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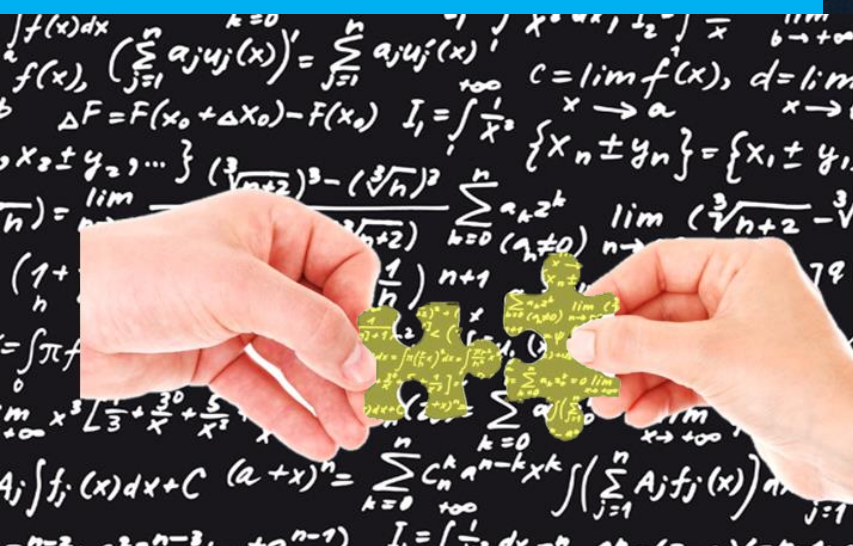
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ESCAP
Economic and Social Commission
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E-commerce and India's Retail and Manufacturing Sectors – Some Lessons for Ensuring Sustainable Development



Nibha Bharti
Sugandha Huria
Ashley Jose
Kanika Pathania

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ASIA-PACIFIC RESEARCH AND TRAINING NETWORK ON TRADE

WORKING PAPER

E-commerce and India's Retail and Manufacturing Sectors – Some Lessons for Ensuring Sustainable Development

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Abstract

The sudden surge in the e-commerce sector has sparked concerns in several economies in the world, particularly in India. The country's traders' associations have complained that the online retail sector (dominated by e-commerce majors) has been growing at the expense of the offline retail sector, primarily the MSMEs. In this context, this study marks one of the initial endeavours to analytically evaluate the impact of the thriving online retail industry on India's organised manufacturing and retail segments. The results indicate that, while online retailing has assumed a significant role in positively impacting the sales of the overall retail and manufacturing sector of the country (on average) during the period 1989-2020, the same effect has not been observed for its MSMEs. The impact on MSMEs has been positive, though not significant – indicating the untapped potential of the MSME sector to take advantage of the growing online commerce. Similar results hold for the retail sector and retail MSMEs when it comes to the impact on their international trade participation due to the growing online retail sector. Finally, the study also underscores the importance of “digitalisation” as a prerequisite for accessing the e-commerce channel, aligning with the societal and environmental objectives outlined in the 2030 Agenda for Sustainable Development. Consequently, the findings advocate setting up a comprehensive e-commerce regulatory framework in India to ensure sustained and inclusive growth for both the e-commerce and MSME sectors.

Keywords: E-commerce, India, Retail Sector, Manufacturing Sector, MSMEs, SDG 2030

JEL Codes: F14, F23, L86, D22

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1. Introduction

Globally, the fourth industrial revolution has led to the digitalisation of economic activities. The evolution of digitalisation has played an important role in raising the productive capacities of economies. It has enhanced digital trade, investment, financial inclusion, and firm competitiveness leading to the growth of economies around the world (Asian Development Bank (ADB), 2021). The digital economy, especially the e-commerce sector in both developed and developing economies, is a channel that enables businesses, particularly Micro, Small, and Medium Enterprises (MSMEs) and consumers to engage in digital trade and investment.⁵ Baseda (2018) pointed out that if technology and the digital economy are leveraged properly, these can be used to achieve Sustainable Development Goals (SDGs). Seventeen SDGs were adopted by the UN Member States in 2015,⁶ as part of the 2030 Agenda for Sustainable Development to develop a roadmap for poverty alleviation, environmental sustainability, economic growth, peace and justice, among others, by focusing on *leaving no one behind*. Economic growth, a key component of achieving Agenda 2030, may be greatly aided by the development of the growing e-commerce sector, particularly small and medium enterprises involved in digital trade (Besada, *op. cit.*), and by bridging the so-called digital divide across MSMEs and large firms. The e-commerce sector is a potent economic and development channel that can be harnessed for attaining SDGs specifically focusing on the components of the Economic Pillar (SDGs 8 and 9)⁷ and Social Pillar (SDGs 10 and 17).⁸ Based on the SDG Index 2022 (Sustainable Development Report 2022), India ranked at the 121st position (out of 163), lower than its 2021 ranking. According to the report, India's performance in achieving SDGs 8 and 9 has moderately improved, but with major challenges; for SDG 10, there are significant challenges; and for SDG 17, the performance is stagnated, and major challenges remain.

Like most countries in the world, India has been witnessing an expansion in its e-commerce sector in recent years. According to the United Nations Conference on Trade and Development's (UNCTAD) Business to Consumers (B2C) E-commerce Index for 2020, B2C e-commerce in India was ranked 71st, up from the 75th position it secured in 2019. Out of the 152 countries considered in the index, Switzerland secured the 1st position, and the US, UK, Republic of Korea, and China, which are also India's major trading partners and have prominent e-commerce industries, were

⁵ Henceforth, we use 'e-commerce' and 'online retail' interchangeably.

⁶ The Sustainable Development Agenda. United Nations.

<https://www.un.org/sustainabledevelopment/development-agenda/>

⁷ SDG Goal 8: Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all. SDG Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialisation, and foster innovation. <https://sdgs.un.org/2030agenda>

⁸ SDG Goal 10: Reduce inequality within and among countries SDG Goal 17: Strengthen the means of implementation and revitalise the global partnership for sustainable development. <https://sdgs.un.org/2030agenda>

positioned at 12th, 5th, 18th, and 55th positions, respectively (UNCTAD, 2021a).⁹ Factors such as the growing penetration of smartphones, inexpensive modes of communication, better logistics systems, digital payments, and an expanding workforce, among others, have contributed significantly to the growth of India's e-commerce sector. While the sector earlier had limited coverage in products, today it offers multiple product ranges, including electronics, apparel, grocery, loan to Kirana stores, etc. Yet, its share in the country's total retail sales is still very small (India Brand Equity Foundation (IBEF), 2020). According to IBEF (2023), due to the increasing demand in the sector, India's e-commerce market is projected to reach US\$ 111 billion by 2024 and further escalate to US\$ 200 billion by 2026. This implies that the growing online commerce industry could also turn out to be a real game-changer for the country's MSMEs by way of employing digital devices and internet networks to trade goods and services and to make payments. Subsequently, the sector holds great potential in helping the country attain its goal of USD 5 trillion economy by 2025¹⁰ and adopting an inclusive and sustainable growth trajectory by focusing on MSMEs, entrepreneurship, financial inclusion, digital infrastructure, technology, creativity, and innovation.

However, the old debate on the co-existence of large (organised) and small firms (unorganised) in an emerging market economy like India has an inevitable existence even today. At present, with the advancement in digitalisation, the debate has shifted towards the co-existence of online marketplaces (the so-called e-commerce aggregators) and MSMEs. On one hand, the extant literature favours the e-commerce sector and highlights its benefits in terms of creating supply jobs and warehouses, facilitating the marketing of products as well as the payment processes, saving consumers' time and providing them access to a wider set of product choices. Sarkar and Bhattacharya (2020) claim that the e-sector involves advanced technology with a higher innovation rate and increasing returns to scale with low marginal cost, which creates higher profits for several businesses. A report by KPMG (2015), using qualitative sources, states that e-commerce platforms have a positive effect on the sales, revenue, and distribution channels of Indian online MSMEs. Another study by Goyal et al. (2022), based on a survey of 1537 manufacturing firms for 6 different product categories, reports that the share of online sales by MSMEs increased from 12 % in 2018-19 to 27 % in 2020-21. Their findings suggest that about 64 % of the surveyed MSMEs sold their products online in 2020-21, with many of them reporting stronger sales than in the previous years. The study, however, looked into the effect of the e-commerce platforms for only the *online* MSMEs and not the MSME sector as a whole using survey data for a single year. Further, the period of the study coincides with the COVID-19 pandemic, which triggered the expansion of the e-commerce

⁹ The Index measures an economy's preparedness to support online shopping. It consists of four indicators that are highly related to online shopping and for which there exists country-wide coverage. These indicators are – (a) account ownership at a financial institution (b) individual using the internet (c) postal reliability index and (d) secure internet servers. Thus, from the ranking, India's position is still quite behind that of its peers, and this could have implications for the growth of its e-commerce sector.

¹⁰ Vision of USD 5 Trillion Indian Economy. <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1549454>

sector not only in India but in most countries in the world (World Trade Organization (WTO), 2020). More recently, a study by Kapoor and Goyal (2023) using a primary survey of 2,007 MSMEs (both integrated and not-integrated with e-commerce platforms) in major states of India highlighted that integrated MSME firms have gained higher profitability and turnover than the non-integrated ones. The major reason for MSMEs not integrating with e-commerce was the lack of adequate knowledge in utilising digital technology and e-commerce platforms. The study also indicated that the export-oriented MSMEs with higher share were found to be more integrated with the online commerce platforms than others. This evidence spells out the importance of the growing e-commerce industry in India and its potential to advance the 2030 agenda for Sustainable Development.

On the contrary, the second piece of evidence puts forth several allegations raised against the country's e-commerce sector, more specifically the two leading foreign players, namely Flipkart (or Walmart)¹¹ and Amazon. These two e-commerce majors contribute to around 63% of the total e-retail segment in India (Dayalani, 2021). The complaints have primarily been raised by India's Traders Associations¹² (representing a group of small and medium businesses) regarding unfair monopolistic practices such as predatory pricing, deep discounting, preferential treatment for some sellers, etc. by the big e-commerce players of the country (Competition Commission of India (CCI), 2019, 2020); Sarkar and Bhattacharya, 2020; Aparna, 2021). The associations have claimed that such practices have been reducing the business opportunities available (especially) to Indian retail MSMEs (Bundhun, 2020), due to which their survival is now at stake, after the first two waves of the COVID-19 pandemic. Additionally, as reported in Business Today (2021), more than 40,000 trade organisations in the country have together argued that such practices would ultimately result in a large e-commerce sector (which is growing at a rapid rate) leading the entire Indian retail market in the long run. Citing the importance of the associations' campaign against e-commerce majors, one of the Confederation of All India Traders (CAIT's) officials also said that,

"Therefore, there is an urgent need to purify the e-commerce landscape of the country so that even a small trader can also adopt and accept the e-commerce business as an additional avenue for raising his revenue and mak[ing] Prime Minister Narendra Modi's Atmanirbhar Bharat campaign a success."

With MSMEs assuming a crucial role in India of contributing about 30% of the country's GDP, 40% of its non-agricultural employment, and approximately half of its exports, it is thus imperative for the country's government to take note of such cases (MSME Annual Report, 2021-22). However, with the initial evidence favouring the e-commerce sector in terms of contributing to India's employment generation, creation of new

¹¹ Walmart (US-based company) acquired a 77% stake in Flipkart (Indian-based e-commerce company) in 2018 (Das 2018).

¹² Traders Associations such as Confederation of All India Traders (CAIT), All India Online Vendors Associations (AIOVA), Micro Small Medium Enterprises (MSME) associations.
<https://www.financialexpress.com/sector/sme/msme-eodb-traders-body-cait-invites-150-associations-trade-bodies-to-forge-bigger-alliance-for-e-commerce-fight/2426856/>

market space, facilitating marketing and sales of products, etc., in conclusion, it seems that a balanced view needs to be considered by the government while formulating relevant policies, as more and more of both MSME and non-MSME firms are expanding their online operations in the country.

Against this backdrop, the present study adds to the literature in three novel ways. The first is by understanding the contrasting evidence at hand, scanning through the issues faced by MSMEs, and attempting to conduct an international comparison of the problems being raised against e-commerce majors. Second, given the limited data on e-commerce activities in India, this paper makes one of the first attempts to quantitatively assess the impact of the Indian e-commerce sector on the performance of its retail MSMEs, the retail sector as a whole, manufacturing MSMEs, and also the manufacturing sector as a whole. The effects on the manufacturing sector (including MSMEs) have been considered since e-commerce platforms are a part of the retail sector, which, in turn, possesses significant backward linkages to the manufacturing sector as it relies on manufactured products for its business operations.

The existing literature suggests that there is a dearth of studies analytically examining the effect of the e-commerce sector on the performance of the retail sector and specifically its MSMEs in the Indian context, even though it has garnered growing attention in recent years. As cited above, KPMG (*op. cit.*), and Goyal et al. (*op. cit.*) do not specifically analyse the impact of the growth of e-commerce on India's production economy over the years. Moreover, only online MSMEs have been considered for the assessment. Given that the recent complaints against the e-commerce sector have been raised by the Traders' Associations representing not only the online but also the offline MSMEs, it becomes crucial to assess the impact of e-commerce on the MSME sector as a whole and not just on the online ones. Kapoor and Goyal (2023) did consider non-integrated firms, however, their study is a cross-sectional assessment. It is also important to note that while there is growing evidence about the benefits of digitalisation, digitalisation without the promotion of e-commerce channels may only have limited benefits for the country. There are, however, a few studies that examine whether the presence of online retail or e-commerce firms hurts their offline counterparts in countries such as the UK, USA, the Netherlands, etc. (Deleersnyder et al., 2002; Biyalogorsky and Naik, 2003; Weltevreden, 2007; Pozzi, 2013; Reitnars et al., 2019 and Ratchford et al., 2022).

Further, the adoption of e-commerce practices should also boost the trade participation of Indian firms due to the benefits they offer such as efficient payment systems, better access to information, greater market access, etc. According to UNCTAD (2021b), digital trade facilitates sustainable growth and expands integration into the Global Value Chain (GVCs), particularly for developing nations, representing a potential for inclusive economic growth. Some studies such as Gautam (2017) and Takkar and Sharma (2021) show that e-commerce has facilitated the export participation of Indian firms, however, they do not analyse the same for the Indian MSMEs or the retail sector in particular. While the role of digitalisation in promoting

the GVC participation of firms has been explored substantially before (Lanz et al., 2018; Sasidharan and Reddy, 2021; VuPhu et al., 2022; Gopalan et al., 2022), to the best of our knowledge, no study explores the role of the *e-commerce sector* in facilitating the entry of the Indian retail and manufacturing sectors (particularly when it comes to the MSMEs) in international markets. We examine this association analytically as the *third* objective of the present study.

It is worth pointing out that this study is particularly relevant in the current scenario when India's e-commerce policy is still in its draft stage. This is also particularly critical at a time when developing countries such as India, which still lag significantly when it comes to digitalisation, vis-a-vis their developed peers, are urged to engage in e-commerce free trade (ETNOW, 2022). Our findings indicate that without the e-commerce sector, the incremental growth of the Indian retail and manufacturing sector during the last two decades would have been lower. However, the country's MSMEs have not been able to (significantly) take advantage of the growing e-commerce and keep pace with the so-called digital globalisation. A similar result holds when it comes to the facilitation of the trade participation of these firms. This mandates a robust policy framework that can concomitantly ensure the growth of both the e-commerce sector and the MSME retail sector while creating positive spillover effects for the other sectors of the country and attaining sustainable growth.

The rest of the paper is organised as follows: the next section (2) discusses the problems faced by Indian MSMEs and the issues raised by the country's Traders' Associations against its e-commerce majors. Section 3 puts forth the data and methodology used and attempts a preliminary graphical analysis to answer the questions of interest, while section 4 presents the main empirical results of the study. The last section (5) concludes and presents policy recommendations based on our findings.

2. Issues Faced by MSMEs

In this section, the study attempts to assess the kind of complaints being raised by the MSME firms against the e-commerce majors in India and inspects if such problems exist in other comparative economies. We investigate the complaints being raised in 12 different countries (a mix of six developed and six developing economies) besides India. Most of these countries have been selected based on the presence of both Flipkart and Amazon (the two leading e-commerce players in India) in their respective economies, apart from the fact that they have a huge e-commerce market.

While there is a diverse range of issues that have been raised by traders, specifically, MSME firms, we broadly classify these into two distinct categories. The *first* relates to *Specific complaints* that have been raised recently against the e-commerce majors. In the case of India, such specific issues have been raised by both the supply and

demand sides of the country (mostly) against two e-commerce majors, namely Flipkart and Amazon. The demand side (i.e., consumers) issue mainly pertains to misleading advertisements with incorrect information that prevent optimal decision-making on their end, while the supply side issues primarily pertain to issues such as predatory pricing, deep discounting, and preferred sellers, all of which come under the gambit of unfair business practices.

Amongst the complaints raised by Traders' Associations against e-commerce majors in 13 countries (including India) under consideration (see Table 1),¹³ *predatory pricing* is the most found complaint.¹⁴ While 11 countries (including China, Costa Rica, the US, the UK, and others) report this to be a severe issue impeding their business atmosphere. However, such a complaint has not been raised by the Indian Competition Commission Board. The CCI continues to probe anti-competitive evidence against the Indian e-commerce majors (Business Standard, 2020). Nevertheless, other complaints such as *preferred sellers*¹⁵ and *deep discounts*¹⁶ have been repeatedly reported in the country, and in countries such as the US, China, and South Korea. This makes it clear that such issues are not specific to India, but have been raised by other major players in the world trading platform.

¹³ Further details on the same can be availed from the authors upon request.

¹⁴ Predatory pricing denotes the anti-competitive business practice of selling a product below its marginal cost by a dominant firm in the market to eliminate its competition.

¹⁵ Preferred sellers are a business practice adopted by e-commerce majors which involves giving preferential treatment to certain sellers.

¹⁶ Deep discounts are business practices adopted by e-commerce majors, wherein the e-commerce platforms offer heavy discounts on goods/services that are sold in high quantities.

Table 1: Specific Issues Raised Against E-commerce Majors: Evidence from India and its Comparative Economies

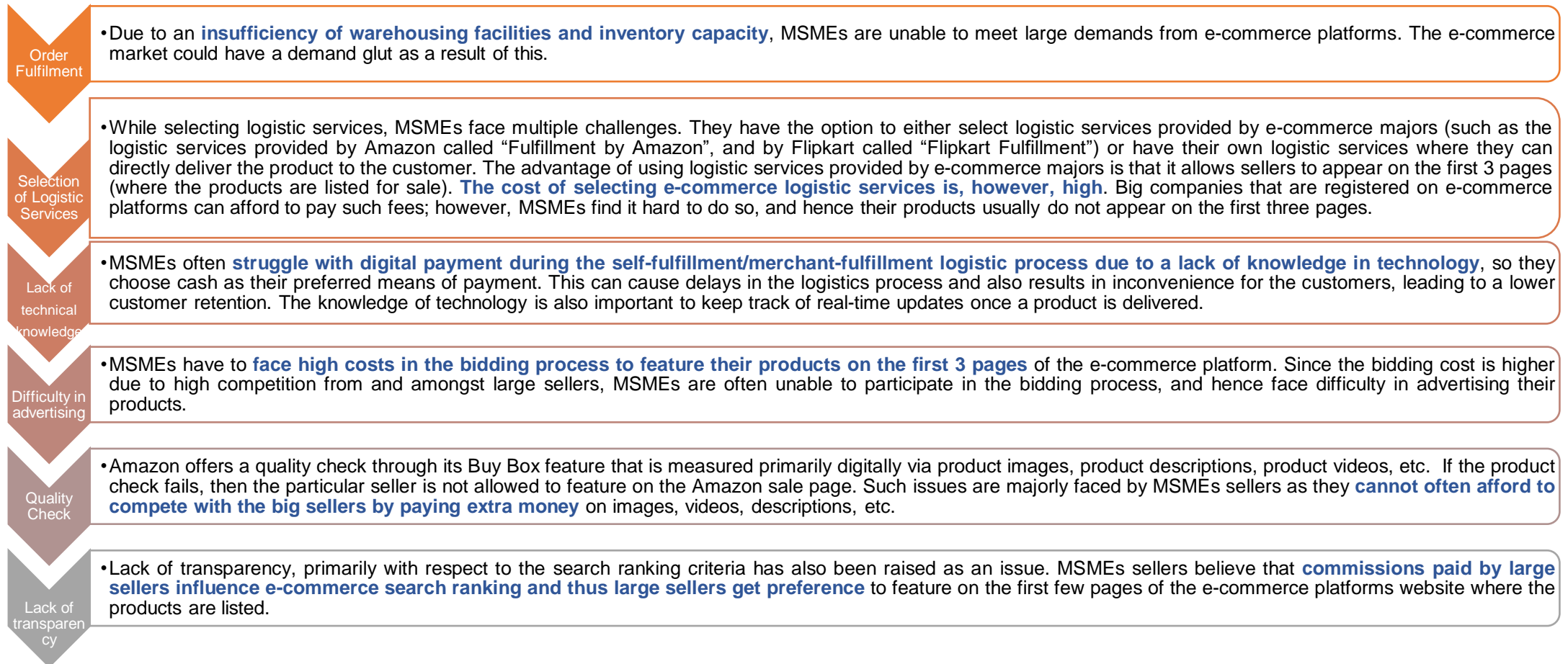
	Developing Economies							Developed Economies					
Specific Issues	India	China	Costa Rica	Mexico	South Korea	Vietnam	Brazil	United States	United Kingdom	Germany	Canada	European Union	Italy
Predatory Pricing		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Preferred Sellers/ Choosing only one *	✓	✓			✓			✓				✓	✓
Deep Discounts	✓	✓						✓	✓				
Misleading Advertisement/ Fake Reviews	✓	✓			✓	✓		✓	✓		✓		

Source: Compiled from country-specific news reports and the existing literature.

*Note: Choosing only one is an anti-monopolistic strategy adopted by e-commerce majors which were uniquely identified in China and not in other countries.

The *second category* of issues pertains to the general weaknesses of MSMEs, vis-à-vis large firms (see Figure 1). These structural issues arise for these MSME firms mainly due to lower economies of scale and result in challenges such as inadequate access to technology, lack of skills, low inventory base, difficulty in advertising, etc. Such issues have an inevitable existence in any economy and not just in India, as in every sphere, there exist both small and large firms with access to different resource bases. Thus, the general issues point toward some of the reasons why it has been argued that the MSMEs are unable to compete with the large sellers in the e-commerce market, and hence, are unable to generate revenues, which causes their enterprises to slow down. In a nutshell, such issues could hinder the progress towards digitalisation or utilisation of online commerce.

Figure 1: General Complaints Raised by MSMEs



Source: Authors' Compilation from various newspaper articles. Jennifer Post. (2022). Top E-Commerce Challenges Facing SMBs. Business News Daily Contributing Writer. Retrieved from <https://www.businessnewsdaily.com/6028-small-ecommerce-challenges.html> Shiprocket. (2020). 10 challenges plaguing small sellers in the Indian e-commerce market. ET Retail. Retrieved from <https://retail.economictimes.indiatimes.com/news/e-commerce/e-tailing/10-challenges-plaguing-small-sellers-in-the-indian-e-commerce-market/76995711>

While this section presents a qualitative investigation to understand the nature of the problems being raised by MSMEs and draw some parallels, it cannot provide an effective conclusion in terms of the actual effect (whether it is positive or negative) of the e-commerce sector without a quantitative inspection of the same. Given the growing amount of discord between offline firms and e-commerce majors, an empirical exercise becomes paramount for further deliberation and consideration of the problems being raised by various economic stakeholders. These include the retail sector, retail MSMEs, manufacturing sector, and manufacturing MSMEs within the country. The following section documents the empirical exercises conducted in this regard.

3. Data and Methodology

To evaluate the effect of the e-commerce sector on the four stakeholders mentioned above, this study utilises the Centre for Monitoring Indian Economy's (CMIE) Prowess Database. The CMIE Prowess is a firm-level database that has a variety of information on a company's business fundamentals such as sales, exports, imports, profits, etc. The data, however, only has information on firms in the organised sector.¹⁷ The data on unorganised sector firms are available in the NSS (National Sample Survey) database, but it does not identify the e-commerce firms separately and also lacks yearly data. Nonetheless, it is important to note here that while in terms of the number of firms, the organised sector is much smaller than the unorganised sector in India, it still has a greater share in the country's GDP, exports, taxes, etc., compared to the unorganised sector.

The present study utilises data on 49,847 organised sector firms comprising both manufacturing and services firms, out of which 34,077 firms belong to the MSMEs (about 68.36%).¹⁸ About 16,164 firms belong to the manufacturing sector out of which 9991 are MSME firms. The retail sector belongs to the services sector. There are 640 firms belonging to the retail sector, out of which 60 (around 9.4%) belong to the online retail sector specifically. It is worth noting that while the CMIE Prowess database has information on a reasonable number of firms in the online sector, including prominent ones such as Amazon, Snapdeal, Myntra, Tata Unistore, etc., it still lacks data on many such firms. For example, the CMIE Prowess dataset does not include Flipkart in the e-commerce sector but rather lists it as a wholesale firm. It is also likely that the data for total online sales in a year may be underestimated to some extent as there may be more firms such as Flipkart that have online operations but are not included in the online retail sector category in the CMIE Prowess database. Further, the data

¹⁷ 'Unorganised sector' is also referred to as the 'informal sector' and the 'organised sector' is also used for 'formal sector'.

¹⁸ The categorisation of MSMEs is based on the MSME Development [MSMED] Act of 2006.

does not entail information on firms that operate in hybrid (online and offline) mode. Nevertheless, in the absence of any other time-series information, the CMIE Prowess is the only source to assess how the growth of the e-commerce sector has affected the overall growth of the Indian retail and manufacturing sectors, and their MSME segments as well.

Before setting the model framework, a few preliminary analyses have been conducted to understand the trends in the performance indicators of the retail sector. Various performance indicators such as sales, gross fixed assets, and the number of firms, have been considered in this regard. Sales and Gross Fixed Assets have been widely used as a variable in the literature to assess the size of the operations of a firm. The indicator based on the 'number of firms', which can be used as a 'size' variable for a sector, is also helpful in analysing whether the growth of e-commerce has incentivised more firms to enter the sector under consideration, or forced some firms to shut down their operations, as highlighted in the introductory section. A preliminary graphical analysis has also been conducted between e-commerce sector sales and the performance indicators of the overall production economy (comprising of the manufacturing sector and services sector¹⁹ in our analysis (and excluding the information on the primary sector)) and manufacturing sector separately to inspect if there is any significant association between the two. The variable construction and data sources for the various variables utilised in the regression are given in Table 2.

Table 2: Construction/ Definitions of variables used for regression analysis²⁰

Name	Variable	Construction/ Definition	Measurement Unit
Deflated Sales of a Firm	Deflated Sales	Sales are deflated by the sector deflator. For the manufacturing sector, we use data on industry-specific price indexes from the Government of India's Office of Economic Advisory's Wholesale Price Index (WPI) database. Service sector deflators have been constructed using the information on service-wise value added in current and constant prices from India's Central Statistical Organisation's National Account Statistics (NAS) database. ²¹	INR Billion
Sum of Online retail sales	Deflated yearly online retail sales	Sum of the deflated sales of all online firms in a year	INR Million
Trade Participation of a firm	Trade Participation Dummy	Takes value 1 if the firm both exports and imports in a year; 0, otherwise	-

¹⁹ The services sector encompasses retail services among its various components.

²⁰ Detailed description on construction of these variables is available with authors.

²¹ The WPI data is accessible from <<https://eaindustry.nic.in/>>. The NAS data is available at <<https://mospi.gov.in/>>.

Name	Variable	Construction/ Definition	Measurement Unit
Extent of digitalisation	ICT Spending	Computer and IT spending by a firm deflated using a computer deflator	INR Million
Gross Value Added	GVA	Nominal output minus the nominal value of intermediate inputs (materials, energy and services), deflated using two-digit sector-level price deflators.	INR Million
Total Factor Productivity	Total Factor Productivity	Calculated using the Levinsohn Petrin technique using gross value added, capital intensity and deflated compensation to employees.	Index
Size of the firm	Size	Log of deflated total assets	INR Million
Age of the firm	Age	Reporting year -year of incorporation	Years
Servicification	Service input intensity	(Services purchased/sales) * 100 , where services purchased include the sum of expenses on heterogeneous services comprising rent and lease, repair and maintenance, outsourced manufacturing jobs, outsourced professional jobs, insurance, selling and distribution expenses, financial services and advertising and marketing expenses measured in current prices.	Proportion
Innovation	R&D intensity	(R&D expenditure/sales) *100	Proportion
Leverage	Debt/equity ratio	Total debt of the firm/total equity of the firm	INR Million
Profits	Profits	Total income + Change in stocks - Total expenses = Profit after tax	INR Million
Competition Index	Herfindahl Hirschman Index	Sum of square of sales of a firm divided by total industrial sales in a year	Proportion

Source: Authors' calculation using CMIE Prowess

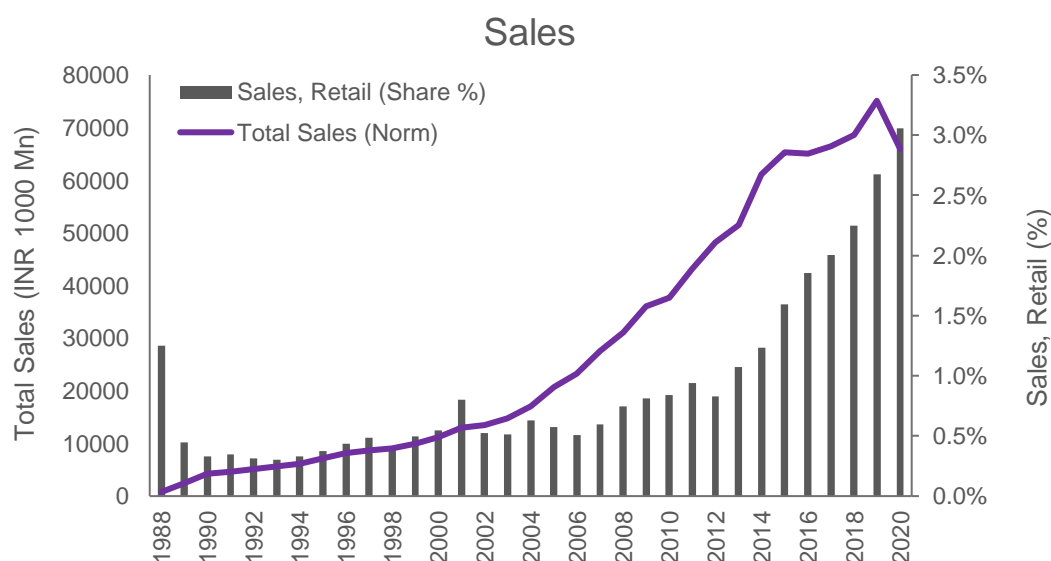
We take the sum of the deflated sales of all e-commerce sector firms in a year as our key explanatory variable. Further, we construct two versions of the e-commerce proxy variable, one with online retail sales that exclude sales from Flipkart and the second where we include sales from Flipkart in online retail sales.²² This is because of the reasons mentioned above. For assessing our third objective, we define trade participation as a binary variable that equals 1 if a firm engages in both exporting and importing operations, and zero, otherwise. This variable is commonly used as an

²² Given that Flipkart operates through its online portal in India, it was, however, not categorised as an online retail firm in the CMIE Prowess dataset. As Flipkart is one of the e-commerce majors in the country, for this study, we recomputed our 'e-commerce sector' variable sales by adding the sales of Flipkart (from the wholesale category) to the online retail sales and re-estimate the regressions. This is why there is no change in the total number of observations in regressions as Flipkart sales were just added to the total online retail sales without adding/subtracting a new data point in the panel set-up.

indicator of GVC participation in the literature (Reddy et al., 2022; Antras, 2021; DAVIS and Zaki, 2020; World Bank, 2020). The terminology is justified by the fact that companies that import intermediate inputs are directly involved in intra-industry activities, and importing is a form of backward involvement in GVCs because using imported components increases the value of a company's exports. Additionally, a company that exports captures the forward involvement in GVCs because it is likely that the companies from which it sources its products are also exporters. As a result, businesses engaged in both exporting and importing activities are classified as GVC firms.²³

We look at the trends of some of the key performance indicators of the retail sector and contrast them with the performance of the overall (i.e., the sum of manufacturing and services) sector. We compare the two to understand if retail has been performing better or worse than the *overall* production sector in aggregate. This would help us to gauge whether the advent of e-commerce firms has had any negative implications for retail as a whole at least at an indicative level.

Figure 2: Trend in Overall Sales



Source: Authors' estimation using CMIE Prowess Database

Figure 2 shows the sales of the overall sector (given by the purple line) and the growth in the proportion of retail sales to sales of the overall sector (given by the grey columns) over the years. It can be observed from the figure that total sales have shown an increase for all years except from 2015-2016 and for the year 2020. It can also be noted from the figure that the proportion of retail sales in total sales has witnessed an increase for most years. This has been more so since 2012. These observations are reflective of the growing importance of the retail sector in the overall economy since its share has increased from about 0.8% in 2012 to more than 3% in 2020. Another

²³ It is important to note here that the CMIE data does not entail information on whether the imported/exported item is for intermediate use or final use.

point pertains to the performance of the proportion of the retail sales to the total sales in 2020. While the total sales dipped in 2020, most likely due to the COVID-19 pandemic, the proportion of the retail sales to the total sales in 2020 shows a sharp increase. This shows that the retail sector (as a whole) has been less affected due to the pandemic vis-à-vis other sectors. Thus, we see that the emergence of online retail has not negatively impacted the performance of the total retail sector but may have improved its performance over the years.

The succeeding section attempts the same to draw reasonable conclusions on the problem explored thus far in the paper.

4. Estimation Results

The graphical analysis indicated the absence of negative effects on the retail sector, the overall sector, and the manufacturing sector due to the emergence of the e-commerce sector. However, a sound empirical analysis becomes imperative to reach any robust conclusion. In this regard, a regression exercise has been conducted to establish causal relations between the sectors, if any, regarding their sales and international trade participation. Section 4.1 presents the impact of the e-commerce sector on the *sales* of the retail and manufacturing sectors along with their MSMEs while section 4.2 discusses the impact of the e-commerce sector on the *trade participation* of firms belonging to these sectors.

4.1 E-commerce and Total Sales by Firms

We explore the impact of the booming Indian e-commerce sector on sales of firms using the following model specification, which has been set up based on an extensive literature review, the summary of which is presented in Figure 3.²⁴

Sales of a Firm, $i,t = \alpha + \beta_1 \text{ E-commerce sales in a year}_{(t-1)} * \text{Firm Size}_{(t-1)} + \text{Other firm-level controls} + \gamma_i + \delta_j + \mu_t + \epsilon_{it}$

Here the dependent variable represents deflated sales of a firm (i) in year (t) and the main explanatory variable represents the total e-commerce (industrial) sales in year (t-1) interacted with the firm's size. Thus, given the firm's size, β_1 explains the effect of the e-commerce sector's sales in year (t-1) on the tth period sales of the manufacturing/retail firm under consideration.²⁵ Other firm-level controls include total factor productivity, expenditure on IT and computer systems, service-input intensity of firms, their R&D intensity, age, profit-after-tax, and debt-to-equity ratio. Various iterations of the above-given model have been run to analyse the effect of the e-commerce sector on the retail and manufacturing sectors of India along with a special

²⁴ Figure 3 entails information on studies that have assessed the role of different determinants of firm performance.

²⁵ Lagged e-commerce sales have been considered to (a). control the likelihood of endogeneity that may arise due to the issue of reverse causality, and (b). to capture the effect of growing e-commerce sector on manufacturing/retail sector firms under consideration.

focus on their MSMEs. Preliminary testing revealed the presence of autocorrelation and heteroskedasticity problems in the data. Thus, Pooled Ordinary Least Squares regression would lead to spurious results. Hausman test revealed the fixed effects model to be the suitable model for our analysis as the p-value was less than 0.05. We use (firm-level) clustered standard errors to mitigate the problems of autocorrelation and heteroskedasticity in our data. To account for endogeneity problems, we have taken a one-period lag of all the explanatory variables except for the age of the firm. In addition, we also control for γ_i , i.e., firm fixed effects, and μ_t , i.e., time fixed effects. Firm fixed effects account for characteristics that are unique to a firm and do not change over time. Time-fixed effects on the other hand control for the effects that are present for all firms at different points in time. The manufacturing sector regression also controls for industry-fixed effects (δ_j) i.e., factors that differ across different industries within the manufacturing sector but are constant over time. Table 3 gives the summary statistics of the variables utilised for the regression exercise while Table 4 reports the results of the empirical exercise.²⁶ There are 8 columns in Table 4 ((1) to (8)). The first two columns report results for India's retail sector, followed by findings for retail MSMEs in columns (3) and (4). Columns (5)-(6) and (7)-(8) present results for the overall manufacturing sector and manufacturing MSMEs, respectively. As discussed in section 3, we have computed the information on total e-commerce sales in two ways – one, that excludes data on sales of Flipkart, and two, that includes Flipkart's sales as well. Accordingly, for each of the four stakeholders, the two columns present regression results when the e-commerce sales variable is exclusive of Flipkart's sales, and when Flipkart's sales are included in the main explanatory variable, respectively.

Figure 3: Studies on Factors Affecting Firms Performance

Firm Size and Firm Age	Advertising and Marketing intensity	Debt-to-Equity ratio	Total Factor productivity	Comeptiton	Profits	Service Input Intensity	Research and Development Expenditures	Digitali zation
Hall & Weiss, 1967; Zeitun & Tian, 2007; Onaolapo & Kajola, 2010; Pouraghajan & Malekian, 2012; Pervan & Visic, 2012; Sinha et al., 2021	Paton & Williams, 1999; Salomon & Shaver, 2005; O'sullivan & Abela, 2007; Chander & Aggarwal, 2008; Srinivasan & Lilien, 2009; Sridhar et al., 2014	Liargovas & Skandalis, 2010; Nanda & Panda, 2018; Nguyen, 2021	Rosegrant & Evenson, 1992; Lipsey & Carlaw, 2000	Wijewardena & Cooray, 1995; Huselid et al., 1997; Bahadir et al., 2009	Cronin & Page 1988; Veltman et al. 2014; Endri et al. 2020; Suzan 2020	Arnold et al. 2011; Lin 2013; Shepotylo & Vakhitov 2015	Kim at al. 2014; Yoo et al. 2019	Purba et al. 2021; Purnam a et al. 2022; Martins 2022; Huria et al. 2022

Source: Authors' Compilation

²⁶ A detailed description of these tests is available from the authors.

Table 3: Summary Statistics for Prowess Analysis

Variable	Observations	Mean	Std. Dev.	Min	Max
Deflated Sales (INR Billion)	362,958	2.557	30.527	.0000344	3669.438
Sum of online sales in a year	514,127	30827.230	46010.340	40.534	149885.9
Sum of online sales in a year (Including Flipkart Sales)	514,127	68948.820	103767.800	40.533	325519
Firm Size (Deflated Total Assets)	516,277	6352.555	131551.5	0	28100000
Total Factor Productivity	297,403	.271	3.585	0	724.312
Expenditure on IT and computer systems	519,609	14.172	310.329	0	51794.620
Competition index (Herfindahl-Hirschman Index)	180,575	.053	.074	0	1.000
Age square	519,258	724.065	1481.131	0	24649
R & D Intensity	362,958	.658	99.879	0	42400
Service Intensity	362,958	1613.762	107417.500	0	2.98e+07
Advertising and Marketing Intensity	362,958	2228.869	33896.630	0	4686000
Leverage (Debt to Equity)	443,508	11.796	479.072	-1	126978
Profit after Tax	480,892	79.492	2087.838	-380421.900	183819.500

Source: CMIE Prowess Database

Table 4: Effect of Online Retail Sales on the Retail Sector, the MSME Retail Sector, the Manufacturing Sector and the MSME Manufacturing Sector

Variables	Col.	Retail without Flipkart	Retail with Flipkart	Retail MSME without Flipkart	Retail MSME with Flipkart	Manufacturing without Flipkart	Manufacturing with Flipkart	Manufacturing MSME without Flipkart	Manufacturing MSME with Flipkart
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Deflated sales of a firm							
L.E-commerce Sector * L.Firm Size	(1)	0.0000119*** (3.10x10 ⁻⁶)		8.99x10 ⁻⁷ (9.40x10 ⁻⁷)		0.0000159*** (3.03x10 ⁻⁶)		1.08x10 ⁻⁷ (5.77x10 ⁻⁷)	
L.E-commerce Sector (With Flipkart)*L.Firm Size	(2)		5.04x10 ⁻⁶ *** (1.31x10 ⁻⁶)		3.82x10 ⁻⁷ (4.14x10 ⁻⁷)		6.74x10 ⁻⁶ *** (1.29x10 ⁻⁶)		4.40x10 ⁻⁸ (2.50x10 ⁻⁷)
L.Total Factor Productivity	(3)	0.087 (0.156)	0.087 (0.157)	0.076 (0.048)	0.076 (0.048)	0.075 (0.110)	0.076 (0.111)	0.033*** (0.011)	0.033*** (0.011)
L.Expenditure on IT and computer systems	(4)	0.839*** (0.280)	0.837*** (0.279)	0.144 (0.132)	0.144 (0.132)	0.169* (0.089)	0.167* (0.089)	0.037* (0.020)	0.037* (0.020)
L.Competition index (Herfindahl-Hirshman Index)	(5)	-5.110*** (1.436)	-5.199*** (1.444)	-0.322 (0.358)	-0.327 (0.377)	0.074 (0.300)	0.073 (0.300)	-0.068** (0.033)	-0.069** (0.032)
Age	(6)	-0.680*** (0.187)	-0.681*** (0.187)	-0.002 (0.028)	-0.022 (0.031)	-0.269* (0.160)	-0.266* (0.160)	0.021 (0.020)	0.022 (0.020)
L.Service Intensity with L.Advertising and Marketing Intensity	(7)	0.768*** (0.276)	0.776*** (0.279)	0.182*** (0.052)	0.182*** (0.052)	0.801*** (0.169)	0.810*** (0.170)	0.057*** (0.014)	0.057*** (0.013)
L.R & D Intensity	(8)	-2.299*** (0.824)	-2.314*** (0.827)	-0.239 (0.263)	-0.237 (0.264)	-0.0009 (0.015)	-0.0006 (0.015)	0.003** (0.001)	0.003** (0.001)
L.Leverage (Debt to Equity)	(9)	-0.002	-0.004	0.058* (0.058)	0.058* (0.058)	-0.003	-0.004	0.016** (0.016)	0.016** (0.016)

Variables	Col.	Retail without Flipkart	Retail with Flipkart	Retail MSME without Flipkart	Retail MSME with Flipkart	Manufacturing without Flipkart	Manufacturing with Flipkart	Manufacturing MSME without Flipkart	Manufacturing MSME with Flipkart
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Deflated sales of a firm							
		(0.111)	(0.111)	(0.034)	(0.034)	(0.044)	(0.044)	(0.007)	(0.007)
L. Profit after Tax	(10)	0.009**	0.009**	0.006*	0.006*	0.002*	0.002*	0.0003	0.0003
		(0.004)	(0.004)	(0.003)	(0.003)	(0.001)	(0.001)	(0.0003)	(0.0003)
Constant		-6.655***	-6.811***	-0.963	-0.970	-4.352	-4.419	-0.584	-0.584
		(2.457)	(2.469)	(0.996)	(1.009)	(3.759)	(3.758)	(0.499)	(0.499)
Time Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects		-	-	-	-	Yes	Yes	Yes	Yes
Observations		2,088	2,088	1,061	1,061	54,395	54,393	7,837	7,837
R-squared		0.421	0.420	0.166	0.166	0.185	0.185	0.063	0.063
Number of firms		398	398	258	258	8,770	8,770	2,241	2,241
Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.10; L: Lag									

Source: Authors' Calculation using CMIE Prowess Database

The regression results reveal that the advent of e-commerce firms even after controlling for factors that impact firm sales has had a positive impact on the retail sector in India as can be seen from row 1 column 1 and row 2 column 2. This result is in line with the graphical analysis conducted in the previous section, which showed that the share of the retail sector in the total sector has been on the rise since the emergence of the e-commerce sector in India. As explained by Huang et al., (2016) for China, the e-commerce sector may have had a positive effect on the growth of the retail sector by stimulating demand in the Indian economy. This may be due to e-commerce platforms offering better marketing strategies, easier payment systems, transportation costs for consumers, lower storage costs to sellers, etc. Moreover, the greater the size of the firm, the greater the positive effect of e-commerce on retail firms' sales, indicating that relatively bigger firms capitalise on greater benefits from the presence of the e-commerce sector, vis-à-vis smaller firms.²⁷ Additionally, computer intensity which can be considered to be representative of the digitalisation levels of a firm is also found to be an important determinant of firm sales. Digitalisation is a tool that facilitates e-commerce. Digitalisation of firms facilitates effective communication with consumers, suppliers, and distribution networks, (Jean et al., 2010; Marchi et al., 2018; Sasidharan and Reddy, 2021), all of which are likely to have an indirect positive impact on sales of a firm.

The analysis further reveals that the expansion of the e-commerce sector also has positive effects on the manufacturing sector of the country (row 1 column 5 and row 2 column 6). This may be, as previously discussed, because the retail sector primarily sells manufactured products, apart from agricultural items. Thus, a boom in the retail sector is bound to have positive implications for the manufacturing sector of a country thereby adding a new facilitator for ensuring (on average) higher growth of the country. The findings indicated that on average, the year-on-year incremental growth of the Indian retail and manufacturing sector would have been lower in the absence of a booming e-commerce sector in the country than in its presence. This observation, while missing from the existing studies on assessing the firm-level determinants of sales, holds a crucial prominence today when the Indian government is re-considering its policy stance on e-commerce firms (whether domestic or foreign) and drafting the country's e-commerce policy. In addition, it is important to note that a very small coefficient of e-commerce sales variables observed in the case of both retail and manufacturing sectors, could be because of the limited information available on the total e-commerce sales in the country.²⁸ Nonetheless, our analyses indicate that the manufacturing sector's sales have improved more than sales of the retail sector due to the growing e-commerce sector in the country. As regards the other covariates, it can also be observed from rows 4,7, and 10 of Table 4 that utilisation of services and profit after tax are other important variables that also significantly influence the sales of Indian retail and manufacturing firms.

²⁷ This finding gets substantiated when we analyse the impact of e-commerce on sales of retail MSMEs.

²⁸ Reasons for underestimation have already been discussed in section 3 of this paper.

Next, it is imperative to assess the impact of the growing e-commerce on *MSME retailers and manufacturers* since they have been the prime source of complaints against Indian e-commerce majors in recent times. The estimation results, however, show that the emergence of the e-commerce sector has not had any significant positive impact on retail and manufacturing MSMEs though there is a positive association between the two as can be seen from row 1 - columns 3,7 and row 2 - columns 4,8. This may be due to the MSMEs being unable to substantially utilise the benefits provided by the e-commerce platforms due to reasons such as lack of technical acumen, inability to utilise economies of scale because of their small size, inability to hold sufficient inventory capacity, etc. Similar results have also been found in other countries (Nugroho and Nugraha 2020; Purba et al., 2021). The absence of any significant impact of the e-commerce sector on MSME retail firms may also be due to its differential impact on online and offline MSME firms. However, since the regression coefficient represents the average value of the effect of the e-commerce sector on both the online and offline retail MSMEs, it turns out to be insignificant but positive. It may also be possible that they have negative effects on MSME offline retail firms due to practices such as predatory pricing or deep discounts as has been alleged in recent years (Economic Times, 2022). Another reason may be due to the e-commerce majors having better economies of scale (which has a direct effect on the profits of a firm and its product prices) in the form of an efficient logistics system and lower advertisement costs than the offline retail MSME firms find hard to compete with.

Thus, there may not be any net significant positive impact of the e-commerce sector on retail MSMEs. This is also in line with the graphical analysis (see Figure 2) presented in the preceding section of this study wherein it was seen that while online MSME firms boomed in recent years, this was not true for offline MSME retail firms. However, it is also critical to note that the impact has not been negative either. This implies that, given the limited data on the e-commerce sector in the Indian economy, none of our empirical analyses seem to support the claim that the key online players in India have been killing MSME businesses specifically. Our analysis also reinforces the role of service input intensity (Chowdhury 2017; Zhou et al. 2021) and profits on the sales of a firm (Jain and Jain 2021). Therefore, the advent of the e-commerce major seems to have a positive impact on the Indian retail industry and the manufacturing sector of the country due to the possible backward linkages that retail has with the manufacturing sector of a country.

It is also important to note that while the e-commerce sector had some presence in India from the early 1990s, the sector did not contribute greatly to its economy. It is only in recent times that the e-commerce sector of India has started clocking in high growth rates. Keeping this in mind, a test for the presence of any possible structural break in the data was conducted and 2014 came out to be the watershed year. It thus made sense to conduct a similar analysis but only for the period that witnessed substantial e-commerce expansion to see if such isolation would have any different impact on the sectors in consideration.

The regression analyses had similar results (see Table A1, Appendix) as the prior analyses considering all years, except for the effect of the e-commerce sector on manufacturing MSMEs turning out to be positive and significant. This result could indicate three things. Firstly, it is quite plausible that MSMEs take a longer amount of time to adopt new/emerging technologies. This may be due to reasons such as low levels of digitalisation, inadequate technical know-how, etc. (Huria et al. 2022). Thus, manufacturing MSMEs garnering non-negligible benefits from the e-commerce sector may be a relatively recent phenomenon. Secondly, it may add some substance to the complaints being raised by retail MSMEs in recent years. This is because even after isolating the period that witnessed a substantial e-commerce boom (i.e., from 2014 onwards), its effect on retail MSMEs though positive is still not significant. Lastly, it may be the implication of e-commerce majors having better economies of scale (which has a direct effect on the profits of a firm and its product prices) in the form of an efficient logistics system and lower advertisement costs that the offline retail MSME firms find hard to compete with. It may not be far-fetched to conclude that a good proportion of the complaints that are being raised by the MSMEs against the e-commerce majors in the country may be arising due to the differing economic scales of the two sides. The fundamental reason for many of the issues being raised still may be dissimilar economies of scale, though their nature is now distinct due to the involvement of a relatively new and evolving component called e-commerce.

While it has been seen from the discourse above that e-commerce has a positive impact on the sales growth of the (overall) retail and manufacturing firms in the aggregate, it would also be fruitful to explore whether it has had any impact on the trade participation of these firms. The next section presents the results of the empirical exercise conducted in this regard for the Indian retail and manufacturing firms.

4.2 E-commerce and the Trade Participation of Firms

It is quite well-known in the literature that not all firms find it convenient to enter the international market, given the cost (in terms of studying different countries' requirements, availability of consumers, their tastes and preferences, among others) and the level of competitiveness that the platform demands. With the e-commerce sector in place, it is now comparatively easy for firms to expand their operations internationally and explore the possibility of creating a new market for their products. Hence, it is befitting that an analysis solely dedicated to the impact of the online sector's growth on the trade participation of Indian firms finds its way into the study. The model framework that has been set up based on an extensive literature review (as discussed in the introductory section and Figure 2) is as follows:

Trade participation of a Firm $_{i,t} = \alpha + \beta_1$ *E-commerce sales in a year* $_{(t-1)}$ * *Computer Intensity* $_{(t-1)}$ + *Other firm-level controls* + $\delta_j + \mu_t + \epsilon_{it}$

Once again, we consider eight different specifications while running this regression – two for the retail sector, two for retail MSMEs, and two each for the manufacturing

sector and manufacturing MSMEs, respectively. The first specification for each sector corresponds to data on e-commerce sales (excluding sales of Flipkart) and the second specification entails information on Flipkart sales in the e-commerce sales variable. Other firm-level controls include total factor productivity, service-input intensity, profit after tax, age, and firms' debt-to-equity ratio.

In concordance with studies such as Banga (2018) and Gopalan et al. (2022), among others, this study considers a firm to be a trade participant if it is involved in both imports and exports for a particular year under consideration. The above model has been estimated by utilising the dynamic probit technique. The regression exercise also controls for time-fixed effects for the retail sector (see Table 5). Additionally, it also controls for both time and industry-fixed effects for the manufacturing sector.

Table 5: Effect of the E-commerce Sector on the Trade Participation of the Firms using Dynamic Probit

		Retail without Flipkart	Retail with Flipkart	Retail MSME without Flipkart	Retail MSME with Flipkart	Manufacturing without Flipkart	Manufacturing with Flipkart	Manufacturing MSME without Flipkart	Manufacturing MSME with Flipkart
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables		Trade Participation							
L.E-commerce Sector* L.Log of Computer Intensity	(1)	3.46x10 ⁻⁷		2.09x10 ⁻⁷		7.86x10 ^{-7***}		7.05x10 ^{-7***}	
		(4.70 x10 ⁻⁷)		(9.13x10 ⁻⁷)		(1.03x10 ⁻⁷)		(2.11x10 ⁻⁷)	
L.E-commerce Sector (With Flipkart) *L.Log of Computer Intensity	(2)		1.45x10 ⁻⁷		9.57e-08		3.54x10 ^{-7***}		3.23 x10 ^{-7***}
			(2.09x10 ⁻⁷)		4.10e-07		(4.58x10 ⁻⁰⁸)		9.39x10 ⁻⁸
L.Trade Participation	(3)	2.914***	2.915***	2.887***	2.887***	2.553***	2.553***	2.753***	2.753***
		(0.134)	(0.135)	(0.179)	(0.179)	(0.023)	(0.023)	(0.042)	(0.042)
age	(4)	0.003	0.003	0.0007	0.0007	0.001**	0.001**	0.001	0.001
		(0.002)	(0.003)	(0.002)	(0.002)	(0.0005)	(0.0005)	(0.001)	0.001
L.Total Factor Productivity	(5)	0.012*	0.013*	0.009	0.009	0.006	0.006	0.016***	0.016***
		(0.006)	(0.007)	(0.014)	(0.014)	(0.005)	(0.005)	(0.005)	(0.005)
L.Log of deflated Profit after Tax	(6)	0.040*	0.041*	0.074	0.074	0.075***	0.075***	0.103***	0.103***
		(0.020)	(0.021)	(0.060)	(0.060)	(0.004)	(0.004)	(0.012)	(0.012)

		Retail without Flipkart	Retail with Flipkart	Retail MSME without Flipkart	Retail MSME with Flipkart	Manufacturing without Flipkart	Manufacturing with Flipkart	Manufacturing MSME without Flipkart	Manufacturing MSME with Flipkart
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables		Trade Participation							
L.Log of debt to Equity	(7)	-0.047*	-0.047*	-0.054	-0.054	0.024***	0.024***	0.007	0.007
		(0.026)	(0.026)	(0.047)	(0.047)	(0.005)	(0.005)	(0.011)	(0.011)
L.Services Intensity	(8)	0.008*	0.008**	0.003	0.003	0.002**	0.002**	0.003	0.003
		(0.003)	(0.004)	(0.007)	(0.007)	(0.001)	(0.001)	(0.002)	(0.002)
Time Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects						Yes	Yes	Yes	Yes
Constant		-2.557***	-2.560***	-2.308**	-2.308**	-2.834***	-2.83***	-2.00***	-2.00***
		(0.226)	(0.226)	(0.893)	(0.893)	(0.740)	(0.739)	(0.113)	(0.113)
Observations		1,684	1,684	876	876	46,301	46,301	13,645	13,645
Number of Firms		339	339	217	217	8,198	8,198	3,639	3,639
Robust standard errors in parentheses									
*** p<0.01, ** p<0.05, * p<0.10									

Source: Authors' Estimation using CMIE Prowess Database

In the regression exercise above, the key variable of interest i.e., the sales of the e-commerce sector, is interacted with the computer intensity of a firm, which is considered as a proxy for indicating the digital adequacy of the firm under consideration. This is because firms having a greater level of digital intensity will be able to take greater advantage of a booming e-commerce sector since digitalisation is a key tool without which firms cannot take advantage of online business opportunities. It can be seen from rows 1 and 2 of Table 5 that while the e-commerce sector complemented by the digitalisation of firms has a positive and significant impact on the trade participation of the manufacturing sector in India; when it comes to the retail sector, its impact though positive is not significant. The positive coefficient may however capture the potential of the retail sector to utilise e-commerce to enter the international markets for both exports and imports in the future as the e-commerce sector gets further established in the country. E-commerce may facilitate the internationalisation of MSMEs due to its relatively lower costs for entering the international market and due to the greater control it offers over the entire trading process (Pan et al. 2022). Additionally, the empirical exercise reveals that service input intensity, profits, total factor productivity and a firm's debt-to-equity ratio are also important when it comes to the entry of firms into the global value chains. Thus, this analysis points towards the potential of the Indian e-commerce sector to not only boost the domestic production of the country but also improve its international positioning. Since digital activities (that are a pre-requisite for a firm to be involved in e-commerce) have been increasingly taking precedence in most spheres around the globe including businesses, the need of the hour is increased digitalisation of Indian firms, particularly the MSMEs that are relatively behind in this aspect, while simultaneously ensuring a set-up that reduces the friction between e-commerce platforms and the enterprises that sell on these platforms.

5. Conclusion and Policy Recommendations

Although greater levels of digitalisation of both economies and societies are creating new means for tackling global development challenges today, there are risks that digital disruptions will favour mainly those that are already well prepared to create and capture value in the digital era, rather than contribute to more inclusive development. The present paper discusses this concern in the context of growing online commerce in the Indian economy, and fears of the country's MSMEs that their businesses are being hampered due to the anti-competitive practices adopted by major e-commerce players in the market. While our study establishes that such issues are also raised internationally in leading (e-commerce) countries, the empirical exercises conducted in the study highlight that the positive impact of growing e-commerce has not been significant for India's MSMEs, especially those that belong to the retail sector, while it has been both significant and positive for the overall retail and manufacturing sectors of the country. This could indicate the untapped potential (due to lack of digital

knowledge, basic accessibility to digital infrastructure and digital payment, etc.) of the sector to take advantage of the growing online sector. Further, it was also found that while the existence of the e-commerce industry has facilitated the trade participation of the country's manufacturing sector firms (including MSMEs), the impact is positive but insignificant for the retailers. Thus, our empirical analyses demonstrate why both 'specific' and 'general' complaints have often been raised by India's retailers in the past. Nonetheless, in this light, the policy wing of the country must find a common ground that addresses these challenges effectively while designing policies for the e-commerce sector, and simultaneously addressing the challenges of sustainable development, particularly concerning its economic model and social responsibility.

Although India's e-commerce policy is in its draft stage, policymakers have been trying to maintain harmonisation between MSMEs and e-commerce majors to ensure a conducive environment for inclusive and sustainable growth of the e-commerce sector through a streamlined regulatory framework.²⁹ One such initiative is the introduction of the 'Open Network for Digital Commerce (ONDC)' that aims to democratise e-commerce in India by enabling buyers and sellers to transact through a single platform, showcasing their products, and reaching a wider customer base. This intends to revolutionise India's e-commerce platforms by enabling e-commerce accessibility to the larger consumer base and achieving sustainable and inclusive growth by encouraging MSMEs to adopt digital technology and enhancing exports through e-commerce. Along with this, the Government of India has also initiated several schemes/initiatives such as the GeM (Government E-Marketplace) portal to uplift the participation of MSMEs in the online platform. Such initiatives are directing the overall growth of the economy by encouraging MSMEs to adopt digital technologies and facilitate trade and investment, thus focusing on solving the issues faced by them.

In addition, it is worth noting that while e-commerce serves as a channel, it cannot propel without the pre-requisite tool of 'digitalisation' (such as Computer and IT systems, Internet connection, skills, etc.), which, in turn, helps foster e-commerce exports with greater participation from MSMEs. Some studies have highlighted the role of digitalisation in the Indian manufacturing sector, mainly the MSMEs facilitating export gains (Huria et al. 2022). Ensuring adequate digitalisation for all will also facilitate bridging the digital divide, building digital infrastructure and logistics facilities for MSMEs, and creating a digital environment for women-led enterprises to support inclusive growth to attain the SDG goals. The immense impact of e-commerce marketplaces on trade, foreign direct investment, and sustainable development, has also generated initiatives from the government as well as private players and collaboration between them. For instance, initiatives by the Uttar Pradesh government and e-commerce marketplaces on the ODOP (One District - One Product) scheme to

²⁹ Livemint (2023). National e-commerce policy in final stages, no new draft to be issued: Official. <https://www.livemint.com/news/india/national-e-commerce-policy-in-final-stages-no-new-draft-to-be-issued-official-11692512665260.html>

promote indigenous and local products of weavers, artisans, and others to enable sustainable and inclusive economic growth. The Delhi government also aims to establish an online platform “Dilli Bazar” by helping sellers to sell unique products and reach a wider customer base.³⁰ Such efforts from both private and the government, along with the e-commerce policy coming in place, can help address the issues faced by the MSMEs, and hence, pave the way towards the achievement of the Economic (SDGs 8 and 9) and Social (SDGs 10 and 17) Pillars of the SDG 2030 agenda.

³⁰ Mani, G. (2023). 50% subsidy for sellers, listing platform: Plan for upcoming ‘Dilli Bazar’ portal. <https://indianexpress.com/article/cities/delhi/50-subsidy-for-sellers-listing-platform-plan-for-upcoming-dilli-bazar-portal-8891292/>

List of references

- Antras, P. (2021). Conceptual aspects of global value chains. *World Bank Economic Review*, 34(3), 551–574.
- Aparna, R. (2021). Analysis on the Predatory Pricing in The Indian E-Commerce Sector. Competition and Anti-Trust Law. *Indian Corporate & Finance Law Review*. <https://icflr.in/2021/05/31/analysis-on-the-predatory-pricing-in-the-indian-e-commerce-sector/>
- Asian Development Bank ADB (2021). Harnessing Digitalisation for Sustainable Economic Development: Insights for Asia. <https://www.adb.org/publications/harnessing-digitalization-sustainable-economic-development>
- Bahadir, S. C., Bharadwaj, S., and Parzen, M. (2009). A meta-analysis of the determinants of organic sales growth. *International Journal of Research in Marketing*, 26(4), 263-275. (<https://reader.elsevier.com/reader/sd/pii/S0167811609000512?token=0A22E9B6A949C19765EDB59907BABC020C5C316FE2B8E2E4CCE39590810D088275F352F96ABD54E05806DF54C2AC3DE4&originRegion=eu-west-1&originCreation=20220321101527>)
- Banga, K. (2018). Upgrading in Global Value Chains; A Firm-Level Empirical Analysis of Indian Manufacturing. The University of Manchester. https://www.research.manchester.ac.uk/portal/files/159167455/FULL_TEXT.PDF
- Baseda, H. (2018). Digital Economy and the Implementation of the 2030 Agenda for Sustainable Development. <https://www.unsouthsouth.org/wp-content/uploads/2018/12/Digital-Economy-and-the-Implementation-of-the-2030-Agenda-Hany-Besada.pdf>
- Biyalogorsky, E., and Naik, P. (2003). Clicks and Mortar: The Effect of On-line Activities on Off-line Sales. *Marketing Letters* 14, 21–32. <https://doi.org/10.1023/A:1022854017292>
- Bogavac, M., and Cekerevac, Z. (2021). Digitalization of SMEs In Developing & Developed Countries. *Business Innovations Economics Journal.*, 5, 150-156. <https://www.thenationalnews.com/business/economy/why-small-traders-in-india-fear-the-amazon-effect-1.965981>
- Bundhun, R. (2020, September 27). Why do small traders in India fear The Amazon effect? *The National News*. <https://www.thenationalnews.com/business/economy/why-small-traders-in-india-fear-the-amazon-effect-1.965981>

- Business Standard (2020, January 14). CCI to probe Amazon, Flipkart for deep discounts, preferred sellers' model. https://www.business-standard.com/article/companies/cci-to-probe-amazon-flipkart-for-deep-discounts-preferred-sellers-model-120011301150_1.html
- Business Today (2022, June 14). CAIT vs Amazon, Flipkart: Traders' body to observe 'e-commerce purification week'. <https://www.businesstoday.in/latest/corporate/story/cait-vs-amazon-flipkart-traders-body-to-observe-e-commerce-purification-week-298615-2021-06-14>
- Chander, S., and Aggarwal, P. (2008). Determinants of corporate profitability: an empirical study of Indian drugs and pharmaceutical industry. *Paradigm*, 12(2), 51-61.
(<file:///C:/Users/HP/Desktop/FLIPKART%20FINAL%20DATA/lit%20review%20for%20reg/det%20of%20corp%20profit%20India%2015.pdf>)
- Chowdhury, S.G., and Chatterjee, S. (2020). Determinants of Indian Automobile Sector Growth. *Eurasian Journal of Business and Economics*, 13(26), 65-91, (2020). <https://doi.org/10.17015/ejbe.2020.026.04>
- Chowdhury, S.R. (2017). Measuring the Relationship among the Advertisement Expenditure, Sales Revenue and Profit on Steel Sectors and Banking Sectors in Bangladesh. *European Journal of Business and Management*, 9(9). <https://core.ac.uk/download/pdf/234627785.pdf>
- Competition Commission of India [CCI]. (2019). *Case 40 of 2019*. <https://www.cci.gov.in/sites/default/files/40-of-2019.pdf>
- Competition Commission of India [CCI]. (2020). Market Study on E-Commerce in India. Key Findings and Observations. https://www.cci.gov.in/sites/default/files/whats_newdocument/Market-study-on-e-Commerce-in-India.pdf
- Cronin, J. J., and Page, T. J. (1988). An examination of the relative impact of growth strategies on profit performance. *European Journal of Marketing*.
- Das, S. (2018, May 10). Walmart-Flipkart merger: All you need to know. *India Today*. <https://www.indiatoday.in/india/story/walmart-flipkart-merger-all-you-need-to-know-1229461-2018-05-09>
- Dayalani, V. (2021, December 21). Amazon Vs Flipkart: Who led the Indian E-commerce War in 2021?. *Inc42*. <https://inc42.com/datalab/amazon-vs-flipkart-who-led-the-indian-ecommerce-war-in-2021/>
- Deleersnyder, B., Geyskens, I., Gielens, K., and Dekimpe, M.G. (2002) How Cannibalistic is the Internet Channel? A Study of the Newspaper Sector in the United Kingdom and the Netherlands. *International Journal of Research in*

Marketing, 19 (4) (2002), pp. 337-348. [https://doi.org/10.1016/S0167-8116\(02\)00099-X](https://doi.org/10.1016/S0167-8116(02)00099-X)

Dovis, M., and Zaki, C. (2020). Global value chains and local business environments: Which factors really matter in developing countries? *Review of Industrial Organization*, 57(2), 481–513.

Economic Times (2022, March 6). CCI dismisses complaints against Shopee, Amazon. *Economic Times*. <https://economictimes.indiatimes.com/tech/technology/cci-dismisses-complaints-against-shopee-amazon/articleshow/90033764.cms?from=mdr>

Endri, E., Sari, A. K., Budiasih, Y., Yuliantini, T., and Kasmir, K. (2020). Determinants of profit growth in food and beverage companies in Indonesia. *The Journal of Asian Finance, Economics, and Business*, 7(12), 739-748.

ETNOW. (2022, June 16). India, Pakistan on same side in WTO moratorium battle on trade measures. <https://www.timesnownews.com/business-economy/economy/india-pakistan-on-same-side-in-wto-moratorium-battle-on-trade-measures-article-92242316>

Gautam, V. (2017). Exports and E-commerce in India. Observer Research Foundation (Occasional Paper 125). https://www.koanadvisory.com/wp-content/uploads/2019/08/ORF_Occasional_Paper_125_E_CommerceExports.pdf

Gopalan, S., Reddy, K. and Sasidharan, S. (2022). Does Digitalization Spur Global Value Chain Participation? Firm-Level Evidence from Emerging Markets. *Information Economics and Policy* 59 (2022) 100972. <https://doi.org/10.1016/j.infoecopol.2022.100972>

Goyal, T.M., Kukreja, P., and Kedia M. (2022). MSMEs Go Digital. Leveraging Technology to Sustain during the Covid-19 Crisis. *Indian Council for Research on International Economic Relations (ICRIER)*. https://icrier.org/pdf/MSMEs_Go_Digital.pdf

Hall, M., and Weiss, L. (1967). Firm size and profitability. *The Review of Economics and Statistics*, 319-331.

Huang, L., Lu, X., and Ba, S. (2016). An empirical study of the cross-channel effects between web and mobile shopping channels. *Information & Management*, 53(2), 265-278. <https://doi.org/10.1016/j.im.2015.10.006>

Huria, S., Sharma, K., Jain, N., and Jose, A. (2022). Digitalization and Exports: A case of Indian Manufacturing MSMEs. Available at SSRN: <https://ssrn.com/abstract=4089639> or <http://dx.doi.org/10.2139/ssrn.4089639>

- Huselid, M. A., Jackson, S. E., and Schuler, R. S. (1997). Technical and strategic human resources management effectiveness as determinants of firm performance. *Academy of Management journal*, 40(1), 171-188. (https://www.academia.edu/download/32653450/1997_AMJ_Technical_and_Strategic_SHRM_1.pdf)
- India Brand Equity Foundation (IBEF). (2020). Retail. March 2020. <https://www.ibef.org/download/Retail-March-2020.pdf> India Brand Equity Foundation (IBEF) (2023). Ecommerce Industry Report. <https://www.ibef.org/industry/ecommerce>
- Jain, P and Jain, K. (2021). Impact on Taxation in Indian Consumer Goods Sectors during Covid-19. *International Advanced Research Journal in Science, Engineering and Technology*. 8 (10), October 2021. <http://dx.doi.org/10.17148/IARJSET.2021.81011>
- Jean, R.-J., R.R. Sinkovics, and S. Tamer Cavusgil (2010), 'Enhancing International Customer–Supplier Relationships through IT Resources: A Study of Taiwanese Electronics Suppliers', *Journal of International Business Studies*, 41(7), pp.1218–39.
- Kapoor, R. and Goyal T.M. (2023). Annual Survey of Micro, Small, and Medium Enterprises (MSMEs) in India. Leveraging E-commerce for the Growth of MSMEs. *Indian Council for Research on International Economic Relations*. <https://icrier.org/publications/annual-survey-of-micro-small-and-medium-enterprises-msmes-in-india-leveraging-e-commerce-for-the-growth-of-msmes/>
- Kim, H., Kim, Y., and Cho, K. (2014). The effect of research and development investment and absorptive capacity on firm performance. *Asian Journal of Technology Innovation*, 22(2), 252-267.
- KPMG (2015). Impact of E-commerce on SMEs in India. Snapdeal. https://assets.kpmg/content/dam/kpmg/pdf/2015/10/Snapdeal-Report_-Impact-of-e-Commerce-on-Indian-SMEs.pdf
- Ladrière, M., Lundquist, K., and Ye, Q. (2022). B2B e-commerce marketplaces and MSMEs: Evidence of global value chain facilitation? WTO Staff Working Paper, No. ERSD-2022-7. World Trade Organization (WTO), Geneva. <https://www.econstor.eu/handle/10419/254330>
- Lanz, R., Lundquist, K, Mansio, G, Maurer, A and Teh, R. (2018). E-commerce and developing country-SME participation in global value chains. *WTO Staff Working Paper, No. ERSD-2018-13. World Trade Organization (WTO). Geneva*. <https://doi.org/10.30875/ec5f0f21-en>

- Li, F., Frederick, S., and Gereffi, G. (2019). E-commerce and industrial upgrading in the Chinese apparel value chain. *Journal of Contemporary Asia*, 49(1), 24-53. <https://www.tandfonline.com/doi/abs/10.1080/00472336.2018.1481220?cookieSet=1>
- Liargovas, P. G., and Skandalis, K. S. (2010). Factors affecting firms' performance: The case of Greece. *Global Business and Management Research: An International Journal*, 2(2), 184-197. (https://books.google.co.in/books?hl=en&lr=&id=PkvjLMfrtrUC&oi=fnd&pg=PA184&dq=factors+affecting+firm+performance&ots=QRau41vB1U&sig=ZgOzpnwUTb1zjIWf6yV4isOFUNU&redir_esc=y#v=onepage&q=factors%20affecting%20firm%20performance&f=false)
- Lin, L. (2013). The impact of service innovation on firm performance. *The Service Industries Journal*, 33(15-16), 1599-1632.
- Lipsey, R. G., and Carlaw, K. (2000). What does total factor productivity measure?. *International productivity monitor*, 1, 31-40.
- Marchi, V.D., E.D. Maria, and G. Gereffi. (2018). *Local Clusters in Global Value Chains: Linking Actors and Territories through Manufacturing and Innovation*. London: Routledge.
- Martins, A. (2022). Dynamic capabilities and SME performance in the COVID-19 era: the moderating effect of digitalization. *Asia-Pacific Journal of Business Administration*.
- Ministry of Micro, Small and Medium Enterprises (MSME), Government of India. (2021-2022). *Annual Report*. <https://msme.gov.in/sites/default/files/MSME-ANNUAL-REPORT-ENGLISH%202020-21.pdf>
- Nanda, S., and Panda, A. K. (2018). The determinants of corporate profitability: an investigation of Indian manufacturing firms. *International Journal of Emerging Markets*. (<https://www.emerald.com/insight/content/doi/10.1108/IJoEM-01-2017-0013/full/pdf?title=the-determinants-of-corporate-profitability-an-investigation-of-indian-manufacturing-firms>)
- Nguyen, V. H., Nguyen, T. T. C., Nguyen, V. T., and Do, D. T. (2021). Internal Factors Affecting Firm Performance: A Case Study in Vietnam. *The Journal of Asian Finance, Economics and Business*, 8(5), 303-314. (<https://www.koreascience.or.kr/article/JAKO202112748674972.page>)
- Nugroho, L., and Nugraha, E. (2020). The Role of Islamic Banking and E-Commerce for The Development of Micro, Small, and Medium Entrepreneur Businesses. *Business Economics and Management Research Journal*, 3(1), 11-24.

- Onaolapo, A. A., and Kajola, S. O. (2010). Capital structure and firm performance: Evidence from Nigeria. *European Journal of Economics, Finance and Administrative Sciences*, 25, 70-82.
- Pan, L., Fu, X. and Li, Y. (2022). SME participation in cross-border e-commerce as an entry mode to foreign markets: A driver of innovation or not?. *Electronic Commerce Research*. <https://doi.org/10.1007/s10660-022-09539-7>
- Paton, D., and Williams, L. V. (1999). Advertising and firm performance: some new evidence from UK firms. *Economic Issues*, 4(2), 89-105. (<http://economicissues.org.uk/Files/1999/299gAdvertising%20and%20Firm%20Performance%20-%20Some%20New%20Evidence%20from%20UK%20Firms.pdf>)
- Pervan, M., and Visic, J. (2012). Influence of firm size on its business success. *Croatian Operational Research Review (CRORR)*, 3, 212-219.
- Pouraghajan, A., and Malekian, E. (2012). The Relationship between Capital Structure and Firm Performance Evaluation Measures: Evidence from the Tehran Stock Exchange. *International Journal of Business and Commerce*, 1(9), 166-181
- Pozzi. (2013) The Effect of Internet Distribution on Brick-and-mortar Sales. *RAND Journal of Economics*, 44 (3) (2013), pp. 569-583. https://scholar.google.com/scholar_lookup?title=The%20Effect%20of%20Internet%20Distribution%20on%20Brick-and-mortar%20Sales&publication_year=2013&author=A.%20Pozzi
- Purba, M., Simanjutak, D., Malau, Y., Sholihat, W., and Ahmadi, E. (2021). The effect of digital marketing and e-commerce on financial performance and business sustainability of MSMEs during COVID-19 pandemic in Indonesia. *International Journal of Data and Network Science*, 5(3), 275-282.
- Purba, M., Simanjutak, D., Malau, Y., Sholihat, W., and Ahmadi, E. (2021). The effect of digital marketing and e-commerce on financial performance and business sustainability of MSMEs during COVID-19 pandemic in Indonesia. *International Journal of Data and Network Science*, 5(3), 275-282.
- Purnama, S., Bangun, C. S., Panjaitan, A. R. S., and Sampoerna, S. T. (2022). The Effect of Digitalization On Culinary Msmes On Increasing Sales Turnover During Covid 19 Pandemic. *Aptisi Transactions on Technopreneurship (ATT)*, 4(1), 59-68.
- Ratchford, B., Soysal, G., Zentner, A., and Gauri, D.K. (2022). Online and offline retailing: What we know and directions for future research. *Journal of Retailing*. Volume 98, Issue 1, March 2022, Pages 152-177. <https://www.sciencedirect.com/science/article/pii/S0022435922000070>

- Reddy, K., Sasidharan, S., and Thangavelu, S. (2022). Does Servicification of manufacturing increase the GVC activities of firms? Case of India. <https://onlinelibrary.wiley.com/doi/full/10.1111/twec.13318#:~:text=The%20results%20indicate%20that%20servicification,on%20GVC%20activities%20of%20firms.>
- Reinartz, W., Wiegand, N., and Imschloss, M. (2019). The impact of digital transformation on the retailing value chain. *International Journal of Research in Marketing*, 36(3), 350-366. <https://www.sciencedirect.com/science/article/pii/S0167811618300739>
- Rosegrant, M. W., and Evenson, R. E. (1992). Agricultural productivity and sources of growth in South Asia. *American Journal of Agricultural Economics*, 74(3), 757-761.
- Salomon, R., and Shaver, J. M. (2005). Export and domestic sales: Their interrelationship and determinants. *Strategic Management Journal*, 26(9), 855-871. (<https://onlinelibrary.wiley.com/doi/epdf/10.1002/smj.481>)
- Sarkar, P., and Bhattacharya, S. (2020). Emergence of E-Commerce and Competition Issues. *International Journal of Creative Research Thoughts (IJCRT)*. Vol 8. Issue 10. October 2020. <https://www.ijcrt.org/papers/IJCRT2010515.pdf>
- Sasidharan, S., and Reddy K. (2021). The Role of Digitalisation in Shaping India's Global Value Chain Participation. ERIA discussion paper series no. 376 Indian Institute of Technology, Madras. <https://www.eria.org/uploads/media/discussion-papers/ERIA-Research-on-COVID-19/The-Role-of-Digitalisation-in-Shaping-India%E2%80%99s-Global-Value-Chain-Participation.pdf>
- Shepotylo, O., and Vakhitov, V. (2015). Services liberalization and productivity of manufacturing firms: evidence from Ukraine. *Economics of Transition*, 23(1), 1-44.
- Sinha, A. K., Mishra, A. K., Manogna, R. L., and Prabhudesai, R. (2021). Examining the determinants of small firms' performance in India. *International Journal of Productivity and Performance Management*. (<https://www.emerald.com/insight/content/doi/10.1108/IJPPM-10-2020-0508/full/pdf?title=examining-the-determinants-of-small-firms-performance-in-india>)
- Sridhar, S., Narayanan, S., and Srinivasan, R. (2014). Dynamic relationships among R&D, advertising, inventory and firm performance. *Journal of the Academy of Marketing Science*, 42(3), 277-290. (<https://link.springer.com/article/10.1007/s11747-013-0359-0>)
- Srinivasan, R., and Lilien, G. L. (2009). R&D, advertising and firm performance in recessions. ISBM report, 3, 2009. (https://www.researchgate.net/profile/Gary-Lilien/publication/255669053_RD_Advertising_and_Firm_Performance_in_Reces)

[sions/links/0c96053a19d4e77034000000/R-D-Advertising-and-Firm-Performance-in-Recessions.pdf](https://dashboards.sdgindex.org/rankings)

Sustainable Development Report 2022. (2022). From Crisis to Sustainable Development: the SDGs as Roadmap to 2030 and Beyond. <https://dashboards.sdgindex.org/rankings>

Suzan, L. (2020). Effect of production Costs and Sales on the Company's Net Profit. *Jurnal Akuntansi*, 24(2), 169-186.

Takkar, I., and Sharma, S. (2021). Impact of e-commerce on India's exports and investment. *International Journal of Economics and Business Research*, 21(2), 206-222.

United Nations Conference on Trade and Development [UNCTAD] (2021a). The UNCTAD B2C E-Commerce Index 2020 Spotlight on Latin America and the Caribbean. UNCTAD Technical Notes on ICT for Development No. 17. <https://unctad.org/publication/unctad-b2c-e-commerce-index-2020-spotlight-latin-america-and-caribbean>

United Nations Conference on Trade and Development [UNCTAD] (2021b). Better Trade for Sustainable Development: The role of voluntary sustainability standards. https://unctad.org/system/files/official-document/ditctab2021d2_en.pdf

VuPhu, T., Lee, K., and Park, D. (2022). Several modes of digitalisation of value chains and implications for entrepreneurship: The case of the Apparel Industry. *Several Modes of Digitalization of Value Chains and Implications for Entrepreneurship: The Case of the Apparel Industry* (repec.org)

Weltevreden, J. W. (2007). Substitution or complementarity? How the Internet changes city centre shopping. *Journal of Retailing and consumer Services*, 14(3), 192-207. <https://www.sciencedirect.com/science/article/pii/S0969698906000592>

Wijewardena, H., and Cooray, S. (1995). Determinants of growth in small Japanese manufacturing firms: Survey evidence from Kobe. *Journal of Small Business Management*, 33(4), 87. (<https://www.proquest.com/docview/221008169?pq-origsite=gscholar&fromopenview=true>)

World Bank (2022). Global Value Chains. <https://www.worldbank.org/en/topic/global-value-chains>

World Bank. (2020). World development report 2020: Trading for development in the age of global value chains. World Bank Publications

- World Trade Organization (WTO). (2020). WTO report looks at role of e-commerce during the COVID-19 pandemic. https://www.wto.org/english/news_e/news20_e/rese_04may20_e.htm
- Yoo, J., Lee, S., and Park, S. (2019). The effect of firm life cycle on the relationship between R&D expenditures and future performance, earnings uncertainty, and sustainable growth. *Sustainability*, 11(8), 2371.
- Zeitun, R., and Tian, G. G. (2007): Capital structure and corporate performance: evidence from Jordan. *Australasian Accounting Business and Finance Journal*, 1(4), 40-61 (<https://doi.org/10.14453/aabfj.v1i4.3>)
- Zhou, Y., Ahmad, Z., Alsuhabi, H., Yusuf, M., Alkhairy, I., and Sharawy, A.M. (2021). Impact of YouTube Advertising on Sales with Regression Analysis and Statistical Modeling: Usefulness of Online Media in Business. <https://www.hindawi.com/journals/cin/2021/9863155/>

Appendix

Table A.1: Effect of Online Retail Sales on the Retail Sector, the MSME Retail Sector, the Manufacturing Sector and the MSME Manufacturing Sector for Years after 2014

Variables	Col.	Retail without Flipkart	Retail with Flipkart	Retail MSME without Flipkart	Retail MSME with Flipkart	Manufacturing without Flipkart	Manufacturing with Flipkart	Manufacturing MSME without Flipkart	Manufacturing MSME with Flipkart
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Deflated Sales							
L.E-commerce sales in a year* L.Firm Size	(1)	0.000007***		0.000001		0.000006***		0.000000***	
		(0.000002)		(0.000001)		(0.000001)		(0.000000)	
L.E-commerce sales in a year (With Flipkart)*L.Firm Size	(2)		0.000003***		0.000000		0.000002***		0.000000***
			(0.000001)		(0.000000)		(0.000001)		(0.000000)
L.Total Factor Productivity	(3)	0.0518	0.050	-0.004	-0.003	0.322**	0.323**	0.031***	0.031***
		(0.106)	(0.106)	(0.053)	(0.054)	(0.150)	(0.150)	(0.011)	(0.011)
L.Expenditure on IT and computer systems	(4)	0.495**	0.486**	0.0816	0.082	0.123**	0.120**	0.014	0.014
		(0.209)	(0.207)	(0.153)	(0.151)	(0.050)	(0.050)	(0.009)	(0.009)
L.Competition index (Herfindahl-Hirshman Index)	(5)	-3.442***	-3.475***	-0.304	-0.298	0.280	0.279	0.011	0.0108
		(1.221)	(1.215)	(0.255)	(0.274)	(0.338)	(0.338)	(0.017)	(0.017)
age	(6)	-0.259**	-0.303**	-0.041	-0.042	-0.766***	-0.784***	-0.041***	-0.043***
		(0.129)	(0.141)	(0.032)	(0.031)	(0.191)	(0.204)	(0.014)	(0.015)
L.Service Intensity with Advertising and Marketing Intensity	(7)	0.074	0.077	0.167***	0.167***	0.374**	0.378**	0.031***	0.032***
		-0.169	-0.167	-0.057	-0.057	-0.170	-0.170	-0.008	-0.007
L.R & D Intensity	(8)	-0.731**	-0.734**	0.019	0.021	-0.027	-0.027	-0.003***	-0.003***
		-0.361	-0.362	-0.185	-0.186	-0.030	-0.030	-0.001	-0.001

Variables	Col.	Retail without Flipkart	Retail with Flipkart	Retail MSME without Flipkart	Retail MSME with Flipkart	Manufacturing without Flipkart	Manufacturing with Flipkart	Manufacturing MSME without Flipkart	Manufacturing MSME with Flipkart
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Deflated Sales							
L.Leverage (Debt to Equity)	(9)	-0.010	-0.012	0.014	0.014	0.011	0.012	0.005	0.005
		-0.101	-0.101	-0.018	-0.018	-0.026	-0.025	-0.003	-0.003
L. Profit after Tax	(10)	0.007	0.007	0.009	0.009	0.001*	0.001*	0.001	0.001
		-0.004	-0.004	-0.006	-0.006	-0.001	-0.001	-0.001	-0.001
Constant		-5.978	-5.281	-0.193	-0.146	19.444***	19.986***	1.125***	1.160***
		-3.941	-3.873	-0.927	-0.857	-3.937	-4.219	-0.265	-0.290
Time Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects		No	No	No	No	Yes	Yes	Yes	Yes
Observations		1,321	1,321	696	696	28,948	28,948	7,624	7,624
R-squared		0.343	0.343	0.144	0.144	0.073	0.072	0.065	0.065
Number of firms		341	341	205	205	6,815	6,815	2,193	2,193
Robust standard errors in parentheses									
*** p<0.01, ** p<0.05, * p<0.10									

Source: Authors' Estimation using CMIE Database



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