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## Vietnam's Participation in the Global Value Chains: Opportunities and Challenges

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### **Abstract:**

*Participating in the Global value chains (GVCs) has played an important role to Vietnam economy, help expanding export, boosting growth, reducing unemployment and poverty rate. However, the world production and trade are changing rapidly, especially with the Industrial revolution 4.0. Under this revolution, Global value chains will have significant changes that influence the world production specialization in different ways. For Vietnam, the world technology development will bring chance to improve production and trading capacity, especially through FDI channel. However, there also be challenges to Vietnam's relative advantage, competitiveness and then Vietnam's participation in GVCs. This paper analyses major changes of GVCs under the industrial revolution 4.0 impact. From the changes of the future production and specialized in the global supply chains, the paper analyses opportunities and challenges in GVC's participation of Vietnam. The challenges will have derived from the gap in production capacity and labour skill in Vietnam and developing countries. Therefore, to take the opportunities and overcome challenges, Vietnam need a reform in production and education system to reduce the gap and catch up the world's production.*

**Keywords:** GVCs, Vietnam, Globalization, Export, Industrial revolution 4.0

### **1. Introduction**

After more than 30 years of economic reform, more than 20 years of international integration, Vietnam's economy has comprehensively transformed with remarkable results: the average growth rate is about 7% per year, poverty has reduced from 49% (1992) to 3,1% (2016), from one of the poorest country, Vietnam now is listed in the top 30 largest exporters. Along with the integration process, Vietnam has constantly made efforts to improve production capacity and join the Global supply chains (GVC). However, the world is standing on the brink of a technological revolution that will fundamentally alter the way people live, work and produce. People haven't known how it will unpack, but some significant features of the 4<sup>th</sup> Industrial Revolution will drive the path of future Global Value Chains, how they will be allocated, how developing countries join the Global supply network and continue to reap the benefit from Globalization.

### **2. The Global Value Chains in condition of the Industrial Revolution 4.0**

#### **2.1. How This Current GVC Has Been Possible And Profitable?**

A Global Value Chain (GVC) – or a Global Supply Chain is a term of specialization in production at the international level. It is a system of interconnected processes that are implemented in different countries in the production of a finished good or service. Economies participates Global Supply Chains based on their advantages in production.

For decades, Globalization has transformed the production and trade in every country, exporting a finished good or services has no much meaning as it had before, joining parts (or stages) of the world production that a country has advantage is much more efficient and profitable. Thus, GVCs have been being formed and developing rapidly.

The development of globalization and GVCs is always influenced by the development of technology, not only technology in production, but also technology in transportation and transmission. These technologies create environment to transfer know-how, to produce and transport products from country to country, region to region. Therefore, technology decides features of Global production and trade, forms GVCs spreading worldwide. Richard Baldwin [1] shown in his research that our current stage of globalization derived at mid-1980s with the revolution of ICT. Coordinating among countries required not only product transportation but also a complex exchange among stages of productions, training, investment and information. Some of these relate to communication. Therefore, from mid-1980s, the developing of telecommunication, Internet, computers and organization software have been conditioning factors to help our current GCVs spread worldwide and coordinated tightly. And the production was dispersed into stages that were allocated in different countries based on the wage differences. Thus, current GVCs are considered: "ICT made it possible, wage differences made it profitable" [1]. In short, the current stage of globalization has two notable aspects: The ICT development made production possible to coordinate at distance – it decides the length and connectivity of GVCs; and the apparent wage

differences between developed and developing countries divided production stages in different areas and make GVCs profitable - it decides the geographic paths where GVCs go through.

## 2.2. How The Future of GVCs Will Change in the Industrial Revolution 4.0?

The world production has been developing in associate with industrial revolutions: the 1<sup>st</sup> industrial Revolution used steam power to mechanize production. The Second one used electric power to get mass production. The Third one used information and communication technology (ICT) to automate production. Now the world is standing on the brink of the industrial revolution 4.0 (IR4.0) that is building on the Third but marked by emerging technology breakthroughs in numbers of fields including robotics, artificial intelligence, nanotechnology... These technologies have great potential to continue to connect billions more people to the web, drastically improve the efficiency of business and organizations and help regenerate the natural environment through better asset management [9]. However, the 4<sup>th</sup> industrial revolution raised issues and concerns about labour market and the wealth gap between countries.

We are at the beginning stage of the revolution, a whole picture of how GVCs will change by impacts of the IR4.0 is unclear. have been unclear. However, there are some notable points about the impact of the 4<sup>th</sup> industrial revolution to future path of GVC:

➤ *Firstly, the cost derived from geographic distances will be eliminated.* A visible advantage that the IR4.0 bring to the world production and trade will be the reduction of transportation cost and time, the world will become more and more flat. With the innovation of technology, transportation and communication costs will continue to drop, logistics and global supply chains will become more effective... This network will have created up on a number of key technologies: integrated planning and execution systems, logistics visibility, autonomous logistics, smart procurement and warehousing, spare parts management, and advanced analytics. The result will enable companies to react to disruptions in the supply chain, and even anticipate them, by fully modeling the network, creating “what-if” scenarios, and adjusting the supply chain in real time as conditions change in short, the cost of trade will diminish, more accesses will be opened to join GVCs without concerning about geography distances among countries and continents. In this aspect, GVCs will become a worldwide supply network.

➤ *Secondly, the wage differences will not be the fundamental to allocate stages of production among countries at all.* With the development of robotic and artificial intelligence, low-skill, and repetitive tasks are easier to computerize and robotize, the information- technology-led bundling will typically eliminate occupations that involve such tasks. At the same time, the more intensive use of sophisticated production machines will make the remaining jobs more skill-, capital- and technology-intensive. This leads to a polarization of stages in terms of skill-content. Routine low-skill tasks are bundled into high-skill occupations while the remaining low-skill tasks will typically be highly labor - intensive but less routine. The resulting, broader stages will involve more capital-intensive, more technology-intensive and more skill-intensive processes. This tends to favor production in high-wage nations or near large customer geographically. Whether these machines end up in high-wage, high-skill nations, or they are distributed to be near every large customer base, the impact would be a very substantial reduction the length of supply chains.

➤ *Thirdly, ICT improvement in the 4<sup>th</sup> revolution will create different path of the new GVCs stage depends on each field of technology development.* Deborah K. Elms and Patric Low [2] divide the supply chain at four levels of aggregation: products, stages, occupations, and tasks (Fig.1). That is, *product* - is including after sales services. *Tasks* - the full list of everything that must be done to get the product into consumers' hands and provide them with associated after-sales services. *Occupation* - the group of tasks performed by an individual worker. *Stages* - as a collection of occupations that are performed in close proximity due to the need for face-to-face interaction and the fragility of the partially processed goods - are the critical level of aggregation since supply chain internationalization typically involves the offshoring of stages rather than individual occupations or individual tasks

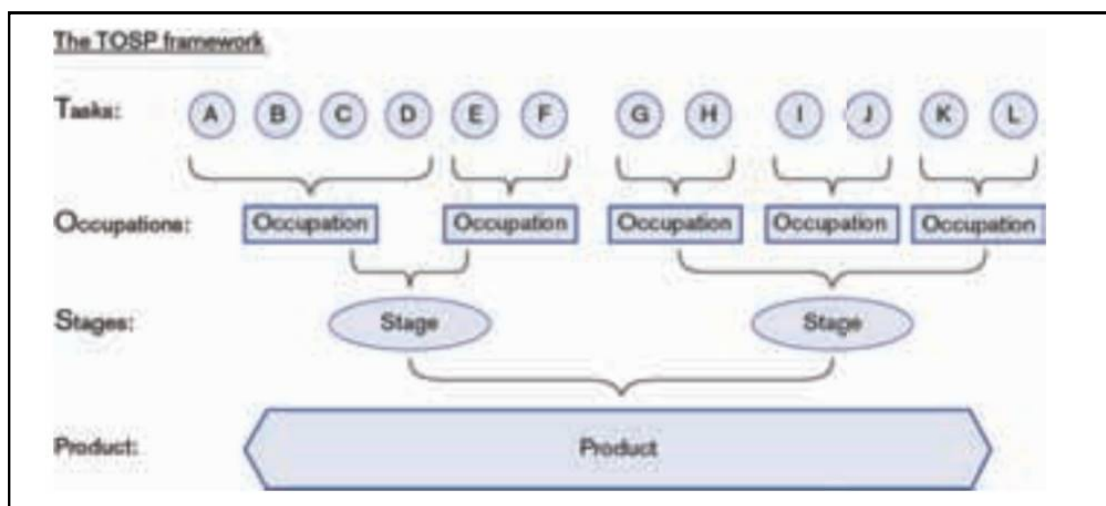


Figure 1: Supply chains at four level of aggregation  
Source: Deborah K. Elms and Patric Low (2013)

With this in hand, K.Elms, 2013 built two economics of optimal [2]: (i)Tasks per occupation; and (ii) Occupations per stage. He also divided ICT into 2 fields: Communication technologies and Information technologies. From this classification, IR4 affects the GVCs via two channels (Fig.2):

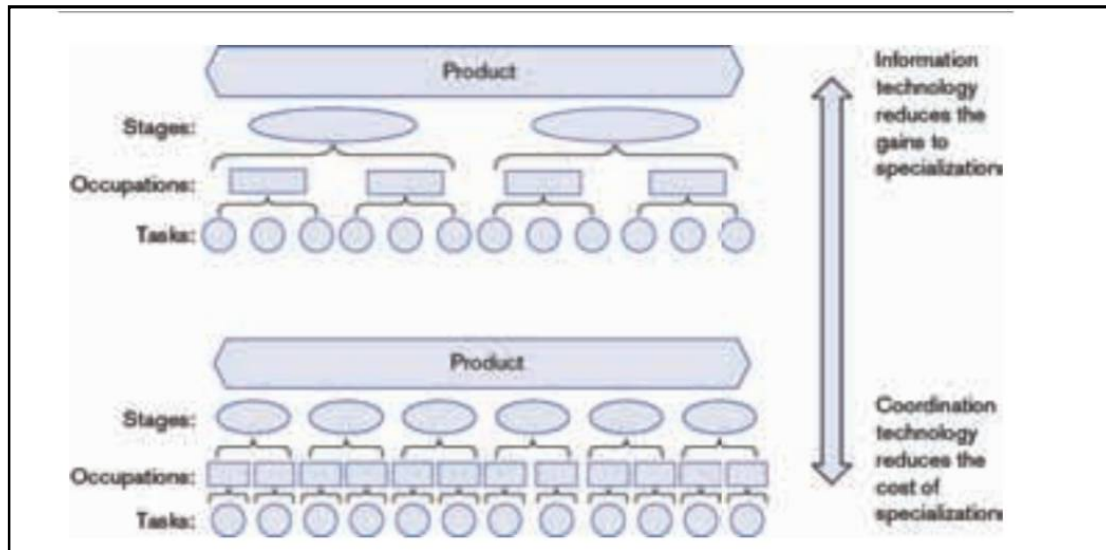


Figure 2: Supply chains at four level with the change in technologies

Source: Deborah K. Elms and Patric Low (2013)

- *Development of Communication and organizational technologies – call them coordination technologies for short will lengthen GVCs, increase international trade.* Coordinate technology facilitate transmission of ideas, instructions and information. Better coordination technologies improve organization and communication among occupations and stages. Rapid improvement in coordination/communication and organization technologies – such as advances in tele-presence technology, software in workflow organization and communications– favours GVCs become more functionally and geographically. The resulting finer division of labour will allow firms to sort stages geographically according to the cost of the relevant productivity factors (labour, capital, technology, etc.). Thus, these technologies favours fewer tasks per occupation and fewer occupations per stage.
- *Development of Information technologies will shorten GVCs, reduce international trade.* The development of robotic and automate makes it easier for individual workers to master more tasks. Numerically controlled machines, robots and computer-aided manufacturing embed information in capital in a way that allows a single worker to perform a wider range of tasks. It favours more tasks per occupation and more occupations per stage. It shortens GVCs. Better information technology also tends to polarize stages of production. When thinking about the future of global supply chains, it is worth speculating on truly revolutionary technological developments. One such possible development concerns Computer Integrated Manufacturing (CIM). This has already produced a tectonic shift in manufacturing in high-wage nations – moving from a situation where machines helped workers make things to a situation where workers help machines make things. The integration and automation of tasks, however, does not stop at the factory gate. Many design, engineering, and management tasks have been being computerized. Computers have greatly boosted the productivity and speed of product design as well as greatly reduced the need for prototyping

### 3. The Integration Process and GVCs Participation of Vietnam

After decentralized planning economy by “Doi Moi” policy, Vietnam has been actively involved in the international integration process. Joining ASEAN in July 1995 was a milestone in Vietnam’s integration process. In 1996, Vietnam joined the Asia-Europe Meeting (ASEM) and the Asia-Pacific Economic Cooperation (APEC) two years later. In January 2007, Vietnam became a membership of the World Trade Organization (WTO) that marked Vietnam’s full integration in international institutions. In 2015, Vietnam and other ASEAN members formed an ASEAN Community. Besides, during its 3 decades of international integration, Vietnam has signed 88 Free trade agreements (FTAs), expand trade ties to 220 markets, attracted direct investment from 70 countries and territories. In 2016, Vietnam signed bilateral FTAs with South Korea, the EU, and the Belarus-Kazakhstan-Russia Customs Union.

The international integration helps Vietnam connect to the Global economy, improves production capacity, expand exports. So far, Vietnam is listed in the group of the 30 largest exporters in the world. The production has majorly joined some GVCs including food and food security, energy, apparel and footwear.

Fig.3 shows the participation ratio of Asia countries in GVCs, including Vietnam. The extent to which an economy is engaged in a GVC can be measured by the GVC participation index. It is defined as the ratio to a country’s gross exports of the sum of foreign value added in domestic exports (backward participation) and domestically produced intermediates to be used in third countries (forward participation). This measure therefore excludes exports of final goods that have no foreign-input content.

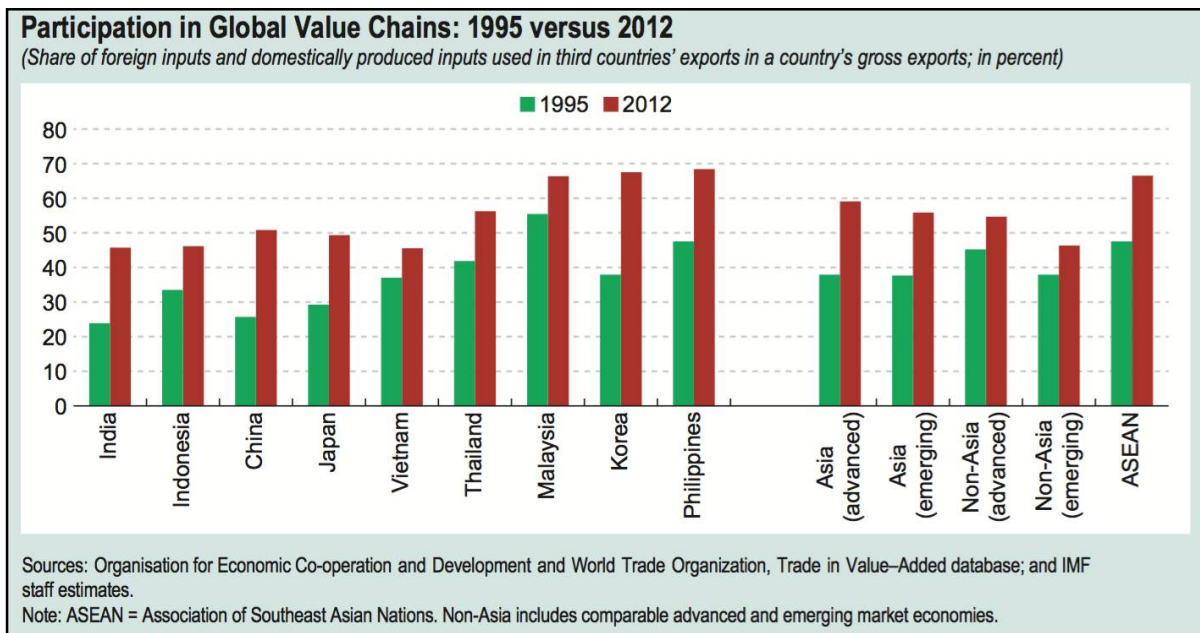


Figure 3: Vietnam's GVC participation among Asia countries

Fig 3 shows that Vietnam has been joining more and more into GVCs with the participant ratio rose from 38% in 1995 to 46% in 2012. However, with the growth rapidly in participating GVC of Asia, particularly ASEAN countries– the most dynamic area, Vietnam has been losing high ranked of participation, from the fourth position in 1995 to the ninth in 2012, this sign highlight Vietnam to continue innovate the economy comprehensively to improve the position in GVCs map. Even though, Vietnam has been reaping benefits from participating the global supply chains so far.

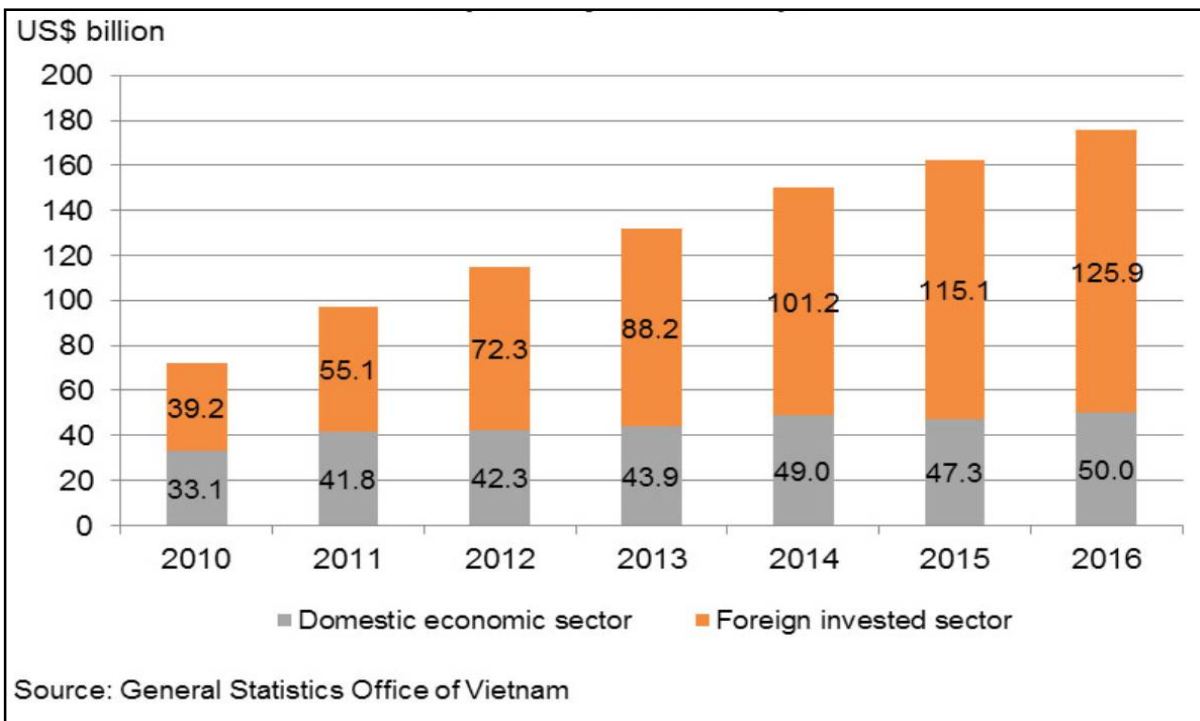


Figure 4: Vietnam Exports

Participating GVCs helps Vietnam increase export, boosting growth. Vietnam's export has been increased sharply (Fig.4) with the average growth of 13%. Vietnam has been considered as the go-to destination for the assembly of relatively sophisticated products, such as mobile phones, printers, copying machines and household electrical appliances, with the majority of these products destined for export markets. The increase of export played an important role in Vietnam's economic growth. The share of exports in GDP increased from 50% in 2002 to 89,5% in 2015.

The average annual GDP growth rate of Vietnam is 6.45% from 2000 to 2016, worth the value of 202.62 billion US dollars in 2016. Growth has been equitable—with a dramatic reduction in poverty—and social outcomes have improved significantly. In 1993, over half of the population lived on less than \$1.90 a day. Today, the rate of such extreme poverty has fallen to 3 percent. The proportion of the population living below the national poverty line reached 13.5 percent in 2014 - down from close to 60 percent in 1993.

The GVCs participation has increased not only trade in goods but also international investment and technology improvement. Vietnam has successfully attracted large volumes of foreign direct investment (FDI). FDI inflows to Vietnam currently reach more than US\$20 billion each year (Fig.5). Investors commonly cite Vietnam’s geographical position near global supply chains, the growing consumer market and available labour. Big industrial companies – such as *Samsung* and *LG* from South Korea – have been investing in Vietnam in order to assemble finished electronic products. Recently, they have also started to produce electronic parts and components within the country. The FDI sector accounted for 23 percent of the country’s investment capital. Foreign invested companies play an increasingly important role in the economy. FDI sector exports has also been increasing sharply, reached 67% of the Vietnam exports (Fig.4). Thus, foreign invested enterprises’ s share of the GDP has also been increasing, around 18% of GDP so far.

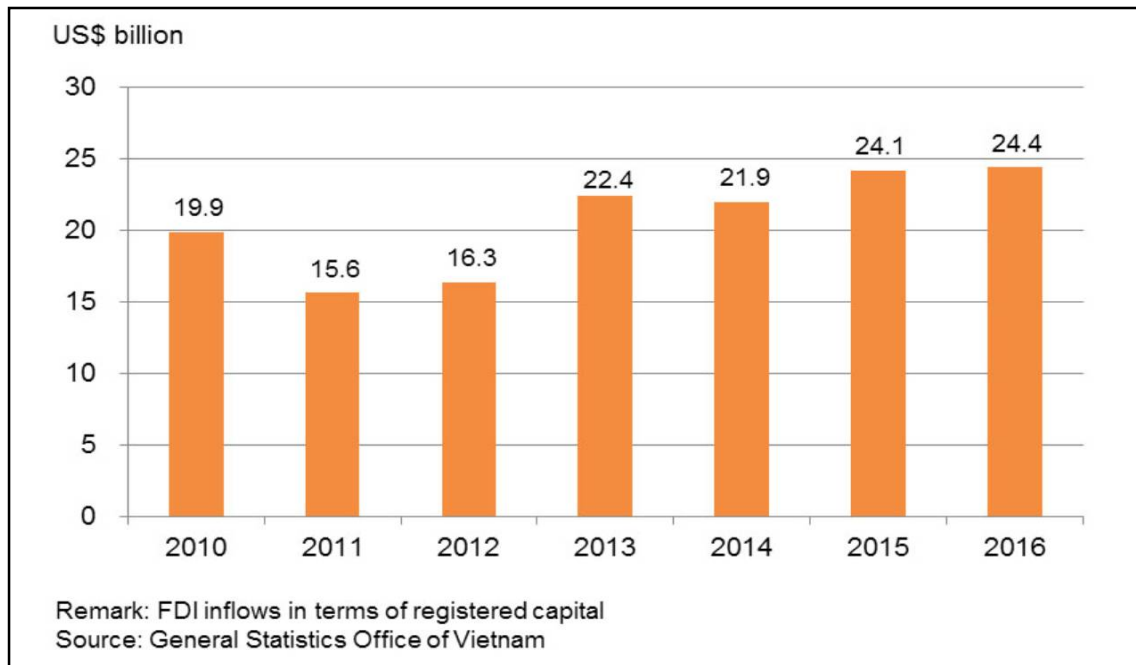


Figure 5: FDI inflows into Vietnam

Besides, joining GVCs creates the condition and momentum to improve technology and labour skill in Vietnam. With the development in GVCs participation and the attraction of FDI, Vietnam ‘s technology and labour skill has been also improved by the spillover from FDI firm. In the Global Information Technology Report 2016 [4], Vietnam ranked at 79/139 with the two highest score pillars were “Affordability” – scored 6.8 over 7 points. According the Report, the affordability pillar assesses the cost of accessing ICT, either via mobile telephony or fixed broadband internet, as well as the level of competition in the internet and telephony sectors that determine this cost. In companion with the development of technologies, the quality of Vietnamese workers has been improved, the rate of trained workers increased from 30% to 50% within ten years, meeting certain requirements of the regional labour market. The technical workforce has steps by steps mastered new scientific technology. Some of them are capable of taking responsibility for jobs requiring high skills that were only taken by foreign experts in the past. Vietnam has also sent large numbers of people going abroad each year to study and work in various professions.

#### 4. Opportunities for Vietnam in Future GVCs Participation

By signing more and more Free trade agreements, Vietnam has been visualizing the desire of international integration. Through FTAs, Vietnam not only be able to expand the market, but also attract new investment, new technologies to improve our production and competitiveness. Therefore, the 4<sup>th</sup> industrial revolution can bring some opportunities for Vietnam to participating GVCs in future, key points including:

The 4<sup>th</sup> industrial revolution will lower the cost of logistic and transportation, enhance more ability for Vietnam to transport product to distance markets. Currently, logistic and transportation capacity are Vietnam’s weakness trammeling export to faraway markets such as United State and the EU. With the development of logistic and transportation technologies, there will be a great chance for Vietnam to access faraway markets easier to expand export markets. That will create opportunity to increase participation share of Vietnam in GVCs.

Besides, the development in communication and organization technology will support the transfer of production know-how, training and skill from developed to developing countries. It will help Vietnam continue to learn either management technologies, improve working skills of labour or absorb new production technology all over the world. It brings more opportunities for Vietnam either to

find more supply chains that we can join or to improve our position in current GVCs, from low value-added stages (production and assembling) to upstream stages of production with higher value added.

The last but not least, Vietnam Government continues to show their commitment to reforms. In the current ten years strategy report, Vietnam's 2011 – 2020 Socio-Economic Development Strategy (SEDS), the Government highlighted the need for structural reforms, environmental sustainability, social equity and emerging issues of macroeconomic stability. The Government defined three "breakthrough areas": (i) promoting skills development, particularly for modern industry and innovation; (ii) improving market institutions, and (iii) further infrastructure development. After 5 years with comprehensive efforts to innovate the economy getting the target, in the second 5-year stage plan, The Socio-Economic Development Plan (SEDP) for 2016-2020, approved in April 2016, Vietnam Government perceived the slow progress on certain policy priorities and emphasized the need to accelerate reforms. That shows the determination and commitment of the Government to constantly improve Vietnam economy to adapt new stage of international integration.

#### 5. Challenges for Vietnam's Future GVCs Participation under the Industrial Revolution 4.0

Future GVCs with influences of the IR4 creates challenging for Vietnam to participate the global production network and get the benefit from joining GVCs. As mentioned above, the industrial revolution 4.0 not only includes coordinate industry but also the development of information technology with robotic and automation, i.e., 3D printing technology. Therefore, the Key Issue given to not only Vietnam but also other developing countries is the development of numeric, robotic and automation production that will replace simple stages of productions in GVCs. This issue can be analyzed in 2 points:

Firstly, according to the IMF, the value added of GVC of Vietnam is purely in the low-tech sector [5]. Moreover, the production in GVCs that are located in Vietnam concentrate in manufacturing and assembling stages. The 4th revolution may cause the trend of shrinkage in GVCs because of the replacement of automation instead of human production, soon in production and assembling at low-tech sector, re-allocate these stages of production near large demand area. In this point, Vietnam may lose the share in GVCs in future. To keep our share in international trade, moving upstream in GVCs from manufacturing and assembling to R&D - design and innovation stages of production should be a solution that need the orientation and supporting from the Government.

Secondly, cheap labour cost has been one of Vietnam advantage in joining GVC so far. According to The Global Information Technology Report 2016, Vietnam's lowest ranked pillar is "skill" (82th per 139 countries) [4]. With low-skill labour, Vietnam is attracting investment in cheap labour – simple technology stages of production. However, the future GVCs will be no longer allocated up on wage differences, but will be up on skill of labour. The "Factory countries" that specialized in low-tech and cheap labour stages of production like Vietnam and other ASEAN countries will be replaced in future GVCs by automation system and robots. To keep the share in Global trade, Vietnam has to improve labour skills. Thus, enhancing effectiveness of education policy, improve education system, promoting R&D are the most important key solutions for Vietnam to participating GVCs and reap the benefit in near future.

In conclusion, The World is standing on the brink of the 4<sup>th</sup> technological revolution that will fundamentally change our life. We haven't known how it will unfold, but it will drive the path of future Global Value Chains, and thus will change the way countries join the World production. The fact is, either technology or any other exogenous force come over that humans have no control. We are responsible for guiding its evolution. Thus, we should take the opportunities and power we have to direct the 4<sup>th</sup> revolution toward a future that reflects our common objectives and values. It's time for Vietnam to have a new version of "Doi Moi" revolution as we did in late mid 1980s and early 1990s. Vietnam economy must transform from the "factory economy" to the "talent economy" in order to continue getting benefit from joining global supply chains in the stage of technologies revolution.

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