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# Upgrading in Global Value Chains: An Integrative Literature Review

# Upgrading nas Cadeias Globais de Valor: Uma Revisão Integrativa da Literatura

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**Abstract:** This article investigates how upgrading strategies have been addressed in studies on Global Value Chains (GVCs). For this purpose, we carried out an integrative literature review where we identified and analyzed the main upgrading modalities used in practice to increase value capture in GVCs and their main propelling mechanisms. In our integrative synthesis, we argue that the effect of value capture in GVCs is due to the implementation of some modality of upgrading which was triggered by a kind of mechanism (internal capacity, institutional structure/industrial policy, governance, and inter-organizational relationships). Furthermore, we discuss how some studies are naming certain propelling mechanisms of upgrading as the very modality of upgrading and how some 'new modalities' of upgrading proposed recently are, in reality, the classic modalities of upgrading (economic upgrading) already widely discussed in the literature. The integrative review gave rise to a conceptual framework and a research agenda that could serve as a

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research reference for other researchers who are interested in investigating this theme based on the gaps and inaccuracies noted in our analysis.
**Keywords** – Global Value Chains; Upgrading; Propelling Mechanisms; Value Capture; Integrative Literature Review.

**Resumo:** Este artigo investiga como as estratégias de *upgrading* têm sido abordadas nos estudos sobre as Cadeias Globais de Valor (CGVs). Para este propósito, realizamos uma revisão integrativa da literatura onde identificamos e analisamos as principais modalidades de upgrading utilizadas na prática para aumentar a captura de valor nas CGVs e os seus principais mecanismos propulsores. Em nossa síntese integrativa, argumentamos que o efeito da captura de valor nas CGVs é decorrente da implementação de alguma modalidade de upgrading o qual foi desencadeado por algum mecanismo (capacidade interna, estrutura institucional/política industrial, governança e relacionamentos interorganizacionais). Além disso, discutimos de que forma alguns estudos estão nomeando certos mecanismos propulsores de upgrading como sendo a própria modalidade do upgrading e que algumas "novas modalidades" de upgrading propostas recentemente são na realidade, as próprias modalidades de upgrading clássicas (*upgrading* econômico) já amplamente discutidas na literatura. A revisão integrativa deu origem a um *framework* conceitual e a uma agenda de pesquisa que poderá servir de referência de pesquisa para outros pesquisadores que tenham interesse de investigar esta temática a partir das lacunas e imprecisões notadas em nossa análise.
**Palavras-chave** – Cadeias Globais de Valor; *Upgrading*; Mecanismos Propulsores; Captura de Valor; Revisão Integrativa da Literatura.

## Introduction

Global Value Chains (GVCs) can be understood as synonymous with a new form of industrial organization in which their productive process is highly fragmented internationally and each country has a portion of added value. There seems to be a consensus between scholars and policy makers that GVCs have become the basis of the contemporary industrial organization constituting as a phenomenon of all the economy (Cattaneo, Geraffi, & Saritz, 2010; Brancati, Brancati, & Maresca, 2017). The entrance into these chains and subsequently, the change to higher levels of value capture has thus become the goal of many nations. In the current scenario, strategies to benefit from the integration of the global economy require the use of upgrading strategies as a transformation processing mechanism (De Backer & Miroudot, 2014; Achabou, Dekhili, & Hamdoun, 2017).

Upgrading in this context can be defined as a process of changes and incorporating high value-added activities in the GVCs (Sturgeon & Gereffi, 2009; Lee & Gereffi, 2015; Morris & Staritz, 2017). This transition process can be carried out by a company, productive arrangements, an economic sector, or a country (Gereffi, 2019). According to this author, the notion of upgrading and the theoretical developments derived from this concept has been the subject of reflections and research that address the GVC structure as a springboard for the creation and capture of added value. In general, current research about this issue aims to: (i) highlight the relevance of the upgrading construct to understand the capture value process (Khattak & Pinto, 2018; De Marchi, Di Maria, Golini, & Perri, 2020; Kano, Tsang, & Yeung, 2020); (ii) formulate conceptual frameworks which explain the upgrading carried out by supplier companies in developing countries (Pipkin & Fuentes, 2017); and (iii) examine the results of GVCs configuration in terms of performance and upgrading (Hernández & Pedersen, 2017).

These studies have contributed to the development of multiple analysis perspectives in GVCs, such as the research by Kano, Tsang and Yeung (2020) which investigated the analysis of the governance process and the institutional context, without analyzing the phenomenon of upgrading. Similarly, De Marchi et al. (2020) took as their object of analysis the constituent elements of the structure, including the geographical and industrial scope, the governance of value generation chains and its institutional context. However, it is noted that the analysis of upgrading was carried out in a fragmented way and focused on some particular upgrading's modalities, as well as the research by Khattak and Pinto (2018) which addressed specifically environmental upgrading as well as Pipkin and Fuentes (2017) which assessed only economic upgrading effects. According to these authors, the concept of "upgrading" needs a more thorough examination that could give rise to a theoretical-conceptual structure that incorporates its multiple modalities.

This point of view was also shared by Yoruk (2019) who pointed out that some explanatory modalities of the upgrading construct remain unexplored. The lack of conceptual clarity can even make it difficult to formulate new categories of analysis that explain this process. These considerations, in addition to the need to develop a conceptual framework on the upgrading dynamic, pointed out by (Lauridsen, 2018) and the fact that the GVC literature offers few answers about upgrading propelling mechanisms were the main reasons to carry out this study. We consider the capture of value in GVCs,

and consequently, the increase in participation in GVCs, as a co-evolutionary process and we argue that the effect of capturing value in GVCs is due to the implementation of some modality of upgrading, which was triggered by some mechanism propellant.

Based on that, the following research questions guide this study: How has upgrading been addressed in studies on GVCs? What are the upgrading modalities used to increase value capture in GVCs and what are their main driving mechanisms? To answer these questions, we chose to carry out an integrative literature review in the terms proposed by Torraco (2005). Thus, we aim to produce evidence, reflections, and analyses from a sample of the main scientific articles published by journals indexed in databases of recognized academic reputation. This research effort gave rise to a conceptual framework that can contribute to the understanding of the upgrading process within the scope of GVCs. More precisely, we carried out a critical analysis of which upgrading modalities identified in our sample can be included in this typology and analyzed their main propelling mechanisms. Our review also offers a research agenda that considers some research gaps that may contribute to improving the conceptual and analytical inaccuracies noted in our analysis.

In addition to this introduction, the structure of this manuscript is made up of section 2, where we covered three perspectives: Firstly, we discussed the approaches and concept of GVCs, followed by the upgrading modalities and then, by upgrading propelling mechanisms. In section 3 we described the methodological procedure adopted in this research, followed by section 4 where we presented the results and the discussion which was divided into descriptive analysis, integrative synthesis, and research agenda. Finally, in section 5, we presented the final considerations.

## Theoretical Background

### Approaches and Concept of Global Value Chains (GVCs)

The emergence of GVCs, as an organizational form of the production process, can be understood as a product resulting from the global transformations that have altered the relations between local and international companies since the beginning of the 19$^{th}$ Century. Smith (2015) highlights that this mode of production organization was consolidated in the United States in the 1960s, when American

companies, intensified the division of their production structures and promoted the outsourcing of their main production stages in order to reduce overall costs and maximize profits.

The consolidation of GVCs as a branch of academic literature and the legitimation of these chains as a framework for analysis took place in the early 2000s (Gereffi, Humphrey, & Sturgeon, 2003; Tinta, 2017) and its concept was used to designate the fragmentation of the process production and trade between countries. A significant milestone in this process was the holding of a workshop organized by the Institute of Development Studies (IDS) of the University of Sussex in the United Kingdom in 1999. This event aimed to create a multi-level integrated research framework that was able to address the plans macro (global), intermediate (industry/country) and micro (company/community), the effects and challenges of economic globalization (Gereffi, 2019; Kano, Tsang & Yeung, 2020).

Scholars who attended the convention organized by the IDS pointed out two research traditions. The first, which aimed to investigate and understand how the action of multinationals in global industries affects the results of economic and social development in specific countries. The second tradition proposes the research and analysis of local economic clusters, highlighting the export potential of small and medium-sized companies from developing economies (Gereffi, 2019). These traditions of research on the global economy have generated the global (top-down) and local (bottom-up) perspectives, which are synonymous in GVC literature with the concepts of governance and upgrading, respectively.

The notion of governance, applied to the context of GVCs, allowed the understanding of the "relationships of authority and power that determine how financial, material and human resources are allocated and flow within a chain" (Gereffi & Korzeniewicz, 1994, p. 97). This concept has also contributed to the understanding of why and how a chain is coordinated and controlled when certain actors in the chain more effectively exercise their power when compared to other actors. On the other hand, the introduction and application of the term upgrading enhanced the mapping and understanding of the processes by which actors in the value chain add added value to their activities (Gereffi, Humphrey & Sturgeon, 2005; Cattaneo, Geraffi, & Saritz, 2010). The latter has become a cornerstone in GVCs research and encompasses all possibilities of moving up the value chain, focusing on the

strategies used by companies, industries, sectors, regions, or countries to maintain or improve their positions in the global economy (Gereffi & Fernandez-Stark, 2011; Pietrobelli & Staritz, 2018).

The definitions of upgrading emphasize the relevance and plurality of this concept to understand the process of generating added value within the scope of GVCs. This process can be described in terms of: (i) the ability to efficiently develop products (Porter, 1990; Pietrobelli & Rabellotti, 2006; Zhu & Pickles, 2014); (ii) generation of added value in production through the use of improved technology, knowledge and skills aiming at generating greater benefits from participation (Tian, Dietzenbacher, & Jong-A-Pin, 2019); (iii) how companies can extract greater added value and increase efficiency and sustainability in the use of resources (Hamilton-Hart & Stringer, 2016); (iv) a modality of innovation that expands the added value (Giuliani, Pietrobelli & Rabellotti, 2005; Pietrobelli & Saliola, 2008); (v) development of capabilities in specific areas that allow for the value capture aimed at increasing revenue and surviving in environments marked by competitive pressures (Tong, 2017); and (vi) maintaining the balance between rewards and risk associated with business (Ponte & Ewert, 2009; Szalavetz, 2019).

Upgrading can also be seen as a process of structural change in the industrial composition, knowledge base, and degree of specialization of a country or productive cluster. This process involves the gradual development of production, technology, and knowledge capabilities that is able to generate greater added value, profitability, productive sophistication, and intensive use of capabilities and skills, and knowledge (Gereffi, 1999; Kergroach, 2019; Trienekens, 2011). In addition to reflecting the nature of the upgrading, these considerations reveal the spectrum and possibilities for understanding the modalities and dynamics of the value capture process within the scope of GVCs.

## Upgrading Modalities

Upgrading results in value capture due to the shift to higher value-added activities (Gereffi, 1999; Khattak & Pinto, 2018). The first change efforts, aimed at capturing value and obtaining competitive advantages, involved four modes of upgrading, which together are known as economic upgrading or industrial upgrading in the terms proposed by Humphrey & Schmitz (2002): The first modality is Product upgrading, which refers to improving the quality of products/services and, consequently, increasing their unit value. The second modality is process upgrading, which makes it possible to reduce

the unit cost of production by reorganizing the production system. The third modality consists of changing the coverage of activities in the value chain to higher value-added functions, while the fourth modality is chain upgrading, which occurs from the use of functional knowledge in a chain. The expansion to a similar function found in another chain of a different industrial sector.

In addition to economic upgrading, other modalities were formulated and incorporated to the literature, such as upgrading: (i) institutional, which concerns the improvement of structures and capacities that enhance the efficient engagement of local actors in collective actions (Haakonsson, 2009; De Marchi et al., 2020; Pipkin & Fuentes, 2017); (ii) social, which changes the social conditions of GVCs by increasing the supply and quality of jobs, as well as improving income distribution, etc. (Gereffi & Lee, 2016; Godfrey, 2015; Jindra, Hatani, Steger, & Hiemer, 2019); and (iii) environmental, which aims to mitigate environmental impacts and make operations in value chains more sustainable through lean production and recycling of waste (Marchi, Maria, & Micelli, 2013; Achabou, Dekhili & Hamdoun, 2017; Navarrete, Borini, & Avrichir, 2020).

The implementation of upgrading strategies is usually related to the objectives that companies, sectors, or countries intend to achieve. The search for competitiveness and repositioning in the market by companies generally involves the structuring of product upgrading, process upgrading, and market upgrading. Also, upgrading function and upgrading chain are carried out when countries are interested in enhancing their competitive capacity through the implementation of targeted industrial policies that stimulate and prioritize development through GVCs. For Humphrey and Schmitz (2002), product and process upgrading are developed internally by firms, while function and chain upgrading modalities are related to change and attainment of higher positions in the GVCs. In other words, the latter can contribute to the repositioning of various players in global markets.

## Propelling Mechanisms of Upgrading

The structuring and execution of upgrading strategies are crucial for the insertion, permanence, and increase of participation in GVCs. This process requires the recognition and adoption of multiple mechanisms that allow the strengthening of the links established between the various actors that make up the GVCs and, above all, the achievement of competitive advantage (Sturgeon & Gereffi, 2009;

Sturgeon et al., 2013). Among the main mechanisms that trigger the upgrading, the governance structure stands out. The literature has provided evidence that governance has a significant impact on the occurrence of economic, social and environmental upgrading (Gereffi & Joonkoo, 2016; Khattak et al., 2018; Lee, 2019), especially because governance structures allow for resources flow together with their allocation and avoid power asymmetries between leading and local companies. Furthermore, depending on which types of governance actors are involved, various paths of upgrading modalities are plausible as argued by Gereffi & Joonkoo (2016). The evidence from Golini, De Marchi, Boffelli and Kalchschmidt (2018), for example, showed that relational and captive governance was largely responsible for economic upgrading in manufacturing in twenty-two developing countries. The success of this mechanism was mainly due to the involvement of customers who supported the role of (large) buyers in the formation of these industries.

Other mechanisms that stand out as crucial for the occurrence of upgrading are those linked to the companies' internal capacities, such as skill, learning and innovation. Training and education had a positive impact on the economic upgrading of the apparel industry in Guatemala and Colombia (Pipkin, 2011) and on the apparel industry in Bangladesh (Sinkovics, Hoque, & Sinkovics, 2018). On the other hand, learning is considered by some authors to be the key to economic upgrading (Sturgeon & Gereffi, 2009) and was fundamental for the occurrence of function upgrading in Polish food and clothing processing companies (Yoruk, 2019) and Uganda's pharmaceutical industry. In the latter, companies carried out upgrading through technology transfers from their suppliers in a process of "learning by importing", facilitated by networks between producers and their suppliers (Haakonsson, 2009).

Innovation and technology were also cited in some empirical studies as being a necessary mechanism for upgrading, regardless of its modality (Szalavetz, 2019; Yang, 2019). In the tourism sector in Spain, the adoption of new technologies has led to the upgrading of products, processes and function in the form of more individualized and more complete services, reduced dependence on operators, increased direct contact with customers and the creation of tourism products brand (Romero & Tejada, 2011).

Another type of upgrading propelling mechanism that has been widely reported is related to meeting customer requirements, or imposing standards, or even obtaining certifications (Ponte & Ewert,

2009; Mohan, 2016; Poulsen, Ponte, & Lister, 2016; Achabou, Dekhili, & Hamdoun, 2017; Tanrattanaphong, Hu, & Gan, 2020). This mechanism differs from most in that in general it does not start at the company's initiative but is imposed by customers so that the supplier achieves minimum requirements of environmental standards. For example, in Italy's domestic furniture industry, environmental upgrading started as a reaction to requests from its customers – mainly mass retailers in northern European countries – where environmental awareness is relatively high (Marchi, Maria, & Micelli, 2013).

As a result, by adapting to the standards, value capture is achieved, above all, through process and product upgrading, as was the case with the product upgrading that took place in olive oil companies in Tunisia. From the adoption of environmental upgrading (reducing the use of pesticides and insecticides) to meet the organic certification standards required by foreign customers, the intrinsic quality of the product improved (Achabou, Dekhili, & Hamdoun, 2017). In addition to these mechanisms, many others are mentioned in GVC literature and these will be discussed later.

## Methodological Procedures

The nature of the research questions raised in the introduction to this article served as a reference for choosing the integrative review method and we chose to follow the guidelines of Torraco (2005, 2016) and Galvão and Ricarte (2019). This method and its analytical procedures allow the mapping and production of an integrative synthesis of representative literature on the topic raised. We emphasize that the integrative review differs from the systematic review in terms of methodological procedures (Popay et al., 2006) and resembles the qualitative meta-analysis which also aims the aggregation and production of new knowledge, taking research results as a reference performed by other authors.

The application of this methodological approach required the completion of several steps, ranging from the choice of the topic, the application of a rigorous and qualified procedure for biographical research and the performance of integrative analysis. In the process of mapping and choosing the bibliography on the chosen topic, the PRISMA protocol (Preferred Reporting Items for Systematic Reviews and Meta-Analyses Figure 1) was used, which helped us with the identification, selection, eligibility, and literature's inclusion and exclusion.

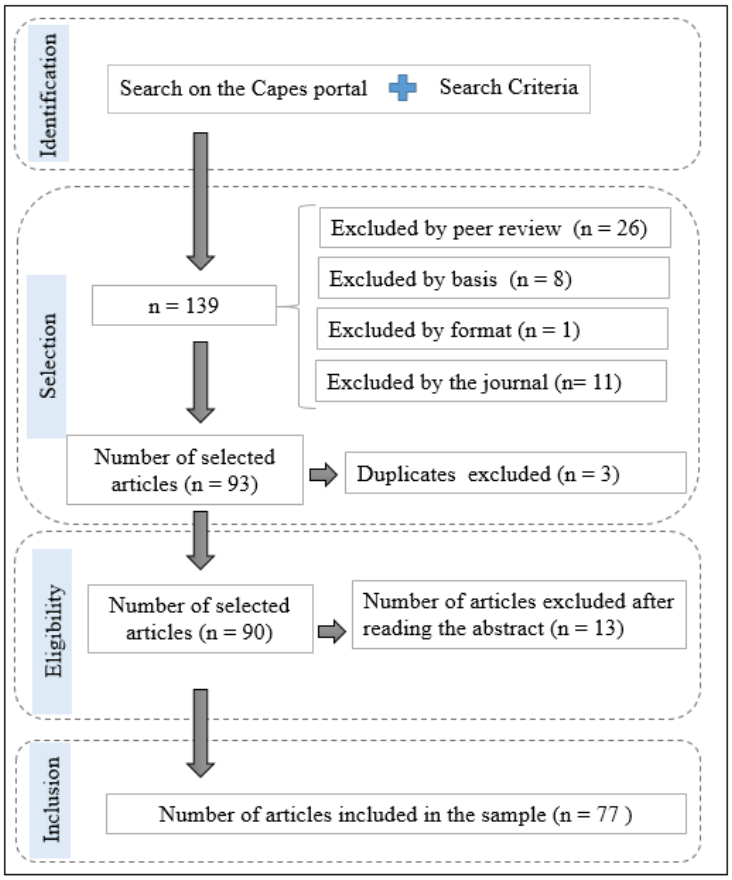


**Figure 1.** Adapted from Prisma Protocol (2015).

The literature was mapped through a search on the Brazilian Scientific Information Portal provided by the Coordination for the Improvement of Higher Education Personnel (CAPES). This information base houses 48,038 journal titles in full text, 130 databases of references and abstracts, 64 databases of theses and dissertations, among other sources of information (Coordenação, 2019). Through this procedure, an "advanced search" was carried out, guided by the words "Upgrading" and "Global Value Chains" in field "subject". The use of the search strategy and the terminology used is crucial for the selection of databases and the replicability of the literature review by other researchers (Galvão & Ricarte, 2019). In this first stage, we selected conceptual and empirical studies that simultaneously incorporated the two terms used in the bibliographic research carried out in February 2021.

In the first selection stage, priority was given to the set of 139 articles published in journals indexed in five databases, namely, Scopus (Elservier), Wiley Online Library, Web of Science, Science

Direct (Elsevier), Taylor & Francis Online, and Emerald Insight. These databases were chosen because they: (i) index the main journals that publish peer-reviewed articles that address research topics from applied social sciences, including administration and economics; (ii) have a high reputation and index journals with a high impact factor; and (iii) be linked to the CAPES journal portal that pays for access to the scientific articles

To select the articles from this initial sample, we used several criteria, including the criterion for publication in English and a journal indexed in those databases. In this second step, we excluded all studies that were not published in the form of articles and those that were published in journals that did not carry an impact factor measured by the SJR (equal to or greater than 20H) as recommended by Viglioni, de Brito and Calegario (2020). For these authors, the H index, which measures the citation, serves as a reference for recognizing the quality of the scientific production that makes up the sample of articles. Finally, we clarify that at this stage, all duplicate articles were also excluded, that is, articles that were published in journals indexed in two or more databases.

In the third step, inspired by Khattak & Pinto (2018), we read the title followed by the abstract and excluded all articles in which the search terms were not in the abstract. On this occasion, we evaluated the relevance of the articles considering the objectives, the quality of the methodology adopted, the theoretical consistency, the contributions arising from the discussion of the results and the conclusions. Thus, we reached the number of 77 articles that were selected to compose the sample of this study. We emphasize that we do not limit the chronology of publications to have an idea of the evolution of the upgrading topic over time and neither its geographical scope.

After following the criteria for inclusion and exclusion of articles as shown (Figure 1), we submitted the set of articles to a process of interpretation, understanding and integration of the set of texts in focus. In order to do that, we used thematic content analysis (Braun & Clarke, 2006). This analysis procedure involved: (i) familiarization (deepening the knowledge of the content of the articles) which allowed the construction of an overview of the texts and the mapping of those related to the guiding questions of the integrative review; (ii) the codification and systematization of extracts from the articles; (iii) mapping, classification and grouping of extracts into themes; (iv) review of themes in order to observe their homogeneity and heterogeneity, as well as coherence and consistency in relation to the

guiding questions of the integrative review in focus; (v) elaboration of analysis categories based on the grouping and naming of themes that have conceptual coherence with each other; and (vi) elaboration of the integrative analysis of the articles, formulation of the conceptual framework and proposition of the research agenda. This process allowed to improve the accuracy, quality and clarity of the review.

## Results and Discussion

### Descriptive Analysis

The studies selected for this research come from 54 different journals and are distributed as follows: World Development (n=8); Geoforum, Sustainability, and Review of International Political Economy (n=6); Journal of Economic Geography, Technological Forecasting & Social Change, Critical Perspectives on International Business and Business Strategy and the Environment (n=3); Marine Policy, Journal of International Management, Journal of Contemporary Asia, International Business Review, Industry, Innovation, Global Network and Development Policy Review (n=2).

These journals represent 62.3% of the articles in this sample, while the other articles appeared once in the other journals. Some of them are from areas other than the social sciences, indicating that GVCs are an important research topic that attracts the attention of researchers working in disciplines outside the territory of international business. Indeed, GVC research has been particularly influential in the fields of economic geography, economic and regional sociology, and development studies (Kano, Tsang, & Yeung, 2020).

The evolution of these articles is at an emerging stage. Studies on GVCs began to take shape in the 2000s (De Backer & Miroudot, 2014; Tinta, 2017) and a great deal of research has been accumulating in recent years. This is justified because GVC literature is seen as a dynamic field, precisely because it involves global and economic processes. Figure 2 shows the distribution of the sample studies over time:

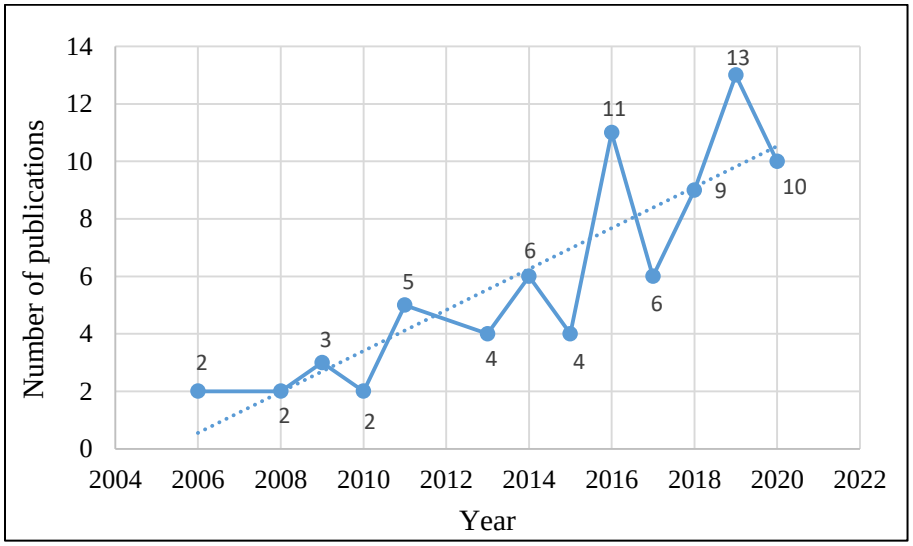


**Figure 2.** Evolution of studies on upgrading in GVCs.

Publications took place in the last fourteen years as can be seen in Figure 2, increased in 2016 and 2019, and has a growing projection. These data confirm that research on upgrading in GVCs has intensified since 2000 (Khattak & Pinto, 2018; Morris & Staritz, 2017), reflecting an increasing trend in publications over the last decade (Kano, Tsang, & Yeung, 2020), in addition to the fact that integration into GVCs through upgrading strategies has been attracting academic attention (Lu et al., 2015). We can state that given the number of studies selected from the Prisma protocol and the interim publications analyzed, our sample provides a comprehensive picture of the current state of knowledge about upgrading in the context of GVCs. Below, in Table 1, we included a small selection of 10 articles from our sample that currently have the highest citations. We tried to summarize the main information (authors, analyzed country, method, or model used in the research and the sector/industry to provide an overview of the design of these researches:

**Table 1.**
Summary of the ten studies in the sample with the highest citation.

| N. | References | Country Analyzed | Approach/Method | Sector/Industry |
|---|---|---|---|---|
| 1 | Gereffi & Lee (2016) | Not applicable | Conceptual | Not applicable |
| 2 | Marchi, Maria & Micelli (2013) | Italy | Qualitative – Case Study | Furniture industry |
| 3 | Lee & Gereffi (2015) | Not applicable | Conceptual | Not applicable |
| 4 | Ivarsson & Alvstam (2010) | Sweden, China and East Asia | Quantitative – Descriptive | Furniture industry |

| | | | | |
|---|---|---|---|---|
| 5 | Rehnberg & Ponte (2018) | Developed countries | Qualitative – Case Study | Aerospace and automotive industries |
| 6 | Poulsen, Ponte & Sornn-Friese (2018) | Developed countries | Qualitative – Case Study | Port sector |
| 7 | Tejada, Santos & Guzmán (2011) | Spain | Qualitative – Case Study | Tourism sector |
| 8 | Achabou, Dekhili & Hamdoun (2017) | Tunisia | Quantitative – Method of the analytical hierarchy process (HAP) | Agricultural industry (olive oil) |
| 9 | Haakonsson (2009) | Uganda | Conceptual | Pharmaceutical industry |
| 10 | Behuria (2020) | Rwanda | Quantitative – Survey | Agricultural industry (coffee) |

Source: Prepared by the authors.

Table 1 indicates that in the ranking above, the object of study of half of the articles is in developed countries. On the other hand, when analyzing the entire sample of this study (n=77) it is observed that the analysis of upgrading was carried out in 49 developing countries (equivalent to 63.6% of the sample) with China being the largest country studied (in 10 of them). This evidence indicates that there is an ongoing discussion on this issue, and suggests that emerging economy nations are looking to upgrading as a way to improve their respective positions in GVCs. Furthermore, this result can be understood, since today, emerging transnational actors are playing an increasingly important role in global bussiness (Haakonsson, 2009; Achabou, Dekhili, & Hamdoun, 2017; Morris & Staritz, 2017).

As for the approach and methods, Table 1 shows that only three articles have a quantitative approach and the rest are divided into theoretical and qualitative essays. In the total sample, 18 articles were conceptual, 30 articles had a quantitative approach and 29 were qualitative. This result is in line with other empirical findings from literature reviews involving GVCs, which confirms that there is an equity of research methods between qualitative case studies and quantitative studies on this topic (Kano, Tsang, & Yeung, 2020).

In terms of sector/industry, the 10 most cited articles shown in Table 1 analyzed upgrading in the GVC approach in various economic segments, while in the general sample the focus on the textile industry (n=11) was predominant, followed by the agricultural industry (n=10), automotive industry (n=5); manufacturing industry and tourism sector (n=4) and aquaculture (n=3). The remaining studies were applied in other industries and sectors. However, this result differs from the systematic review by Kano, Tsang and Yeung (2020), who observed in their sample a predominance of the automotive

industry chosen as the object of study by many researchers. The reason is that this industry is highly fragmented and reliant on a large number of suppliers, and these particularities provide valuable insights for employing the GVC approach. Finally, in the category of upgrading modality, Table 1 indicates that although the most cited article focuses on social upgrading (Gereffi & Lee, 2016), another seven deal with economic upgrading and its modalities (product, process, function and chain). This result is also valid for the total sample as shown in Table 2:

**Table 2.**
Relation between the modalities of upgrading and sample's studies.

| Modalities of Upgrading | N◦ of Articles | Modalities of Upgrading | N◦ of Articles | Modalities of Upgrading | N◦ of Articles |
|---|---|---|---|---|---|
| Economic | 16 | Social | 9 | Technological | 4 |
| Product | 19 | Volume | 2 | Structural | 1 |
| Process | 14 | Variety | 1 | Market | 1 |
| Function | 21 | Managerial | 1 | Position | 1 |
| Chain | 2 | Network relations | 1 | Internationalization | 1 |
| Environmental | 8 | Skill | 3 | - | - |

Source: Prepared by the authors.

Table 2 shows that there is an overall predominance in the analysis of economic upgrading and its components (product, process, function, and chain) to the detriment of other modalities of upgrading in the sample articles. In many studies, various modalities of upgrading are analyzed together, such as Trienekens (2011) which verified the effects of upgrading product, process, network relations and skill in the fishing industry, and in others, we also found that many modalities of upgrading are implemented in practice in isolation and do not necessarily follow the traditional sequence of trajectories commonly reported in empirical studies.

Indeed, upgrading can take place at the firm, industry, inter-industry and country levels, but it remains a non-linear process (Kergroach, 2019), as shown by Hansen, Fold and Hansen (2016), who showed in their analysis that process and function upgrading led to product upgrading. Moving from one modality of upgrading to one that captures more value requires the mobilization of a new set of technical, financial, organizational factors and may not be a company's strategy at first. Furthermore, Table 2 indicates that function upgrading has the highest frequency in practical cases. This suggests that many companies do not aim to implement economic upgrading as a whole, but are concentrating on

more strategic modalities, as is the case with function and chain upgrading, although the latter is more difficult to achieve than functional upgrading (Martinez-Covarrubias, Lenihan, & Hart, 2017).

Although most of the strategies employed by organizations, industries and countries to improve their position in GVCs consist of implementing economic upgrading modalities and their respective components, social and environmental upgrading has been appearing more frequently in empirical studies as shown in Table 2. This confirms Godfrey's (2015) arguments that the omission of the social benefits generated in GVCs is becoming increasingly unsustainable given the unequal gains that occur along these chains, just as occurs with the increase in environmental concern and need for more sustainable production routes.

The analysis of Table 2 also shows that in addition to the four modalities of economic upgrading proposed by Humphrey and Schmitz (2002), and the progress of environmental and social upgrading, other modalities started to be analyzed, such as volume upgrading, managerial upgrading, skill upgrading, among others. Upgrading has multiple modalities and the use of only one of them is limiting and may not capture all the effects generated in the form of value capture (Giuliani, Pietrobelli, & Rabellotti, 2005; Tian, Dietzenbacher, & Jong-A-Pin, 2019). This finding converges with the result of Ponte, Kelling, Jespersen & Kruijssen (2014), who also identified in their study differentiated trajectories of upgrading beyond the classical modalities reported in the literature. The new upgrading modalities identified in Table 2 will be discussed further below.

## Integrative Synthesis

In this topic, we present a reflection on the propelling mechanisms and the upgrading modalities identified, as well as some reflections on the conceptual limits of these topics. We also present a research agenda based on the inconsistencies and gaps found in our analysis.

### *Propelling Mechanisms of Upgrading*

Raising GVCs as a strategy to achieve systemic competitiveness requires the gradual introduction of upgrading processes that are capable of renewing productive activities and modifying market dynamics on a global scale. The structuring of this process on the influences of mechanisms

internal and external to GVCs and in this subsection, based on the analyzed studies, we group and analyze four mechanisms that can trigger the various modalities of upgrading.

*Internal Capacity*

This first group encompasses all the internal elements of a company that contribute to the development of specific capabilities, such as innovation and technology (Rehnberg & Ponte, 2018; Szalavetz, 2019) and human learning and skills (Yoruk, 2019; Whitfield, Staritz, Melese, & Azizi, 2020). The literature review pointed out that technological capacity, knowledge sharing, and innovation are determining factors in the upgrading process carried out by companies that are part of GVCs. The synergistic effect of these constituent elements of internal capacity became a conditioning factor for the competitive potential of companies inserted in these chains (Giuliani, Pietrobelli, & Rabellotti, 2005; Bae, 2011). Furthermore, the adoption of technologies and innovation in terms of products, processes and quality depends on the internal development of new competencies and human skills. For this reason, it can be stated that the upgrading of companies' internal capacities is linked to individual and collective learning (Machacek & Hess, 2019).

The learning process may also involve the transfer of knowledge and the exchange of experiences between or within organizations. In addition to supporting the acquisition of skills and competence development, learning has become a structuring element of the economic upgrading process (Sturgeon & Gereffi, 2009). It should be noted that each modality of upgrading involves internal and external learning networks, which must be considered mandatory prerequisites for function upgrading (Yoruk, 2019). By narrating the learning experience of a company located in the textile chain of Lesotho (South Africa), Morris & Staritz (2017) for example, demonstrated how the interaction with foreign companies was crucial to the realization of the upgrading of product, process and function.

The relationship between learning and updating was also highlighted by Ivarsson & Alvstam (2011) who describe how the acquisition of technological capability was achieved through learning with customers. Likewise, the research by Whitfield et al., (2020) also demonstrated how the interaction between companies located in a production chain boosted training. In addition to highlighting the

relevance and contributions of learning to promote updating, research indicates that learning needs to be stimulated, as it is not a spontaneous process as pointed out by Lu et al. (2015).

Also, the thematic analysis revealed that most articles showed evidence that learning basically occurs in companies that have strong international ties as opposed to those that have local ties (Dolan & Tewari, 2001; Haakonsson, 2009; Ivarsson & Alvstam, 2011; Lu et al., 2015). However, few articles investigated the process of establishing links between companies that enhance the learning and development of new internal capabilities within the scope of GVCs.

*Institutional Structure and Industrial Policy*

The institutional structure was also identified as an inducing element in the upgrading process (Pipkin & Fuentes, 2017). This mechanism has been considered crucial for the occurrence of social upgrading (Godfrey, 2015) and the attainment of technological capacity (Ivarsson & Alvstam, 2011). The interaction between local clusters was also identified as being an element that promotes the improvement of economic and social conditions in developing countries (Tejada, Santos, & Guzmán, 2011), including currency appreciation (Wong & Eng, 2017). In the latter case, analyses of the studies suggest that financial instruments remain the most popular policy tools to support integration into GVCs.

The structuring of an institutional framework, the formulation of liberalization policies, and the implementation of government capacity-building programs were considered essential to build upgrading trajectories (Haakonsson, 2009). Institutional capacity has been considered as one of the elements that enhance the reaction of companies in search of innovative solutions or responses that minimize the effects of challenges and their vulnerabilities. The strength of the domestic regulatory framework and public sector support was described in the sample studies as being a strong influence on the occurrence of upgrading.

However, the absence of an enabling institutional environment and regulatory framework often jeopardizes upgrading initiatives planned by companies or other GVC participants. Some studies have pointed out that the impact of regulation and public sector support are often limited to stimulate product and process upgrading (Ponte et al., 2014), without inducing significant changes of a functional and

structural what? For Hamilton-Hart and Stringer (2016), the functions of regulatory institutions can simultaneously shape and limit upgrading opportunities.

The integrative literature review allowed us to observe that most studies prioritized the investigation of formal institutions (Legal) used by governments to regulate the behavior of companies. Therefore, the studies are not dedicated to understand the informal institutions that mark the upgrading process within the productive chains, except for the case study carried out by Mohan (2016), which took as its object of analysis the informal institutions that permeate the Nepal's tea value chain. This research demonstrates how informal institutions served as a reference for small farmers to benefit from the upgrading of products from organic production. Although some studies have not found evidence on how government support affects the ugrading process (Martinez-Covarrubias, Lenihan, & Hart, 2017), the analyzed literature recognizes the relevance of the institutional structure and action (implementation of public policies) of the State for upgrading processes that produce significant and positive effects on certain industrial sectors and GVCs.

For example, the implementation of public policies has been crucial to promote the development of technology in the mobile phone industry in Bangladesh (Dey et al., 2019), to stimulate the export of domestic coffee to special markets in Rwanda (Behuria, 2020) and economic upgrading in the Chinese textile industry (Zhu & Pickles, 2014). These initiatives have shown us how institutional structure, economics, and politics influence the upgrading process and outcomes. We also noted that the design of these policies is changeable and mostly combines different instruments in different policy domains according to the country's position in GVCs, national structural characteristics and comparative advantages (Kergroach, 2019).

*Governance*

The integrative analysis pointed out that the nature and choice of the upgrading modality by companies is conditioned by the governance pattern and the power structure within GVCs scope. Most authors discussed the influence of leaders in decisions and the realization of upgrading within the chains (Bae, 2011; Gereffi & Lee, 2016; Lee, 2017; Poulsen, Ponte, & Sornn-Friese, 2018; Tessmann, 2018). The study by Ivarsson & Alvstam (2010) highlighted that buyer-driven global value chains, coordinated

by large retailers, encourages (é o estudo que encoraja?) the development of product upgrading that favors small and inexperienced producers whose production structures demand labor in an intensive way. Among the authors who investigated the role of GVC governance on the choice of modality and the results of upgrading, stand out (Gereffi & Fernandez-Stark, 2011; Blažek, 2016; Golini et al., 2018; Khattak et al..,2018; Behuria, 2020).

For Khattak et al. (2018) GVC governance standards can create the necessary conditions for economic upgrading, as they will determine how material, financial and human resources will be allocated and coordinated within the chain. These standards will influence how leading companies coordinate activities along the chain. Tejada, Santos and Guzmán (2011) for example, noted significant differences in the type of upgrading that Andalusia's small tourist companies apply, depending on the standard of governance in which they are engaged. Small companies located on the coast face greater restrictions on upgrading within the tourism GVC than those located inland, where cultural and business tourism is predominant. The reason why this seems to happen according to these authors is that the type of governance exercised in the coastal region is closer to the hierarchy of tourism.

Through our analyses, we noted that a significant portion of the articles did not relate how specific governance structures trigger certain modalities of upgrading. Our findings suggest that the possibility of the coexistence of multiple governance structures and their political effects on upgrading outcomes have not been adequately explored, which converges with the Lee evidence (2017). For this author, this coexistence can generate significant effects that can affect the relationships between actors participating in GVCs and make the process of collective interest choices more difficult. We also note that studies on the effects of governance mechanisms on upgrading assume the existence of a single governance modality, as in the research by Poulsen, Ponte and Lister (2016). These authors stated that the occurrence of environmental upgrading is more likely when global value chains are characterized by unipolar governance and where leadership is exercised by representatives of leading companies that meet the demands of consumers that pose potential reputational risks.

The thematic integrative analysis revealed that the literature on governance as the main driving mechanism for upgrading focused their research efforts on five well-established modes of governance (market, modular, relational, captive and hierarchical) in the terms described by Gereffi, Humphrey and

Sturgeon (2005). To fill this research gap, Ivarsson and Alvstam (2010) point out that other theoretical perspectives need to be applied to the investigate and understand governance structures in GVCs. Despite earlier appeals (Lee & Gereffi, 2015), the effects of synergistic governance, which involves cooperation between global and local actors, private, public and community actors on social upgrading have not been properly explored by researchers studying the phenomena inherent in GVCs.

*Inter-organizational Relationships*

In this group of propelling mechanisms for upgrading we consider the relationship between leading companies and subsidiary companies (Jin, Zhang, & Wang 2019); leading companies and their suppliers; companies and customers (Pietrzak, Chlebicka, Kracinski, & Malak-Rawlikowska, 2020), or any other form of relationship between the actors in the chain (Poulsen, Ponte, & Sornn-Friese, 2018). We also address external stimuli from customers that influence the definition of quality standards and requirements and specifications (Marchi, Maria, & Micelli, 2013; Mohan, 2016; Sinkovics, Hoque, & Sinkovics, 2016; Tanrattanaphong et al., 2020). The complementary resources and capabilities shared between two subsidiaries, located in different countries, promoted the upgrading of the company in the host country and without conflicts between the subsidiaries as evidenced by Jin, Zhang and Wang (2019).

However, there seems to be a less than optimistic perception regarding the performance of leading companies with regard to their contributions to the creation and maintenance of relationships that enable learning, technology transfer, know-how, among others, for the benefit of their subsidiaries or local suppliers. The possibility of carrying out functional upgrading can be seen by leading companies as a threat to their control and influence within GVCs (Pananond, 2015). For this author, it is unlikely that leading multinational companies encourage national suppliers to extend their activities to other functions in the chain.

Because of that and other cultural and economic reasons, relationships between actors in a chain tend to develop highly competitive and potentially conflicting behaviors (Riisgaard et al., 2010). However, some authors recognize that social relationships between actors in a value chain can be characterized by trust and cooperation and the incorporation of these values can stimulate knowledge

sharing. In this case, the resources they would spend on mutual monitoring can be used for more productive purposes, both for efficiency and for dynamic capacity to promote upgrading (Hamilton-Hart & Stringer, 2016).

Considering the scope of this literature review, we noted that there is little empirical evidence on why and how various stakeholders interact symbiotically and create value in developing countries. The relationship between suppliers and customers concerning meeting quality standards and requirements can also be seen as a propelling mechanism for upgrading. Certification standards are often used as an inherent mechanism in the governance of the upgrading process (Mohan, 2016). This feature has stimulated and made viable product upgrading (Poulsen, Ponte, & Lister, 2016) and environmental upgrading (March et al., 2013).

*Economic Upgrading or a New Modality of Upgrading?*

Among the various definitions of upgrading presented in subsection 2.2, they all converge on the argument that the purpose of upgrading is to increase added value, that is, to capture value. The capture of value stems from the specialization and innovation of activities (Porter, 1990; Pietrobelli & Rabellotti, 2006, Tian, Dietzenbacher, & Jong-A-Pin, 2019), from the increased efficiency and sustainability of resources use (Hamilton-Hart & Stringer, 2016), the structural change in the industrial composition and knowledge base generated by a country (Gereffi, 1999; Kergroach, 2019), among other aspects.

The occurrence of upgrading, as a process to allow value capture, depends on the triggering of the mechanisms in the terms discussed above. This process may also traditionally involve the components of economic upgrading (product, process, function and chain) and other upgrading modalities, such as volume upgrading (Alam & Natsuda, 2016; Ponte et al., 2014), variety ( Ponte et al., 2014), managerial (Yoruk, 2019), establishing network relationships (Trienekens, 2011), skill building (Machacek & Hess, 2019; Tian, Dietzenbacher, & Jong-A-Pin, 2019; Trienekens, 2011), innovation (Dey et al., 2019; Ivarsson & Alvstam, 2010; Kergroach, 2019; Yoruk, 2019), structural modification (Landesmann & Stöllinger, 2019), market (Li, Frederick, & Gereffi, 2019), strategic repositioning (Pietrzak et al., 2020) and internationalization (Jin, Zhang & Wang 2019).

Despite the identification of these varied modalities of upgrading in our sample, we argue that it can only be considered an upgrading modality when there is an antecedent propelling mechanism and a value capture effect preceding the upgrading. Furthermore, for each mode of upgrading there is an intrinsic value capture effect – as pointed out by Humphrey and Schmitz (2002) for economic upgrading – and different modes of upgrading should, as a rule, generate different types of value capture as this would be one basic condition of differentiation between them. However, our review pointed out that this condition did not occur in many of the analyzed cases.

For example, the definition of "volume upgrading", is regular and sufficient supply of the product and its practical result in one of the studies was the shift from a low to high-grade production arrangement of products in the Bangladeshi garment industry (Alam & Natsuda, 2016), that is, it is a consequence of function upgrading. Similarly, managerial upgrading presupposes the implementation of different management models and organizational methods, and in one of the analyzed cases, its result in Polish food and clothing processing companies was the acquisition of new functions, new capacities in the areas, raw material acquisition, design and marketing (Yoruk, 2019), which can also be understood as an effect of function upgrading.

The "network relations upgrading" (the collaboration with horizontal partners) promoted the combination of activities that add value in the Philippine fishing industry with other sectors of the economy (Trienekens, 2011), namely, there was a chain upgrading. At the same time internationalization upgrading, that is, the contribution of subsidiaries in the host country to the internationalization of companies from emerging countries led to product diversification and qualification in the photovoltaic industry of emerging economy countries (Jin, Zhang, & Wang 2019), which can be classified as a product upgrading.

These are just some of the examples of new upgrading modalities effects described in our sample. Although empirical studies are recurrently proposing new types of upgrading modalities, the effects of these new modalities are on the same level as the results of traditional upgrading modalities, that is, economic upgrading (product, process, function and chain). These observations confirm the study by Tian, Dietzenbacher and Jong-A-Pin (2019) who found out that different modalities or types of upgrading actually reflect different modalities of economic upgrading, social and environmental

upgrading. Thus, this evidence shows that although upgrading has multiple modalities, at the same time, the excess of them can double the same direction of a given modality (Giuliani, Pietrobelli & Rabellotti, 2005).

*Upgrading Modality or Propelling Mechanisms?*

The literature review and integrative analysis carried out also allowed us to observe that some upgrading modalities that were considered in the analyzed sample, in our analytical perspective, are actually the propelling mechanism of upgrading. The imbrication between mechanisms, modalities and value capture seems to be marked by a duality in which cause and effect relations are not clearly demarcated, as in the case of skill and technological upgrading. Machacek & Hess (2019) used the term "skills upgrade" as a synonym for "re-skilling" workers in the Chinese automotive industry. However, the re-qualification of workers seems to be a direct effect of the social upgrading that occurred as a function of skill acquisition, that is, of the propelling mechanism "skill". In other words, skill is the propelling mechanism of social upgrading and not a specific upgrading modality of how it was considered.

Similarly, some studies have used the term "technological upgrading" to refer to the value capture as a result of technological innovation, even though the resulting effect is characteristic of product or process upgrading (Ivarsson & Alvstam, 2010; Dey et al., 2019). On the one hand, innovation and technology seem to be, in fact, a propelling mechanism for different modalities of upgrading which allows the value capture from the differentiation of products and services in the market. Therefore, they help to increase the competitive edge. Although innovation and technology enhance the increase of added value (Giuliani, Pietrobelli, & Rabellotti, 2005; Pietrobelli & Saliola, 2008), they are not in itself the upgrading, but an essential condition in many cases for its occurrence.

This reasoning converges with the definition of upgrading by by Tian, Dietzenbacher and Jong-A-Pin (2019) who claim that upgrading results from the use of technology, knowledge and improved skills in many cases. This understanding is also shared by Guzmán, Moreno and Tejada (2008) and Yang (2019). According to these authors, the adoption of new technologies and innovation is directly related to the upgrading processes. The digital transformation in the automobile industry has allowed

opportunities to upgrade products, processes and functions for local companies, and also for the leading companies themselves through the invention of new business models applied to the diffusion of digital technology and digital services related to connected cars (Szalavetz, 2019).

Thus, among the different new modalities of upgrading identified in our sample, the "market upgrading" seems to be the only one that is conceptually robust as it generates a type of value capture differentiated concerning the classic modalities of upgrading. This modality has provided the reduction of the entry barrier and the institutionalization of certain markets, such as the marketplace. For example, E-commerce has facilitated the creation of new sales tools, shifting the supply and demand of products, greater coverage of national and international markets, and also the development of new purchasing habits (Li, Frederick, & Gereffi, 2019). In addition, consumers began to actively participate in the formation of brands, design, product testing, which has been promoting a reduction in the cost of services and products.

Based on those factors, what emerges from our analyzes are two conceptual inconsistencies observed in our sample: (i) some studies are naming certain propelling mechanisms upgrading as the modalities of upgrading and; and (ii) some more recently proposed modalities of upgrading are actually the classic upgrading modalities themselves, that is, the economic upgrading modalities (already widely discussed in the literature). In the latter, our observation is based on the ratio of the effects similarity generated after the implementation of the new upgrading modalities about the classical modalities being exactly the same.

Thus, we noted that there is an overlap of upgrading modalities and the nomination of others that do not establish the conceptual limits previously established in GVC literature, bringing the most diverse considerations. For example, managerial and functional upgrading are components of organizational upgrading while product and process upgrading are considered to be components of technological upgrading (Yoruk, 2019). Therefore, we argue that upgrading must necessarily generate value capture, regardless of its modality. The effects of this value capture vary depending on the modality that was implemented, which is intrinsically linked to its propelling mechanism. In Figure 3 there is a conceptual model that represents the relationship between propelling mechanisms, upgrading modalities and value capture. Similarly to Szalavetz (2019), we understand that this is a co-evolutionary process that takes

place within the scope of GVCs. In this ontological conception, an overlap between these three categories of analysis and their variables is admitted:

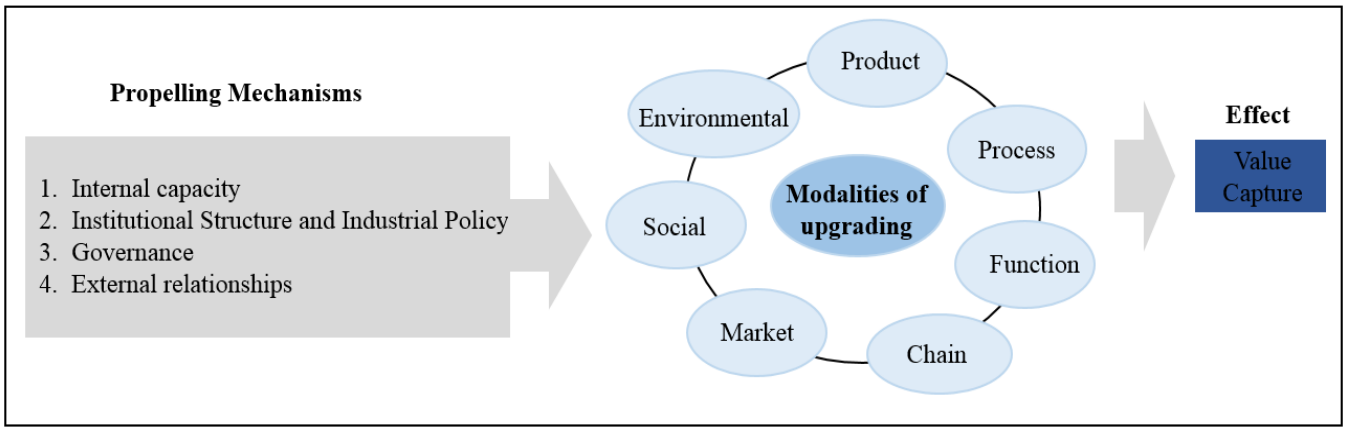


**Figure 3.** Conceptual model of upgrading's occurrence.

The conceptual model proposed in Figure 3 includes in the category of propelling mechanisms the variables of (i) internal capacity, including its essential competencies; (ii) institutional structure and industrial policy; (iii) governance; and (iv) inter-organizational relationships. The second category refers to the modality of upgrading and contains the different upgrading trajectories that meet the conditions discussed above, that is, it encompasses economic upgrading (process, product, function, and chain), market, social and environmental upgrading.

In this process, value capture (or increasing added value) can be understood as being an indicator of the occurrence of upgrading. Thus, we propose that in the third category of analysis, the effects of the process of capturing value from the upgrading process triggered by its driving elements are evaluated. The literature indicates several variables and indicators for assessing the occurrence of upgrading in terms of value capture, such as growth in labor productivity, payment and capital intensity (Tian, Dietzenbacher, & Jong-A-Pin, 2019), the share of domestic value-added (or foreign) in exports, intermediate imports re-exported and the domestic value-added incorporated in foreign exports (Kergroach, 2019; Lee, Qu, & Mao, 2021) among several others.

This conceptual model does not aim to elucidate that the four categories of propelling mechanisms will necessarily trigger the occurrence of these seven dimensions of upgrading. It actually

aims to emphasize that there is a logical sequence between the cause (propelling mechanisms) and the upgrading modalities (result) beyond the effect (value capture). In this sense, value capture must be seen as a complex and multifaceted process and its effects vary depending on the implemented upgrading modality, which is intrinsically linked to its driving mechanism.

We hope that our evidence can to some extent clarify these conceptual differences and contribute to the consolidation of the theoretical concept of upgrading in the GVC literature. As in any study, there are limitations in this research that must be taken into account. We emphasize that the propelling mechanisms for the occurrence described here do not eliminate all the real possibilities of generating the various forms of value capture in GVCs. However, they constitute a very broad guide of possibilities that can be put into practice by managers, policymakers (among others) according to the modality of upgrading they wish to implement. Furthermore, the reading we did to identify such mechanisms is part of qualitative analyses, which, therefore, must have its subjective character considered. It is also important to emphasize that the criterion used as a filter in the search field for this review may have limited the number of articles in the sample.

## Research Agenda

In order to contribute to the advancement of knowledge, we propose a roadmap for future studies. In formulating this research agenda, we followed Torraco's (2016) guidance of considering the authors' reflections in addition to the deficiencies, omissions and conceptual inaccuracies observed during the integrative review. This exercise allowed us to point out some research questions that we deem necessary: (i) it is recommended to carry out surveys that analyze the situation before and after the implementation of economic upgrading modalities in order to investigate the gains or losses obtained from these strategies. Gereffi (1999) points out that the integration of GVCs induces gradual upgrading in production, design, marketing and branding. However, this issue has not been adequately explored in the literature from a procedural perspective that reveals the contributions of upgrading in terms of value capture; (ii) there is a need to carry out further research that takes as an object of analysis the upgrading dynamic, including a detailed and in-depth examination of the modalities of economic upgrading that take into account micro (enterprises), intermediate (regions or territories), and macro (countries and

global productive arrangements); (iii) linked to the above gap, research is suggested to investigate how local factors, labor supply, institutional and environmental aspects, among others, can interfere in the upgrading implementation strategies. The insights could highlight opportunities particularly for supplier countries to prepare to improve their positions with GVCs; (iv) an important study would be to relate governance structure with possibilities for upgrading in specific contexts. Although GVC literature is rich in studies involving the concept of governance and has already established a typology of its five main types (Gereffi, Humphrey & Sturgeon, 2005), studies involving these two concepts considered will bring contributions to GVC literature. The reason is that the contexts of analysis are numerous, as they vary according to the sector, country, whether the object of analysis is a leading or local company, among others; (v) furthermore, empirical evidence from many studies has shown that different sectoral groups tend to show different governance configurations to promote upgrading. They can also vary depending on the collective efficiency of clusters (Giuliani, Pietrobelli, & Rabellotti, 2005) or even by the imposition of a standard by the buyer (Ivarsson & Alvstam, 2010). A survey that investigates these patterns across different sectors could broaden the discussion about the peculiarities of specific industries in the context of GVCs; (vi) as it has been seen, the institutional framework is being identified as an important mechanism for the success of upgrading strategies. Thus, it is important to carry out more studies that address the importance of institutional capacity in the advancement of GVCs and, at the same time, expand the concept of institution, in addition to its form of the state represented by its agencies. For example, researchers can bring as a stage for discussion the role of institutions such as business associations, universities and other actors that can support regulation, technical learning and are rarely discussed in GVC literature. Another possibility is also researching the common bottlenecks associated with institutional capacity that can hamper upgrading and offer suggestions on how to deal with these challenges; (vii) studies are needed to investigate the necessary conditions and challenges for suppliers from developing countries to create strategic links with global companies in order to obtain specific learning. These linkages can bring benefits such as spillover and technology transfer (Haakonsson, 2009; Lu et al., 2015) enabling upgrading of various modalities. However, these surveys should also investigate that links with global companies will not necessarily result in the desired learning, as it will depend on the policy and interest of that company in transferring knowledge. Thus,

making case studies that were successful and studies that failed would be an important contribution; and (viii) although public policies are considered to be a very important propelling mechanism for upgrading, there is still a lack of studies that show which elements should be present in a policy design oriented to GVCs. It was also noted the need for empirical studies to verify the effectiveness of the policies already implemented and assess whether government interventions are promoting the capture of value in GVCs through upgrading strategies or not.

## Final Considerations

This study used the integrative literature review method to identify which modalities of upgrading have been the most analyzed in the literature and what are their main propelling mechanisms. Firstly, this research pointed out that the four modalities of upgrading most analyzed in empirical studies, and, therefore, most used in practice, continue to be those categorized by Humphrey and Schmitz (2002): product, process, function, and chain upgrading. This suggests that they are effective and should be considered in strategic management focused on advancing GVCs.

Secondly, it was observed that certain modalities of upgrading are being more used and reported in the literature currently, as is the case with social upgrading. The latter was discussed in several studies analyzed in this review. The concept of upgrading, which until recent years was basically used to analyze GVC insertion only from the economic point of view, seems to have evolved because of the urgent need for the developmental perspective of economic growth to be prioritized. Thus, aspects such as the impacts of inclusion in GVCs on workers' rights, generation and quality of employment, conditions that lead to a joint improvement in the competitiveness of companies and the social conditions of workers, in addition to the need for production's routes sustainable come gradually gaining ground. This last modality, environmental upgrading, shows a tendency for companies to develop green strategies to reduce environmental impacts while obtaining economic benefits and competitiveness.

Thirdly, we identified and analyzed the main mechanisms that are considered drivers of the various upgrading modalities identified in the sample. We noted that some of them have been considered in some empirical studies as the modality of upgrading itself. Furthermore, we found out that most of the new upgrading modes are actually a duplicate of the classic upgrading modes. Fourth, we proposed a

conceptual model that integrates all the modalities of upgrading that meet our theoretical argument, in addition to highlighting their driving mechanisms. Finally, based on this script and the observation of gaps and inaccuracies identified in our sample, an agenda for future studies was proposed as one of the contributions of this research.

Thus, the reconceptualization of the term upgrading presented in this article contributes to the literature as follows: It offers a useful and clear definition of this concept and outlines the necessary assumptions for a phenomenon to be considered an upgrading based on the action that created it (propelling mechanisms), in the results (modalities of upgrading) and its effects (value capture). This prevents the misuse of this concept and sets clear limits on its use. The literature review not only provided insights into synergies and complementarities but also revealed several limitations in existing concepts that provided a solid foundation for their refinement.

We also contribute to the literature by bringing the state of the art on the main factors that contribute to the occurrence of upgrading and its practical consequences. Empirical insights provide answers for a better understanding of the processes that underlie upgrading outcomes (Surmeier, 2020). In addition, we complemented previous reviews that also addressed the concept of upgrading in the context of GVCs, such as De Marchi et al. (2020), Khattak & Pinto (2018), and Pipkin & Fuentes (2017), but on the other hand, they did not explore the perspective adopted in this study.

As a practical contribution, it is hoped that this evidence can be useful for the most diverse types of organizations that aim to expand or even enter the productive dynamics of GVCs. The analysis of upgrading in the context of GVCs arouses interest not only academic, but also from managers, international organizations, and policymakers. In this way, we believe that our results can be useful for the development or improvement of industrial policies, especially for developing countries.

## References

Achabou, M. A., Dekhili, S., & Hamdoun, M. (2017). Environmental upgrading of developing country firms in global value chains. *Business Strategy and the Environment*, *26*(2), 224-238. https://doi.org/10.1002/bse.1911

Alam, M. S., & Natsuda, K. (2016). The competitive factors of the Bangladeshi garment industry in the post-MFA era. *Canadian Journal of Development Studies/Revue Canadienne d'Études du Développement*, *37*(3), 316-336. https://doi.org/10.1080/02255189.2016.1157457

Bae, Y. (2011). Global value chains, industry structure, and technology upgrading of local firms: the personal computer industry in Korea and Taiwan during the 1980s. *Asian Journal of Technology Innovation*, *19*(2), 249-262. https://doi.org/10.1080/19761597.2011.630597

Behuria, P. (2020). The domestic political economy of upgrading in global value chains: how politics shapes pathways for upgrading in Rwanda's coffee sector. *Review of International Political Economy*, *27*(2), 348-376. https://doi.org/10.1080/09692290.2019.1625803

Blažek, J. (2016). Towards a typology of repositioning strategies of GVC/GPN suppliers: the case of functional upgrading and downgrading. *Journal of Economic Geography*, *16*(4), 849-869. https://doi.org/10.1093/jeg/lbv044

Brancati, E., Brancati, R., & Maresca, A. (2017). Global value chains, innovation and performance: firm-level evidence from the Great Recession. *Journal of Economic Geography*, *17*(5), 1039-1073.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Cattaneo, O., Gereffi, G., & Staritz, C. (2010). Global value chains ina postcrisis world: resilience, consolidation, and shifting end marketz. *Global Value Chains in a Postcrisis World: A Development Perspective*, *1*. https://doi.org/10.1596/978-0-8213-8499-2

CAPES – Coordenação de Aperfeiçoamento de Pessoal de Nível Superior. *Portal de periódicos*. Brasília: CAPES/MEC, 2021. Available at: https://www-periodicos-capes-gov-br.

De Backer, K., & Miroudot, S. (2014). Mapping global value chains. *Global Value Chains and World Trade: Prospects and Challenges for Latin America.* Santiago: ECLAC, 2014. LC/G. 2617-P. p. 43-78. https://doi.org/10.18356/8ad97673-en

De Marchi, V., Di Maria, E., Golini, R., & Perri, A. (2020). Nurturing international business research through global value chains literature: a review and discussion of future research opportunities. *International Business Review*, *29*(5), 101708. https://doi.org/10.1016/j.ibusrev.2020.101708

Dey, B. L., Babu, M. M., Rahman, M., Dora, M., & Mishra, N. (2019). Technology upgrading through co-creation of value in developing societies: analysis of the mobile telephone industry in Bangladesh. *Technological Forecasting and Social Change*, *145*, 413-425. https://doi.org/10.1016/j.techfore.2018.05.011

Dolan, C. S., & Tewari, M. (2001). From what we wear to what we eat upgrading in global value chains. *IDS Bulletin*, *32*(3), 94-104. https://doi.org/10.1111/j.1759-5436.2001.mp32003010.x

Fernandez-Stark, K., & Gereffi, G. (2011). Global Value Chain Analysis: A Primer. *Center on Globalization, Governance & Competitiveness (CGGC).* Duke University.

Galvão, M. C. B., & Ricarte, I. L. M. (2019). Revisão sistemática da literatura: conceituação, produção e publicação. *Logeion: Filosofia da Informação*, *6*(1), 57-73. https://doi.org/10.21728/logeion.2019v6n1.p57-73

Gereffi, G. (1999). International trade and industrial upgrading in the apparel commodity chain. *Journal of International Economics*, *48*(1), 37-70. https://doi.org/10.1016/S0022-1996(98)00075-0

Gereffi, G. (2019). Global value chains and international development policy: bringing firms, networks and policy-engaged scholarship back in. *Journal of International Business Policy*, *2*(3), 195-210. https://doi.org/10.1057/s42214-019-00028-7

Gereffi, G., & Korzeniewicz, M. (eds.). (1994). *Commodity chains and global capitalism* (No. 149). ABC-CLIO.

Gereffi, G., & Lee, J. (2016). Economic and social upgrading in global value chains and industrial clusters: Why governance matters. *Journal of Business Ethics*, *133*(1), 25-38. https://doi.org/10.1007/s10551-014-2373-7

Gereffi, G., Humphrey, J., & Sturgeon, T. (2003). The governance of global value chains: an analytic framework. *Review of International Political Economy*, *12*(1), 78-104. https://doi.org/10.1080/09692290500049805

Giuliani, E., Pietrobelli, C., & Rabellotti, R. (2005). Upgrading in global value chains: lessons from Latin American clusters. *World Development*, *33*(4), 549-573. https://doi.org/10.1016/j.worlddev.2005.01.002

Godfrey, S. (2015). Global, regional and domestic apparel value chains in Southern Africa: social upgrading for some and downgrading for others. *Cambridge Journal of Regions, Economy and Society*, *8*(3), 491-504. https://doi.org/10.1093/cjres/rsv018

Golini, R., De Marchi, V., Boffelli, A., & Kalchschmidt, M. (2018). Which governance structures drive economic, environmental, and social upgrading? A quantitative analysis in the assembly industries. *International Journal of Production Economics*, *203*, 13-23. https://doi.org/10.1016/j.ijpe.2018.05.021

Guzmán, J., Moreno, P., & Tejada, P. (2008). The tourism SMEs in the global value chains: the case of Andalusia. *Service Business*, *2*(3), 187-202. https://doi.org/10.1007/s11628-008-0034-6

Haakonsson, S. J. (2009). 'Learning by importing'in global value chains: upgrading and South–South strategies in the Ugandan pharmaceutical industry. *Development Southern Africa*, *26*(3), 499-516. https://doi.org/10.1080/03768350903086861

Hamilton-Hart, N., & Stringer, C. (2016). Upgrading and exploitation in the fishing industry: Contributions of value chain analysis. *Marine Policy*, *63*, 166-171. https://doi.org/10.1016/j.marpol.2015.03.020

Hansen, U. E., Fold, N., & Hansen, T. (2016). Upgrading to lead firm position via international acquisition: learning from the global biomass power plant industry. *Journal of Economic Geography*, *16*(1), 131-153. https://doi.org/10.1093/jeg/lbu050

Hernández, V., & Pedersen, T. (2017). Global value chain configuration: A review and research agenda. *BRQ Business Research Quarterly*, *20*(2), 137-150. https://doi.org/10.1016/j.brq.2016.11.001

Humphrey, J., & Schmitz, H. (2002). How does insertion in global value chains affect upgrading in industrial clusters? *Regional Studies*, *36*(9), 1017-1027. https://doi.org/10.1080/0034340022000022198

Ivarsson, I., & Alvstam, C. G. (2010). Supplier upgrading in the home-furnishing value chain: an empirical study of IKEA's sourcing in China and South East Asia. *World Development*, *38*(11), 1575-1587. https://doi.org/10.1016/j.worlddev.2010.04.007

Ivarsson, I., & Alvstam, C. G. (2011). Upgrading in global value-chains: a case study of technology-learning among IKEA-suppliers in China and Southeast Asia. *Journal of Economic Geography*, *11*(4), 731-752. https://doi.org/10.1093/jeg/lbq009

Kano, L., Tsang, E. W., & Yeung, H. W. C. (2020). Global value chains: A review of the multi-disciplinary literature. *Journal of International Business Studies*, *51*(4), 577-622. https://doi.org/10.1057/s41267-020-00304-2

Kergroach, S. (2019). National innovation policies for technology upgrading through GVCs: A cross-country comparison. *Technological Forecasting and Social Change*, *145*, 258-272. https://doi.org/10.1016/j.techfore.2018.04.033

Khattak, A., & Pinto, L. (2018). A systematic literature review of the environmental upgrading in global value chains and future research agenda. *The Journal of Distribution Science*, *16*(11), 11-19. https://doi.org/10.15722/jds.16.11.201811.11

Landesmann, M. A., & Stöllinger, R. (2019). Structural change, trade and global production networks: an 'appropriate industrial policy'for peripheral and catching-up economies. *Structural Change and Economic Dynamics*, *48*, 7-23. https://doi.org/10.1016/j.strueco.2018.04.001

Lauridsen, L. S. (2018). New economic globalization, new industrial policy and late development in the 21st century: a critical analytical review. *Development Policy Review*, *36*(3), 329-346. https://doi.org/10.1111/dpr.12299

Lee, J. (2019). Three worlds of global value chains: multiple governance and upgrading paths in the Korean animation industry. *International Journal of Cultural Policy*, *25*(6), 684-700.

Lee, J., & Gereffi, G. (2015). Global value chains, rising power firms and economic and social upgrading. *Critical Perspectives on International Business*, *11*(3-4), 319-339. https://doi.org/10.1108/cpoib-03-2014-0018

Lee, K., Qu, D., & Mao, Z. (2021). Global value chains, industrial policy, and industrial upgrading: automotive sectors in Malaysia, Thailand, and China in comparison with Korea. *The European Journal of Development Research*, *33*(2), 275-303. https://doi.org/10.1057/s41287-020-00354-0

Lu, F., He, W., Cheng, Y., Chen, S., Ning, L., & Mei, X. (2015). Exploring the upgrading of Chinese automotive manufacturing industry in the global value chain: an empirical study based on panel data. *Sustainability*, *7*(5), 6189-6211. https://doi.org/10.3390/su7056189

Machacek, E., & Hess, M. (2019). Whither 'high-tech' labor? Codification and (de-)skilling in automotive components value chains. *Geoforum*, *99*, 287-295. https://doi.org/10.1016/j.geoforum.2017.11.023

Marchi, V. D., Maria, E. D., & Micelli, S. (2013). Environmental strategies, upgrading and competitive advantage in global value chains. *Business Strategy and the Environment*, *22*(1), 62-72. https://doi.org/10.1002/bse.1738

Martinez-Covarrubias, J. L., Lenihan, H., & Hart, M. (2017). Public support for business innovation in Mexico: a cross-sectional analysis. *Regional Studies*, *51*(12), 1786-1800. https://doi.org/10.1080/00343404.2016.1245414

Mohan, S. (2016). Institutional change in value chains: evidence from tea in Nepal. *World Development*, *78*, 52-65. https://doi.org/10.1016/j.worlddev.2015.10.004

Morris, M., & Staritz, C. (2017). Industrial upgrading and development in Lesotho's apparel industry: global value chains, foreign direct investment, and market diversification. *Oxford Development Studies*, *45*(3), 303-320. https://doi.org/10.1080/13600818.2016.1237624

Navarrete, S. D. S., Borini, F. M., & Avrichir, I. (2020). Environmental upgrading and the United Nations Sustainable Development Goals. *Journal of Cleaner Production*, *264*, 121563. https://doi.org/10.1016/j.jclepro.2020.121563

Pananond, P. (2015). Motives for foreign direct investment: a view from emerging market multinationals. *The Multinational Business Review*, 23(1), 77-86. https://doi.org/10.1108/MBR-02-2015-0008

Pietrobelli, C., & Rabellotti, R. (2006). Clusters and value chains in Latin America: in search of an integrated approach. *Upgrading to Compete Global Value Chains, Clusters, and SMEs in Latin America* (p. 1-40). Washington, USA: IDB Bookstore.

Pietrobelli, C., & Saliola, F. (2008). Power relationships along the value chain: multinational firms, global buyers and performance of local suppliers. *Cambridge Journal of Economics*, *32*(6), 947-962. https://doi.org/10.1093/cje/ben016

Pietrobelli, C., & Staritz, C. (2018). Upgrading, interactive learning, and innovation systems in value chain interventions. *The European Journal of Development Research*, *30*(3), 557-574. https://doi.org/10.1057/s41287-017-0112-5

Pietrzak, M., Chlebicka, A., Kraciński, P., & Malak-Rawlikowska, A. (2020). Information asymmetry as a barrier in upgrading the position of local producers in the global value chain – evidence from the apple sector in Poland. *Sustainability*, *12*(19), 7857. https://doi.org/10.3390/su12197857

Pipkin, S. (2011). Local means in value chain ends: dynamics of product and social upgrading in apparel manufacturing in Guatemala and Colombia. *World Development*, *39*(12), 2119-2131. https://doi.org/10.1016/j.worlddev.2011.04.016

Pipkin, S., & Fuentes, A. (2017). Spurred to upgrade: a review of triggers and consequences of industrial upgrading in the global value chain literature. *World Development*, *98*, 536-554. https://doi.org/10.1016/j.worlddev.2017.05.009

Ponte, S., & Ewert, J. (2009). Which way is "up" in upgrading? Trajectories of change in the value chain for South African wine. *World Development*, *37*(10), 1637-1650. https://doi.org/10.1016/j.worlddev.2009.03.008

Ponte, S., Kelling, I., Jespersen, K. S., & Kruijssen, F. (2014). The blue revolution in Asia: upgrading and governance in aquaculture value chains. *World Development*, *64*, 52-64. https://doi.org/10.1016/j.worlddev.2014.05.022

Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., ... & Duffy, S. (2006). Guidance on the conduct of narrative synthesis in systematic reviews. *A Product from the ESRC methods Programme Version*, *1*, b92.

Porter, M. E. (1990). The competitive advantage of nations. *Competitive Intelligence Review*, *1*(1), 14-14. https://doi.org/10.1002/cir.3880010112

Poulsen, R. T., Ponte, S., & Lister, J. (2016). Buyer-driven greening? Cargo-owners and environmental upgrading in maritime shipping. *Geoforum*, *68*, 57-68. https://doi.org/10.1016/j.geoforum.2015.11.018

Poulsen, R. T., Ponte, S., & Sornn-Friese, H. (2018). Environmental upgrading in global value chains: The potential and limitations of ports in the greening of maritime transport. *Geoforum*, *89*, 83-95. https://doi.org/10.1016/j.geoforum.2018.01.011

PRISMA Group. (2015). Preferred reporting items for systematic reviews and meta-analyses. Ottawa: University of Ottawa. Available at: http://www.prisma-statement.org/PRISMAStatement/.

Rehnberg, M., & Ponte, S. (2018). From smiling to smirking? 3D printing, upgrading and the restructuring of global value chains. *Global Networks*, *18*(1), 57-80. https://doi.org/10.1111/glob.12166

Riisgaard, L., Bolwig, S., Ponte, S., Du Toit, A., Halberg, N., & Matose, F. (2010). Integrating poverty and environmental concerns into value-chain analysis: a strategic framework and practical guide. *Development Policy Review*, *28*(2), 195-216. https://doi.org/10.1111/j.1467-7679.2010.00481.x

Romero, I., & Tejada, P. (2011). A multi-level approach to the study of production chains in the tourism sector. *Tourism Management*, *32*(2), 297-306. https://doi.org/10.1016/j.tourman.2010.02.006

Sinkovics, N., Hoque, S. F., & Sinkovics, R. R. (2016). Rana Plaza collapse aftermath: are CSR compliance and auditing pressures effective? *Accounting, Auditing & Accountability Journal*, *29*(4), 617-649. https://doi.org/10.1108/AAAJ-07-2015-2141

Sinkovics, N., Hoque, S. F., & Sinkovics, R. R. (2018). Supplier strategies and routines for capability development: Implications for upgrading. *Journal of International Management*, *24*(4), 348-368. https://doi.org/10.1016/j.intman.2018.04.005

Smith, F. (2015). Natural resources and global value chains: what role for the WTO? *International Journal of Law in Context*, *11*(2), 135-152. https://doi.org/10.1017/S1744552315000038

Sturgeon, T. J., & Gereffi, G. (2009). Measuring success in the global economy: international trade, industrial upgrading, and business function outsourcing in global value chains: an essay in memory of Sanjaya Lall. *Transnational Corporations*, *18*(2), 1. https://doi.org/10.18356/64e03043-en

Sturgeon, T. J., Nielsen, P. B., Linden, G., Gereffi, G., & Brown, C. (2013). Direct measurement of global value chains: collecting product-and firm-level statistics on value added and business function outsourcing and offshoring. *Trade in Value Added*, *313*.

Surmeier, A. (2020). Dynamic capability building and social upgrading in tourism – potentials and limits of sustainability standards. *Journal of Sustainable Tourism*, *28*(10), 1498-1518. https://doi.org/10.1080/09669582.2020.1744615

Szalavetz, A. (2019). Digitalisation, automation and upgrading in global value chains–factory economy actors versus lead companies. *Post-Communist Economies*, *31*(5), 646-670. https://doi.org/10.1080/14631377.2019.1578584

Tanrattanaphong, B., Hu, B., & Gan, C. (2020). The impacts of value chain upgrading on the export of processed food. *Food Policy*, *93*, 101906. https://doi.org/10.1016/j.foodpol.2020.101906

Tejada, P., Santos, F. J., & Guzmán, J. (2011). Applicability of global value chains analysis to tourism: issues of governance and upgrading. *The Service Industries Journal*, *31*(10), 1627-1643. https://doi.org/10.1080/02642069.2010.485642

Tessmann, J. (2018). Governance and upgrading in South-South value chains: evidence from the cashew industries in India and Ivory Coast. *Global Networks*, *18*(2), 264-284. https://doi.org/10.1111/glob.12165

Tian, K., Dietzenbacher, E., & Jong-A-Pin, R. (2019). Measuring industrial upgrading: applying factor analysis in a global value chain framework. *Economic Systems Research*, *31*(4), 642-664. https://doi.org/10.1080/09535314.2019.1610728

Tinta, A. A. (2017). The determinants of participation in global value chains: the case of ECOWAS. *Cogent Economics & Finance*, *5*(1), 1389252. https://doi.org/10.1080/23322039.2017.1389252

Tong, Y. S. (2017). Vertical specialisation or linkage development for agro-commodity value chain upgrading? The case of Malaysian palm oil. *Land Use Policy*, *68*, 585-596. https://doi.org/10.1016/j.landusepol.2017.08.020

Torraco, R. J. (2005). Writing integrative literature reviews: guidelines and examples. *Human Resource Development Review*, *4*(3), 356-367. https://doi.org/10.1177/1534484305278283

Torraco, R. J. (2016). Writing integrative literature reviews: using the past and present to explore the future. *Human Resource Development Review*, *15*(4), 404-428. https://doi.org/10.1177/1534484316671606

Trienekens, J. H. (2011). Agricultural value chains in developing countries; a framework for analysis. *International Food and Agribusiness Management Review*, *14*(2), 51-83.

Viglioni, M. T. D., de Brito, M. J., & Calegario, C. L. L. (2020). Innovation and R&D in Latin America and the Caribbean countries: a systematic literature review. *Scientometrics*, 1-37. https://doi.org/10.1007/s11192-020-03714-z

Whitfield, L., Staritz, C., Melese, A. T., & Azizi, S. (2020). Technological Capabilities, Upgrading, and Value Capture in Global Value Chains: Local Apparel and Floriculture Firms in Sub-Saharan Africa. *Economic Geography*, *96*(3), 195-218. https://doi.org/10.1080/00130095.2020.1748497

Wong, C. Y., & Eng, Y. K. (2017). International spillovers of China's structural reforms. *The Journal of International Trade & Economic Development*, *26*(8), 955-978. https://doi.org/10.1080/09638199.2017.1325071

Yang, Q. (2019). Prediction of global value chain based on cognitive neural network-take Chinese automobile industry as an example. *Translational Neuroscience*, *10*(1), 81-86. https://doi.org/10.1515/tnsci-2019-0014

Yoruk, D. E. (2019). Dynamics of firm-level upgrading and the role of learning in networks in emerging markets. *Technological Forecasting and Social Change*, *145*, 341-369. https://doi.org/10.1016/j.techfore.2018.06.042

Zhu, S., & Pickles, J. (2014). Bring in, go up, go west, go out: upgrading, regionalisation and delocalisation in China's apparel production networks. *Journal of Contemporary Asia*, *44*(1), 36-63. https://doi.org/10.1080/00472336.2013.801166

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