution expenses are taken to calculate the S&D intensity which is the ratio of selling and distribution expenses to sales. Furthermore, innovative firms are expected to enter more foreign markets to increase their revenues and cover their expenses. At the same time innovative products appeal to customers both in domestic as well as global markets. R&D intensity is the variable used to measure a firm's likelihood to innovate. Majocchi et al. (2005) contends that experienced firms gain more maturity in dealing with international trade partners. Hence the age of firms is taken as another variable to explain export intensity.

Furthermore, international exposure of top management is also given due consideration as foreign education and international work experience helps them to take export related decisions (Love et al., 2016).

2.2. Empirical model

To examine the factors influencing the export intensity of firms this study has considered a panel regression model. However, keeping in mind the possible heteroskedasticity and autocorrelation issues in the secondary data the dynamic panel data model has been used for regression purposes. The fundamental dynamic panel regression equation has been mentioned below (equation 1):

$$y_{it} = \gamma y_{i,t-1} + \beta' x_{it} + \varepsilon_{it} + v_{it}, \qquad i = 1, ..., N; \qquad t = 1, ..., T \tag{1}$$

Specifying the equation for the present study equation (2) has been derived as given below:

$$\begin{aligned} Exp\_Int_{it} = \alpha Exp\_Int_{it-1} + \beta_1 Size_{it} + \beta_2 SD\_Int_{it} + \beta_3 RD\_Int_{it} + \\ + \beta_4 FExp_{it} + \beta_5 Int\_Exp_{it} + (\varepsilon_i + v_{it}) \end{aligned} \tag{2}$$

The need to address unobservable individual effects requires switching to first differences (equation 3).

$$\begin{aligned} \Delta Exp\_Int_{it} = \alpha \Delta Exp\_Int_{it-1} + \beta_1 \Delta Size_{it} + \beta_2 \Delta SD\_Int_{it} + \\ + \beta_3 \Delta RD\_Int_{it} + \beta_4 \Delta FExpit + \beta_5 \Delta Int\_Exp_{it} + \Delta v_{it} \end{aligned} \tag{3}$$

The evidence provided in Judson and Owen (1999) gives support for the superiority of corrected Least Square Dummy Variable estimates (LSDVC) over biased LSDV and traditional GMM estimates. In addition the LSDV estimates become inconsistent in cases of large *N* and finite *T*, as it is there in the present work (Bruno, 2005). Equation (4) gives estimation of LSDV:

$$y_{it} = \alpha + \beta' X_{it} + \mu' Z_{\mu,it} + v_{it}, \qquad i = 1, \ldots, N, \qquad t = 1, \ldots, T \tag{4}$$

where, $Z_{\mu, it}$ denotes a dummy variable which takes value 0 for all observations (it) where i is not equal to j and takes value 1 for all observations (it) where i is equal to j.

The small sample bias consistent with LSDV has been corrected by researchers in the past. Kiviet (1995) formulated bias correction for linear LSDV, whereas Bun and Carree (2006) provided correction of LSDV bias for the non-linear relationship. Both studies have assumed homoscedastic disturbances. The issue of heteroskedastic disturbances in LSDVC has been addressed by Bun and Carree (2006). The same has been followed in this study along with the initial consistent estimator given by Blundell and Bond (1998). As stated by Bogliacino et al. (2012), LSDVC starts with a dynamic panel estimate which is system GMM in the present case and thereafter depends on 'recursive correction' of the bias.

2.3. Sample

As already discussed, SMEs play an important role in India's economy. MSME share in India's total industrial production was 36.9% in 2019–2020 and accounted for 49.5% of India's total exports (Ministry of MSME, 2021). For this reason, the focus of the present paper is on this particular sector. The following criteria are used by the Indian Ministry of Micro, Small, and Medium Enterprises (https://msme.gov.in/know-about-msme) to define micro, small, and medium enterprises.

- A micro enterprise is defined as any business with a maximum investment in plant, machinery, or equipment of Rs. 1 crore and a maximum annual revenue of Rs. 5 crores.
- Any business with an annual revenue of less than Rs. 50 crore and an investment in plant, machinery, or equipment of less than Rs. 10 crore is considered a small enterprise.
- Any business with an annual revenue of up to Rs. 250 crore and an investment in machinery and equipment of up to Rs. 50 crore is considered a medium enterprise.

There is dearth of publicly available data for micro enterprises, therefore, the sample of this current paper is restricted to small and medium enterprises. Using the definition of SMEs given by the Ministry as the criteria a list of firms was retrieved from the ProwessIQ database. Out of the 647 firms satisfying the criteria of being an SME only 50 made it to the final sample because of lack of availability of data .

The sample firms were from different industries and their distribution is shown in Table 2.

Table 2. Industry-wise sample size

Industries	Number of firms
Equipment manufacturing	15
Chemicals	13
Pharmaceuticals	9
Food	7
Textiles	3
Others	3
Total	50

Source: authors' compilation.

For these sample firms the data was collected for a ten year period from 2011–2020. The data for all the variables was collected mainly from the ProwessIQ database. For any missing information the annual reports were referred to. For gathering the information about the international experience of the top management of each of sample firms the Bloomberg website was used along with the annual reports.

3. Results and analysis

3.1. Descriptive statistics

Table 3 shows the descriptive statistics of all the variables used in the study. The mean values, standard deviation, minimum and maximum values of dependent and four independent variables are presented. The mean value of export intensity shows that on average the sample firms generated 21.81% of their total revenue from exports. There are companies with no exports

(as evident from minimum value of 0) as well as with almost all the sales as exports (as evident from the maximum value of 99.9%). A minimum value of S&D intensity and R&D intensity is zero showing that there are some firms which do not spend on selling and distribution and research and development. However the maximum value of R&D intensity is 132.69 revealing that some firms really invest in research and spend as high as 132.69% of their sales revenue for research and development.

Table 3. Descriptive summary of the data

Variables	Mean	Standard deviation	Minimum	Maximum
Exp_Int	21.808	27.765	0	99.9
Size	7.030	0.845	1.649	8.855
SD_Int	4.119	5.510	0	84.615
RD_Int	1.051	6.292	0	132.692
FExp	27.88	17.245	1	91
Int_Exp	0.614	0.487	0	1

Source: authors' computation.

The descriptive statistics of the age of the sample firms show that their age ranges from 1 year to 91 years with the average age being 27.88 years. The international experience of management is a dummy variable with two possible values of 0 and 1: 0 for no international exposure of top management and 1 for presence of international exposure. For the dummy variable, the mean value is estimated to be 0.614. This implies that 61.4% of the firm years saw the board of directors having international exposure. It can also be inferred that directors in most of the firms have had international experience. The standard deviation does not hold much relevance in the case of binary dummy variables as it basically shows only the impact of just the sample size.

3.2. Correlation analysis

When multiple variables are included in a regression model It is crucial to make sure that the independent variables do not have a strong correlation with one another. In the case of a high degree of correlation between explanatory variables the standard errors of regression coefficients increase leading to unstable coefficients. Also a high correlation makes it difficult

to judge the individual importance of the independent variables. Gujarati and Porter (2009) suggest that correlation values of 0.8 or 0.9 are problematic. Table 4 shows correlation coefficients among dependent as well as independent variables. None of the variables have a correlation coefficient of 0.8 or more. This means multicollinearity is not a problem with the present sample. Further, only S&D intensity is positively correlated to export intensity while size, R&D intensity and age are negatively correlated with export intensity.

Table 4. Correlation between dependent and independent variables

	Exp_Int	Size	SD_Int	Innovation	Age
Exp_Int	1.000				
Size	–0.030	1.000			
SD_Int	0.029	–0.136	1.000		
RD_Int	–0.002	–0.257	0.590	1.000	
FExp	–0.138	0.290	0.054	–0.034	1.000

Source: authors' computation.

Multicollinearity is also checked by Variance Inflation Factors (VIFs). VIFs indicate whether the independent variables have a strong linear relationship with each other. VIFs of more than 10 are problematic and may bias the regression results (Field, 2013). Table 5 shows the VIF values for each variable and none of them have VIF of 10 or more.

Table 5. Multicollinearity: Variance inflation factor

Variables	VIF	1/VIF (tolerance)
Size	1.25	0.799
SD_Int	1.58	0.633
RD_Int	1.62	0.619
FExp	1.13	0.889
Int_Exp	1.10	0.911
Mean VIF	1.33	

Source: authors' computation.

Furthermore, a tolerance statistic of below 0.2 can be a cause of concern (Field, 2013). None of the variables havea tolerance value less than 0.2. This means the data used in this analysis is free from multicollinearity bias.

3.3. Diagnostic tests

To understand the data better and to decide on the most appropriate regression technique some diagnostic tests must be performed. They help to ensure that the basic assumptions of multiple regression are met. For these reasons, heteroskedasticity and autocorrelation are checked. Regression models assume that the error terms have a constant variance, i.e., they are homoscedastic across all the predicted values of the dependent variable. Error terms are heteroskedastic when the error term variance is not constant. To check for heteroskedasticity the Breusch-Pagan Test is applied. The null hypothesis of this test is that the errors have a constant variance. The p-value (in Table 6) shows that the null hypothesis is rejected at 1% level of significance indicating that the error terms are heteroskedastic.

Table 6. Diagnostic tests

Test conducted		**Results**	
Breusch Pagan Test	**Heteroskedasticity**	**Chi2 (1)**	**Prob > chi2**
	H0: Constant variance	36.38	0.000
Woolridge Test	**Autocorrelation**	**F(1, 49)**	**Prob > F**
	H0: No first-order autocorrelation	43.355	0.000

Source: authors' computation.

No autocorrelation in the error terms is another assumption of multiple regression model. To check for this assumption the Woolridge test is used. The null hypothesis of this test is also rejected for the present data. Hence, it can be concluded that errors are in fact autocorrelated.

3.4. Regression analysis

Since the present data has problems of autocorrelation and heteroskedasticity a dynamic panel regression model of Least Square Dummy Variable Corrected (LSDVC) is used which is suitable in the present scenario. The results of this model are presented in Table 7.

The regression analysis revealed that all the independent variables showed a significant and positive relationship with the dependent variable, Export Intensity (Exp_Int). Besides the independent variables the lag value of export intensity (Exp_Int l1) is also considered in the present regression model. The

Table 7. Regression analysis: Least Square Dummy Variable Corrected (LSDVC)

Exp_Int	Coefficient	Standard error	*z*	95% confidence interval	
Exp_Int (l1)	0.863*	0.038	22.53	0.788	0.938
Size	0.625*	0.224	2.79	0.186	1.065
SD_Int	0.688**	0.296	2.33	0.108	1.268
RD_Int	2.835*	0.922	–3.07	1.028	4.641
FExp	0.061***	0.035	1.72	0.008	0.131
Int_Exp	0.104**	0.042	2.50	0.023	0.185
Wald $chi^2(8)$	2764.25				
Prob > chi^2	0.000				
Arellano-Bond test: AR (1)					
z	–5.58				
Prob > z	0.000				
Arellano-Bond test: AR (2)					
z	0.02				
Prob > z	0.980				
Sargan Test					
chi2(43)	57.91				
Prob > chi^2	0.34				

Note: * shows 10% significance level, ** shows 5% significance level, *** shows 1% significance level

Source: authors' computation.

coefficient shows that last year's exports effect the exports of the present year as well. The results support the 4th hypothesis. As expected Size showed a positive impact on Exp_Int as larger firms have more managerial and financial resources to handle additional costs associated with export operations including the funds required for market research and product development as per the requirements of foreign customers. Hypothesis 3 is also supported at 5% level of significance. Incurring expenditures on selling and distribution activities helps to improve the competitive position of the firms by building up the brand value and recognition of the firms as well as their products. Hence selling and distribution expenses (SD_Int) showed a positive impact on export intensity of the firms. Innovation has also been used as an important explanatory variable in previous studies (Radicic & Djalilov, 2019; Spuldaro et al., 2021). To proxy for this variable R&D intensity (RD_Int) has been used which also showed a significant and positive relationship with export intensi-

ty at 10% level of significance. To raise sales' volume and distribute the fixed cost of innovation over more units, innovative businesses frequently expand into overseas markets. The results further reveal that firm experience showed a significant positive relationship with export intensity (at 1% level of significance) with a coefficient of 0.061. Firms which wish to enter new markets have to face new cultures, varied tastes and preferences, different political regimes, distribution systems and diverse languages; all of which take time to learn. Hence, the firms with more age and experience tend to enter and perform better in foreign markets. Lastly, international exposure of top management has a positive impact on export intensity thereby supporting Hypothesis 5. When the top management has prior international exposure, they have a better understanding of the macro as well as micro environment of foreign companies. This helps them in identifying international opportunities and using them to the best of their advantage.

3.5. Post-estimation tests

The model used for regression analysis needs to be further tested for post--estimation. For this purpose, the Sargan test has first been used to check if the instrument variables satisfy overidentifying restrictions. The results shown in Table7 imply that there is no such issue because the results have failed to reject the null hypothesis of the test. Auto-correlated first differenced error terms at an order beyond 1 shows that the moment condition assumed in the model is invalid. Thus, to check for this the Arellano-Bond test, i.e., AR1 and AR2 has been conducted. The results show that though the null hypothesis for serial correlation is rejected at order 1, however, at order 2 contrary results are arrived at. Hence, it can be inferred that the first differenced error term at order 1 are serially correlated but the same is not true for the disturbances at order 2. In the light of the performed tests the empirical model is correctly specified.

Conclusions

This study was conducted to empirically find out if certain firm specific factors have significant impact on export intensity. It was hypothesized that firm specific factors such as firm size, selling and distribution intensity, research and development intensity, age of the firm and management specific factors such as international experience of top-level management have a positive

impact on the export intensity of the firm. It is shown that firm size, selling and distribution intensity, research intensity, age of the firm and the international experience of top-level management have significant influence on export intensity.

Through the empirical analysis presented in the paper it was found that research and development expenditure have a positive and significant influence on the export intensity. This shows that Indian SMEs should try to improve their innovation capacity by giving importance to research and development activities. The firms engaging themselves in research and development activities gather rich technology which helps them in increasing their exports. The cost of these activities is then spread over larger number of units. Firms such as Agrahyah Technologies, Befach 4X and Bellatrix Aerospace are amongst the top innovative MSMEs in India which are doing exceptionally well in their respective fields (*The Economic Times*, n.d.). It was also found that there is a positive and significant impact of firm size on export intensity. Larger firms have more export intensity as compared to smaller ones which could be because of availability of better financial resources. On this basis it could be suggested to Indian policy makers to formulate export promotion measures keeping in mind the smaller firms as they contribute towards a large percentage of Indian exports.

The study also shows that industry experience is a significant variable and the relationship between age and export intensity is positive. Prior knowledge is important in developing international markets. Getting a foothold in international markets is a learning process which evolves over time. Firms with more experience also attain more maturity in terms of management, international trade, business partnership and customer relationships (Majocchi et al., 2005). The empirical analysis shown in the paper provides a strong validation of the influence of advertising on export intensity. Allocating funds for selling and distribution activities helps firms in enter into new markets and in acquiring intangible assets such as brand name recognition which in turn can help in entering other markets. It was also found that international exposure of top management significantly and positively influences export intensity. Managers when exposed to international business environment acquire the knowledge of culture of other nations and tastes and preferences of foreign consumers which help them in taking better export decisions.

This study has implications for managers of SMEs. The results can be used by the managers to improve their exports. Firms should invest more proactively in their innovation efforts as this will ultimately help them increase their growth potential and achieve sustained competitive advantage. While firms with large size have more funds to support their entry into foreign markets their entry will also help them to achieve economies of scale. All firms should consider their expenditure on selling and distribution activities as an investment which is bound to provide them with benefits of product recognition

and improved brand value. Furthermore, SMEs would gain from hiring personnel with foreign experience and also provide their employees with more opportunities to learn in a foreign environment. Since the small firms are a very large number in India they could help tremendously in narrowing the trade deficit by contributing more towards exports and thus the Government support to SMEs will be mutually beneficial for the firms as well as the economy.

Due to the limitations of the data that is currently available, firms from only four manufacturing industries were taken as the sample for the present study. This is also a single country study and the results cannot be implied for firms from other emerging markets. However, despite these limitations this study can be used as a reference for other research papers such as those comparing the large and established business firms with SMEs or comparing the results with the SMEs of other nations. The present research studies only the direct impact of the independent variables on the dependent variable. Future studies can also study the mediation and moderation effect of other variables.

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