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Stare (Metka), « Le rôle multidimensionnel des services dans les chaînes de valeur mondiales. Implications pour la théorie et la pratique »

Résumé – Cet article est consacré aux rôles des services dans les CVM et en particulier dans la création de valeur des CVM de service pur. Sur la base de cas, il montre que c'est dans les phases de développement, de conception, de marketing et de gestion des relations client que le maximum de valeur ajoutée est créé. L'applicabilité du modèle de la "smiley curve" aux CVM de service pur est remise en cause. L'article souligne les implications en termes de stratégie d'entreprises et de politique publique.

Mots-clés – Chaîne de valeur mondiale, service, politique publique, stratégie d'entreprise, études de cas

Stare (Metka), « Multidimensional role of services in global value chains. Implications for theory and practice »

Abstract – This paper addresses the multiple roles services play in GVCs and in particular in value creation process of pure service GVCs. Based on case studies of service firms, it shows that the highest value added in pure service GVCs is created in the phase of development, design, marketing and customer relationship management. The findings question the applicability of the smiley curve model for the analysis of pure service GVCs. The paper highlights implications for firms strategies and policy design.

Keywords – Global value chains, service, public policy, business strategy, case studies

MULTIDIMENSIONAL ROLE OF SERVICES IN GLOBAL VALUE CHAINS

Implications for theory and practice

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INTRODUCTION

Last two decades have witnessed the expansion of global value chains (GVCs) owing to the synergy of interlinked trends, such as advances in information-communication technology (ICT) and its influence on the efficient coordination of production phases at distant locations; strengthening of linkages between goods and services production that result in integrated solutions for customers (Gallouj et al., 2015); liberalisation of capital flows and services trade, declining transportation costs and organisational innovations in business processes (Stehrer et al., 2012). GVCs are '*organisational systems*' that operate across multiple nations, their global integration is complex and their technology base, or 'engine', is ICT (Brennan, Rakhmatullin, 2015). Fragmentation of production process and specialization in individual phases/functions performed at different global locations results in shifting the focus of competition from industries to phases/functions of production (Timmer et al., 2013; Cataneo et al., 2013). Specialisation in service functions and tasks is on the rise with the prominent role of knowledge-based services that can be stored in digital form (Shepherd, 2013).

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Rapid technological progress and adoption of new business models reinforce the complementarity of manufacturing and service activities in general and in GVCs. Yet, the analyses of GVCs remain focused on manufacturing, individual manufacturing industries or products produced within manufacturing companies GVCs (e.g. Nokia, Acer, Apple). Scholars acknowledge the facilitating role of services for the functioning and efficiency of GVCs (Backer, Mirodout, 2013; Low, 2013) arguing that without transportation, telecommunications, research, logistics, marketing, design and other services GVCs could not function (Stephenson, 2012). Nevertheless, most of the analyses concede to services primarily the enabling role in GVCs while the research on other dimensions of services integration in the global economy is largely missing (National Board of Trade, 2013; Stephenson, Drake-Brockman, 2014).

Against the backdrop of partial treatment of services' role in GVCs in the analyses thus far the principal objectives of the paper is to: a) broaden the scope of research on services engagement in GVCs with a view to demonstrating multiple roles that they play; b) explore pure service GVCs[2], the characteristics and specificities of value chains where the production process is composed mainly of services; and c) uncover how the existing conceptual models for the analysis of value creation in GVCs align to five cases of GVCs where services assume different roles. There is ample evidence of service companies that outsource/offshore non-core activities or establish subsidiaries across global locations to source inputs or sell services there with a view to optimize business processes and improve the performance (for example Deloitte, Generali, Google, CNN, Disney, etc.). It is no surprise though that 2/3 of foreign direct investment takes place in services (UNCTAD, 2013) confirming the structural shift to services in developed and developing economies. Moreover, due to the advances in ICT and drive towards digitalisation of activities an increasing number of small service firms establish own GVCs as well. They can easily source different types of knowledge and skills from global locations to produce new services (e.g. mobile applications).

The paper is organized as follows. After the introduction we discuss theoretical and conceptual foundations underpinning the research of GVCs.

2 Our understanding of pure service GVC relates to GVCs where services perform key functions and dominate the value creation process while material infrastructure and hardware facilitate their provision.

Bearing in mind that the analyses so far centred on manufacturing GVCs we revisit whether these conceptual approaches can be accommodated for the analysis of GVCs in which services play key role. Owing to the lack of detailed data on bilateral flows for services trade we apply case study methodology to analyse the patterns of five companies' engagement in GVCs. The criteria for the selection of companies enable to capture different types of services (intermediate and final services), the companies that establish their own service GVC and those that supply services to GVCs of other companies. The central part of the paper examines value chains of five companies with a view to analyse the sequencing of stages in the business process performed at regional or global level and their relative contribution to the final value of the product. This presents the background for the discussion of key phases in the fragmentation of the business process and for the applicability of "smiley curve" conceptual model for the analysis of pure service GVCs. The paper concludes with main findings of case study analysis that are relevant for business strategies of companies and for policy shaping. Finally, some areas of future research related to services engagement in GVCs are proposed.

I. THEORETICAL AND CONCEPTUAL BACKGROUND FOR THE ANALYSIS OF GVCs

The complexity of the GVCs phenomenon is reflected in different perspectives that scholars take in research – from the definition of the phenomenon and its characteristics, upscaling of value chains from the perspective of company, industry or economy, identification of the determinants of companies' integration to GVCs and their effects, deconstruction of value added chain to identify relative contribution of individual sequence to the value of final product, value chain management and governance, etc. Conceptual roots of value chains discussion date back to the late 1970s highlighting that production processes of companies are not isolated from each other but interlinked through intermediates that participate in the commodity chain of final products (Hopkins, Wallerstein, 1977). Value added chain is considered as a series of activities

performed by individual company at different stages of production and distribution of products to final consumers (Porter, 1985). In his view the value chain includes also the logistics performed by external suppliers which makes it an open chain coordinated by one company.

The debate on value chains re-emerged as a research topic in the 1990s and the concept was extended to embrace value chains at different global locations. Describing the production process in the apparel industry ranging from raw materials to final products the term global commodity chain was coined (Gereffi, 1994). In a more comprehensive way global value chain (GVC) is defined as a set of activities performed by several actors that deliver a product or service starting from development up to disposal after use (Kaplinsky, 2000). In the new millennium the term global value chain is referred to the chain of diversified activities carried out by companies at different global locations[3] and coordinated by the lead company (Park et al., 2013). There exists a large body of *international business* literature on outsourcing and offshoring that could be considered as a predecessor of the discussion on GVCs. This literature deals with the offshoring of labour intensive stages of production processes to low cost locations where internationalisation concerns primarily companies' input side rather than sales and output side internationalisation (Schmeisser, 2013).

The debate on GVCs points out both backward and forward dimensions of the phenomenon that are inextricably linked and complementary. Companies establish own GVC integrating value chain at different locations but can equally play a role of suppliers to other companies' GVCs. Further complexity of GVCs relates to the integration of trade, foreign direct investment, infrastructural services and coordination of dispersed production and growing share of knowledge intensive activities that locate globally (e.g. intellectual property protection, managerial and marketing knowledge, etc.) (Baldwin, 2012). Since value added of individual activities and their contribution to the value of final product differs the key decision of the companies engaged in GVCs relates to the selection of those activities that they will perform by themselves along with the coordination of those procured from other suppliers (Gereffi et al., 2005). In so doing companies combine comparative advantages of

3 According to the empirical analysis the term »global« value chains is misleading since international supply chains are mostly regional within what have been called Factory Asia, Factory Europe and Factory North America (Baldwin; Lopez-Gonzales, 2015).

individual locations with own resources and competences to maximize their competitive advantages (McCann, Mudambi, 2005).

Based on the analysis of business processes within GVC of his company that produces computers the founder of Acer shaped the conceptual model of stylised "smiley curve" that depicts the phases of value creation (Shih, 2005) and is frequently used for the analysis of GVC in manufacturing. The position of phases along the "smiley" curve refers to the relative value added in individual phases. In line with this concept, pre-manufacturing phases (e.g. development, innovation, design) create high value added, the manufacturing itself brings low(er) value added while logistics, brand management, marketing and after-sales services contribute high value added. The model shows that various service functions/activities located at the beginning and at the end of the production process are fundamental for the value creation and for the competitiveness of the final product[4] (Figure 1). In a supplement to the model of smiley curve Mudambi (2008) proposed to integrate standardised services into the central phase of production (e.g. in manufacturing). The reasoning behind is that those services add lower value compared to knowledge-based services that are found at the beginning and at the end of the business process.

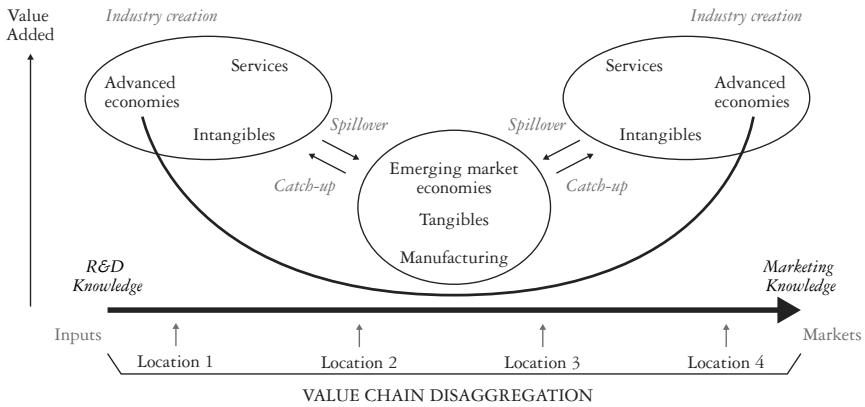

Fig. 1 – Global value chain in manufacturing companies. Source: Mudambi, 2008.

4 The analysis of 45 GVCs confirms that the share of value added created in »tangible« phases of production is rather small compared to the share of »intangible« phases referring to various services and intellectual capital (Ali-Yrkkö, Rouvinen, 2013).

In addition, he attributed the location and country groups to phases where they are carried out most frequently. Figure 1 indicates that developed economies principally perform intangible tasks/service activities located in the beginning and at the end of value chain. Conversely, emerging market economies focus on manufacturing that results in tangible products. It is concluded that companies located in the middle of curve are motivated for catching-up via developing sources and competences that lead to higher value added creation and enable the shift to intangibles and knowledge intensive services (Mudambi, 2008).

As pointed out by Shih (2005) the smiley curve model does not necessarily apply to all industries and the shape of the curve and the distribution of value added between locations changes over time. In particular, it is questionable whether the smiley curve model illustrating linear chain is applicable to service companies' GVCs. At least, it needs to be taken into account that the value creation process in services differs from the one in manufacturing on account of intrinsic characteristics of services. Accordingly, GVCs in services may not function in a similar way as in manufacturing where research, production and consumption in general follow one after another. A few studies however establish that stylised smiley curve and the position of business phases are not suitable for the analysis of service GVCs where individual phases are tightly interlinked, such as for example development, innovation and design, and cannot be easily separated form services production (National Board of Trade, 2013). Baldwin and Venables question the applicability of smiley curve model for pure service GVCs by arguing that the production process in services is composed of a network of activities that add value and not a linear value chain (Baldwin, Venables, 2010). Some scholars refer to "service networks" instead of service value chains to depict the process of fragmentation in services production (Stephenson, Drake-Brockman, 2014; Lanz, Maurer, 2015).

Our paper aims to shed light on the multiple role played by services in GVCs, to extend knowledge on the characteristics of pure service GVCs and revisit the applicability of smiley curve model for their analysis.

II. METHODOLOGICAL APPROACH

As is often the case in research on services data imperfections hamper a detailed analysis of the specific issue. Referring to services trade the data are available only for main categories of services[5]. Furthermore, the role of services in internationalization and in GVCs is significantly underestimated when traditional measurement concepts are applied[6]. New methodology for measuring international trade combines several data bases that enable to capture the value added of individual stages of the business process at different locations (concept of trade in value added) thereby providing new insights on the weight of individual sectors in world trade. In particular, these data show that the share of services in world exports is much higher in value added terms than in gross terms (Figure 2) and reflects the dominant role of both final and intermediate services in advanced economies and in GVCs.

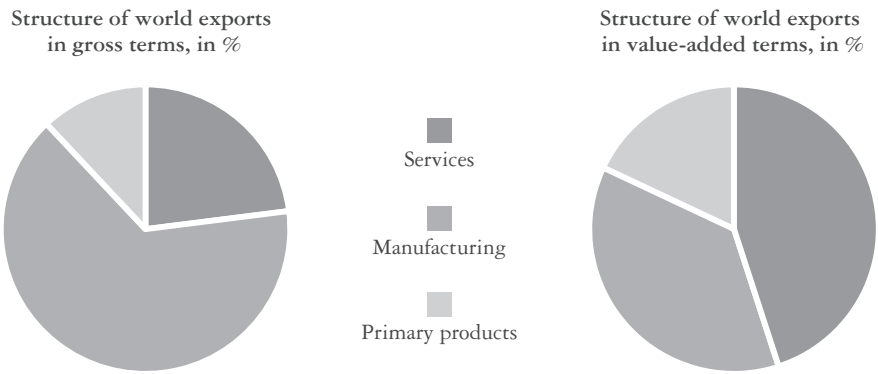

FIG. 2 – Sectoral distribution of world exports on gross terms and value-added terms, 2008. Source: Low, 2013.

5 While trade statistics for goods are disaggregated to 8,000 products OECD reports member states trade in services for 11 broad categories of services (Sturgeon, Gereffi, 2009).

6 Traditional approach to measuring international trade is based on balance-of payment data that records trade flows in gross terms, allowing for double-counting of intermediate products and services.

While new data sets importantly benefit firm level analysis of GVCs in manufacturing this is not the case when analysing GVCs of service firms due to insufficient disaggregation of services trade data and poor availability of data on bilateral flows of services. To overcome the imperfections of data for services trade at the company level that would allow to empirically examine the characteristics of value chain fragmentation our methodological approach applies qualitative analysis based on case studies of firms that engage in GVCs with services.

The relevance of case study analysis is of particular importance when data on a phenomenon is scarce and when the objective of the analysis is to highlight in detail multiple dimensions of a phenomenon and/or to challenge the existing concepts. This approach renders possible to compensate for the gap in data availability, obtain insight into the complexity of the topic and still reveal some common patterns (Hyde et al., 2012; Yin, 2013). Some authors consider that case quality should be evaluated against positivist quality criteria that allow to check the operationalisation of theoretical concepts along construct validity, internal and external validity and reliability. Their survey of 105 qualitative cases published in the period 1971–2006 points to a gradual improvement in how research quality is addressed by authors. At the same time, they acknowledge the existence of various approaches of authors to research quality (Beverland, Lindgreen, 2010).

We address the issue of research quality of case study analysis by triangulation of sources (interviews, publicly available data and literature on conceptual models for the analysis of global value chains) and by studying five company cases. In this way we move closer to the premise that case study methodology is not only exploratory in nature but it can also be explanatory and confirmatory (Yin, 1994).

Case study approach is often used to identify the contribution of individual stages of production to the value of final output in manufacturing GVCs. Having in mind the enabling role of services in GVCs it is of particular importance to refer to the case of the Finnish company that produces bicycles and the composition of its GVC. Irrespective of the location of the assembly of bicycle (Finland, Lithuania or Indonesia) services contribute the bulk of total value added. Logistics, branding and distribution alone account between 50% and 60% of value added (Kalm et al., 2013) emphasizing the key role of services as enablers of

GVCs. There are very few analyses that decompose global value chain processes in services, partly also on account of their intangibility and invisibility. These cases mostly relate to services that use ICTs and electronic communications and integrate several phases of splintered value chains. Film industry is an example of service GVCs where movies are increasingly produced as international collaboration. In the production process of the film *"The life of Pi"* a large number of companies and individuals from different countries cooperated and contributed specialised professional services and tasks[7]. The case of video game Minecraft illustrates in detail how five phases of value process (innovations, R&D; production; distribution; marketing and branding; consumption) located all over the world are combined for the release of final product (National Board of Trade, 2013).

To expand further the knowledge on the role of services in GVCs our analysis focuses on case studies of five companies that participate in GVCs with services[8]. The following criteria were used to select the companies: size (small, medium, large); main activity (manufacturing, services); type of service (final, intermediate); heterogeneity of services provided; degree of company integration into GVCs (own GVC, other actors' GVC); and geographical outreach of GVCs (regional, global). Based on these criteria we selected companies with different features that enable to illustrate the variety of roles and characteristics that services assume in GVCs. Interviews with firms' management were carried out on the basis of semi-structured questionnaire[9] allowing to reveal both general and specific characteristics of each case. The questionnaires were sent to the managers of companies in advance to enable them to

7 The Life of Pi is an American movie released in 2012. The movie was shot in different locations in India, Canada, Taiwan and New Zealand. Almost 100 firms and public entities were directly or indirectly involved in the production. Special visual effects were created by 18 firms from USA, Taiwan, India, Canada and Malaysia. Further 84 firms and public entities provided production services, security, catering, automatic dialog recording, titles, score recording, photographs, transportation and logistics, insurance, travel and accommodation (Lanz and Maurer, 2015).

8 The analysis is part of the broader research project "The determinants and effects of the positioning of Slovenian companies in global value chains" that focuses on the analysis of empirical data for manufacturing companies. Due to data deficiency, the analysis of service GVCs is much more limited. The project is financed by the Slovenian Research Agency.

9 An open question was added related to managers' view on how could various policies support companies' readiness to enter GVCs or efficiently manage their own GVC.

collect data and consult colleagues for specific issues. With the exception of one skype interview, face-to-face meetings were arranged that lasted between 90 and 120 minutes. Draft case studies were prepared afterwards and sent to interviewees for review and comments. Based on their feedback the cases were finalised and sent to respective managers for final approval. The whole process was carried in the period from October 2015 to January 2016.

The following companies were included into case study analysis: 1) Iskratel group–manufacturing company producing telecommunication equipment whose sales crucially depend on related professional services; 2) Company A[10]–producer of mobile applications; 3) Company B–direct to consumer electronic retail; 4) NiceLabel group–producer of software for labelling solutions; 5) Gigodesign company–supplier of design, consulting and visual communications (Table 1).

III. RESULTS OF THE ANALYSIS OF SERVICES ROLE IN GVCs AND DISCUSSION

The information gathered via interviews, companies' websites and publicly available information serve as the basis to: 1) present the profile of selected companies and main features related to their integration into GVCs; 2) discuss the fragmentation of their GVCs with particular reference to the role of individual phases of value creation process; and to revisit the relevance of existing conceptual approaches to the analysis of service GVCs.

MAIN FEATURES OF COMPANIES' ENGAGEMENT IN GVCs

The overview of five companies shows differences and similarities in their profiles as well as in the characteristics related to participation in GVCs (Table 1). Three companies have headquarters in Slovenia while Company A and Company B have subsidiaries in Slovenia. The latter

10 Two companies prefer not to reveal the identity. We refer to them as company A and company B.

perform strategic tasks that contribute high value added and are essential for the efficiency of the whole GVC. The size of companies ranges from micro to large company with tertiary educated employees accounting for the majority of manpower that could point to high productivity of companies. All but one company are focused on external markets, their exports exceeding 80% of the total sales. The GVC of two companies rely on markets in East Europe; Company A is born global, it sources knowledge worldwide and has customers in approximately 230 countries; NiceLabel group sells to approximately 70 markets, USA and Germany accounting for the largest share. The smallest company Gigodesign company enters GVCs indirectly as supplier of design solutions, brand development and communication services to a number of Slovenian companies that are successful exporters.

Other companies from the sample established own GVCs composed of parent company, subsidiaries and contract partners at different locations. In general, the number of companies' subsidiaries abroad depends on the characteristics of services they supply (whether these can be provided via electronic means or via local presence of suppliers) and degree of standardisation of services. On the one hand, Company A can reach consumers in almost every country of the world with only 5 subsidiaries thanks to internet distribution (app stores) and highly standardized service. NiceLabel group on the other hand delivers software for labelling to 70 markets via resellers that also provide technical support to customers. Company B and Iskratel group sell directly to consumers and need to have local presence in most markets (e.g. 20 countries) to manage the delivery, the accompanying technical services and after sales services. The selection of the location of subsidiaries of case companies depends on diverse factors, however in general it seems that market size, qualified labour force and favourable business environment are the key determinants along with specific requirements for individual company.

The analysis of companies with own GVCs shows that lead company controls overall business processes, monitors the quality and efficiency of the value chain. Lead companies closely cooperate with their subsidiaries in performing the key phases of the value chain. These relate to development and design of products and services, conceptualisation and implementation of marketing strategy, management of brands and customer relationship management. The companies also cooperate with

contract partners who supply highly specialised services that require particular skills and knowledge (e.g. animation for mobile application) but also to procure a range of non-core services (e.g. logistics, advertising, accountancy, operational services, etc.).

The companies from our sample that have their own GVC also participate in other companies GVCs' as suppliers of products and services. *The Iskratel group* whose GVCs is regional and oriented to East Europe recently entered to the GVCs of multinational companies in Germany, Austria and Italy supplying niche products. The aim is to lessen the dependence on markets in single region, to increase bulk sales but also to obtain knowledge on business models and marketing approaches applied in GVCs of multinational companies from developed economies. *Company A* in addition to its main activity sells licences to over 100 companies that use visual appearance of animated characters of Company A in manufacturing of different goods (e.g. accessories, toys, school supplies). The integration into GVCs of licensee companies not only increases the Company A revenue but also promotes its global brand.

Subsidiaries of *Company B* located throughout East Europe provide services of their call centres also to other firms selling in the respective markets. Entering the GVCs of those firms as the suppliers of intermediate services the Company B benefits from better utilization of its call centres' capacity that requires extensive investment in equipment and training of employees. Apart from managing own GVC the *NiceLabel group* is supplying intermediate services in GVCs of different partners, such as the companies that integrate labelling software into printers they produce; companies that use NiceLabel software for labelling of various products (e.g. drugs); buyers of system solutions.

These examples reveal that the interlinkages between company's own GVCs and GVCs of other companies bring complementarity and synergy in market outreach, improved efficiency and increased brand value of the company. The discussion of the main features of selected companies' engagement in GVCs highlights multiple roles of services–from auxiliary functions, enablers and facilitators of GVCs to core functions in pure service GVCs. It brings new insights for understanding the phenomenon of GVCs, in particular bearing in mind the weight of services in value added and employment of advanced and emerging market economies.

COMPANY	GROUP ISKRATEL (M)	COMPANY A (S)	COMPANY B (S)	NICELABEL GROUP (S)	GIGODESIGN (S)
Employment / in Slovenia	790/560	190/160	7.000/600	100/65	10
% of tertiary educated	67%	62%	50% (in Slovenia)	80%	95%
Type of service activity	Installation, maintenance and upgrade of software	Mobile applications	Direct to consumer electronic retail	Software for labelling solutions	Design, consulting and visual communications
Services by user type	Intermediate	Final	Final	Intermediate	Intermediate
% of export in total sales	80%	100%	Dominant share	98%	5%
Own GVC, others' GVC; both types	Both	Both	Both	Both	Others' GVCs
Number of markets/ major markets	20–30/ Russia, Kazakhstan, Turkmenistan	230/ China, USA	22/ Russia, Ukraine, Romania	70/ USA, Germany, United Kingdom	5–10 /Netherlands, Italy, Saudi Arabia
Number of subsidiaries Location	6	5	20	4	Contract partners in the Netherlands, Italy, Saudi Arabia, Hong Kong
	East Europe	Slovenia, United Kingdom, South Korea, China	Slovenia, East Europe, USA	Germany, China, Singapore, USA	
Phases with highest value added[i]	Adjustment of system to local customers; training of customers; after sales services and maintenance	Development, design and branding; animation and testing; cross marketing	Development, design and marketing concept; multi-channel distribution; customers relationship management	Software development; marketing and branding; customers relationship management	Research and development of project idea

M: Manufacturing company / S: Service company

i. We asked the managers to identify three phases in their GVC that contribute the most to value added. Often, they pointed to interlinked functions as one phase.

TAB. 1 – Profile and characteristics of companies related to engagement in GVCs.

ANALYSIS OF GVCs FRAGMENTATION

Value added by stages in service GVCs

As pointed in the introduction of the paper we aim to explore not only diverse role that services play in GVCs but also GVCs of service companies and characteristics of their value chain[11]. Similar to GVCs in manufacturing GVCs of service companies are also composed of a range of stages/functions that contribute different proportion to final value added and are performed at various locations. Interviews in companies addressed the issue of identifying the phases that bring the largest value to companies performance[12] (see Table 1 for an overview).

The main activity of the Company A relates to mobile applications, a highly competitive industry that requires agile approach of actors, real-time monitoring of customers' behaviour and their purchasing patterns. According to the interviewed person the highest value added is created in three complementary phases that are very difficult to draw a time boundary between them. Within each of the phases specialised services are required and supplied in collaboration between the lead company and subsidiaries at global locations. The first phase consists of *idea generation, product development* (mobile application) and *branding* that are closely intertwined. Second phase relates to *animation and testing* of the product to accommodate it to the perception of customer preferences (carried out by subsidiaries and individual professionals with specialised skills). The outlet for products are application stores where a number of new applications are published on a daily basis. Due to a tough competition and in order to secure market success with the new application the Company A applies cross *marketing* (third phase). Whenever the users start the existing application an advertisement for new application appears on their mobile for immediate download. Given the fact that Company A has 15 applications it is not surprising that cross-marketing brings high value added[13]. As pointed out by one of the founders of the company A "*we do not race with our competitors, but we compete for the free time of users".*

11 The analysis refers to three service companies with own GVCs that narrows our sample. Iskratel group is a manufacturing company and Gigodesign does not have its own GVCs.

12 The questionnaire asked to identify three most important stages, however the respondents often quoted two or three interlinked functions as one stage.

13 In October 2016 five billion users downloaded their applications for mobile.

NiceLabel group on average invests 20% of revenue in *development of superior quality software* that is in the opinion of general manager a precondition for high value added and is performed by the lead company. Still, there are other activities that significantly contribute to market success of the company. Notwithstanding the fact that company's sales at foreign markets accounted for over 90% and was gradually increasing the breakthrough was reached only after the introduction of active *marketing and branding* of their services. As a matter of fact, a marketing professional from UK became a member of NiceLabel group management and induced strategic rethinking of the marketing role in value creation. Further, a subsidiary was established in the USA (largest market for the company) that took over the marketing of their services in North and South America. Both changes in marketing strengthened market position of the company and raised the price of their services. Finally, new approach to *customers' relationship management* was introduced to improve the communication and differentiate between three main types of customers. For example, the company started to devote special attention to small contract partners (resellers) consisting of about 1,000 firms. Training is provided on how to raise those firms' sales by using NiceLabel software. The interviewed manager of the NiceLabel group pointed out that in their communication with resellers they use the motto "*we assist you to increase your own sales*" that concurrently leads to positive impact on NiceLabel group sales.

The Company B is direct-to-consumer electronic retailer of consumer goods that are procured from a large number of global suppliers. However, these consumer goods are sold as brands of Company B. The manager of subsidiary in Slovenia considers that the most important phases in the business process of GVC are the following: *development and design* of products along with *marketing concept* implemented by company's agency for innovation in direct marketing; *multi-channel distribution* of products that enables to accommodate to different buying habits of consumers[14]; customer relationship management via own call centres. The decision to keep the call centres in subsidiaries throughout Eastern Europe was rather risky in the time when the competitors largely outsourced/offshored them. The move was nevertheless helpful as it contributed to the increase of sales and customers' satisfaction with long term benefits.

14 TV sales with direct response, internet sales, printed catalogues, telemarketing via call centres, branded retail stores; network of partnerships with biggest retail chains.

In summary, the findings from the interviews in service companies regarding three most important phases of value creation in their GVCs show that development and marketing are identified unanimously by all three companies; two companies pointed out design and customer relationship management; one company singled out multi-channel distribution and another animation and testing phase (Table 1). It needs to be recalled that any of these phases cannot be singled out and ranked by its share of value added in the final product. The interviews in all companies revealed that these phases are closely interlinked making it difficult to delineate value added of the single phase. This suggests that a bundle of services performed in these phases complement each other in value creation.

In spite of the limited number of sample companies, differences in types of services (final vs. intermediate) and scope of GVCs (global vs. regional) the cases illustrate that there is a large degree of similarity between the companies in respect of key phases that create the largest value added. The findings are relevant for conceptual approach to analysing GVCs in services as well as for companies' strategies and for policy makers.

The relevance of smiley curve concept for the analysis of GVCs

As observed in section 2 the most frequent conceptual approach to analysing the fragmentation of value along GVCs in manufacturing is based on "smiley curve" model (Figure 1). In essence it shows that the phases at the beginning and at the end of the curve contribute the highest value added while the central phase of physical production is relatively much less important in value creation. How does this model apply to service companies' GVCs? The analysis in our paper referring to companies that participate in GVCs also with services or only with services demonstrates differences between them with respect to the relevance of the smiley curve model. These companies' GVCs[15] can be aligned in two groups–the one for which "smiley curve" model is relevant and the other where it fails to provide the conceptual underpinning for the analysis of GVCs. We refer to them below:

15 Company Gidodesign does not have its own GVC but is integrated into GVCs of manufacturing and service companies as a supplier of design services.

a) *GVCs of manufacturing company* Iskratel Group fits well into the conceptual model of "smiley curve". The value added and competitiveness of its GVC critically depends on enabling services (e.g. installation and testing of equipment; training of customers how to use it and related after sales services) that it supplies to customers to secure efficient functioning of telecommunication equipment. These services come after physical production and contribute high value added for the company similarly as research and development that are found at the beginning of the business process;
b) *GVC of Company B* (e-retailer of consumer goods) consists of a variety of service activities, however it also includes manufacturing of products carried out by contracting partners. Key stages such as development, design, branding, marketing and customer relationship management are performed by lead company and its subsidiaries. These services create much higher value added compared to outsourced manufacturing. Pre-manufacturing service phases are tightly interlinked while manufacturing of consumer goods is outsourced from different locations. It seems that the smiley curve model could be used for the analysis of GVC of the Company B, but only as a very loose interpretation. Graphical illustration would show that both sides of "smiley curve" are very steep while the manufacturing phase would occupy a very narrow section on the curve.
c) GVCs of two service companies (*Company A and NiceLabel Group*) consist of service phases only (*pure service GVCs*). In the first case development phase is closely related to design, testing and branding that result in mobile application. The boundary between them is not clear making it difficult to determine when does development and testing end and when the production starts. In addition, customer relationship management provides important feedback to suppliers regarding the potential for innovation in services, processes or business models. Similarly, in the case of NiceLabel Group GVC the development of software for labelling overlaps with testing and development of support services that together produce solution for customers and high value added for the supplier. In

> GVCs of both companies' different services are not performed in separate phases but bundled together in a complementary way to co-produce value. It cannot be attributed to individual phase making it difficult to assess their contribution to the value added of final product.

The analysis of video game Minecraft and the fragmentation of its value chain to phases suggests that the trouble of finding the equivalent to physical production, assembly and logistics in services is sufficient reason to argue for the adjustment of the smiley curve model (National Board of Trade, 2013). Rather than its adjustment we advocate the design of a new conceptual model for the analysis of pure service GVCs. Heterogeneity of services (e.g. level of digitalisation, knowledge intensity, degree of regulation, customers' involvement, etc.) brings additional complexity to the conceptualisation of GVCs in services that is much larger than we are able to illustrate in the paper.

CONCLUSION

Global value chains present the fundamental feature of international business development in the last two decades. They shift the focus of competition from industries to phases/tasks in which countries/companies aim to outperform other actors (Timmer et al., 2013). Substantial body of literature deals with the GVCs phenomenon however it remains centred on the characteristics of global fragmentation of processes in manufacturing industries and companies. The paper brings more informed assessment of services role in GVCs and broadens the knowledge on their engagement in GVCs that is relevant from the perspective of theoretical advancement, practice of international business and policy design.

In the first place the analysis contributes to narrowing the gap in research by shedding light on multiple roles that services play in GVCs. Case study analyses of five companies illustrate that apart from supporting smooth functioning of GVCs and improving their efficiency (for example logistic and financial services, consultancy, information processing),

services also act as "masters" of GVCs–from developing a new service to designing, managing and coordinating the business processes at different locations and optimizing customer relationship management. The mastering dimension of services engagement in GVCs has received little attention so far and relates to pure service GVCs where services or service functions perform all or key phases of the business process.

Secondly, the overview of the phases in case companies' GVCs indicates that development, design, marketing and customer relationship management create the highest value added. The interviewed managers highlighted that these phases are tightly interlinked and complementary. They are mainly performed as a collaborative effort of the lead company and its subsidiaries while contract partners enter mostly as suppliers of highly specialised services that require particular skills and competences. Here, one can observe the difference in the outsourcing pattern compared to manufacturing GVCs. In service GVCs it is not only about outsourcing non-core service functions but also those with high value added that are increasingly specialised or are niche services. This is of particular relevance for GVCs of small service companies that lack the capacity to carry out all high value added tasks.

The paper draws the attention to the need for lead companies to monitor and thoroughly coordinate all processes in value chain to ensure that customers get high quality services. Experiences of analysed companies are relevant for service companies that have the ambition and capability to upgrade their international business strategy by creating own GVC. For them the imperative is continuous innovation in products, processes and business models and the improvement in quality of services for customers. Companies that have limited capacity for the expansion of international business could benefit from more intensive participation in GVCs of successful exporters or in the GVCs of multinational companies with subsidiaries at the home market. In this way they could actively engage in a learning process, acquire new knowledge and skills, introduce new business models and improve overall innovation capability.

The analysis of services participation in GVCs bears important implications also for the shaping of policies that foster the competitiveness of services and enable service suppliers to progress along the value chain. The availability of highly educated and skilled workforce, research and

ICT infrastructure are essential for improving the capability for technological and non-technological innovations that drive the competitiveness. Conversely, unstable and unfavourable business environment hampers companies' ability to compete and can even cause the relocation of their headquarters and other business activities abroad. States need to be mindful that the relocation of high value adding activities, consisting mainly of services, could undermine the competitiveness of the whole economy. Policy design in different areas (from education and training to digitalisation) need to better address challenges and opportunities of GVCs so as to facilitate the strengthening of the companies' innovation capability.

In spite of the limited number of cases the mapping of services integration into GVCs provides the basis to consider their features against the conceptual model of stylized smiley curve and identify dissimilarities and deviations that is an added value of the paper. We have detected that in the case of pure service GVCs (e.g. all/key phases of the business process are composed of services) the smiley curve model is not suitable to explain the fragmentation of business processes where no separate phase of services "production" exists. Instead, several business functions are interlinked in co-creating services. The observed pattern of value creation leads us to conclude that a different model is needed for the analysis of service GVCs rather than a revision or adjustment of the stylized smiley curve model. It could be a *network* of interlinked functions that co-create value with nodes of key value adding functions or also a different shape of a dynamic model. Owing to heterogeneity of services it might as well be that no single model could work for the analysis of service GVCs or should at least be very loose and flexible. Even though the findings from two pure service GVCs that supply ICT services are relevant and important bearing in mind the increasing digitalisation of services and related potential for their supply from distant locations.

Finally, even if the paper contributes to narrowing the gap related to services role in GVCs there is large scope for advancing the comprehension of pure service GVCs. Future research needs to provide insight into the patterns of value creation in GVCs of other services, such as for example logistics or health tourism where a mix of different services and service functions are required to satisfy customers' expectations. The complexity of GVCs underpinned by the emergence of new business

models in services provision and proliferation of digitized services present further research challenge. These studies would help to improve the conceptualization of the model for analysing pure service GVCs and bring additional information to companies and policy makers concerning the functioning of GVCs.

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