



The Fourth Industrial Revolution

A Vietnamese Discourse

Truong-Minh Vu and Nguyen Vu Nhat Anh

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Abstract

The discourse revolving around the Fourth Industrial Revolution (4IR) in Vietnam was sparked around January 2016 following the domestic media coverage of the World Economic Forum Annual Meeting 2016, of which the theme was “Mastering the Fourth Industrial Revolution.” The discourse, however, only started gaining momentum when remarks from governmental figures regarding “Industry 4.0”—Vietnam’s iteration of 4IR—emerged on the scene in late 2016. Since then, the domestic discourse has witnessed participation from business circles, academics, and policy makers tackling different aspects of 4IR in Vietnam. This report, therefore, aims to explore Vietnam’s understanding of 4IR and the various aspects it covers in the Vietnamese

context. The report also examines practical responses to 4IR from different sectors following the discourse. The first section attempts to capture the evolution of the Vietnamese discourse on 4IR in chronological order. The second section sorts the discourse into sub-sections according to the perspectives of the policy makers, business circles, and academics respectively, to capture an overall Vietnamese approach to 4IR so far. In the conclusion, comments and recommendations regarding the 4IR discourse in Vietnam will be provided.

Keywords: Fourth Industrial Revolution, 4IR, Industry 4.0, Vietnamese discourse

Foreword

The labour-cost advantage of developing countries in Asia is challenged by increased use of digital automation and robots, also known as Industry 4.0. Particularly those countries whose development model depends on export-led, low-technology, low-wage manufacturing industries may as a result face the phenomena of jobless growth or even de-employment in the form of automation or even reshoring of employment to the previous importing countries thus reversing the direction of the current global value chains. In Vietnam, this development is particularly relevant to the garment, footwear and electronics sectors which provide employment to about 3.5 million people and have considerable growth potential. There is a common understanding that Vietnam has to upscale technology levels in these industries to increase productivity in order to remain competitive with its neighbours and explore the benefits and potentials of Industry 4.0.

But the limiting factors here are not only the difficult access to credit for domestic companies to invest in technology or the low skills of the labour force. Various political actors, institutions and academics in Vietnam do not share a clear consensus on how broad this development is, how deep its impacts will be, what the time horizon for such changes is and what needs to be done in concrete terms.

In other words, the debate on the fourth industrial revolution in Vietnam is in a beginning stage, broad and diverse. This publication aims to investigate the discourse revolving around the concept of Industry 4.0 in Vietnam. It explores the current Vietnamese perspectives and understanding of Industry 4.0 and its various areas

of concern as well as the first practical responses from different sectors.

The publication is meant to contribute to the ongoing discourse and facilitate a successful exploration of the benefits of the digital economy in Vietnam. It relates to the regional and global programme of Friedrich-Ebert-Stiftung under the heading “Economy of tomorrow” (www.fes-asia.org/our-work/economy-of-tomorrow/). With digital and urban transformation penetrating all walks of life, we foster debate on change strategies towards a sustainable economy of tomorrow in Asia. We support policy analysis and research like the publication presented here to bridge the gap between economics and politics and seek ways to democratize new technologies, discuss adequate qualifications, and overcome economic growth without a corresponding growth in jobs for people.

Friedrich-Ebert-Stiftung Vietnam Office is therefore very grateful to the authors of this publication, Dr. Truong-Minh Vu and Mr. Nguyen V. Nhat Anh for making a valuable contribution to the national and regional discourse on the concept of Industry 4.0 that will have an enormous economic impact and will affect changing societies as a whole.

Erwin Schweissheim

Resident Director, FES Vietnam Office

Friedrich-Ebert-Stiftung

Vietnam Office

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Introduction

In his latest book, Klaus Schwab describes how mankind is on the brink of “the fourth industrial revolution”¹ (henceforth 4IR). While the incremental development of technology is by no means a new idea, Schwab is among those who believe technology breakthroughs have accumulated enough momentum to trigger a shift to an entirely new mode of production. The next industrial revolution, according to Schwab, is one that builds upon, but at the same time breaks away from the third industrial revolution with computers, software, and networks at its core. In his own words, 4IR “is characterized by a much more ubiquitous and mobile internet, by smaller and powerful sensors that have become cheaper, and by artificial intelligence and machine learning.”

Schwab is not the first nor the only one to discuss how mankind is entering a profoundly novel mode of production, although approaches to the phenomenon may vary. Frey and Osborne look at “computerization” and its potential impacts on various occupations.² In some instances, parts of the longstanding discourse regarding “automation” and its impact on manufacturing³ and society⁴ can be seen as bearing traces that resemble those belonging to the discussion about the next industrial revolution. That still leaves out a wide range of other discussions about technological progress and its implications.

In Germany, the term “Industry 4.0” is generally the equivalent of 4IR. In 2012, the Working Group on Industry 4.0 presented a set of Industry 4.0 implementation recommendations to the German federal government, in which it defines the emergence of the next production revolution as the convergence of the physical and the virtual worlds—the Cyber-Physical systems (CPSs), which can monitor and control various stages within the production process by creating parallel virtual copies of the physical world and autonomously make prompt and effective decisions. What is entailed with a more prevalent application of CPSs is potentially a boost to productivity and more efficient resource allocation.

It is worth noting that this approach to Industry 4.0 is not the only one, even within Germany. For example, Lasi posits that Industry 4.0 refers to a range of concepts, among which CPSs are just one among others which cannot be

possibly classified in individual cases.⁵ Meanwhile, discrete new technologies and their impacts on industrial business are individually discussed, such as 3D-printing as the cause for the next industrial revolution,⁶ or big data as an enabler to Industry 4.0.⁷ In certain cases, there are doubts over whether Industry 4.0 is just hype, or it can truly bring about radical changes in production.⁸

Regardless of the usage of the terminology, as well as the understanding of the related definitions and contents, what separates the current discourse from those about the previous three “industrial revolutions” is that it is established *ex ante*. With regards to the first three industrial revolutions, while there are a variety of definitions stemming from extensive academic debates, they are in large part founded on a retrospective summary of technological changes and their impacts in history. The current transition to a new production mode, on the other hand, is not so much a unanimously recognized event in the works, but a projection, or in certain cases, a roadmap towards a desired future. In addition, uneven development among countries suggests that each country will likely experience the transition process differently, with possibly disparate timings. It is exactly because right now the new industrial revolution is still largely a vision, that awareness, perspectives, ideas, and most importantly, the game plan a country has for this transition, will play a vital role in a country’s success with 4IR.

It is for this reason that this report aims to investigate the discourse revolving around 4IR in Vietnam. In that context, this report will explore the Vietnamese perspectives and understanding of 4IR and its various areas of concern. The report also examines practical responses to 4IR from different sectors following the discourse. The first section attempts to capture the evolution of the Vietnamese discourse on 4IR following its chronological order, while sorting it into sub-sections according to the perspectives of the policy makers, business circles, and academics, respectively, to capture an overall Vietnamese approach to 4IR so far. Responses from the public and private sectors within the context of the discourse are highlighted in the second section. In the final section, the report makes some concluding comments and recommendations for the Vietnamese discourse on 4IR.

The 4IR discourse in Vietnam: a brief history

The earliest traces of the discourse about 4IR in Vietnam date back to the media coverage of the World Economic Forum (WEF) taking place in January 2016. WEF's report—"The Future of Jobs"—was roughly translated and summarized by various news outlets. For the next several months, general discussions over 4IR continued to receive increasing domestic media coverage.

4IR first gained attention among the Vietnamese leadership during the 4th Plenum of the 12th Central Committee on 5 May 2016, wherein members spent two hours receiving reports on the matter. Central Committee Plenums are important events in which policies are discussed and decided, so the fact that 4IR was an agenda item at a plenum indicates that it bears strong political implications.

In the first few months after the first event, 4IR appeared not to be a consistent concern of the Vietnamese top leadership. At the seminar "Vietnam's National Industrial Development Policies", hosted by the Party Central Economic Committee on 25 August 2016, 4IR and related concepts were entirely absent from the agenda. Instead, attention towards 4IR started to gain more momentum within events of a lower profile, which a few government officials attended. The Vietnam ICT Summit on the theme of "Digital Revolution: Opportunities and Challenges", organized on 24 September 2016, marks the first time 4IR was openly discussed. At the event, Prime Minister Nguyen Xuan Phuc delivered his keynote speech on "digital revolution," which proved to be an early iteration of 4IR.

On 10 October 2016, President Tran Dai Quang spent a considerable part of the speech given at the opening of school ceremony at Vietnam National University, Ho Chi Minh City, discussing the concept of 4IRs as well as its impacts on Vietnam's socio-economic development as a whole. This was the first time a government official had publicly presented a detailed perspective on 4IR. The speech by the president seems to have revived the discussion about 4IR among the Vietnamese top leadership.

The Party Central Economic Committee's seminar "The Fourth Industrial Revolution and its Impacts on Vietnam's Socio-economic Development" included three presentations from the Ministry of Foreign Affairs, the Ministry of Planning and Investment, and a Central Executive Committee member, Dr. Huynh Thanh Dat, with their individual takes on 4IR—a sign indicating that the topic had received close attention from within the government.

Outside the public sector, 4IR and its relevance in the Vietnamese context became a sensational topic in the mainstream media. The WEF in January 2017 at Davos, which Prime Minister Nguyen Xuan Phuc attended, received widespread media coverage.

In response to the interest in 4IR shown by policy makers, the discourse came to witness participation from intellectuals and business figures in different ways. Seminars, workshops, and conferences on relevant topics, either government-backed or privately held, were organized on a frequent basis. These events, unsurprisingly, also received extensive media coverage. Within this wave of media sensation revolving around 4IR, many academics from different fields have chosen to express their views via opinion pieces or interviews in newspapers. Up until July 2017, while having become less of a dominant topic, 4IR was still a buzzword widely discussed at events and in the media.

Policy makers' perspective

Considering the current status of the Vietnamese discourse on 4IR, policy makers' perspectives on the matter can be explored through the speeches and presentations of prominent government officials at different events. In cases where the original texts cannot be retrieved, accounts from the media will be the primary sources.

The keynote speech by Prime Minister Nguyen Xuan Phuc at the Vietnam ICT Summit 2016 can be deemed the first prominent occasion in which a government official expressed his view on 4IR. The original text of the

speech has not been published anywhere for the public to read. However, the main points of the speech were reported by ICTNews,⁹ making it possible to examine the speech in part. In the speech, there is no doubt about the “digital revolution” as a phenomenon in the works, acknowledging that “mankind is facing a revolution that will radically change how people live, work, and interact.” While the terminology used was not 4IR but “digital revolution”, they are in fact equivalents based on the speech’s content. The speech did not go deep into the definitions of any of the terms, such as “digital revolution” or 4IR, but then identified its most outstanding feature as “a shift of development model based on cheap labour and natural resources to one reliant on technologies.” The primary challenge from the “digital revolution” was recognized as job displacement due to further automation, which threatens Vietnam’s core industries like garments, leather and footwear. Inequality as a social issue was also mentioned as a consequence of such a process.

Overall, the speech still gives an optimistic view, affirming that Vietnam possesses the foundation to seize the opportunities from the “digital revolution.” Specifically, the speech mentions that Vietnam’s young and growing population structure is best suited to take advantage of the next technological revolution, as it is still in its incipient stage. It is also pointed out that in the context of the “digital revolution”, the government is fully prepared, with its clear focus on developing a competent ICT backbone, citing Resolution 36 of the Politburo on ICT Development and Implementation, and Resolutions 26 and 36a of the Government, which have identified becoming an ICT-competent country as a crucial focal point. In addition, the speech refers to some indicators of Vietnam’s progress in ICT development. According to the speech, it is suggested that ICT development is associated with “digital revolution”. This point is further substantiated by the five recommendations for Vietnam laid out in the speech, which predominantly revolve around ICT development and its pertinent areas, such as e-government, information technology development, entrepreneurship in the high-tech sector, “digital labour force”, smart cities, etc. However, these recommendations were not detailed.

Also within a speech, President Tran Dai Quang provided a very comprehensive outlook on 4IR. Structured into

three main sections and a conclusion, the speech spends the first two discussing the context of 4IR and its general impacts internationally.¹⁰ The third part is used to talk in detail about the challenges and opportunities for Vietnam in the context of 4IR—a major distinction from the other speech by Mr. Phuc. The conclusion is in large part a general message to students and teachers.

Similar to the speech by Mr. Phuc, this speech also recognizes 4IR as an ongoing reality. Other than this point, Mr. Quang’s speech completely departs from Mr. Phuc’s ideas. The most obvious distinction is that the speech actually uses the term “4IR” to discuss the matter, while the term “digital revolution” is completely absent. In defining the terminologies, the speech specifically refers to the Hannover Fair in 2011 and the high-tech strategy of the German government, and hence acknowledges the term “Industry 4.0” as an iteration of 4IR in Germany.

Within the first two sections, the speech only skims over and briefly mentions the issues concerning 4IR without any apparent focus on any one in particular. The comments bear obvious resemblances to other discussions found in Germany and other parts of the world. For instance, the speech asserts that 4IR far exceeds previous industrial revolutions in terms of pace and scope, and thereby promises radical shifts within the economy and society as a whole. The fact that production will move from countries that rely on cheap labour and natural resources to those with advanced technologies, skilled labour, and large markets is also acknowledged, among other concerns on the environment, employment, job displacement and consumption habits. Interestingly, the speech hints at the emergence of a “creative class”, although definite reference to this concept is unstated.

The third and also the most substantial part is devoted to discussing the advantages and disadvantages of Vietnam in the context of 4IR. First, the speech reasons that due to the historical context, Vietnam missed the chance with the previous industrial revolutions, and that Vietnam should be ready to seize the opportunity provided by the fourth industrial revolution to “get straight to new industries,” “utilize new technologies” and thereby “enhance the industrialization and modernization process” and “close the development gap”. Next, the speech identifies job losses and job displacement due to automation, citing an ILO report. More specifically, Mr. Quang pointed out

that Vietnamese workers are at risk of being squeezed between cheaper labour from Cambodia, Bangladesh and Myanmar and more developed robots being ever more prevalently deployed in more developed countries, implying the “reshoring” effect.

Interestingly, the speech brings up cyber security, along with other correlated concepts such as cyber espionage, cyber warfare, and cybercrime, which are listed as some of the “unconventional security threats” to Vietnam in the context of 4IR. The speech also mentions social media in general and particularly Facebook as a platform for “the hostile forces” and “reactionaries” to “threaten the political stability of the country”, and calls for better awareness and defence, which may be an allusion to more constrictive social media censorship measures. These concerns over 4IR are unique to Vietnam and this speech in particular. Overall, this adds to the cautious attitude the speech has towards 4IR.

Other demonstrations of the policy makers’ perspective could be seen in the presentations by the representatives of the Ministry of Planning and Investment (MPI) and the Ministry of Foreign Affairs (MFA) at the conference “The Fourth Industrial Revolution and Its Implications for Vietnam’s Socio-economic Development.” The contents of these two presentations are largely similar to each other and to the speech by President Tran Dai Quang.

Regarding the origin of 4IR, the presentation by the MPI (2016) simply recognizes the presence of a new industrial revolution and suggests that it is a continuation of the third at a much faster pace, which is a similar observation to that of Mr. Quang.¹¹ The presentation by the MFA (2016), on the other hand, while acknowledging the same observations of Mr. Quang and the MPI, points out that there are other takes on the issue. Specifically, the presentation states that there are those who think there is not yet another industrial revolution, noting that such a phenomenon could still be elementary, and that its impacts are rather obscure.¹²

Both presentations by the ministries expanded on Mr. Quang’s speech by mentioning specific technologies when discussing the features of 4IR. While the presentation by the MPI only briefly explains the Internet of Things, 3D printing and cloud computing without making much comment on how they make 4IR radically

different from the previous industrial revolutions, the MFA goes into a detailed list of new technological breakthroughs and discusses how impactful they are as a whole on mankind’s socio-economic situation.

With regard to the impacts of 4IR on countries around the world, what are mentioned by both presentations of the two ministries essentially reiterate similar contents discussed in the speech by President Quang. The common theme is job losses and occupational displacement caused by new technologies, aside from rising inequality both within and between countries. It is noteworthy that the MFA points out the low employment risk, offering statistics to further corroborate their points. For example, the MFA cites research by the OECD, saying that only 9 per cent of the jobs in OECD countries will be automated, and that 30 per cent of the jobs require new skillsets, thereby suggesting that job losses and displacement caused by 4IR will not happen in a widespread and instantaneous manner, and that only professions that rely on low-skilled labour will suffer the most.

Regarding Vietnam, not much of any new position is presented by both. The MFA’s presentation says that the next industrial revolution is still in its early stages and thus is an opportunity for Vietnam to “promptly get straight to new industries” and to “close the development gap”, which Vietnam could not due to historical circumstances with the previous industrial revolution. These observations in fact only echo the point Mr. Quang made in his speech. On the population structure that has been viewed as advantageous by others, the presentation by the MFA, however, warns that Vietnam is will pass the optimum point in the near future. How this is related to 4IR, presumably as a challenge, is not specified.

Neither set of recommendations provide any concrete policy implications, but mostly offer general ideas and direction. Generally, the recommendations suggest that since 4IR in Vietnam is still a novel concept, further research into how much the projected changes may impact Vietnam’s socio-economic situation is needed for appropriate policy responses to be devised. The MPI primarily calls for better awareness of the matter across industries and sectors. Their presentation also stresses the continuation of improvement in the domestic legal and business environment, and capacity building for the

labour force and then enterprises, especially the smaller ones.

On the other hand, the MFA gives some insights about Vietnam's goal to industrialize and modernize. Specifically, it is suggested that Vietnam should "switch from the conventional development model of relying on natural resources exploitation, manufacturing and assembly to a more knowledge-based model with advanced technologies and skilled labour." The MFA also urges further integration into the global value chain. On "getting straight to the new industries," the MFA calls for: 1) development of the bedrock industries of industrialization; 2) determination of technology fields foundational to 4IR, to invest therein; and 3) further development of spearhead industries including those in which [Vietnam] potentially has a competitive advantage. In other points, the MFA advocates industrial clusters, referencing the experience of the "newly industrialized countries", and calls for the role of science research and implementation in facilitating a high-quality labour force. On science research, the MFA suggests public-private partnership in technology development and partnership with countries that lead in technologies driving 4IR.

Overall, Vietnamese policy makers hold a unified view on what 4IR is about and how it may affect Vietnam. This can be explained by the fact that Vietnam is a latecomer to the international discourse, and policy makers in Vietnam primarily draw their references from the same most well-known sources such as Schwab's book for instance. The recurrent theme in terms of 4IR's impacts on Vietnam, according to all accounts, is predictably job losses and displacement. The only exception is President Quang's view on cyber security and regime security, which may herald the government's growing aversion towards social media. Generally, Vietnamese policy makers contribute to triggering domestic discourse via public statements, speeches, and presentations. These, however, are more of a politically rhetorical nature, and have not been substantive in terms of policy implications.

Enterprises' perspective

To delineate an overarching picture of how the business sector in Vietnam views and is preparing for 4IR is a difficult task. At the time of writing, there has

not been any research that the author is aware of on Vietnamese enterprises' maturity, perception, and preparation for 4IR such as the work done by Acatech,¹³ or Schumacher.¹⁴ There are existing maturity assessment models, such as those from IMPULS Foundation,¹⁵ and PricewaterhouseCoopers,¹⁶ yet their compatibility with Vietnamese enterprises is questionable, which calls for appropriate modifications. For this reason, to encapsulate the Vietnamese discourse from the enterprises' perspective, this report must rely on mainstream media's sparse coverage and accounts that reflect in part the prominent opinions of major business leaders, as well as how the business sector in general views 4IR.

At the CEO Forum 2017 on the theme of "The Fourth Industrial Revolution: Gains and Losses", which was organized by the Vietnam Economic Times on 7 April 2017, the results of a survey conducted by the SME Association of Hanoi regarding SMEs' awareness of 4IR were presented. Further details of this survey are unknown, since aside from the fact that the survey's results were presented at the conference, no written documents or reports of this survey are to be found anywhere, and there is also no relevant information on the official website of the SME Association of Hanoi.

Details of the results of this survey, fortunately, were reported consistently by several news outlets. For example, according to VnEconomy (2017), 85 per cent of the surveyed enterprises show an interest in 4IR. Among these, 55 per cent believe that 4IR will leave a profound impact on Vietnam's economy, 23 per cent think the impact will be medium, 11 per cent predict a marginal impact, while 6 per cent have no idea.¹⁷ When asked about strategies to prepare their enterprises before 4IR, 79 per cent say that they have not done anything. On the other hand, 55 per cent say they are learning about the matter, 19 per cent have plans to develop strategies accordingly, and 12 per cent say they have implemented the plans. Among the uninterested enterprises, 67 per cent say 4IR is irrelevant to their businesses, 56 per cent believe their respective sectors will not feel much impact, 76 per cent say they are not aware of 4IR and its features, while up to 54 per cent say it is unnecessary to pay attention to this issue.

Since these results are derived from media reports, it is impossible to know the exact wording of the

questionnaire. Cross-checking with other reports from different news outlets yields similar results in terms of wording. There is no way to determine the typical issues of a survey: response rate, sampling quality, and representativeness of the sample. Also, the phrasing of the questions appears to be ambiguous, and the answer choices not mutually exclusive. What can be determined with some degree of certainty is that a large majority of the SMEs in Hanoi are aware of, or at least know of, the phenomenon of 4IR. It is difficult to conclude, on the basis of this survey, how ready Hanoi SMEs are for 4IR in terms of their strategic vision. However, it is clear that between both those that are interested in 4IR and those that are not, most have not devoted much effort to prepare themselves, perhaps because they do not think that 4IR is of much significance, at least in the Vietnamese context. Also, while it is suggested that more than half of the respondents interested in 4IR believe that it would have profound impacts on Vietnam, there is no telling whether these impacts, according to them, would be mostly positive or negative. Nevertheless, it is important to note that this survey was conducted aimed at SMEs in Hanoi in particular, and there was no distinction between SMEs in different sectors, such as manufacturing, services, and ICT. Moreover, while there has not been any similar survey that targeted SMEs in other places, especially Ho Chi Minh City it is possible to believe that results from SMEs in Ho Chi Minh City would be different, since compared to Hanoi, Ho Chi Minh City adopts a more business-oriented culture.¹⁸

Perception of 4IR by larger corporations is different from that of SMEs. FPT Group president Truong Gia Binh is someone whose opinions regarding 4IR have been reported a lot by the media. At the CEO Forum 2017, he said that the fourth industrial revolution would be the last opportunity for Vietnam to dodge the middle-income trap and become an industrialized country before the demographic shift of an ageing population. According to Binh, 4IR would initiate a natural selection process, through which low-productivity enterprises would be eliminated. Nonetheless, Mr. Binh maintains the optimistic view that Vietnam has adequate ICT capacity to cope with 4IR. Mr. Binh told VnExpress that Vietnam possesses substantial potential to take advantage of 4IR, as 65 per cent of the population are under the age of 35, and thanks to prevalent internet availability.¹⁹ According to him, 4IR brings along new ideas and technologies that

start-ups can exploit to break into new niche markets. He also noted that his company FPT itself is developing an ecosystem that facilitates entrepreneurship.

As reported by VnEconomy, at a shareholder meeting, President Binh said that FPT is implementing a roadmap to prepare for 4IR. Interestingly, Mr. Binh also revealed that FPT is working on implementing 4IR in building “digital government,” which he said is fundamentally different from “cyber government.”²⁰ While further details were not provided, it seems to be a collaborative project between FPT and the government. Also worth noting is the disclosed roadmap for becoming a “pure technology” corporation to better prepare ahead of 4IR. According to this roadmap, FPT will divest from distribution and retail to focus on its technology core. However, it needs pointing out that there have been no comments saying that this move is specifically to prepare FPT for 4IR, nor whether this roadmap is part of the Industry 4.0 roadmap by FPT.

Viettel²¹ CEO Nguyen Manh Hung, on the other hand, has a rather optimistic view on Vietnam's potential with 4IR. His comment that “Vietnam can lead in 4IR” made the headlines on VnEconomy, in which he noted that Vietnam has the largest potential to take advantage of the opportunities from Industry 4.0. He reasoned that because Vietnam's current capacity is still low, the shift to a newer mode of production will be faster and less costly. According to Mr. Hung, 4IR will pose a great challenge considering the technological starting point Vietnam is at, but is a great opportunity “to identify issues and solve them”, and the Vietnamese are “capable and fortunate.”²² Nonetheless, no specific explanation of how Vietnamese enterprises can do what is suggested, nor any information as to how Viettel in particular can cope with 4IR strategically, is reported by any other source.

In general, what can be traced so far reveals a very insufficient delineation of the business sector's perspective on 4IR in Vietnam. However, what is available reveals that between SMEs and larger corporations there is a gap in terms of awareness and preparation regarding 4IR. Vietnamese SMEs appear to show limited interest in 4IR, and devote minimal attention to developing a game plan to deal with the trend. While further investigation into how prepared Vietnamese SMEs are for 4IR is needed to

have a more accurate snapshot of the current situation, it is understandable how smaller companies in Vietnam do not actually find 4IR relevant to their businesses, as the concept is still new to Vietnam, and they would be the least likely to afford to transition to more advanced technologies. Larger corporations in Vietnam may not have to deal with financial shortcomings, and are better informed regarding 4IR, at least in the cases of the business leaders at FPT and Viettel, and hence presumably these corporations are better prepared strategically to cope with 4IR. However, there needs to be better investigation into the large corporations regarding the matter.

Intellectual perspectives

A proper analysis of an intellectual discourse on a particular subject matter, as a common practice, should be conducted sourcing from an academic body of literature. However, much like the rest of the discourse examined so far, academics in Vietnam up to this point still predominantly use the media, or feature at conferences and events, to express their opinions. Chronologically speaking, the time frame in which opinion pieces and interviews about 4IR/Industry 4.0 appeared most prevalently coincides with the period in which 4IR/Industry 4.0 was still a media buzzword. This is not necessarily a negative thing, but it is still important to keep in mind that the positions from the academics are by and large not derived from rigorously conducted and peer-reviewed research, but rather personal commentaries in response to the media sensation at the time.

In an interview with a newspaper, Chu Hao said that Industry 4.0 offers more opportunities than challenges to Vietnam. Specifically, on job displacement, a risk that concerns many, he said that Vietnam is yet to be the under the direct influence of Industry 4.0, and hence can still take time to prepare its labour force to adapt to the new trend. Interestingly, he said that value chain segmentation in Industry 4.0 is not as “competitive” as in the “industrial age of mass production” (perhaps an allusion to Fordism, also referred to as the second industrial revolution by some).²³ Industry 4.0 therefore is preferable for SMEs, and emphasizes creativity rather than capital. Overall, it is unclear what he means by

saying that Industry 4.0 is less competitive than previous eras, and what sector he is specifically discussing. The point on SMEs and a creativity-based economy is also ambiguous, but it is possible that he holds a similar view to that of Viettel’s CEO Nguyen Manh Hung, that SMEs can strive to explore niches in 4IR.

While most abstain from giving their own opinion on the features of 4IR, in an interview, Dr. Vu Minh Khuong offered his own two concepts: “enlightenment” and “connective synergy ability”.²⁴ In his elaboration, “enlightenment” alludes to the massive database accumulated thanks to the advent and evolution of the internet, which is retrievable by any individual or organization. This facilitates “benchmarking”, “progress monitoring” and also transparency. For instance, a public organization is deemed to be implementing 4IR well when information regarding its agenda, personnel, administrative work and budget is publicized and benchmarked, which is expected to enhance productivity and boost its own prestige. In addition, Dr. Khuong’s concept on “connective synergy ability” shares a certain resemblance with the concept of a sharing economy, in which an idea may reap extraordinary profits by its ability to find “resonance” with the community. Primary examples of this business model include Oculus Rift, Uber, and Airbnb. According to Dr. Khuong, this feature of 4IR allows an enterprise, or even a state to increase its value, not solely via reinvestment, but also through building “connection”, interaction with customers and citizens.

In line with a few other accounts, Dr. Khuong believes that Vietnam, despite its low starting point in the industrialization process, can still seize the opportunities with 4IR, and what is needed are genuine aspiration, along with a concrete agenda and an open mindset. He especially stresses the responsibility of the institutional and administrative foundations, which should further be reformed to take a more facilitative role. It is worth noting that Dr. Khuong suggests that Vietnam can attempt to create special economic zones (SEZ) that enjoy exclusive policy experiments. Each area chosen as an SEZ may receive focus investment on its comparative advantage to become a spearhead in that sector, from which benefits may trickle down to other areas.²⁵

Truong Van Cam,²⁶ on the other hand, delves into the textile and garment industry. To him, Industry 4.0 and its effects may radically change this industry in Vietnam, and in multiple positive ways: 1) labour might expect to be liberated from menial, hazardous jobs; 2) gaps in Vietnam's supply chain might be filled, prompting the restructuring of domestic industry; 3) productivity and product quality are expected to be improved; 4) the "reshoring" trend may trigger domestic industry to divert from exporting to focus on the flourishing domestic market of close to 100 million people; and 5) the education and training system will be pressured to improve to accommodate the demand for higher-skilled labour.²⁷

On the job displacement risk, Dr. Cam says that such an effect from 4IR is inevitable. According to Dr. Cam, the risk might be intensified as Vietnam's spearhead industries are heavily labour-intensive, such as textiles and garments, and leather and footwear, citing the ILO's (2016) report on the textile labour displacement rate in Vietnam, which is estimated to be 86 per cent in the next decade.²⁸ However, he notes that job losses in Vietnam might not be as profound as the ILO suggests. This is because within the global value chain, the Vietnamese garment industry occupies stages that suffer less from automation. Specifically, Dr. Cam estimates that human replacement rates by machines are relatively high in stages such as: synthetic fibre production (40-50 per cent); natural fibre production, weaving, non-woven processes, accessories production, and finishing (30-40 per cent). Sewing, which is the most dominant stage in Vietnam, has a relatively low replacement rate (<30 per cent).²⁹ How he came up with these estimations is unspecified. He also points out the reshoring trend as a potential adverse effect from Industry 4.0, in which garment production may shift back to developed countries, most of which are Vietnam's largest export markets. However, no quantifiable estimations are offered on this matter.

Dam Quang Minh and Pham Hiep meanwhile approached 4IR from the education perspective, specifically tertiary education. According to their opinion piece, conventional Vietnamese universities will face fierce competition from the business sector in attracting the best people. In addition, traditional universities are currently teaching knowledge that may quickly become obsolete within the

time frame a batch of students graduate, as technologies and hence the job market are evolving at a rapid pace. The situation calls for the combination of universities and enterprises to form an entity called an entrepreneurial university, so that universities can teach knowledge that matches what the market demands, or will demand.³⁰

The opinion piece by Ho Tu Bao is one of the rare attempts to break down what is termed 4IR, and the general 4IR discourse in Vietnam. The fact that Dr. Bao does not delve into a particular sector, but zooms out for an overarching view of the whole discourse, which is similar to this paper itself, merits this piece a closer look. Dr. Bao is the only author who points out that 4IR is more about anticipation and speculation than a concrete development apparently in progress. However, he notes that even if 4IR is just a forecast, countries are devising plans according to the predicted changes in the manufacturing scene, such as Germany's "Industry 4.0", or China's "Made in China 2025."³¹ This observation by Dr. Bao may imply that the move towards 4IR may be expedited as countries are already making adjustments, and latecomers like Vietnam would have to be even more prepared to adapt.

Dr. Bao presents the link between the technologies deemed to make up 4IR, such as 3D printing, cloud computing, machine learning, and artificial intelligence, by defining the digitalization concept, thereby explaining the notion of "cyber-physical system". This explanation aligns largely with what is commonly presented by the German body of literature on the matter. His discussion on the application of digitalization in several sectors such as agriculture, tourism, and health care, may not be sufficient as policy recommendations, but serves as good guidelines on how this concept can be implemented in actual settings. Interestingly, Dr. Bao says that 4IR's unique feature, which distinguishes it from past developments, is its focus on digitalization technologies, and not on industries such as cars and robots. According to Dr. Bao, while lagging far behind developed countries in terms of conventional industries, Vietnam may be able to seek ways to leapfrog and shorten the distance via digitalization. To elaborate, he says that developments in digitalization, machine learning, and data science are predicated on the profound bedrock of mathematics and information technology, in the teaching and training of which Vietnam has considerable advantage. This, as

Dr. Bao emphasizes, is what Vietnam should capitalize on on a more comprehensive scale.³²

Overall, the discourse on 4IR among the academics in Vietnam hitherto can be broken down into three categories: 1) discussion on the impact of 4IR in Vietnam on a macro level; 2) discussion on the impact of 4IR in a niche sector or market; and 3) discussion on the overarching concept of 4IR and its related concepts and technologies. Following this breakdown, it can be seen that the first receives the most attention, with more or less a focus on Vietnam's policy response. The second is more tilted towards manufacturing, specifically

garments & textiles—one of Vietnam's spearhead sectors, but overall still calls for more investigation into other sectors and markets. The third appears to be the least saturated. Discussion on it is core to the overall discourse, since it helps provide a more thorough and accurate understanding of the 4IR concept, which lays a firm foundation for discussions on the first two categories. Generally, the overall discourse is still lacking both depth and quantity across all three categories, as proper and rigorous research has not been conducted and published as opposed to commentaries in the media. Further development in terms of research regarding various aspects of 4IR in Vietnam is urgently required.

Discussion and recommendations

Examination of the overall discourse on 4IR in Vietnam so far reveals several interesting points. First of all, judging by the sequence of events, it can be seen that the 4IR discourse in Vietnam was initiated by the attention from policy makers. The discourse started gaining momentum mostly after the opinions of government officials, either in speeches or written records, were covered by the media from the latter half of 2016. The fact that policy makers express their interest in and awareness of the matter has fuelled the dense coverage of 4IR, turning it into a media sensation. This development then instigated the involvement of business figures and intellectuals in the discourse via opinion pieces, commentaries, and interviews in mainstream media. The fact that the discourse is conducted primarily through mainstream media, however, renders itself inadequate in both scope and depth, making it not so much a serious discourse as a sensational media topic that eventually fades out with hardly any meaningful follow-up.

While Vietnamese policy makers play the role of instigating the discourse, their efforts so far have been confined primarily to political rhetoric and not actual policy response. While the leadership in Vietnam appears to be informed about the concept of 4IR, its take on the matter is primarily derived from foreign accounts and not from thorough domestic research and reports. Also, a coherent and coordinated undertaking in Vietnam similar to Germany's "Industry 4.0", China's "Made in China 2025", and South Korea's "Future Growth Program", which show substantive political commitment, is still absent. Moreover, there has been no reference to previous policies and programmes, such as the "Development Strategy in Science and Technology until 2020" approved in 2012, or the National Foundation for Science and Technology Development (NAFOSTED) operating since 2008, which are pertinent to the context of 4IR in Vietnam. This calls into question whether Vietnamese policy makers genuinely view 4IR as a policy concern or just political rhetoric.

This lack of concrete endeavour from the government also leads to the deficiency in coordination and connection between academics and policy makers. As pointed out, the intellectual perspective in the discourse

so far has been devoid of quality studies. Part of the reason is perhaps because policy makers have not made their vision clear: aside from citing the concept of 4IR as a trendy catchphrase, do they seek to address specifically the manufacturing sector, the domestic labour market, the social welfare system, the development and implementation of new technologies, the SME sector, growth, or any other aspect? Without a clear-cut vision, it is difficult for academics to work in tandem with policy makers and advise the leadership on appropriate policy development. In addition, the academic aspect of the discourse is currently short of participation by experts in manufacturing, supply chains, logistics, information technology, robotics and artificial intelligence, among others, while these fields provide salient insights to the concepts of 4IR. Without these insights, comments on the features and impacts of 4IR in Vietnam on the macro level lack practical implications. Even policy recommendations, such as those by Dr. Ho Tu Bao and Dr. Vu Minh Khuong, are difficult to implement given the lack of adequate political will.

Finally, the insufficiency of the discourse academically also impairs the business sector in two ways. On the one hand, as pointed out earlier, research on Vietnamese enterprises' readiness for 4IR is limited. Without adequate evaluation, devising policies that effectively cater to Vietnamese enterprises is difficult. On the other hand, the sensationalisation of the 4IR concept in mainstream media may confuse and overwhelm business leaders instead of informing them, hence distorting how 4IR is perceived and how enterprises devise plans to cope with the imminent changes. In fact, the cases of FPT and Viettel can hardly be used to generalize for the whole of the Vietnamese business sector, given their size, market power, and the particular sectors in which they operate.

Overall, it appears that the Vietnamese discourse on 4IR is still nascent and under-developed. This is, however, understandable, since the starting point of Vietnam is recent. From this point onwards, contribution to the discourse is most expected from academics, with more in-depth studies that cover a more diverse range of aspects related to 4IR in Vietnam. In addition, policy makers need to be more candid and resolute in their

vision regarding 4IR, thereby working side-by-side with academic institutions and universities. Whether or not these endeavours crystalize into a meaningful policy

outcome is a matter of time and effort. Vietnam still has time with 4IR, but such a window of opportunity can easily slip past without adequate focus.

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About the authors

Dr. Truong-Minh Vu is Director of Centre for International Studies (SCIS) at the University of Social Sciences and Humanities, Ho Chi Minh National University. He holds a PhD in International Economy - Politics from University of Bonn, Germany. He has contributed with research papers, commentaries and initiative on topics relevant to his area of studies and the South China Sea dispute settlement.

Nguyen Vu Nhat Anh is a Master student at Yonsei University — Graduate School of International Studies (GSIS), majoring in International Trade, Finance and Management. He is currently working as an Associate Researcher at Saigon Center of International Studies (SCIS). His fields of interest include international political economics, development economics, and East-Asian security.

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7 Ba Huyen Thanh Quan, Ba Dinh
Hanoi, Vietnam
|Po Box 44

Responsible:

Erwin Schweissheim | Resident Representative

Phone: +84 24 3845 5108

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