

Industrialisation and Modernisation in Vietnam: from Perception to Action and Some Recommendations

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Abstract: Over the past years, the industrialisation and modernisation in Vietnam have yielded important achievements yet still exposed many shortcomings. This paper will make clear perceptual constraints on the industrialisation and modernisation in Vietnam recently, analyse limitations in the implementation of these two processes in such aspects as selection of steps, regional structure and link and industrial development mechanisms. Based on that ground, the author proposes a system of solutions for the industrialisation and modernisation in the next periods.

Keywords: Industrialisation, modernisation, industrial development, development strategy.

Subject classification: Economics

1. Introduction

Throughout the journey of industrialisation and modernisation over the past 30 something years, despite ups and downs, the industry of Vietnam has gained crucial attainments, contributing greatly to the socio-economic development of the country.

From a moderate position, the industry of Vietnam has become one of the front runners with regard to its contribution to the whole country's GDP by the emergence of new industries such as oil exploitation, oil refinery, electronics and information technology, automotive manufacturing and

assembly, fertilizer and chemicals and other consumer goods manufacturing industries. Industrial products of Vietnam have made important contributions to the provision of materials to national economic sectors while meeting the ever-higher consumption needs of all strata within the country and thriving to facilitate exports.

The research on the industrial development of Vietnam over the past 30 something years reveals that the industry's proportion of the national GDP sharply increased during the first years but has been reduced during the ten recent years². The sustainable development of Vietnam's industry is

shown in not only its proportion of the GDP contribution but also other indicators such as the ever-reduced proportion of value added (VA)/gross output (GO); the ever-increased incremental capital output ratio (ICOR, the additional unit of capital or investment needed to produce an additional unit of output) and the negligible increase of labour productivity in the industrial sector (much lower than other countries in the region) in numerous years, while intermediary costs keep going up.

Given that practice, many issues have arisen including such questions as “Did the industrial development in Vietnam reach its peak?”, “Is Vietnam falling into the middle-income trap, thereby failing to fly higher in the future?” and more importantly, “What is the reason for these outcomes?”.

To give a voice in explaining the unsustainable growth of the Vietnamese industry recently, this paper will deeply analyse the limitations of Vietnam’s industrialisation from perception to implementation to propose some solutions for such limitations.

2. Perceptual constraints on the industrialisation and modernisation

General comments on industrial development in the period of 1976 – 1985:

- Developing a self-help industry based on priorities over the heavy industry is the cross-cutting view in this period. However, necessary factors to be self-reliant are insufficient or do not exist at present. Vietnam, therefore, has an unfocused industry which is in the shortage of spearheads.

- The self-help spirit and closed-door policy (or open in only one direction, to be precise) of the economy stop the course of technological and technical development, resulting in the backwardness in Vietnam’s technologies through many generations. The industry management mechanism strays from market principles.

- The organisation of industrial and commercial systems is almost independent, making the industry purely producing without selling products and at the absence of competitiveness.

Since the *đổi mới* or the renovation process (1986) up until now, two out of three shortcomings above have been gradually improved in important policies of the Party and State on economic development in general and industrial development in particular. However, the view on “developing a self-help industry” or an independent and autonomous economy has been interpreted in the wrong way, leading to adverse consequences.

In the context of globalisation, a self-help industry can be perceived as an industry which is highly competitive and adaptable as well as less vulnerable to fluctuations of complicated regional and international situations. Moreover, under no circumstances does the industry maintain its manufacturing activities, ensure the essential needs of the society and efficiently serve the goals of security and national defence of the country.

However, due to improper understanding of the essence of a self-help industry, distorted perceptions have emerged and been manifested through the following forms:

- The overinvestment in industrial development has caused toxicities in investment attraction and resource allocation. The economy keeps witnessing unfocused investments which should have been prioritised over agriculture and rural development. The investment in agriculture will create resilience for the industry, foremostly the processing industry and other related fields.

The investment in industry is always three to six times higher than the investment in agriculture for both the State

resources and investments of the society as a whole. Despite no specific statistics, foreign investments also mainly focus on industry and services (Table 1).

Major and strong investment in industrial development is recognisable concerning not only the financial distribution as mentioned above but also the allocation of such resources as land and labour. Over the past 20 years or so, industrial parks have boomed all over the country on a large scale, leading to the evaporation of arable land and livelihoods of farmers.

Table 1: Capital Invested in Sectors, Fields

Unit: trillion VND

Indicators	1990	1995	2000	2005	2010	2015	2016
<i>Total investments in country</i>	<i>6.018</i>	<i>64.685</i>	<i>115.089</i>	<i>447.135</i>	<i>830.278</i>	<i>1,044.42</i>	<i>1,145.009</i>
1.1. Agriculture	0.671	8.584	15.935	31.320	51.062	59.323	71.105
1.2. Industry	1.584	20.244	50.063	179.304	316.419	432.703	468.080
1.3. Construction	0.017	1.796	2.712	16.426	37.362	60.263	65.495
1.4. Service + others	3.746	34.061	74.859	220.049	425.435	545.495	540.329
<i>State investment</i>	<i>1.345</i>	<i>27.185</i>	<i>68.069</i>	<i>233.948</i>	<i>316.285</i>	<i>397.324</i>	<i>430.254</i>
2.1. Agriculture	0.180	3.265	8.338	16.710	18.534	25.349	26.332
2.2. Industry	0.601	9.926	25.576	84.103	110.371	116.439	133.373
2.3. Construction	0.005	0.651	1.601	9.835	16.257	24.833	25.815
2.4. Service + others	0.558	13.343	32.554	123.3	171.123	230.703	244.734

Source: Compiled from annual statistical yearbooks.

The imbalance in investment is also reflected within the industrial sector. Table 2 shows that over an extended period before 2010, in the investment structure of state resources, besides the (sensibly) focused investment in energy - a fundamental industry - the investment in mining is always

nearly the same as that in the whole processing and manufacturing sector. In recent years, this rate has been greatly adjusted. The small capital for investment is spread out to about 20 areas, taking from the processing and manufacturing industry the abilities to have spearheads that can create breakthroughs.

The closed trend in both upstream and downstream investments makes this activity unfocused and insufficient (with investors being impatient regarding some fields requiring capital and high-tech know how such as alloy steel, coloured metallurgy, petrochemical refinery and electronics). Meanwhile, the upstream processing industries with materials from agriculture, forestry and fishery as well as textile, leather and footwear, pharmaceutical and other industries, which match the economy's capacity, remain untapped.

Moreover, in the context of globalisation and international integration, the approach based on the value chain of products has not been thoroughly grasped and effectively applied by industrial enterprises. Almost all enterprises cannot locate their strengths in the value chain of products to focus the investment on. The trend of closed investments within an enterprise or a sector thus keeps reiterating and results in continued sporadic and insufficient production.

Table 2: Capital for Industrial Investment

Unit: Trillion VND

Indicators	1995	2000	2005	2010	2015	2016
<i>1. Total investments in country</i>	<i>20.244</i>	<i>42.435</i>	<i>179.304</i>	<i>316.419</i>	<i>432.703</i>	<i>468.080</i>
- Mining	3.255	7.299	36.401	62.520	41.359	40.190
- Processing, manufacturing	11.048	22.207	82.026	161.904	306.642	334.801
- Power and gas	5.941	12.929	49.238	70.491	67.678	73.395
- Water supply, waste treatment...		-	11.639	21.504	17.024	19.694
<i>2. State investment</i>	<i>9.926</i>	<i>25.576</i>	<i>84.103</i>	<i>110.371</i>	<i>116.439</i>	<i>133.373</i>
- Mining	0.973	6.568	19.720	20.590	17.005	19.275
- Processing, manufacturing	4.001	7.006	21.596	30.110	27.813	32.269
- Power and gas	4.952	12.002	33.709	47.462	55.529	61.865

Source: Compiled from annual statistical yearbooks.

3. Limitations in industrialisation and modernisation

3.1. Selecting inappropriate steps

3.1.1. The policy of rapid industrialisation

After the 7th National Congress (1991-1995), significant achievements had been

gained, especially in agriculture, and fundamental difficulties of the economy had been initially overcome, the impatience and desire to boost the industrialisation continued to make their presence visible.

Right from the 8th National Congress (1996), Vietnam advocated that by 2020, the goal of industrialisation and modernisation was to develop the country into an

industrialised one with modern technical facilities. This continued to be touched upon in the following National Congresses. Even from the 9th National Congress (2001), this content was elevated to the goal of “creating the foundation for our country to become an industrialised country with the modern orientation by 2020...”, while essential criteria of an industrialised country with the modern orientation (in theory) have not been clearly identified yet. Practically, in contrast with indicators achieved in that period and the following years and in comparison to criteria of an industrialised country determined by home and overseas researchers, many indicators are still well below par. Given industrialisation criteria of the world, it will be tough for Vietnam to satisfy them by 2020, especially ones on the average per capita income and proportion of farmers in the total workers. Vietnam thinks that the imposition of its industrialisation criteria is not necessary because whether a country completes its industrialisation or not depends on the international recognition, rather than the country’s self-assessment with a different perspective in comparison with the common practice.

3.1.2. The selection of industrial strategies

Not until the late 1990s, could Vietnam strongly shift towards an export orientation. However, with a very low start of its economy (because of the war’s aftermath and losses caused by weak economic management), Vietnam could only meet fundamental needs of the people’s lives at that time. Such an absurdly rapid

industrialisation strategy with an intense concentration on export (mainly mineral and cheap agricultural product exports, exhausting the country’s resources) at the expense of the domestic market has led to the fact that it was flooded with imported commodities in many areas, especially industrial products for mass consumption such as garment, footwear, technological products, processed food and even agricultural products, which are theoretically the strength of Vietnam.

Another inadequacy is the separation or independence between industrial and commercial activities. This separation causes not only jams or losses in product consumption (in both domestic and export markets) with impacts at the scale of an enterprise or each manufacturing field but also damage at the national scale. While state trade management agencies struggled in negotiations to sign bilateral and multilateral trade agreements, paving the way for enterprises in their international integration, almost all manufacturing enterprises were apathetic and inactive in preparation for the integration in terms of human resources, management capacity, financial and technological resources and so on. Therefore, since such trade agreements came into force, many manufacturing sectors of the country have been compressed and not been able to rise above. This has severely affected the competitiveness of Vietnamese industry in the next phase.

3.1.3. Selecting prioritised and spearhead industries

In 2007, to focus resources on industrial development, the Government issued

Decision No.55/2007/QĐ-TTg, approving the list of prioritised and spearhead industries between 2007 and 2010 with a vision to 2020 and some development incentive policies. Three industries classified as spearheads include mechanical engineering (automotive technology, shipbuilding, completed equipment, agricultural machines and mechatronics); electronic and telecommunications equipment and information technology including products from new technologies (new energies, renewable energies, software industry, digital contents). Seven prioritised industries are textile, leather and footwear, plastics, agro-forestry-fishery product processing, aluminium-bauxite exploitation and processing as well as steel and chemicals.

However, because mechanisms and policies supporting above industries are still general such as providing adequate land for investment and facilitating their trade promotions without concrete and special mechanisms, such policies do not have any game-changing impacts on the development and growth of these prioritised and spearhead industries. In addition, the concepts of prioritised and spearhead industries, as well as their incentive policies, is still a controversial matter.

In a long period (about 25 years from 1971 to 2007), Vietnam was not able to identify the focal points of industrial development for each phase. The policy of “prioritising the sound development of heavy industry” (put forward at the 3rd plenum of the 19th Central Party Committee in January 1971) was correct. Nevertheless, how the sound development of heavy industry should be was not identified. Not to mention the fact that orientations of some

heavy industries went well off the track and derailed from the motto of “growth based on the development of agriculture and light industry”. Hence, investments in industrial development were stretched out, sporadic and inefficient; so were the goals of attracting investments and utilising national resources.

Processing and manufacturing industries are focal points of the investment capital of the society as a whole with a year-on-year increase (always by two or three times in recent years). However, the capital from the state budget tends to primarily focus on mining, manufacturing as well as power and gas generation and distribution. Fundamental heavy industries such as mechanical and chemical engineering are hardly attended to.

Therefore, branches in the processing and manufacturing industry share almost the same proportion as one another with only 4-5%. This indicates that the development is still unfocused and fails to identify fields in need of prioritisation, or succeeds in locating prioritised ones without appropriate mechanisms and policies.

3.2. Regional structure and link remain fraught with inadequacies

Between 2001 and 2010, the industrial space was initially distributed towards exploiting geographic advantages and potentials of provinces. Nevertheless, it is recognisable that the space of industrial development in this period was just formed naturally based on the strengths of provinces without sensible distribution on a national scale.

The strengths of each region have been determined. Overall, the spatial distribution

is entirely appropriate among regions. However, industrial development within a region remains greatly inadequate. Overlapping investment often takes place. Notably, within some sectors, investments flow into regions with no advantages. Investments and investment exhortations are in lack of synchronicity and linkage, even within a region. Despite some specific results in industrial production recently, the efficiency is still not up to expectation. Provided the continued insensible distribution of space, it will surely leave direct impacts on industrial development in the next phase.

3.3. Some mechanisms and policies for industrial development (to serve the cause of industrialisation and modernisation) remain insensible

3.3.1. Failure in the effective mobilisation of social resources for socio-economic development in general and industrial development in particular.

Due to sustaining the rigidly planned economy as well as the bureaucratic and subsidised management mechanism in an extended period, resources for socio-economic development in general and industrial development in particular, all came from the state budget. Private resources in the country were not encouraged and attended to or suffered from some stigmata, even after the foreign investments had been mobilised.

The poor performance in using already limited resources of the state economic sector slowed the cause of industrialisation

and modernisation of Vietnam down and made it inefficient.

In recent years, although the policy of attaching importance to the private economic development has been put forward, the thinking on the role of this economic sector has changed very slowly. It is not an overnight story of transforming from “hindrance” to “acceptance” but has been through quite a long period of “reluctant acceptance”.

It is this distorted thinking that has driven the private economic sector of Vietnam to the inequality in accessing development resources such as land (manufacturing sites), credits, labour forces, technologies and even markets due to a fairly long list of professions and fields in which the operation of the private economic sector is restricted. As a result, with small and medium-sized enterprises as its leading forces, the private economic sector in Vietnam has become quite sickly in terms of scale, technological capacity and human resource qualification.

3.3.2. The State mechanism of industrial management

Industrial management is a unified block. However, due to differences in the scale and ownership of enterprises, there is a management decentralisation between the central and local levels. In principle, enterprises need to report to the provinces in which they are being situated even though they may be under central management. Nonetheless, many state enterprises at the central level and FDI enterprises do not seriously implement the reporting to local management agencies,

which makes it very hard for provinces to summarise and monitor the industry as a whole in their management areas. At the central level, there remain numerous inadequacies because industrial management is assigned to many different ministries. Notably, with the overlapping management of some branches, the Ministry of Industry and Trade (the industry management agency in general) cannot supervise the industrial development of the whole country in details. For example, the production of building materials is managed by the Ministry of Construction and the generation of means of transportation is managed by the Ministry of Transport; meanwhile, the policy of removing the mechanism of [having] line ministries was suggested a long time ago yet has not been successfully implemented.

The biggest constraint in industrial management by geographic locations is the disruption of specialised planning. It is undeniable that due to the market mechanism and integration trend, the planning is just for orientation purposes and needs periodic adjustments. However, frequent violations of and investments in a way that breaks the previously made planning in provinces without appraisals of specialised ministries are the main reasons for imbalances in the supply and demand of products and supply of human resources, the disruptive linkage among regions and provinces and recent environmental consequences.

Generally, the management coordination between the central and local levels, among ministries and sectors has been improved recently through regional debriefings and meetings among ministries, sectors and between ministries and provinces. However,

the coordination efficiency remains limited owing to the overlapping with unacceptably numerous focal points and the uncontrollable decentralisation in industrial management from the central to the local level as mentioned above.

3.3.3. Development policies in leading economic areas

Understanding the role and significance of leading economic areas in the country's socio-economic development and ensuring the operation of economic development in each region and among regions in an efficient manner, the Prime Minister has promulgated some legal documents related to this field. However, the scales of leading economic areas have been expanded uncontrollably or even unreasonably to some extent, which reduced the motivation and spread of provinces in the region. In addition, for economic regions, although the goal was set to build upon strengths of the whole region, provinces in the region often compete with one another to attract investments as well as try to develop their own priorities and spearhead sectors without any collaborations and assignments based on the strengths and capacities of each province. Moreover, the development of industrial, export processing and economic zones in Vietnam still has some downsides, falls short of affiliation by regions and fails to accomplish major strategies and orientations of the Government, leading to limitations in exploiting advantages, potentials and special features of each region. Besides, the construction planning quality of industrial and economic zones still exposes

vulnerabilities and requires many turns of alignment, affecting the progress of construction investments.

3.4. Results of the industrialisation and modernisation of agriculture and rural area are still limited

The most outstanding economic achievement in the first stage of the industrialisation is obvious advancements in implementing goals of three economic programmes (food, consumer goods and exporting goods).

The renovative thinking has already appeared in agriculture with Directive No. 100 (October 1981) of the Party's Secretariat on the contract policy in agriculture and Resolution No. 10 of the Politburo (1988). These decisive policies have changed the direction and organisation of production as well as cooperative agricultural management, created the motivation as well as new momentum in the rural areas and liberated the production power for millions of farmers.

In 2008, based on the results of more than 20 years of the country's renovation and the ongoing analysis of agriculture, farmers and rural areas, the 7th Plenum of the 10th Party Central Committee approved the Resolution on "Agriculture, farmers and rural areas" with views, goals and solutions in the new period. Researching views of the Party on economic development through the Party's Congresses, it can be concluded that right from the first years of developing the Socialism in the North, the Party paid great attention to agricultural development in addition to industrial development, including both heavy and light industries.

However, over a long period, Vietnam's agriculture faced various challenges from natural disasters and epidemics and from weaknesses in management due to inadequate attention to agricultural development both in theory and practice as well as hasty thinking of focusing on rapid industrial development. In the next period, thanks to effective policies on agriculture, Vietnam made remarkable progress in agricultural productivity, proved by its production and export output. However, advancements in agricultural quality, including material and processed product qualities, were still very humble. After Resolution No.26-NQ/TW dated 5 August 2008 on agriculture, farmers and rural areas was passed, issues of the agricultural and rural industrialisation were increasingly attended to. However, it seemed that only farmers and rural areas witnessed those reforms thanks to the programme of building new-style rural areas; meanwhile, the industrialisation of agriculture did not seem to have numerous changes. Notably, because the relationship among stages in the value chain of processed agricultural products, including agricultural production, procurement, processing and distribution, did not go well; the added values of agricultural products were decreased. As a result, farmers remained the most vulnerable.

Impacts of the industrialisation on agricultural production are represented through contributions to the improved competitiveness of agricultural products. Recently, especially over the past three years or so, the competitiveness of agricultural products of Vietnam has been gradually improved. Nevertheless, in comparison with the huge potential of

Vietnamese agriculture, it can be assessed that the competitiveness of Vietnamese processed agricultural products is still pretty low.

4. Conditions for industrial growth

Conditions for the long-term industrial growth have not been prepared solidly and adequately, which makes it very hard for Vietnam to escape from small, sporadic and outdated situations.

4.1. For enterprises

4.1.1. The sizes of enterprises are increasingly small

Although the number of active enterprises in the whole economy has increased (from 149,000 in 2007 to about 436,000 in 2015), the sizes of enterprises tend to be reduced. According to the VCCI survey, the proportion of micro-enterprises, which was 61.4% in 2007, increased to 66.8% in 2012 [6].

Based on criteria of workforce and capital, the percentage of micro-enterprises in terms of human resources (under 11 workers) increased from 66.8% in 2012 to 71.5% in 2014; and the average size of the workforce in enterprises reduced from 49 workers in 2007 to 29 workers in 2014. This abatement has resulted from the fact that the number of newly established enterprises dramatically increased, but the number of new personnel did not greatly swell. This shows that the risk of lacking medium-sized enterprises in Vietnam is visible. The capital size of non-state

enterprises has been improved and increased from VND 13 billion in 2007 to VND 27 billion in 2015. However, it is still much smaller in comparison with the state and FDI sectors. In 2015, the average capital size of state-owned enterprises was VND 2,666 billion, and that of FDI enterprises has increased from VND 172 billion to VND 372 billion.

According to the enterprise survey of VCCI, the proportion of enterprises with a small capital size increased from 77.07% in 2012 to 83.04% in 2014 (Vietnam Chamber of Commerce and Industry, 2015). It proves that the competitiveness of Vietnamese enterprises is ever-diminishing.

The non-state sector also has some large enterprises, but most of them grow thanks to the asset investment and speculation instead of manufacturing development, which is most clearly manifested in the real estate. Also, Vietnam does not have an industrial billionaire.

4.1.2. The development of domestic private enterprises is not sustainable

In three years (2012-2014), the number of bankrupted or shut-down enterprises went up, specifically 47,000 in 2010, 61,000 in 2013 and 34,000 in 2014. The underlying reason for these figures is partly because the home and overseas economies have not recovered yet and majorly because of the failure in finding markets and accessing loans in addition to soaring output costs. In two years (2015 and 2016), thanks to renovations in development policies, the number of newly-established or re-operational enterprises sharply increased from over 94,700 in 2015 to 136,780 in 2016.

However, nearly 95% of all enterprises in Vietnam are categorised as “small and medium-sized enterprises” (micro and small enterprises in fact) and only 15% out of these can be eligible for official credit. Non-state enterprises tend to seek informal credit sources rather than credits from banks due to mortgage requirements.

4.2. *The industrial infrastructure*

Up to the end of March 2017, 325 industrial zones have been established all over the country with a total area (natural land) of 94.9 thousand hectares, in which the area of industrial land available for lease reaches 64,000 hectares (67%). More specifically, 220 industrial parks have been put into operation with a total area (natural land) of 60.9 thousand hectares, and 105 ones are still in the process of site clearance compensation and basic construction with a total area (natural land) of 34 thousand hectares. The coverage of industrial parks stands at 51.5%, in which 73% are industrial parks already put into operation [11].

Because the planning development and approval are thought to be proceeded at the local scale without regional and interregional visions, overlapping which leads to resource waste and competitiveness in investment attraction among industrial zones and clusters often take place. It is not uncommon to witness neighbouring provinces sharing the same industrial zones and clusters, thereby reducing their coverage.

In addition, due to no vision on sustainable development when provinces just try to get as many projects as they can to fill all industrial parks and clusters, the industrial parks and clusters, which have

been planned to attract investments, are mostly complex (multisectoral) ones. Therefore, it is very hard to develop sectoral linkage clusters towards eco-models, in which for instance, the output, even waste of this enterprise, will be the input of another.

At the same time, with incomplete technical infrastructure, the provision of technical services to enterprises in each industrial park is facing trouble, which affects the operational fees of enterprises.

According to the evaluations of environment management agencies, because of many different reasons such as inadequate capital, ineffective binding conditions with emission enterprises and poor awareness, only 26% of sewage treatment systems in industrial zones founded before 2012 are working at present. Up to now, it is still challenging to overcome this hardship.

According to a survey in 35 provinces and centrally-run cities, the total amount of dangerous waste is about 984,000 tonnes/year. Meanwhile, the treatment capacity of licensed facilities can only cover 14-15% of the demand [4]. This practice has shown no positive development so far.

4.3. *Technological capacity*

According to the Report “*The Development of Scientific and Technological Application in Production and Trade*” of the Ministry of Science and Technology (April 2014), the technological level of enterprises in the industry of Vietnam is now outdated by two to three technological generations in

comparison with other countries in the region. 80-90% of their technologies are imported, including 76% from the 1960-1970 generation. For their equipment, only 10% are brand-new, 75% are at the post-depreciation period, 50% are remodelled, 38% are moderate, and 52% are backward and obsolete. Notably, in small and medium-sized enterprises, backward and obsolete equipment occupies up to 75% [1]. More importantly, almost all imported technologies come from regions with an average technological level such as China and Chinese Taipei, not countries with source technologies such as the U.S., the EU and Japan. The use of these technologies increases the consumption of fuels and materials in production as well as the price of products, which will reduce the competitiveness of enterprises and worsen the pollution caused by industrial waste.

In addition, the quality and efficiency of technology transfer remain inadequate due to the shortage of optimal technology selection, the inappropriate technological level and especially the extremely low value of know-how software transfer. Therefore, the abilities to operate, adapt and master new technological equipment still expose numerous constraints with the maximum usable performance of 70-80% of their capacity. The investment to innovate technologies is mainly carried out by FDI enterprises (accounting for more than 90.6% of the total investment capital). The funding for technological innovation of state-owned enterprises only occupies 8.7%. This figure for non-state enterprises is only 0.67% out of their total capital invested in science and technology.

Vietnamese enterprises have a low level of investment for technological innovation, which is only equivalent to 0.2-0.3% of their revenue, while this figure in India and Korea is respectively 5% and 10%.

This situation is limiting the competitiveness of enterprises and the economy in the current context of international economic integration.

4.4. Quality of human resources

By the 4th quarter of 2017, the workforce aged 15 or older of the whole country was estimated at 55.1 million people, in which over 11.6 million were equipped with technical knowledge and skills through both professional or technical training for at least three months [10]. Meanwhile, according to statistics in the 1st quarter of 2016, out of 54.4 million people aged 15 or older working nationwide, only more than 11.3 million people (20.89%) have been trained, the other 79.1% have not been trained to reach some level of technical knowledge and skills. For the industry in particular, according to statistics of the General Statistics Office (2016), the rates of employed workers who have gone through training in the sectors of mining, processing and manufacturing, power and gas generation and distribution, water supply, waste and sewage management and treatment are respectively 50.4%, 18.5%, 78.7% and 43.4% (the respective numbers in 2015: 42.1%; 17.7%, 75.3%, 44.7%; 2014: 52.5%, 17.9%, 73.1%, 40.2% and in 2013: 42.3%; 18.3%; 76.2%). A tiny proportion of trained workers in the processing and manufacturing sector (18.5%) is one of the reasons for the

dominance of processing products among industrial products. In general, the qualification of industrial workers is still low with an imbalance in training level distribution. Specifically, workers with higher education amazingly outnumber their fellows graduating from technical high schools. Engineers, especially high-level ones, account for a trivial proportion. Meanwhile, the majority of workers only receive short-term training and on-spot guidance at their working places.

Findings of some surveys and studies done by organisations within and without the country all indicate that most surveyed enterprises are not satisfied with the educational qualities and skills of their staff, especially engineers and technicians. Vietnamese workers are not only in lack of expertise, but also weak in problem-solving, leadership and communication skills. Therefore, the advantage of low cost for human resources in Vietnam is losing its attractiveness in the eyes of foreign investors.

According to the annual report on Vietnamese enterprises in 2015 by VCCI, the efficiency of human resource utilisation (the relation between the revenue of an enterprise and income of workers) has shown a reduction from 17.4 times in 2007 to 14.9 times in 2012, followed by an increase to 15.4 times in 2014 in all three categories of enterprises. Particularly, the performance of workforce exploitation sharply decreased in 2012 (-11%) over the fact that the average revenue per worker only increased by 2.65%, but the money to be paid to workers went up at a much higher speed (15.3%). This is a huge pressure for enterprises in strengthening their competitiveness.

5. Proposed solutions

5.1. Changing the awareness regarding industrialisation and modernisation

First and foremost, it is necessary to change the awareness regarding industrialisation and modernisation and adjust the investment focus to match the comparative advantages of the economy.

Industrialisation is a qualitative transformation of parts of the economy or the whole economy, society and civilisation in a broader sense. With the current resources and experience, despite making leapfrogs, the industrialisation in Vietnam also needs time to have enough quantitative accumulation, which will then transform qualitatively and lay a foundation for the industrialisation, followed by the modernisation in the next stage.

The first step is to develop agriculture to nurture the industry (providing high-quality and stable materials for the processing industry). From the foundation of enough agricultural products to be processed for export, agriculture will come back to facilitate industrial development. If the industry considers serving agriculture as the controlling motto for its operation, it will have no worries about the output market. These reciprocal activities create favourable conditions for agriculture and some related industrial fields to develop and have some initial accumulations for the industrialisation.

Mistakes in overinvestment in the industry at the expense of agriculture (even depressing agriculture due to a great area of agricultural land occupied and abandoned) need to be improved and rectified

immediately. Priorities should be given to the development of clean and high-quality agriculture, creating materials for the processing industry in both cultivation and animal husbandry with some specific plants and animals to avoid spreading out.

5.2. Selecting appropriate steps and solutions for the industrialisation and modernisation

5.2.1. Conducting the industrialisation, coupled with agricultural and rural development

To make contributions to boost the agricultural and rural industrialisation and modernisation, it is necessary to develop industrial sectors, areas in combination with agricultural and rural development through processing agricultural products and other supporting activities.

The resources and development levels of the country at present show that the development of processing and manufacturing industries going hand in gloves with hi-tech agriculture and the direct support of industry for agricultural activities to yield high efficiency is an approach which needs to be taking into serious consideration. Priorities will be given to the following areas: processing, manufacturing and supporting groups.

5.2.2. Goals to 2025

Based on the orientations of some priority sectors and areas mentioned above, the goals of the Vietnamese industry are identified for the next period as follows:

- Developing with a sensible structure by sectors and regions, great competitiveness to develop in the context of integration, advanced technological level in some specialised sectors and fields and the ability to satisfy basically the requirements of an economy on consumption and export.

- Becoming a country that can provide high-quality agricultural products and processed products with some strong brands at the regional and global levels.

- Promoting supporting and related industries, meeting the requirements for developing a clean and high-quality industry and perfectly-processed agricultural products.

5.2.3. Development solutions for selected sectors and areas

- Innovating and modernising technological procedures

In both stages: material production and product processing.

- + At the stage of material production: Focusing on all stages from cultivation, growing, harvest, storage, preliminary processing to reduce the rate of post-harvest losses (the current loss rate of post-harvest rice: 8-12%, aqua-products: 25-35%, vegetables and fruit: 27-37%). Each year, hundreds of thousands of tonnes of materials from each agricultural product of Vietnam go off and cannot be used for processing, which greatly impacts the quality of materials, especially those meant for export. Therefore, the technological innovation in cultivation and animal husbandry needs to be researched thoroughly to have a standard procedure ensuring the quality and quantity of materials meant to be processed.

+ At the processing stage: In order for processed agricultural products of Vietnam to not only meet the diverse needs of the domestic market from the intermediate to advanced segmentation but also satisfy requirements of the export market with high-quality ones, the innovation of processing technology is a prerequisite. Currently, in the domestic market, the segmentation of high-quality products is still saved for imported products. Meanwhile, in the foreign market, Vietnam still does not hold a strong position due to low-quality products and failure in ensuring food safety and hygiene standards.

However, processed agricultural products are quite diverse, and the need for each market is varied, while Vietnam's resources are limited. Therefore, the selection of products and markets for investment needs to be carefully discussed to avoid mass investment without specific and feasible strategies, which can lead to incomplete work.

The technological innovation needs the assistance of related supporting industries, such as biological technology to create new breeds of plants and animals with high productivity, disease resistance and preparations for agricultural product storage; chemical industry to generate suitable fertilizers and environment-friendly biomedical, vaccines and pesticides, which can ensure food safety and hygiene, thereby creating premises for the export of preliminarily-processed agricultural products of international standard.

The selection of technology to make renovations in all areas needs to ensure food safety and hygiene standards, protect the environment and target sustainable development.

- Developing supporting industries and services in a synchronous manner

+ Mechanical engineering industry: This is the most important stage, deciding the productivity and quality of not only materials but also processed products. Currently, Vietnam can supply many kinds of agricultural machines with various functions and good qualities. However, because their prices are still high, farmers have very few opportunities to access machines, leading to limitations in agricultural activities. For seafood fishing, boats and vessels still fail to meet the needs of offshore fishing, causing their low performances. The shipbuilding mechanical engineering is thus a sector that needs to be paid attention to for development. Additionally, shipbuilding development also acts as premises for the development of ocean shipbuilding mechanical engineering in the future and contributes to the protection of sea and island sovereignty.

At the processing stage, old equipment and low mechanisation affect the qualitative uniformity of products. Hence, it is crucial to call for the State support so that agricultural and shipbuilding mechanical engineering can get improved conditions for their development. These two sectors are also touched upon in the Vietnam-Japan cooperation programme to develop an industrialisation strategy. This is a very good opportunity for Vietnam to modernise these sectors.

+ Chemical industries: With the role of supplying products that increase the productivity and quality of plants and animals, the chemical industry has also made contributions to the success of agriculture over the past few years.

However, the unique strengths of tropical plants such as essential oil and medicinal plants as well as furs and skins of cattle remain untapped. If these groups of materials are well exploited, Vietnam will have high-quality products to serve the domestic consumption and export.

+ Biological technology: Biological technology is one of the essential fields, deciding the output structure and quality of the processing industry. Recently, this field has gained many achievements thanks to the creation of numerous plants and animals with good productivity and quality through cross-breeding.

Nevertheless, epidemic prevention in agriculture still exposes many downsides. The uncontrollable use of chemicals in cultivation, animal husbandry, preliminary processing and storage seriously impact the quality of export products. In the upcoming time, the biological technology needs to focus on studying and creating environment-friendly biomedical, which tackle with epidemics in cultivation and animal husbandry (cattle, poultry, aqua-products and so on) and ensure the food safety and hygiene with reasonable prices to be used commonly in the sector.

+ Other supporting services: logistic activities, trade promotion and environmental protection.

Logistic activities include all stages from loading, transport to stocking; even customs, quarantine and recall, waste treatment services. Some processed agricultural products need special logistic services such as warehouses and specialised transports (warehouse, refrigerated trucks) to escort products to far-away places (even borders) for export, while still ensuring

their quality. Due to a tremendous amount of cost, this stage needs the State support, even the reduction or exemption of import tax for specialised equipment serves this activity. The customs service facilitating the export of products of this kind also needs to be simplified to create the best conditions for goods trading.

Despite not being listed in the production cycle, trade promotion and market expansion are decisive factors for the existence of production. If enterprises conduct this activity alone, it will not be effective. Therefore, it is very necessary to have the support of professional associations, even Government agencies in providing information about market and trade barriers, that domestic enterprises must overcome in export markets, and building connections in the trade relationships (signing bilateral and multilateral agreements) to conquer more markets and negotiate in case of trade disputes. The organisation of focal points to support the cross-border consumption of products, especially agricultural products to avoid price squeezes by partners which happen very often at present, is a very pressing task and needs to be implemented immediately with the support from State management agencies.

On the other hand, the industry of agricultural product processing often has a great emission level of sewage, solid waste and exhaust. Emission reduction activities are the direct responsibility of manufacturers. However, these activities also require huge costs and thus need State support.

- Completing and developing value chains in the processing industry

This value chain can only run smoothly and be considered successful if the benefits

of all stakeholders are handled in harmony. Despite its intermediary role in this value chain, the State, including the system of authorities, management agencies at all levels, credit organisations and others, has a great impact through its functions of facilitation, monitoring and benefit reconciliation. The function of facilitation here needs to be understood as facilitating horizontal connections (the connection among actors in the same stage of the value chain) and vertical connections (connection among actors in different stages of the value chain) to create newly added values of the chain. It is not simply facilitating farmers through activities such as rice procurement for temporary storage and market rescue (for some agricultural products) to maintain the market price as it is often done.

Under either connection, the State's role is very crucial and decisive to make a successful chain.

At present, the value chain in the production and consumption of vegetables and fruits exported through borders encounters many challenges. Jams at border gates reduce the quality of hundreds of tonnes of different vegetables and fruits, which even often become waste, without any effective solutions yet. With such value chain-based approach, if focal enterprises at border areas can be formed to collect agricultural products (vegetables and fruits) that need to be exported, this problem will be solved completely. It is because these focal enterprises will explore exporting markets and actively regulate the number of goods transported to borders at the request of importers to avoid the competition among

sellers, which enables importers to squeeze the price as for the time being.

The same situation happens in the value chains of some other products such as rice, sugar cane and aqua-products when there are some problems among actors in each stage, needing a solution.

5.3. Restructuring the industry by regions and developing regional links

In the planning, it is necessary to conduct the following steps:

Apply a new approach in regional allocation for industrial development; accordingly, the system of industry needs to be divided into two regions, namely the core and buffer industrial regions.

Strengthen the connections among provinces in economic regions.

Re-design/adjust the overall planning of industrial development by regions based on resources, orientations, potentials and experience in accordance with the above assignment, as while taking into consideration the attention from foreign investment flows, especially ones from Japan, Korea and the U.S. in the coming years.

Particularly, develop incentive policies for formulating sectoral link clusters in industrial fields of Vietnam's strengths, especially in core and buffer industrial regions, where the system of leading and satellite enterprises develops quite strongly. Accordingly, the key role in developing these clusters belongs to agencies that promote the development of industry, trade and investment with the great support of universities, institutes and the system of financial and non-financial service provision.

5.4. Establishing a synchronous and efficient policy system

Renovating the economic institution and establishing a synchronous and efficient policy system is a pressing requirement of the whole economy, not just industry-related sectors.

In the upcoming time, it is necessary to renovate the thinking in policy development instead of the old thinking of “integrating life into policies”, which means that based on development orientations and goals of each period of the State, sound policies need to be issued at the requirements of the life to reach such goals. Based on available resources, proposed incentives must be carefully considered, so that policies can be put into practice after their promulgation.

First and foremost, it is crucial to focus on developing the appropriate system of policies for prioritised industries to make breakthroughs in the coming time, acting as premises for the next development.

In addition, the late promulgation of normative legal documents guiding the implementation of new policies, one of the reasons for the reduction of effectiveness in implementing policies, needs to be handled immediately.

6. Conclusion

- Industrialisation is a qualitative transformation of parts of the economy or the whole economy, society and civilisation in a broader sense. Therefore, it needs certain conditions for development in terms of resources, including human resources

and other material resources with importance attached to high-quality human resources.

Moreover, industrialisation is a process. Korea and Chinese Taipei are considered Asian dragons, but it took them 40 years (from the 1950s to the late 1980s) to succeed with their industrialisations and become newly industrialised countries. Korea has completed its industrialisation and is underway with its modernisation. Chinese Taipei is still working on the finishing touches in its industrialisation. Meanwhile, Thailand and Malaysia started their industrialisations from the 1960s and are still ongoing with this process accompanied by numerous challenges after 50 years.

For Vietnam, with the current resources and experience, whether or not the country wants to leapfrog other countries, it will still take time for the industrialisation to get enough quantitative accumulation to transform qualitatively and successfully, thereby laying a foundation for the next modernisation.

- During the industrialisation, mistakes in the overinvestment in the industry at the expense of agriculture (even depressing agriculture due to a great area of agricultural land being occupied and abandoned) need to be improved and rectified immediately.

- The institutional system for developing industry is evaluated as one of the especially important resources, which can decide the success of a country's industrialisation. Inadequacies in the system of industrial development policies shown in the contents of each policy and the synchronicity in the policy system as well as the policy implementation of competent agencies (the State apparatus, administrative procedures and so on) need to be adjusted and rectified promptly.

Notes

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² The proportions of industry and construction in GDP: 25.1% (1987-1991); 29.27% (1992-1997); 33.49% (1998-1999); 39.82% (2000-2007); 40.57% (2008-2009); 41.24% (2010-2013) [7].

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