Does Participation in the Global Value Chain Affect Product Sophistication of Family Firms? Evidence from the Indian Manufacturing Sector

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The paper investigates the productivity of family firms within the context of global value Chains (GVCs), utilizing a methodology centered on assessing product sophistication and upgrading. Drawing on a comprehensive dataset spanning 903 family firms over the period of 2008–2018, sourced from the Center for Monitoring Indian Economy (CMIE) Prowess database, the study delves into the dynamics of Indian manufacturing firms. The findings underscore a noteworthy and positive correlation between GVC participation and product sophistication among family firms. This highlights the pivotal role of family enterprises involved in GVCs in producing and exporting high-quality goods, thereby encapsulating an inherent technological competitiveness. Moreover, the preliminary analysis highlights the significance of forward linkages, indicative of the product sophistication achieved by these family firms.

1. Introduction

IN recent decades, there have been notable transformations in the dynamics of production and international trade. Previously, countries or firms typically handled all production aspects before exporting goods for consumption elsewhere. However, advancements in transportation and communication technologies have enabled a different approach. Nowadays, countries can break down production processes to reduce overall costs (Grossman & Rossi-Hansberg, 2008; Foster-McGregor *et al*., 2015). Firms focus on specific tasks themselves

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while outsourcing other components to foreign countries for subsequent production stages. Baldwin and Robert-Nicoud (2014) referred to the traditional trade pattern as 'trade in goods,' contrasting it with the newer concept of 'trade in tasks.' The combined tasks contributing value to production constitute what is known as a value chain. While in the past, most value chains were confined within individual countries, today they span the globe, fragmented into smaller tasks distributed across multiple nations. At the same time, GVCs expand, numerous studies indicate that companies participating in GVCs enjoy notable advantages. These include accessing worldwide markets, concentrating on essential activities, obtaining top-notch resources, and harnessing innovative concepts and technology exchanges. This participation also leads to spill-over effects that enhance productivity growth and expand export scales (Pahl & Timmer, 2020; Criscuolo & Timmis, 2017; Collier & Venables, 2007).

Although existing literature lacks a thorough investigation into whether involvement in GVCs boosts efficiency, amplifies export volumes, and significantly influences the quality of exported goods, it's widely accepted that nations can gain substantial advantages from manufacturing and exporting high-quality, sophisticated products. This not only pushes the boundaries of technology but also enhances growth performance (Rodrik, 2006: Hausmann *et al*., 2007). The quality of a country's exported goods plays a crucial role in economic growth and competitiveness, shaping its reputation in global trade (Hallak, 2006; Mania and Reiber, 2019; Verhoogen, 2008). Consequently, countries with diverse exports of superior quality goods often experience rapid growth by capitalizing on their comparative advantages to boost export revenues and create job opportunities (Hummels & Klenow, 2005; Broda & Weinstein, 2006; Hausmann *et al*., 2007: Funke & Ruhwedel, 2001; Amiti & Freud, 2010). Hence, it's essential to delve into the relationship between GVC integration and export quality, particularly with the increasing importance of globally traded intermediate goods.

The impact of GVCs varies among firms involved, with the benefits depending on how production is managed (Banga, 2023; Tian *et al*., 2021). The power dynamics between supplier firms, lead firms, and the diverse learning approaches adopted by suppliers are pivotal in shaping opportunities for advancement. Despite GVC participation often being viewed as a growth opportunity for firms in developing countries, numerous case studies indicate that the benefits of this connection are not automatic (Tian *et al*., 2021). The internal efforts of participating firms to acquire, absorb, and effectively utilize acquired knowledge, along with their investments in developing technological capabilities, are crucial factors affecting product improvement and overall success within GVCs (Arora & Siddiqui, 2020).

In this context, the paper focuses on examining the involvement of family-owned firms in GVCs and investigates how they enhance their products by

improving sophistication and quality for export. This upgrade aims to enhance a firm's competitive edge and maximize the benefits of participating in production tasks. Within the Indian literature, there has been limited exploration of the various types of firms associated with family enterprises, encompassing family involvement in ownership, CEO duality and management (where both the chairperson and CEO hail from the same family). Additionally, the integration of such firms into GVCs, which could potentially result in higher-quality exports due to product sophistication, has received scant attention.

Amidst the backdrop of globalization's rise, technological advancements, and fiercer competition, family businesses are increasingly embracing internationalization to stay competitive (De Massis *et al.,* 2018; Casprini *et al*., 2020; Debellis *et al*., 2021). This move towards internationalization is broad-reaching, impacting not just multinational corporations and large enterprises but also smaller family-owned businesses (Cerrato & Piva, 2012; Alayo *et al*., 2019). The ongoing COVID-19 pandemic has further highlighted the importance and immediacy of this shift towards internationalization. For family-run enterprises, engaging in international business is essential for ensuring their long-term growth and survival (Alayo *et al*., 2019; Hennart *et al*., 2019). Casillas and Moreno-Menéndez (2017) note that the modern globalized landscape has reshaped traditional internationalization patterns and market dynamics, opening up new opportunities for family businesses. Even though family-owned businesses are widespread in governance and ownership frameworks globally (La Porta, Lopez-de-Silanes, & Shleifer, 1999), there has been a recent surge in interest in systematically assessing the effects of family engagement on technological innovation, particularly in emerging markets (De Massis, Frattini, & Lichtenthaler, 2013; Ashwin *et al*., 2015). In such economies, the influence of the family is frequently heightened, particularly in the presence of a business conglomerate (Morck & Yeung, 2003).

Business families often view their company as an extension of their identity, leading them to pursue both business objectives and emotional ties associated with family bonds in their business endeavours (Dyer, 2021; Chua *et al*., 2012). However, this can lead to conflicts due to the dual focus when the desire to uphold family values and control clashes with the need to explore and capitalize on the benefits of international expansion (Arregle *et al*., 2017). Debellis *et al*. (2021) emphasize the necessity for a specialized and context-specific examination of the internationalization process for family firms due to this unique phenomenon. Building on this research direction, the current study aims to assess the impact of family member's involvement in the governance and management of small and medium-sized family enterprises (SMEs) on their internationalization, primarily through exports — a prevalent approach for entering foreign markets (Majocchi *et al*., 2018).

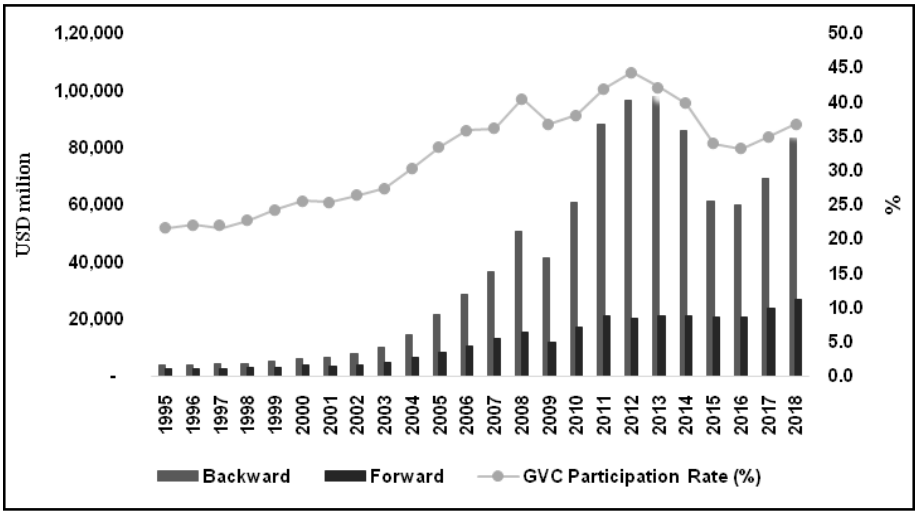
2. Background

Backward and forward linkages are important indicators for examining the GVC participation of a country. Backward linkage pertains to the foreign value added to the gross exports of a country. On the other hand, forward linkage involves gross exports consisting of intermediate inputs used by the direct importer to produce exports for third economies. These indicators, combined with a country's export data, are employed to gauge the extent of that country's GVC participation. In the following section, we employ these metrics to assess the involvement of the Indian manufacturing sector in GVCs.

Over the last twenty years, the Indian manufacturing sector's engagement in GVCs has experienced remarkable growth, more than doubling from about 22 per cent in 1995 to approximately 44.4 per cent in 2012 (refer to Figure 1). However, there was a decline in GVC participation between 2013 and 2016, dropping to 33.2 percent by 2016. Subsequently, in the following two years, there was an increase in GVC participation, reaching 36.8 per cent. It's notable that the significant rise in the Indian manufacturing sector's involvement in global value chains mainly originated from backward linkages rather than forward ones. This indicates a substantial presence of foreign value added in Indian manufacturing exports compared to the contribution of Indian manufacturing to exports from foreign countries. Consequently, the proportion of backward linkages in total linkages (backward and forward) has increased from 58.5 per cent in 1995 to 75.5 per cent in 2018.

FIGURE 1

TREND OF GVCS PARTICIPATION OF INDIAN MANUFACTURING SECTOR



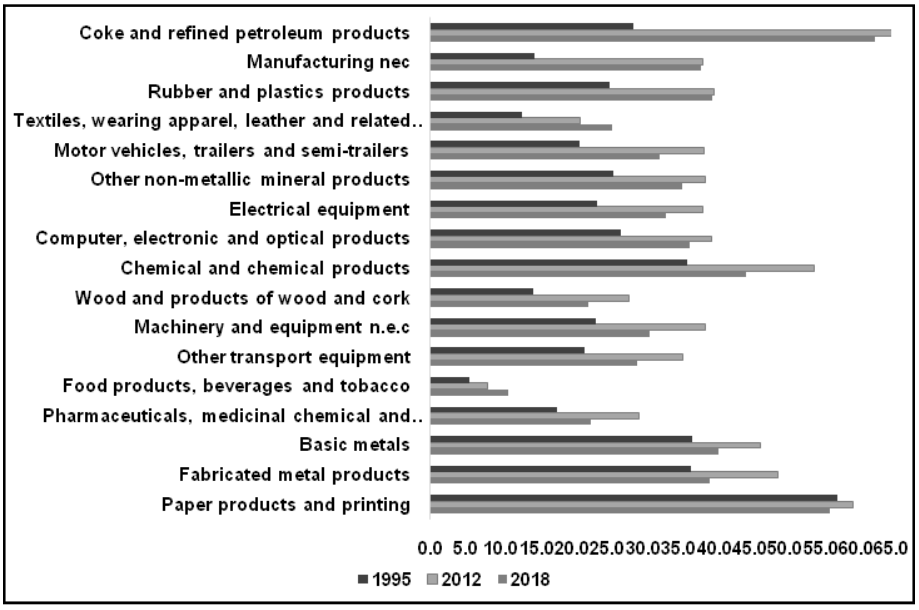
Source: OECD TIVA database.

Figure 2 provides insights into the evolution of various industries within the Indian manufacturing sector regarding their engagement in global value chains from 1995 to 2018. We compare data across three distinct periods — 1995, 2012, and 2018 — to illustrate the observed fluctuations in the manufacturing sector's participation in global value chains. Industries such as "Coke and refined petroleum products," Manufacturing NEC (Not Elsewhere Classified), "Chemical and chemical products," and "Motor vehicles, trailers, and semi-trailers" witnessed significant increases in their participation rates between 1995 and 2012, indicating a notable shift towards greater integration into global production networks. Conversely, certain industries like "Wood and products of wood and cork," "Food products, beverages, and tobacco," and "Textiles, wearing apparel, leather, and related products" remained among the least integrated industries during this period. However, from 2012 to 2018, nearly all industries experienced a decline in their participation in GVCs, with the exceptions of "Food products, beverages, and tobacco" and "Textiles, wearing apparel, leather, and related products."

The inquiry arises regarding whether Indian manufacturing sectors are reaping benefits from their involvement in GVCs. Industry-specific advantages are assessed using the ratio of forward-to-backward linkages, a method developed by Banga (2013). If this ratio exceeds 1, it signifies that a country's

FIGURE 2

INDUSTRY-WISE GVC PARTICIPATION RATE IN 1995, 2012 & 2018

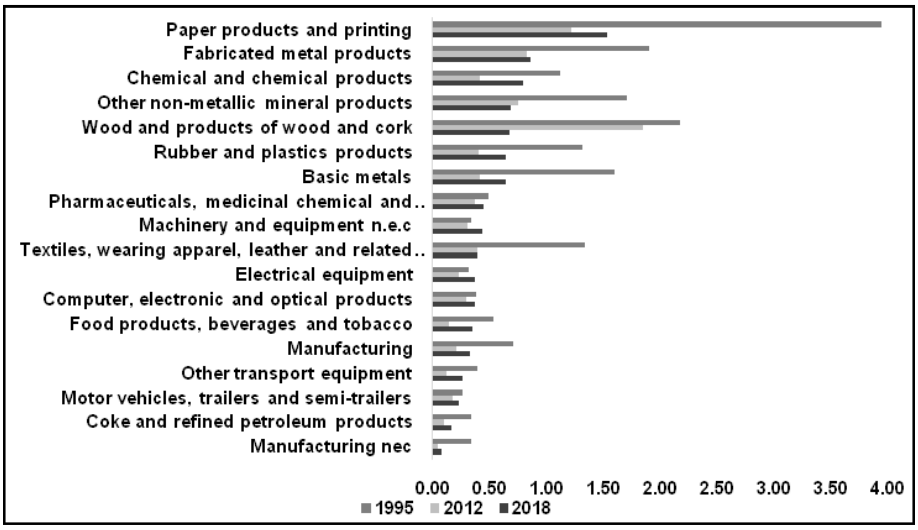


Source: OECD TIVA database.

domestic value added in intermediate exports surpasses the foreign value-added content in its gross exports. Employing this method, we observed a decline in the forward to backward linkages ratio across all Indian manufacturing industries from 1995 to 2018, indicating a growing dependency on foreign countries in Indian manufacturing exports relative to India's role in foreign countries' exports (refer to Figure 3). Furthermore, it was discovered that the overall net gains from integration into GVCs were negative in 2018 across all industries, except for "Paper Products and Printing," where the forward-to-backward linkages ratio exceeded one.

FIGURE 3

INDUSTRY-WISE FORWARD LINKAGES TO BACKWARD RATIO



Source: OECD TIVA database.

3. Literature Review

Existing literature presents two conflicting theories regarding family businesses (Le Breton-Miller & Miller, 2009; 2011). The principal-agency perspective, which has received significant attention, underscores a potential clash of interests between controlling family members and minority shareholders (Young, Peng, Ahlstrom, Bruton, & Jiang, 2008). From this perspective, family-run businesses may give precedence to family concerns rather than the broader welfare of the company. This prioritization could lead to mismanagement of resources, aversion to risk, and favoritism, potentially resulting in inadequate investment in vital endeavours such as research and development (R&D), crucial for the firm's advancement and competitiveness (Dharwadkar, George, &Brandes, 2000).

In contrast, stewardship theory (Davis, *et al.,* 2006) offers an alternative perspective on understanding the influence of family on innovation. According to this theory, controlling family members, due to their long-standing tenure and emotional attachment to the firm, often assume the role of stewards. In this capacity, they prioritize the firm's continuity, foster a sense of community among employees, and cultivate stronger relationships with various stakeholders (Miller, *et al*., 2008). This approach could potentially encourage increased investments in research and development (R&D) and create an environment conducive to innovation.

With the diverse array of approaches to conducting business, including various ownership patterns, governance structures, management styles, motivations, objectives, and social value systems (Zahra *et al*., 2004; Pieper *et al*., 2017), a pertinent research question emerges: How effectively can the performance of family businesses be assessed when they integrate into Global Value Chains (GVCs) innovatively manner? While there has been extensive research on the internationalization of family-owned enterprises (Arregle *et al*., 2017), the engagement of these firms in GVCs is crucial for improving the quality of exported goods. This improvement is facilitated by both forward and backward participation in GVCs (Ndubuisi and Owusu, 2020). Additionally, goods of superior quality and greater complexity tend to be less susceptible to price competition from low-wage producers. These characteristic fosters higher export revenues and productivity, thereby exerting a substantial influence on a country's economic growth and development (Khandelwal, 2010: Henn *et al*., 2020; Amiti & Khandelwal, 2013).

Using a firm-product-level dataset of Indian manufacturing firms from the CMIE Prowess database covering the period 2008-2018 for 903 family firms, this paper contributes to recent studies on international production and GVCs undertaken by the family firms on their product sophistication. For GVCs-related data, backward and forward linkages, we have utilized the OECD, and TIVA databases covering the same period.

4. Methodology, Data Collection and Construction of Variables

Measuring the impact of GVCs on product upgradation isn't straightforward and poses an intriguing challenge for analysis. The analysis focuses on product upgradation as a shift towards more advanced goods and investigates how GVC involvement impacts the enhancement of products by familyfirms. There's been limited empirical research examining how family firms upgrade their products, especially within India. Existing studies have often measured product improvement through increased product unit values (as seen in Manova and Zhang, 2012: Bas and Strauss-Kahn, 2015; Harding and Javorcik, 2012; Hallak, 2006). However, in this study, we determine the sophistication level of family

firms by calculating a sales-weighted average using Hausman's product sophistication index (2007).

The criterion for classifying family firms is an improved version of the existing literature which includes the following:

1. Sales of a firm must be positive.
2. The firm should belong to a business group and be listed in the Security and Exchange Board of India (SEBI).
3. Firms' Indian promoters share should be greater than 20 per cent.

Using these criteria 903 family firms have been identified with a total number of 8,170 between 2008-2018.

5. Findings and Conclusion

The extensive panel dataset, encompassing 903 family-owned enterprises spanning from 2008 to 2018, demonstrates a noteworthy and statistically significant (at the 5% level) association between participation in GVCs and product sophistication. Signaling the importance of family firms engaged in GVCs to export quality product which captures the average tacit technological competitiveness. The preliminary findings show forward linkage variable significance which indicates product sophistication by the family firms (see detail for Appendix).

Conflict of Interest

The author declares that they have no conflict of interest.

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APPENDIX

Fixed-effects (within) regression — Number of obs = 8,169
Group variable: Company — Number of groups = 835

R-squared:
Within = 0.0490
Between = 0.0012
Overall = 0.0025

Obs per group:
min = 1
avg = 9.8
max = 11

F(7, 7327) = 53.95
corr(u_i, Xb) = -0.2256 — Prob > F = 0.0000

Prody	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
GVC_Firms	.0000294	.0000114	2.58	0.010	7.06e-06	.0000518
Researchdevelopmentint	-.2168728	.0580417	-3.74	0.000	-.3306513	-.1030943
ImportRMint	-.0267985	.0046635	-5.75	0.000	-.0359404	-.0176567
ImportCGint	.0036266	.0032684	1.11	0.267	-.0027803	.0100336
Sellingdistributionexpint	.0172575	.0069068	2.50	0.012	.0037182	.0307969
LnAge	0	(omitted)				
Size	.0986526	.0057897	17.04	0.000	.0873032	.110002
HHI	.1467794	.1080325	1.36	0.174	-.0649955	.3585542
_cons	.0799714	.0453834	1.76	0.078	-.0089932	.1689359
sigma_u	.64277999					
sigma_e	.22462752					
rho	.89116707	(fraction of variance due to u_i)				

F test that all u_i=0: F(834, 7327) = 67.79 — Prob > F = 0.0000

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Fixed-effects (within) regression               Number of obs      =      8,169
Group variable: Company                         Number of groups   =        835

R-squared:                                      Obs per group:
     Within  = 0.0486                                         min =          1
     Between = 0.0006                                         avg =        9.8
     Overall = 0.0015                                         max =         11

                                                F(7, 7327)         =      53.51
corr(u_i, Xb) = -0.2299                         Prob > F           =     0.0000
```

Prody	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
Forward_Firms	2.76e-06	1.42e-06	1.94	0.053	-3.12e-08	5.55e-06
Researchdevelopmentint	-.2187451	.0588585	-3.77	0.000	-.3325566	-.1049337
ImportRMint	-.0231795	.0049943	-4.64	0.000	-.0329698	-.0133893
ImportCGint	.0037658	.0032699	1.15	0.249	-.0026441	.0101757
Sellingdistributionexpint	.006245	.008844	0.71	0.480	-.0110918	.0235818
LnAge	0	(omitted)				
Size	.0999941	.0057712	17.33	0.000	.0886809	.1113073
HHI	.1494484	.108068	1.38	0.167	-.062396	.3612928
_cons	.0722415	.0453396	1.59	0.111	-.0166372	.1611201
sigma_u	.64346364					
sigma_e	.22467181					
rho	.89133491	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(834, 7327) = 70.30                     Prob > F = 0.0000
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Fixed-effects (within) regression               Number of obs      =      8,169
Group variable: Company                         Number of groups   =        835

R-squared:                                      Obs per group:
     Within  = 0.0482                                         min =          1
     Between = 0.0007                                         avg =        9.8
     Overall = 0.0017                                         max =         11

                                                F(7, 7327)         =      53.02
corr(u_i, Xb) = -0.2284                         Prob > F           =     0.0000
```

Prody	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
Backward_Firms	1.56e-06	2.22e-06	0.70	0.483	-2.80e-06	5.92e-06
Researchdevelopmentint	-.2180778	.0580796	-3.75	0.000	-.3319305	-.1042251
ImportRMint	-.0288105	.0055978	-5.15	0.000	-.0397837	-.0178372
ImportCGint	.0003938	.0056463	0.07	0.944	-.0106746	.0114622
Sellingdistributionexpint	.0171944	.0069174	2.49	0.013	.0036343	.0307545
LnAge	0	(omitted)				
Size	.0997916	.0057739	17.28	0.000	.0884731	.11111
HHI	.1477258	.1081053	1.37	0.172	-.0641916	.3596432
_cons	.0738738	.0453416	1.63	0.103	-.0150087	.1627563
sigma_u	.64321117					
sigma_e	.22472187					
rho	.89121567	(fraction of variance due to u_i)				

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F test that all u_i=0: F(834, 7327) = 65.17                     Prob > F = 0.0000
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