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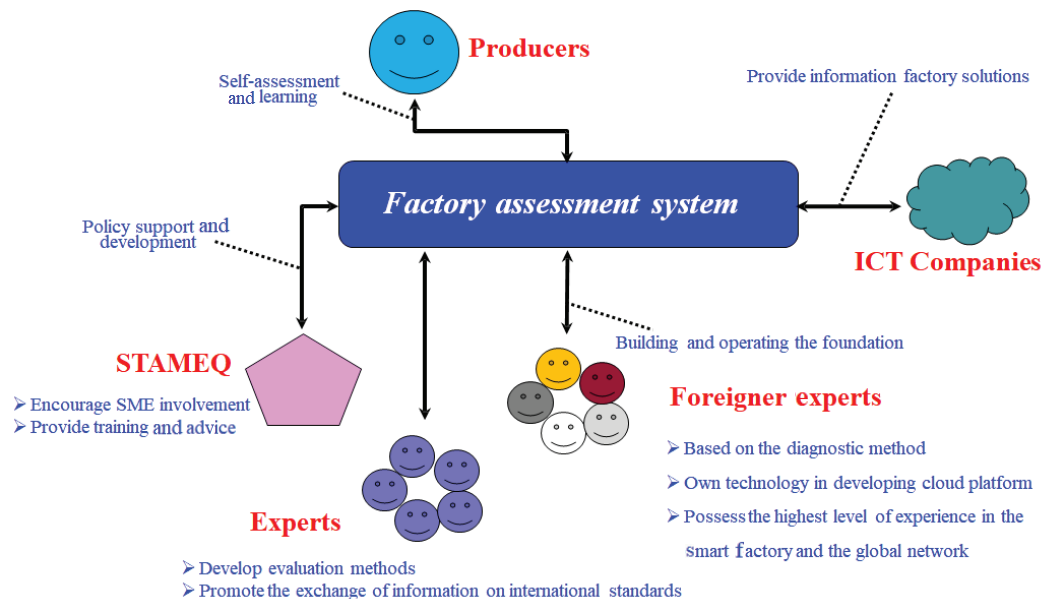
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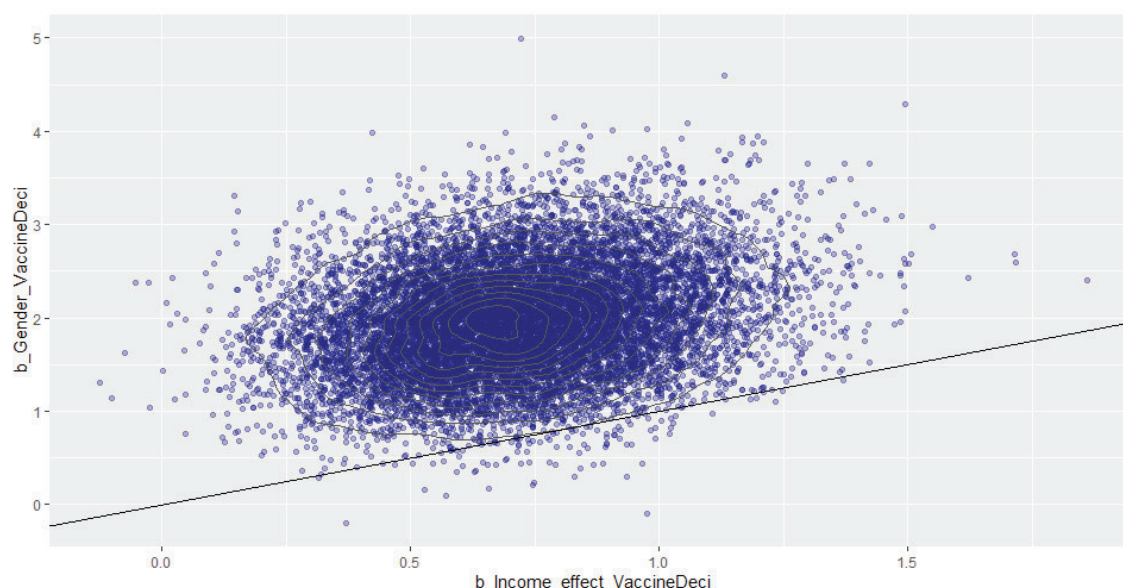
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Market entry strategy for construction chemicals firm in Vietnam

Van Chung Anh Le^{1*}, Guillaume Finck²

¹IPAG Business School, 184 Bd Saint-Germain Street, Paris City, France

²College De Paris International, 15, Rue Montmartre, 75001 Paris, France

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Abstract:

Economic development has led to rapidly increased demand for construction in Vietnam, which creates great potential for the growing market of construction chemicals. This paper examines influential factors of market entry success by reviewing related literature, gathering information about market characteristics in Vietnam, and surveying firms in the field. This study's results reveal some factors that strongly influence the success of a market entry strategy including research and development and adaptive abilities of marketing and sales when responding to market changes. With strict technical requirements and fluctuating demand due to changes in construction activities and market trends, all aspects of market entry need to be gathered and considered carefully. No market entry model suits any business forever. According to the circumstances of each market and firm, market entry should also change appropriately. Firms should have insight into the market including knowing customer needs, anticipating demand trends, and identifying competitive advantages of the firm by understanding customers, market, competition, and competitors.

Keywords: barrier to market entry, market entry strategy, Vietnam construction chemicals market, Vietnam market entry.

Classification number: 2.2

1. Introduction

Construction chemicals are used in construction activities to extend the functional scope of construction materials as well as speed up construction, enhance durability, and provide strength to structures. In Vietnam, over the past decade, the construction chemicals market has been steadily growing. Currently, according to the World Bank, "Vietnam is now one of the most dynamic emerging countries in East Asia". Given urbanization, economic development, and population growth in Vietnam, the demand for new construction and upgrade of old structures is increasing rapidly [1]. Consequently, this supports steady, fast growth of the country's construction chemical industry. Indeed, the Vietnamese construction chemical market has high growth prospects because of many supportive factors including rapid urbanization, increasing investments in infrastructure and real estate construction, and expanding industrial zones.

In addition, rising income levels and the desire to enhance the style and quality of living spaces lead to higher construction standards. Consequently, this also supports increasing demand for construction chemicals. Besides this great potential, the market also has many challenges and difficulties. For example, the current market is highly fragmented, competitive, and changing fast with various market participants that include both small, local companies and multinational corporations. There are some merger and acquisition activities in the market to expand market share, which can be used as a way to eliminate direct competitors, and indeed most of these situations occur between a key player and a domestic producer.

For many reasons, most major foreign players have limited business networks that focus mainly on big construction projects with high demands of technology. On the other hand, the domestic players exploit advantages of having market insight and

*Corresponding author: Email: lanhlolus@gmail.com

flexibility to develop distribution networks and sales, increasing market share of low-tech products, and continuously improving their technical abilities for enhancing competition. Because of more accessible production techniques, more and more local producers are appearing in the market and competition in the segments of low-tech products is becoming tenser while profit margins remain slim. However, the market size of such products increases rapidly, and total revenue grows accordingly.

Some research on market entry in Vietnam has been conducted, and most of these works focus on how to select the mode of market entry for international companies and identify contributing factors of market entry strategy [2-4]. However, there is a notable lack of analysis and detailed knowledge about actual factors affecting the success of a market entry. Therefore, this article aims to examine characteristics of the Vietnamese construction chemicals market. What are the most influential factors of the success of the market entry in actual business operation? All these results will provide a better understanding of the market entry and highlight key factors to develop a comprehensive market entry plan or expand the market, confronting the rapidly evolving world around business activities.

We organize the rest of the article into three sections. First, we review existing research on market entry, barriers to market entry, and market entry in Vietnam in particular. Second, we describe the method and data collection. Third, we discuss findings, limitations, and further research.

2. Literature review

2.1. Market entry

To avoid making a biased entry decision, one needs to carefully analyse other factors such as critical stakeholders, success factors, barriers to entry, appropriate strategies, etc. X. Wang, et al. (2018) [5] stated that “market entry is the activity associated with bringing a product or service to a targeted market”. There are two kinds of markets: the primary market refers to the market where the companies sell new products to the customers for the first time and the secondary market is one in which the customers trade the products among themselves”.

Regarding market entry timing and other factors of market entry, D.J. Teece (2018) [6] show that “a firm’s market entry timing and entry mode can significantly influence the firm’s performance. Many factors such as control, experience, and cultural distance can influence the formulation of a firm’s market entry strategy”.

G.D. Markman, et al. (2019) [7] provided another aspect of market entry, “some firms can operate inside their market niches with limited growth, while many enter a new market as important means to either grow sales, develop capabilities, or diversify in terms of both a product range and geographical presence”. This author also provided “a field-wide perspective of market entry by expanding on the framework of market entry” by considering factors including “the who - players such as incumbents, entrants, suppliers, etc., when - the timing and sequence of entry, how - the strategy, resources, capabilities, etc., where - the space of entry, and what - product, service, business model, etc”.

There has been a lot of attention paid to the fundamental research to “develop market entry strategy formulation: a hierarchical modelling and consumer measurement approach” conducted by G.L. Urban (1979) [8] because of the benefits brought to the firms. “New product development requires large amounts of money and time and presents major risks of a failure”. Therefore, firms can increase the benefits of their current products or services by “an effective strategy for market entry can increase the likelihood of success and improve the potential payoff by focusing development efforts on attractive market opportunities”.

The Collins Dictionary of Business prepared by C.L. Pass (2005) [9] provides the most comprehensive explanation on the definition of market entry:

“The entry into a market of a new supplier in the form of either a greenfield operation (i.e., an additional supply source), merger with, or takeover of, an existing supplier. Market entry constitutes a major business strategy decision, reflecting a strategic initiative on the part of a firm to develop or reshape its product/market positioning. Such entry occurs largely in response to the perceived long-run profit potential of the target market, which in turn is importantly influenced by the size of the market and its perceived growth potential, concerning the expansion of total primary demand and particular market segments. Successful new entry requires the firm

not only to overcome any initial barriers to entry but also to develop a long-term strategy for establishing and sustaining competitive advantage over rival suppliers”.

In general, the scholarly topic on market entry has grown steadily over decades, and many papers have analysed related theoretical perspectives such as transaction cost economics, the resource-based view, influent factors, etc. At present and in the future, the topic of market entry will remain important because entrants are often mounting significant threats to trade war, the COVID-19 pandemic, climate change, incumbent performance, industry profitability, and many other factors.

2.2. The barrier to market entry

Understanding barrier factors to market entry plays a vital role in the successful strategy of companies to enter the Vietnamese construction chemicals market. A barrier to market entry impedes and or undermines the ability of a company to enter the market successfully.

The topic of a barrier to entry has been discussed and synthesized over many decades with a pioneering study by J.S. Bain (1956) [10], which provides the following definition: “a barrier to entry is an advantage of established sellers in an industry over potential entrant sellers”. In the aspect of production costs, G.J. Stigler (1968) [11] suggested, “barrier to entry is the production cost (at some or every rate of output) which must bear by firms which seek to enter an industry, but the firms already in the industry do not need to bear such costs”. According to D.W. Carlton, et al. (1994) [12], “a barrier to entry is anything that prevents an entrepreneur from instantaneously creating a new firm in a market”. J.R. Church, et al. (2000) [13] also indicated that: “an entry barrier is a structural characteristic of a market that protects the market power of incumbents by making entry unprofitable”.

The above definitions of barriers to market entry focus mainly on market characteristics and their negative impacts on new entrants’ making market entry decisions. Besides that, more concepts of barrier to market entry focus on other aspects relating to strategic behaviour as well as natural and artificial barriers.

A. Pehrsson (2009) [14] proposed that “a firm that enters a market late and faces extensive barriers would choose a broader product/market scope and differentiate its products to a larger extent than an

early entrant”. F. Karakaya, et al. (1989) [15] provided more ideas on the concept: “the importance of barriers differs depending on the market and the type of product marketed”. According to Encyclopaedia Britannica, “barriers to entry, in economics, obstacles that make it difficult for a firm to enter a given market”. The classification of barriers is based on the natural and artificial characteristics of the market. Most of them happen due to the firms already operating in the market or by the government [16].

2.3. Different barriers to market entry

It is necessary to specifically identify market entry barriers and consider the possibility of overcoming them before making a market entry decision. To make it more specific for academic study and strategic management, many scholars have classified barriers over the last few decades.

For example, M.E. Porter (1980) [17] proposed six significant entry barriers including: 1) cost advantages of incumbents; 2) product differentiation of incumbents; 3) capital requirements; 4) customer switching costs; 5) access to distribution channels; and 6) government policy. For more details, F. Karakaya, et al. (1989) [15] pointed out 25 market entry barriers and classified them into two categories: 1) competitor-activated or controllable barriers to entry and 2) environmental or uncontrollable barriers to entry.

Furthermore, the small and medium enterprises (SMEs) and Entrepreneurship Program financed by the Netherlands’ Ministry of Economic Affairs provided a report on barriers to entry prepared by J. Blees, et al. (2003) [18]. The purpose of the report was: “to identify and describe all possible barriers to entry and their potential effects on competition”. Thirty-seven different barriers were identified “with a special focus on the possible side effect of the barrier, the sustainability of the barrier, the way it can be measured and the relation with other barriers to entry”. The report describes each barrier, “the mechanisms behind the barrier and how the barrier influences or restrains competition and entry”. Additionally, it analysed the relationship between the barriers. Some examples of market entry barriers mentioned in the report include access to distribution channels, advertising, availability of skilled labour, brand name, capital requirements, cultural distance, customer loyalty, government licences, government

policies, investment risk, level of technology, selling expenses, and technological change.

2.4. Market entry in Vietnam

Regarding the topic of market entry in Vietnam, few studies show a comprehensive approach for practitioners or as scholarly references. However, some researchers published, to some extent, outlines of lessons learned and other aspects of the subject.

On the subject of cultural factors on the entry mode, M.H. Nguyen, et al. (2020) [4] mentioned cultural distance as a crucial factor significantly affecting the entry mode selection of multinational enterprises. The result of the study showed that “when the cultural difference between Vietnam and their home country is high, foreign-invested firms prefer wholly-owned subsidiaries over equity joint ventures”. Z. Li, et al. (2017) [3] contributed to the research topic by “analysis of the strategy of Chinese enterprises to open up Vietnam market - a case study of a Hong Kong invested enterprise entering the Vietnamese market”. The result of the analysis points out two valuable conclusions. Firstly, “each company should have its correct decision-making and fully understand Vietnam’s laws and regulations”. Secondly, “they also should not tend to ignore the training and promotion of Vietnamese employees in the process of Vietnamese market development”.

In addition to the research topic focusing on entry strategy and entry modes, D. Simonet (2012) [2] contributed some exciting findings on the entry modes of European firms in Vietnam a decade ago. According to the research results, there are some concerns of European firms when choosing entry modes in Vietnam. Firstly, the market is “still heavily government regulated and some time that leads to uncertainty about economic conditions”. Secondly, there is a “lack of trust in partners and institutions”. These factors gave the firms low expectations and so they preferred low equity entry modes although Vietnam has high potential, such as a large market and high growth rate. B.H. Wafler, et al. (2017) [19] also shared findings on two European multinational companies’ adaptations to suit “market uncertainty and political instability in a newly emerging market”. Balancing between standardization and adaptation on product quality and performance-labelled as a semi-adaptation solution-can work well

in the market. This strategy is more effective than the variety of product categories.

Regarding lessons learned from enterprises’ market entry in Vietnam, H.T. Nguyen (2020) [20] presented an “analysis of Starbucks’ entry strategy into Vietnam market”. Starbucks has been recognized as a well-known brand worldwide with successful experience in China, reliable resources and capabilities, and supported by the great potential of a fast-growing economy and the rapidly increasing size of the middle class. However, eight years after entering the Vietnamese market, Starbucks’ business has moved slower than planned, and they intend to close some stores in the next few years due to unexpected business results. For reasons of such effect, this paper suggests some points to consider as lessons learned for reference. Firstly, Starbucks offers “cafes - dispensing drinks from Arabica” - a less common coffee in Vietnam. Meanwhile, Robusta coffee comprises most of the coffee market in Vietnam. This situation may come from a lack of insight into the favourite beverages of Vietnamese consumers. Secondly, Starbucks is inflexible in changing menus to meet market trends while local coffee chain stores have appropriate adaptations to meet their target customers’ tastes.

2.5. Conclusions of literature review

A review of literature on market entry strategy reveals that the concept of the subject is still fragmentary in its definition, problem identification, and lacks a coherent theory. Some studies present “market entry”, which is understood as foreign or international, usually focusing on entry modes with different equity entries and risks. In contrast, other papers understand that “market entry” means firms enter into both new geographical areas and new industries as well. Consequently, the term “market entry” remains unclear in terms of distinctions between foreign market entry and business diversification.

Given that Vietnam’s market size has been increasing rapidly and its deep integration with the global economy, more and more studies on market entry in Vietnam are becoming present in books, research papers, theses, etc. However, as far as the time of implementation of this study, there is no existing research on market entry for construction chemicals in the Vietnamese market. Furthermore, many other aspects of successful market

entry strategy in practice are still lacking in literature due to the diversity of different markets and industries. Given that, the goals of this study are to explore how firms can make a successful market entry strategy in the field of construction chemicals. Furthermore, this work contributes to a better understanding of the research literature on the topic.

3. Methodology and data

3.1. Methodology

Based on the purpose of this research, our methodology consists of four modules that have links to each other to facilitate the analysis and synthesis of the outputs and outcomes. For more detail, Fig. 1 below presents an overview of the methodology and process of the study implementation.



Fig. 1. Illustration of research methodology and process.

As shown in Fig. 1, the first and second modules are study literature on market entry theory and market entry in Vietnam, respectively, which provide an overview on the status of the related research topic that helps identify research gaps, specific issues, and a theoretical basis for implementing the following research modules. In the third research module, desk and empirical research were conducted by using secondary data from credible sources on the internet and primary data collected by a questionnaire survey to understand the characteristics of the Vietnamese market. In addition, other data sources also were used such as unofficial consultations with suppliers and buyers, and observations from the actual business operation of the author.

Outputs of the above research modules of theoretical basis and understanding of the actual market situation helped to develop the fourth research module, deriving knowledge from actual market entry experience and identifying and analysing factors that influence firms' market entry and business development. Knowledge gained from analysing and synthesizing the above research modules helps develop recommendations for Vietnam market entry and business development in the construction chemicals industry. For more detail,

based on influential factors and the relationships between them, and understanding crucial background information, help explain why and how to lead to the typical patterns of strategic success and failure in terms of the market entry and business development.

3.2. Data collection

Construction chemicals are a niche market of the chemical industry and have limited participants. However, the empirical survey was conducted with participation of all significant types of market players, including local and international traders, local and international producers, and training and research organizations. The respondents are directly involved with construction chemical business and technology activities in Vietnam and work at different positions, organizations, business models, company sizes, and segments in the market.

To build an insightful understanding of the construction chemicals market in Vietnam, we conducted a survey questionnaire to collect thoughts, opinions, and attitudes on market entry from experts in the field.

Understanding competition, supportive factors, and barriers to entry provide insight into the market and have an essential role in developing a market entry strategy. In line with that, the survey groups questions into three different sections:

- The first section gathers respondents' understanding of market and competition and other relative factors.
- The second section concerns the supportive factors for successful market entry. This section covers issues regarding factors influencing success, for example, price of the product, brand awareness, etc.
- The final section is to check barriers to market entry, for example, quality of human resources, leaders' motivation on market entry, etc.

Besides the suggested factors in the questionnaire, the respondents can add in other aspects.

The reasons for grouping questions are 1) to help respondents answer questions in a more manageable way and 2) to provide more clarity for the respondents to better understand the meaning of the questions. This also facilitates coherent answers and helps avoid overlaps and misunderstandings. Respondents rank

the importance of the factors in the questionnaire as inputs to gauge their opinions and attitudes on aspects of the market entry into the Vietnamese construction chemicals market.

According to the report prepared by TechSci Research (2018) [21] - a research-based management consulting firm, the Vietnamese construction chemicals market has high growth prospects because of many supportive factors, which include rapid urbanization, increasing investments in infrastructure and real estate construction, and expanding industrial zones. In addition, rising income levels and the desire to enhance the style and quality of living spaces lead to higher construction standards. Consequently, this also supports the increasing demand for construction chemicals.

Except for the Sika Company, for many reasons, most of the major foreign players have limited business networks and focus mainly on big construction projects with high demands for technology. On the other hand, domestic players exploit the advantages of having market insight and flexibility to develop distribution networks and sales, increasing market share of low-tech products, and continuously improving their technical abilities to enhance competition.

Because of increased accessibility to production techniques, more and more local producers are appearing in the market and competition in the segments of low-tech products is becoming more tense. Meanwhile, profit margins remain slim. However, the market size of such products increases rapidly, and total revenue grows accordingly.

Similar to other markets in the South East Asia area, the Vietnamese construction chemicals market is fragmented in nature as well. There are some merger and acquisition activities in the market to expand market share or used as a way to eliminate direct competitors, but most of these situations occur between a key player and a domestic producer.

Together with improving quality of life and materials, the architects, contractors, and investors have good awareness of the value and importance of construction chemicals to support the quality and performance of structures. Furthermore, requirements

on quality and eco-friendly factors are considered more strictly, and many are mandatory to enter the market. These are supportive factors to increase demand for higher quality, eco-friendly products.

As stated above, more expenditure on infrastructure, rapid urbanization, growing engineering and construction activities, and the increasing income level of the people are growing trends in the market.

4. Results and discussion

4.1. Findings on entering Vietnam construction chemical market

Factors in human and management: the human factor has the most crucial role in the development of firms. Participants also recognized this factor in their actual business operation, which was reflected in their response. As shown in Fig. 2, the most common response shows that leaders' motivation on the success of market entry (100%) and human resources (HR) management (57%) are essential for the success of the market entry. Besides, a significant number (50%) of responses show that corruption does not play an important role, reflecting the reality of doing business. In a market with a high level of competition, the market entry success should not rely on corruption.

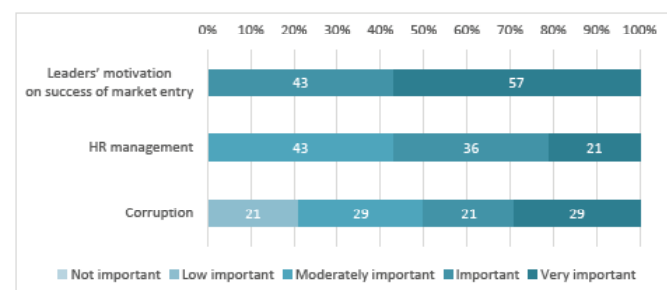


Fig. 2. Respondents' attitudes to human resources and management.

Factors in market and competition: 100% of respondents think that knowing the competitive advantages of the firm, customer need, anticipating demand, and market trends are very important for market entry success. In addition, 79% of responses indicate the importance of knowing competitors attract customers effectively while knowing the challenges of competitors received a lower number of responses on importance with a score of 57% (Fig. 3).

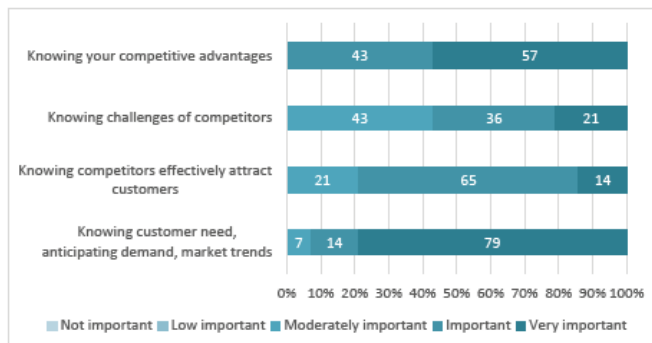


Fig. 3. Respondents' attitudes to market and competition.

Factors in marketing: As shown in Fig. 4, the survey results indicate that among many marketing factors, brand awareness and/or preference (93%) ranked the highest on the number of responses of importance. The lower ranked responses are market adaptation (79%), brand loyalty (72%), and market segmentation (72%). This survey result is similar to observations in reality. For example, the Sika Company is the most significant key player in the Vietnam market, which is in line with the fact that their brand is most popular in the field of construction chemicals. On the other hand, promotional activities (28%) have a significant number of responses indicating low importance on the market entry success.

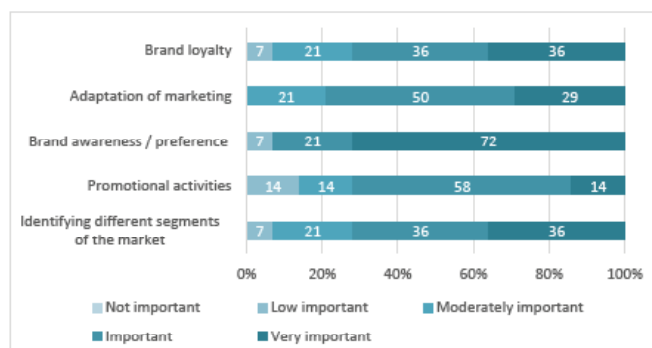


Fig. 4. Respondents' attitudes to marketing.

Factors in R&D and products: According to survey results, the product's origin has a small number (43%) of responses on the importance of market entry. Similarly, the factors on the flexibility of product quality and diverse product range also received a low number of responses on importance.

On the contrary, the use of advanced technologies (79% of response), products, and R&D based on purchasing trends (93% of response) received the most concern on the importance of market entry. The

results highlight that the core values of products brought to the customers are a strong foundation for business development (Fig. 5).

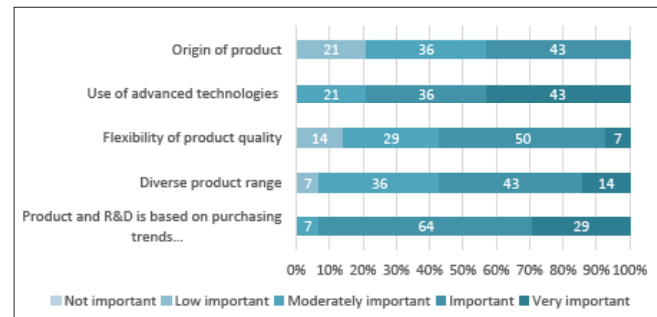


Fig. 5. Respondents' attitudes to research and development and products.

Factors in sales and distribution: Fig. 6 shows that low price products (7%) and online purchasing (35%) have low concern from respondents regarding sales and distribution success, which shows that users need quality assurance for their construction and technical support directly from suppliers. Apart from this, at higher levels of concerns are the availability of products (64%) and flexibility of sales (65%).

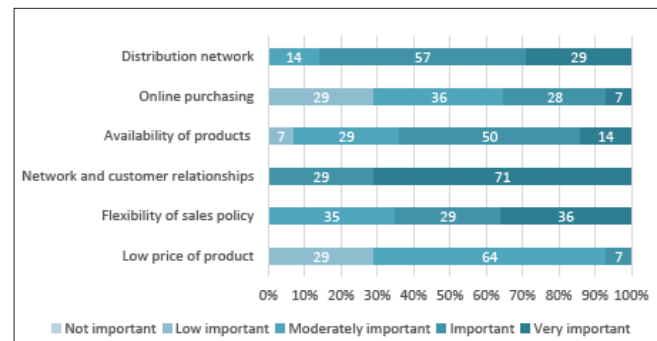


Fig. 6. Respondents' attitudes to sales and distribution.

Differing from the above factors, respondents think that network and customer relationships (100%) and distribution networks (86%) play the primary role in sales and product distribution. A possible explanation of this result is that construction chemical products need technical support to provide reasonable solutions and to be applied correctly, so relationships and networks play essential roles in selling products.

4.2. Discussion on research results

This section discusses the findings and initial analysis of the existing literature, as discussed in chapter two. This study set out to develop preliminary guidance

and recommendations on entering the construction chemicals market in Vietnam and considering the possible contribution to the literature on the market entry. As noted in the literature review, there are many research papers on the topic including barriers to market entry, emerging market entry, market entry in the construction industry, and market entry in Vietnam.

To enter a new market, a firm needs to identify and overcome barriers. This study shows that the most critical barriers to entering the construction chemicals market are customer need and market trend, brand awareness, and network and customer relationships. The findings of this study would agree with the literature regarding entry barriers. M.E. Porter (1980) [17] presented six significant entry barriers, while 37 barriers were also listed by J. Blees, et al. (2003) [18] in a research report on differences in barriers to entry for SMEs and large enterprises. On the other hand, as shown in empirical findings and observations on actual business operation, low motivation for the success of market entry should be considered as one of the most significant barriers to market entry success. When leaders have low levels of motivation or aspiration to enter the market that undermines inspiration and motivation of the workforce.

The research on marketing strategies of specialty chemicals by K.D. O’Gorman, et al. (2015) [22] pointed out, “An approach to solve business challenges through innovative solutions will become a key differentiator for increased market share”. Consistent with this literature, the empirical survey found that the use of advanced technologies, products, and R&D based on purchasing trends received respondents’ most significant concerns.

According to the World Bank, Vietnam is an emerging market. However, it has both challenges and opportunities. Therefore, studies have been conducted to find out the influence of some factors on a firm’s market entry. In terms of culture and human resource management, H.T. Nguyen (2020) [20] mentioned cultural distance determining levels of equity and risk. On the other hand, the authors pointed out that ignoring the training and promotion of local employees will demotivate them, leading to weakening sales and distribution [3]. These views have close links to empirical findings and prove the importance of the points. In the

context of Vietnam’s construction chemicals market, there are no different levels of technologies between competitors. So, the success of market entry mainly relies on effort of the workforce to have market insight and to develop network and customer relationships.

Another notable discussion is the lesson of Starbucks’ entry strategy into the Vietnam market by H.T. Nguyen (2020) [20]. According to this author, reasons for Starbucks to reduce business activity in Vietnam are “lack of insight into the favourite beverages of Vietnamese consumers” and “not flexible in changing menus to meet market trends”. This result of the market entry shows clear evidence in the empirical survey result, i.e., 79% of respondents agreed on the essential importance of knowing customer needs and market trends. Therefore, the study’s findings support the literature and prove a strong positive link between market insight and entry success.

Dissimilarities in the market context, level of technology, and cultural and natural environment create different characteristics and obstacles to successful entry into a new market. This research has revealed some factors on entry success as well as particular insight into the construction chemicals market in Vietnam, which contribute to our understanding of the research topic. The following sections provide a series of recommendations for practitioners and academics for areas of further research.

5. Conclusions

Construction chemicals are a niche segment of the chemical industry. They can be used in new construction and refurbishment projects, bringing durability and strength to the structures, and speeding up the work. With strict technical requirements and fluctuating demand due to changes in construction activities and market trends, all aspects of market entry need to be gathered and considered carefully. No market entry model suits any business forever. According to the circumstances of each market and firm, market entry should also change appropriately. Firms should have insight into the market including knowing customer needs, anticipating demand trends, and identifying competitive advantages of the firm by understanding customers, market, competition, and competitor. As presented above, this

market is fast-changing and continues to improve with high demand for construction and increasing awareness of the values and roles of construction chemicals for structures. In the scope of this study, based on knowledge from the literature review, characteristics of construction chemicals markets in Vietnam, and results of the survey, some recommendations are revealed about the successful strategy of construction chemical market entry in Vietnam as follows:

- As indicated in the previous section, product and research & development need to be based on purchasing trends and customer satisfaction in terms of the quality strategy. Therefore, advanced technologies and technological ability play an essential role in creating a core value of products, building customer loyalty, brand awareness, and preference.

- Regarding marketing and sales, each market has its characteristics of standard business practices and culture. Therefore, the market entry also needs to adapt to marketing, the flexibility of sales policy to develop network and customer relationships, and distribution network.

- Regarding human factors, leader motivation on the success of market entry plays a crucial role in promoting the process and severely impacts the performance of those who are directly involved in the implementation of the entry strategy. Besides, human resource management also showed the importance of the success of market entry, which needs to be transparent, create equity, and improve talent, etc.

To enter a new market, a firm needs to identify and overcome the barriers. This study shows that the most critical barriers to entering the construction chemicals market are customer need and market trend, brand awareness, and network and customer relationships. Another point is technology and product quality. However, in the context of Vietnam's construction chemicals market, there is almost no difference in levels of technologies between competitors in the same segment.

Dissimilarities in the market context, level of technology, and cultural and natural environment create different obstacles to successful entry into a new

market. This research has revealed some factors on entry success and particular insight into the construction chemicals market in Vietnam, which contribute to our understanding of the research topic and serves as a reference for practitioners.

6. Limitations and further research

Due to limited resources and research ability, the study has limitations summarised in the following points:

Firstly, the formulation of research aims, to understand the successful strategy of companies entering the Vietnamese construction chemicals market, is only based on input data gathered by literature review, general information about the market, and small survey results, which may not be enough evidence to come up with an ultimate solution or conclusion.

Secondly, the sample size and the number of surveyed parties account for a small part of the firms in the market. Therefore, the survey results do not reflect the market situation entirely.

Thirdly, the scope of discussion is limited because impacts from the COVID-19 pandemic are ongoing and there is no update available. Thus, information and data used for research and discussion in the paper disregard influence from the pandemic.

The points mentioned above could not cover all aspects of research limitations and can complement others.

This paper is not a comprehensive study, and there is room for future research. It may be necessary to carry out further research on Vietnamese construction chemicals market entry in a broader survey to contribute to a greater understanding about the topic.

The research area of market entry is highly complex, with multiple variables and theories. Therefore, more research is needed to improve understanding of the system theory.

CRedit author statement

Van Chung Anh Le: Conceptualisation, Methodology, Writing - Original draft preparation; Guillaume Finck: Conceptualisation, Editing.

COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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Board characteristics and dividend payout ratios: Empirical evidence from the Vietnam Stock Exchange

My Tran Ngo*, Anh Thu Ha, Le Thu Trang Ho, Kim Hanh Nguyen

Can Tho University, Campus II, 3/2 Street, Xuan Khanh Ward, Ninh Kieu District, Can Tho City, Can Tho Province, Vietnam

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Abstract:

This study was conducted to investigate the impact level of board characteristics on the dividend payout ratio of firms listed on the Vietnam Stock Exchange. Data were collected from 321 listed firms during the period of 2014 to 2019. The results of the generalised least squares (GLS) method show that board ownership has a negative impact on the dividend payout ratio. In addition, the findings also support agency theory on the negative relationship of chief executive officer duality and dividend payout ratio. Besides, the proportion of female members was also found to have a negative effect on dividend payout ratios of listed firms. Based on these findings, some recommendations are proposed for listed firms such as i) consider regulations on the share ownership level of members of the board of directors, ii) separate the two positions of chairman and chief executive officer, and iii) consider a reasonable board of director structure when deciding to increase the number of female members on the board of directors.

Keywords: board characteristics, board of directors, dividend payout ratio, listed firms.

Classification number: 2.2

1. Introduction

In an increasingly fierce business environment, the role of the board of directors (BOD) has become increasingly important in joint-stock firms. E.F. Fama, et al. (1983) [1] argued that BOD plays an important role in monitoring the board of management and in enhancing shareholder value. With respect to firms, dividend policy is a tool that regulates distributed profit and retained profit so that both the investment and development capital needs of the business are met as well as the requirements of the shareholders to attract capital from investors. BOD is responsible for major corporate decisions such as dividend policy [2]. These decisions may depend on board characteristics. Up until now, there have not been any specific standards to help firms decide on an effective dividend policy.

The formulation of dividend policy has direct implications for income reinvestment and solid strategic growth [3]. Several studies around the world have found that dividend payouts can be significantly influenced by board characteristics such as board size, board independence, board diversification, and chief executive officer (CEO) duality [4]. However, the findings have been inconsistent. For instance, there are studies that provide evidence that board independence has a negative impact on dividend payout ratio [5, 6], while there are also some studies that concluded the relationship between board independence and dividend policy is significantly positive [7, 8]. In addition, some researchers argued that women tend to be more conservative and risk-averse in dividend decision-making [9], while some authors proposed the opposite [10]. These empirical

*Corresponding author: Email: nmtran@ctu.edu.vn

outcomes are documentation of mixed results. A few studies show that the proportion of female members on the board of directors has a positive influence on dividend policy [11, 12], but some have indicated a negative influence of female board members on cash dividend payments in emerging economies [13].

The agency theory proposed by M.C. Jensen, et al. (1976) [14] argued that the goal of dividend policy is to maximise the benefits of current shareholders, that is, choosing a dividend distribution plan that maximises the future dividend growth rate but minimizes the risk for shareholders. Hence, a study of the characteristics of the board of directors will help firms determine the board structure and how to make a reasonable dividend policy, thereby increasing the profit as well as the market price of the firm's shares [15]. The research topic on the influence of BOD characteristics on dividend policy has attracted a lot of interest from scholars around the world. However, studies in this area in the Vietnamese context are still limited. In recent times, several authors have conducted research on dividend policy in Vietnam, however, most studies only focus on examining the influence of dividend policy on a firm's financial performance [16]. There is also one study [17] on factors affecting dividend policy but it only focuses on firm characteristics while factors related to governance control characteristics such as board size, board independence, female members of the BOD, CEO duality, and share ownership of board members have not been considered. Therefore, a study on the effect of board characteristics on dividend policy in the context of Vietnam could provide more scientific evidence in this research area as well as serve as a reference base for listed firms to decide on board structure and choose a firm's dividend policy.

2. Literature review and hypotheses

From an agency theory standpoint, a larger board size allows for more effective management oversight by reducing the dominance of board members and protecting shareholder interests [18]. Boards with many members can distribute more supervision and give advice on management decisions. In addition, the theory of resource dependence holds that an increase in the number of board members will help increase the connection of the firm to external resources as well as bring many benefits to the organisation by taking advantage of resources [19]. The main function of the board of directors is to supervise and advise, therefore, the larger the board size, the more effective the management function hence leaving managers with less opportunity for personal gain. Larger boards could bring more experience and knowledge to the table, which could allow for more quick and efficient decisions related to dividend payments to solve agency problems. As a result, firms with larger board sizes are expected to have more efficient governance and could lead to higher dividends [20].

Some previous empirical studies show that there exists a positive correlation between board size and corporate dividend policy [21, 22]. In other words, when a firm has a larger board, shareholders receive higher returns on their investments in the form of dividends. This finding is also supported by A.A. Aloudat, et al. (2019) [6] who conclude that a large board size will diversify the composition of gender, professional qualifications, as well as management experience and thus increase dividend payout. The size of the board could depend on the complexity of the firm's business. In Vietnam, according to the 2017 Enterprise Law, the board of directors of listed firms must have a minimum of 5 members and a maximum of 11 members. Vietnam belongs to a group of emerging markets, thus an increase in the size of the board of directors can help improve

the supervision and the financial performance of the firm, and therefore could create a valuable attraction for investors. Based on those ideas, the first hypothesis is proposed as follows:

H₁: Board size has a positive impact on the dividend payout ratio of listed firms

The board of directors is representative of the interests of shareholders in the firm's operations (Security Law 2019, Article 41). In order to protect shareholders' interests, the board of directors should have independent members because they are expected to provide objective and independent opinions to the board as well as contribute skills and expertise that could result in a better performance for the firms [23]. According to E.F. Fama, et al. (1983) [1], the independent members of the board of directors are encouraged to make decisions independently and without the influence of management. They are motivated to introduce their reputation and competence to the market [1, 24]. In addition, independent directors can consider many factors such as the firm's growth opportunities or financial leverage to determine the exact dividend policy [25]. In recent years, the proportion of independent directors on the board of directors has increased due to the imperative to protect shareholders from abuses by management and to maximize corporate value [24].

Stakeholder theory also supposes that independent directors on the board can better protect the interests of their stakeholders because they have multiple perspectives, experiences, and legal and ethical obligations, so they can increase dividend payout [26]. Empirical evidence from a number of previous studies showed that board independence has a positive effect on the level of corporate dividends [4, 25, 27]. Although firms in Vietnam are small in size, in general, joint-stock firms listed in the stock exchange are larger in size [28]. The number of board members, as well as the appointment of an independent board, is required by law in Vietnam. Hence, the second hypothesis is expected as follows:

H₂: The ratio of independent members on the board of directors positively affects the dividend payout ratio of listed firms

Some studies provided evidence that female board members can help improve board-level discussions and focus on monitoring more than male members [2, 29, 30]. However, according to behavioural theory, female directors are more likely to experience underinvestment problems than male members [31, 32]. C.K. Man, et al. (2013) [9] argued that women exhibit more conservative and risk-averse behaviours in dividend decision making, which implies that a high percentage of women on the board of directors has a negative impact on the dividend payout ratio. Besides, A. Saeed, et al. (2017) [13] also provide empirical evidence that the increase in the number of female members on the board of directors has a negative effect on cash dividend payment in some emerging economies such as India, China, and Russia. In addition, H. Tahir, et al. (2020) [33] also made a similar conclusion when analysing the influence of board characteristics on dividend payment policy in Malaysia. Women participating in the BOD structure have been increasing due to the Law on Gender Equality that was applied in Vietnam in 2006. As a result, the proportion of female members on the board of directors is expected to be negatively correlated with dividend payout ratios in the Vietnamese market.

H₃: The proportion of female members on the board of directors negatively influences the dividend payout ratio of listed firms

According to the interest linkage hypothesis, shareholders agree on the goal of maximizing their return on investment [14]. As a result, board members tend to monitor management more effectively when they hold significant shares in the firm [34]. The incentive alignment created by higher management ownership leads to a larger dividend payout ratio [35, 36]. Thus, manager ownership can be used as an alternative governance mechanism

and dividend distribution can be seen as a management oversight mechanism [37]. However, contrary to the above statements, some scholars have pointed out that the more shares owned by the board of directors, the more likely they are to reduce dividend distribution [14, 37, 38]. When the members of the board of directors hold a large number of shares, they tend to provide information that is not transparent to serve the interests of the board of directors and thus could damage the interests of the remaining shareholders [11]. M. Shehu (2015) [39] showed that the ownership ratio of board members causes a negative impact on dividend policy in the Malaysian market. The share ownership of board members of listed firms in Vietnam has been increasing. Thus, the fourth hypothesis is formulated as follows:

H₄: The ownership ratio of members on the board of directors negatively affects the dividend payout ratio of listed firms

The dual position of CEO and chairman of the board of directors occurs when these two positions are held by one person. According to human resource dependency theory, the benefits of the concurrent position may be useful in conditions of scarcity of human resources, where the need for additional resources leads to a concentration of power in the firm [40, 41]. However, from the perspective of agency theory, the combination of CEO and chairman roles reduce the supervisory power of the board of directors over management [42], so this may have a negative effect on the firm's performance [43]. Some studies suggest that separation of the CEO and chairman positions are necessary to establish some effective supervisory mechanisms [39, 44] because CEO duality might increase the likelihood of making decisions that are unfair to minority shareholders [45]. Thus, firms with duality may have too much power concentrated in one person, which in turn may suggest lower dividend payments [45, 46]. Some empirical studies have provided evidence that

CEO duality has a negative effect on the dividend payout ratio [21, 33]. As a result, the fifth hypothesis is formulated as follows:

H₅: Listed firms with CEO duality have a lower dividend payout ratio

3. Research methods

3.1. Measurement of dividend policy

This study approaches the measurement of dividend policy proposed by S. Byoun, et al. (2016) [47] in terms of dividend payout ratio on assets. With this measure, the dividend payout ratio is not affected by fluctuations in the stock price. This is an indicator that shareholders are very interested in because this ratio reflects shareholders the ratio of dividends received by shareholders compared to the total assets of the firm through which to assess whether the firm's working capital is effectively used. In addition, this indicator also provides information about the firm's net income compared to total assets. Many previous studies in emerging economies have used this indicator [33, 45].

3.2. Data collection

This study uses panel data collected from annual reports, management reports, and financial statements over a 6-year period (2014-2019) of non-financial firms listed on the Ho Chi Minh city Stock Exchange (HOSE) and Hanoi Stock Exchange (HNX) in Vietnam. The selected firm must satisfy the following criteria: i) have full information on stock trading on the market; ii) have audited financial statements, annual reports, and management reports and iii) have sufficient information regarding the characteristics of the board of directors (ownership structure, board structure). As of December 31, 2019, the HOSE and HNX have 717 listed firms. After filtering the data by sampling criteria, the number of firms selected was 321, of which 172 firms were listed on HOSE and 149 listed on HNX. These firms operate in industries such as real estate and construction, industry, technology, services, consumer goods, energy, healthcare, agriculture, and fisheries.

3.3. Data analysis

First, the pooled ordinary least squares (OLS) method was used to analyse the influence of board characteristics on the dividend payout ratio of firms listed on the Vietnamese stock exchange. This is also the method used by many scholars in previous studies in this area [2, 7, 33]. Next, the fixed-effects model (FEM) and random effects model (REM) is used to consider the spatial and temporal aspects of the panel data. The Hausman test was used to check the fit of the model. Then, the GLS estimation method is used to solve possible problems such as autocorrelation, multicollinearity, or heteroskedasticity to increase the reliability of the estimated parameter [48]. The estimated model is specified as follows:

$$DPR_{it} = \beta_0 + \beta_1 BSIZE_{it} + \beta_2 PIND_{it} + \beta_3 PWOMEN_{it} + \beta_4 POWN_{it} + \beta_5 CEODUAL_{it} + \beta_6 FSIZE_{it} + \beta_7 LEV_{it} + \beta_8 ROA_{it} + \varepsilon_{it} \quad (1)$$

where DPR represents the firm's dividend payout ratio, which is measured by the ratio of the total dividend paid divided by the total assets of the firm. Independent variables include board size (BSIZE) calculated by the total number of

board members [5, 6, 45, 49], the proportion of independent members on the board (PIND) measured by dividing the number of independent members by the total number of board member [39, 45], the proportion of female members on the board (PWOMEN) calculated by the ratio of the number of female members and the total number of board member [11, 13, 33], board ownership (POWN) calculated by dividing the total number of shares owned by all board members by the total number of current shares of the firm [5, 39], and CEO duality (CEODUAL) taking the value of 1 when the firm's the chairman is also the CEO and 0 otherwise [6, 33, 49]. The variable description of independent variables in the model is displayed in Table 1.

Control variables include FSIZE, which is measured by the logarithm of a firm's total assets. Large firms could face high agency costs due to increased complexity and the inability of shareholders to closely monitor the firm's activities. Therefore, large firms could have a higher probability to pay high dividends to reduce agency costs [50].

Table 1. Description of variables used in the estimation model.

Coding	Variables	Measurement
DPR	Dividend payout ratio	The ratio of the total dividend paid divided by the total assets of the firm
BSIZE	Board size	The total number of board members
PIND	Proportion of independent members	Dividing the number of independent members by the total number of board member
PWOMEN	Proportion of female members	The ratio of the number of female members and the total number of board member
POWN	Board ownership	Dividing the total number of shares owned by all board members by the total number of current shares of the firm
CEODUAL	CEO duality	Taking the value of 1 when the firm's chairman is also the CEO and 0 otherwise
FSIZE	Firm size	Ln (total asset)
LEV	Financial leverage	The ratio of debt and total assets
ROA	Return on asset	The ratio of net profit divided and total assets

LEV is measured by the ratio of debt and total assets. Firms with lower levels of debt could have the ability to pay higher dividends, while firms with higher levels of debt could pay lower dividends to reduce their dependence on external funding [51] or to maintain a certain amount of capital for meeting debt obligations and paying transaction costs [37]. Therefore, financial leverage is expected to have a negative effect on the dividend payout ratio.

ROA measures a firm's ability to earn per dollar of assets, calculated by the ratio of net profit divided and total assets. This indicator is considered as one of the most important aspects that can affect a firm's dividend. High corporate profits could lead to high dividend payout ratios [50, 52]. Some empirical studies confirmed that ROA has a positive effect on corporate dividend policy [38, 53, 54].

4. Results and discussion

4.1. Dividend payout ratio for the period 2014-2019 of firms listed on the Vietnam Stock Exchange

The dividend payout of the listed firms illustrated in Table 2 shows the average dividend payout ratio of firms listed on the Vietnamese stock market is 3.69%. In the 2014-2019 period, the dividend payout ratio of listed firms did not show high fluctuation. This ratio of this market is relatively high compared with those of some other emerging markets. For example, M. Duygun, et al. (2018) [45] recorded an average dividend payout ratio of listed

firms in Indonesia at 1.6%, while H. Tahir, et al. (2020) [33] showed that this ratio in the Malaysian stock market is, on average, 6.4%. In general, in recent years, firms listed on HOSE tend to pay a little higher dividend than firms listed on HNX. Firms listed on HOSE have an average dividend payout ratio of 3.72%, while the average dividend payout ratio of firms listed on HNX is 3.66%.

4.2. Descriptive statistics of variables used in the research model

The data in Table 3 show the highest dividend rate of listed firms in the sample is 52%, while there are firms that do not pay dividends. Listed firms on the Vietnamese stock market have a total number of BOD members ranging from 3 to 11 members. The average number is about 5 members, which is in line with the provisions of Vietnam's corporate law. In general, the size of the board of directors in Vietnam is relatively smaller than in other countries. Specifically, G. Najiba, et al. (2019) [5] show that, the average BSIZE in Tunisia is around 10 members, while P. Jiraporn, et al. (2008) [55] recorded the average BSIZE in France being 12 members. Another study by H. Tahir, et al. (2020) [33] in the Malaysian market shows that the average number of board members is 7.

The percentage of independent members on the board on the Vietnamese stock market has an average value of 18%, while there are firms that do not have any independent members and those with all independent members. In general, the

Table 2. Dividend payout ratio of listed firms on the Vietnamese stock market. Unit: %.

Stock exchange	No. of firms	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018	Year 2019	Sample average
HOSE	172	3.40	3.77	3.76	3.70	3.94	3.75	3.72
HNX	149	3.82	3.73	3.88	3.57	3.48	3.46	3.66
Total	321	3.61	3.75	3.82	3.63	3.71	3.60	3.69

Source: Data processing results from a sample of 321 firms listed on the Vietnamese stock market in the period 2014-2019.

Table 3. Descriptive statistics of variables in the research model (n=1,926).

Variables	Variable code	Mean	SD	Min	Max
Dependent variable					
Dividend payout ratio	DPR	0.04	0.05	0	0.52
Independent variables					
Board size	BOARDSIZE	5.54	1.20	3	11
Proportion of independent members	PIND	0.18	0.19	0	1
Proportion of female members	PWOMEN	0.15	0.16	0	0.8
Board ownership	POWN	0.11	0.14	0	0.9
CEO duality	CEODUAL	0.12	0.33	0	1
Control variables					
Firm size	FSIZE	27.38	1.65	23.44	33.63
Financial leverage	LEV	0.47	0.22	0.005	1.18
Return on assets	ROA	0.07	0.07	-0.57	0.78

Source: Data processing results from a sample of 321 firms listed on the Vietnamese stock market in the period 2014-2019.

proportion of independent directors in Vietnam is quite low compared to some other markets. For example, this average ratio is 67.2% in Australia [4], 67.9% in Nigeria [7], and 40.8% in Indonesia [45]. Besides, the statistical results show that the average share ownership rate of board members is about 11%, while the lowest is 0% and the highest is 90%. The average proportion of women on the board is about 15%, while there are boards with no female members and those with 80% female members.

There are 12% of listed firms in the sample that has CEO duality. In other words, up to 88% of firms have a separation between the two positions of chairman and CEO in the firm. These statistics imply that many firms listed on the Vietnamese stock market pay attention to adopting this practice of good governance proposed by the Organisation for Economic Co-operation and Development (OECD). In addition, listed firms have an average debt ratio of 47% and an average return on assets of 7%. During the research period, there was one listed firm that faced a loss in one year, but its next year's business was better, so it was not delisted.

4.3. Results of the influence of board characteristics on the dividend payout ratio

First, model (1) is estimated by the Pooled OLS method. The Pooled OLS results in Table 4 show that, only four out of five board characteristics are statistically significant, which include CEO duality, the proportion of female members, the proportion of independent members, and board ownership. The R^2 value of 42% means that all independent variables used in the estimation model can explain about 42% of the variation of the dividend payout ratio.

Next, FEM and REM are implemented. The results of the Hausman test give a p-value of 0.0000, so the estimated results by REM are considered more suitable. There are two main independent variables being statistically significant, namely, the proportion of independent members and board ownership. After performing the test for multicollinearity, autocorrelation, and heteroskedasticity, the results show that the estimates of REM have the problem of

Table 4. The estimated results of model (1) by Pooled OLS, FEM, REM, and GLS.

Variables	Pooled OLS	FEM	REM	GLS
Independent variable	-0.001	0.000	0.000	-0.000
Board size				
Proportion of independent members	-0.009**	-0.014*	-0.012**	-0.003
Proportion of female members	-0.011**	-0.007	-0.008	-0.004**
Board ownership	-0.019***	-0.015	-0.024***	-0.014***
CEO duality	-0.005*	-0.001	-0.002	-0.003***
Firm size	-0.003***	-0.013***	-0.004***	-0.003***
Financial leverage	-0.023***	-0.001	-0.02**	-0.015***
Return on assets	0.367***	0.182***	0.282***	0.335***
Constant	0.122***	0.389***	0.150***	0.114***
R ²	0.42			
Number of observations	1,926			

Note: ***, ** and * represent the 1, 5, and 10% significance levels.

Source: Data processing results from a sample of 321 firms listed on the Vietnamese stock market in the period 2014-2019.

heteroskedasticity. Therefore, to overcome this shortcoming, model (1) is re-estimated by the GLS method. The estimated results in Table 4 (column 5) are subject to some changes. This shows that the existence of heteroskedasticity has an influence on the estimated results. The results of GLS show that three factors of board characteristics are statistically significant, namely proportion of female members, board ownership, and CEO duality.

The statistical evidence estimated by the GLS method in Table 4 shows that the percentage of female members on the board has a negative effect on the dividend payout ratio ($\beta = -0.004$). This result supports the initial expectation of hypothesis H_3 . In other words, if other factors remain unchanged, when the proportion of female members on the board increases 1%, the dividend payout ratio will decrease by 0.4%. This result is consistent with the findings of some previous empirical studies [13, 33, 49]. This could be due to the argument that women have less power, control, and confidence, and tend to exhibit less conservatism and risk-taking than men in decision-making relevant to dividend payout [56, 57].

The GLS results in Table 4 also provide statistical evidence to support hypothesis H_4 that the ownership ratio of board members is inversely proportional to the dividend payout ratio. Specifically, other things being equal, if the ownership ratio increases 1%, the dividend payout ratio will decrease by 1.4%. This result is also consistent with some previous research. For instance, M. Shehu (2015) [39] showed that board ownership has a negative relationship with the dividend payout ratio. This result also supports the signalling theory that board members holding more shares in the firm tend to give out non-transparent information to serve the interests of the board of directors, which could damage the interests of the remaining shareholders.

There is evidence in Table 4 that CEO duality has a negative effect on the dividend payout ratio, which supports hypothesis H_5 . Previous studies such as M. Duygun, et al. (2018) [45] or H. Tahir, et al. (2020) [33] reach the same conclusion. This result is also consistent with the agency theory that CEO duality could lead to ineffective supervision of the board of directors with respect

to the management team. This could influence the decision on dividend payout.

In addition, the statistical evidence in Table 4 also shows that FSIZE has a negative effect on dividend payout ratio. Besides, the negative coefficient of financial leverage is statistically significant at 1% level. This result is consistent with M. Duygun, et al. (2018) [45] in that firms with high debt ratios pay lower dividends. From the estimation results in Table 4, the return on total assets is found to have a positive influence on the dividend payout ratio of listed firms. This shows that the firm's profit plays an important role in increasing the dividend payout. Previous studies showing similar results include S.R. Yarram, et al. (2015) [4], A.A. Idris, et al. (2019) [7], and A.A. Aloudat, et al. (2019) [6].

5. Conclusions and implications

This study was conducted to analyse the influence of board characteristics on the dividend payout ratio of firms listed on the Vietnamese stock market based on data collected from 321 listed firms during the period 2014-2019. The statistics show that the average dividend payout ratio of firms in this market is at 3.7%. In addition, the firms listed on this stock market have an average BSIZE of about five members. Besides, 88% of firms do not have the dual role of chairmanship and CEO. The average percentage of female members on the board is about 15%. On average, the independent members account for 18% of the total number of board members.

The results of GLS estimation show that CEO duality has a negative effect on the dividend payout ratio. This means that when the chairman of the board holds the CEO position in the firm, there will be a tendency to pay fewer dividends to shareholders. Besides, the ownership ratio of the board members was found to have a negative effect on the dividend payout ratio. The reason may be that when members of the board own too

many shares, they tend to associate for personal benefits and make decisions that are beneficial in the short term but harmful to the firm's value in the long run. In addition, statistical evidence shows that the proportion of female members on the board of directors also has a negative impact on the dividend payout ratio. This may be because women tend to be conservative and risk-averse when making dividend decisions. However, there is no statistical evidence of the influence of BSIZE on the dividend payout ratio. In addition, the estimated results show that FSIZE and debt ratio have a negative effect on the dividend payout ratio. Meanwhile, corporate earnings measured by ROA were found to have a positive influence on the dividend payout ratio of the listed firms.

Based on the above findings, several policy implications are proposed. Firstly, the listed firms should consider the appropriate level of share ownership of the members of the board of directors to limit the situation of profiteering, which could affect the common interests of shareholders. Secondly, the listed firms should consider separating the two positions of chairman and CEO to increase corporate governance efficiency. In addition, the listed firms should consider a reasonable board structure when deciding to increase the number of female members on the board of directors to maximize the dividend payout ratio as well as the firm's profits to effectively attract investors.

CRedit author statement

My Tran Ngo: Conceptualisation, Methodology, Validation, Writing; Anh Thu Ha: Data curation, Visualisation, Writing; Le Thu Trang Ho: Data collection, Conceptualisation, Methodology, Validation, Writing and Editing; Kim Hanh Nguyen: Data analysis, Visualisation, Writing.

COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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Smart manufacturing readiness in Vietnam: An assessment survey and policy implications

Van Thanh Nguyen¹, Minh Hiep Ha^{2*}

¹Vice Chairman of the Central Theoretical Council for 2016-2021,

57 Phan Dinh Phung, Quan Thanh Ward, Ba Dinh District, Hanoi, Vietnam

²Deputy Director General of the Directorate for Standards, Metrology and Quality of Vietnam,

8 Hoang Quoc Viet, Nghia Do Ward, Cau Giay District, Hanoi, Vietnam

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Abstract:

To maintain a sustainable high growth rate and narrow the gap with developed countries, Vietnam must make efforts to gain new momentum to build a “Strong Vietnam”. One fundamental solution is to implement a digital transformation that promotes smart manufacturing (SM), which will help Vietnam take the lead in the region in the Industry 4.0. This article provided an overview study of specific policies and implementation actions on SM in Vietnam. SM is an important trend in the world, especially in the context of the Fourth Industrial Revolution (Industry 4.0). However, for a developing country like Vietnam, the right policy can help small and medium enterprises by providing a roadmap to transformation on a digital stage and according to their resources. Therefore, we conducted a survey that assesses the needs and current status of small-and medium-sized enterprises (SMEs) in Vietnam and proposes specific policies for the Government of Vietnam to develop and promote SM in our country at micro and national levels. In this research, we work to understand how economies that are similar to Vietnam, namely Indonesia and Thailand, adapt to the era of SM. This work will serve as lessons learned for developing countries implementing digital transformation in the Industry 4.0.

Keywords: industry 4.0's policy, smart manufacturing readiness, SMEs performance analysis, Vietnam's digital readiness.

Classification number: 2.3

1. Introduction

The impressive growth rate of Vietnam's GDP in 2019 (up by 7.02%) serves as confirmation of the efforts of businesses and people, as well as the timeliness and efficiency of solutions provided by the government. Similarly, 2019's growth rate, although lower than that of 2018, was higher than the growth rate from 2011 to 2017. Vietnam is one of the top three countries with the highest GDP growth in Asia and amongst the top 10 countries with the highest growth rate in the world in 2019. The processing and manufacturing industry continues to play a key role in growth with an increase of 11.29 thereby contributing 2.33% to the overall economic growth. However, compared

with some industrialized countries in Asia and the ASEAN-4 countries, labour productivity in the manufacturing sector in Vietnam is still low [1].

To maintain a sustainable high growth rate and narrow the gap with developed countries, Vietnam must make efforts to gain a new momentum to build a “Strong Vietnam”. One fundamental solution is to implement a digital transformation that promotes SM, which will help Vietnam take the lead in the region in the Industry 4.0. With the advent of technology like big data, robotics, information and communication technology (ICT), Vietnam has a great chance to apply SM in the manufacturing sector [2, 3].

*Corresponding author: Email: haminhhiiep@gmail.com

2. Research questions

As a matter of fact, SM is not new in developed countries where technology has a very close relationship with manufacturing. However, in developing countries, manufacturing is still growing accustomed to utilizing high technology to evolve into a SM era. Vietnam has a huge interest in the Industry 4.0 where SM is one of the most important aspects. However, the question remains, “Is Vietnam ready for the wave of applying SM?” The answer to this question is broken down into three smaller questions that are depicted in the following sub-sections [4].

Bottom-up: For any macro situation to gain success, especially related to industrial changes, enterprises or companies are the key agents that play the most important roles. Therefore, we strive to understand if enterprises or companies have self-prepared and if they are capable of capturing the opportunities that SM brings. This idea means that the bottom base (enterprises or companies) should be well prepared to utilize any possible chances.

Top-down: Once the bottom-up direction is fulfilled, the top-down direction should be in line to support. Top-down actions can be anything from government policy, easing the business environment or available standards for the economy to operate. We hope that the answer to the question, “What does the government do in order to support the application of SM in Vietnam?” helps the bottom-up direction more.

Pillars’ harmony: “What should Vietnam do in order to support SM on a pan-economy scale?” We propose three pillars in building a good environment for SM to flourish. The three pillars are: (i) research and development (R&D) activities; (ii) capability to adopt digitalization; and (iii) institutional actions from government and other government bodies. A harmonious cooperation between these pillars is required for the manufacturing sector to successfully adopt SM. Whether Vietnam achieves such a harmony is the ultimate question to understand her readiness for SM.

Utilizing such a chance is a big question that all economic factors participating in the economy must cooperate to solve. To arrive at an answer, we outline our research in this paper as follows: methodology and research results; related experiences learned from similar countries; policy implications; conclusions and some insights about future work.

3. Methodology and research results

3.1. Industrial facts

Statistical background: As Asian Productivity Organization (2020) [5] shows, Vietnam’s GDP growth rate was quite impressive in the year 2019. Out of the growth rate of the whole economy, agriculture, forestry, and fishery sectors increased by 2.01 contributing 4.6% to the general growth, industry and construction increased by 8.9 contributing 50.4%, and finally the service sector increased by 7.3 contributing 45% to national GDP growth.

On the other hand, the growth rate of value added in the industry and construction sector was 8.85%. The industry maintained a high growth rate of 8.86%. The processing and manufacturing industry continued to play a key role in growth with an increase of 11.29 contributing 2.33%. The mining industry increased 1.29% after 3 consecutive years of decline, which contributed 0.09% to the increase in the total added value of the entire economy. The construction industry maintained growth momentum at a rate of 9.1% thereby contributing 0.66% to the general growth.

The proportion of industrial value added to the industry and construction sector is 83% of which the construction industry accounts for 17%. Among industries, the processing and manufacturing industries accounted for 56% of the total added value of the whole sector, the mining industry accounted for 26%, and the electricity and gas production and distribution sector accounted for 16%.

The processing and manufacturing sectors: in industry, the processing and manufacturing sectors employ most of the industry's labour accounting for 95%. Mining, power generation, gas, and water industries employ 1-2% of the entire workforce and the rest are in other industries.

Processing and manufacturing industries continue to grow rapidly with an average growth rate of over 10.71% in the 2011-2018 periods and continued to grow by 11.29% in 2019. Labour productivity of the processing and manufacturing industries is 96.2 million VND (4.160 USD) per person per annum and the average growth rate of about 5.61% per annum in the 2011-2018 period, which increased to a relatively high level of 6.36% in the 2016-2018 period [5].

The industry's rapid development is also reflected by rapid growth in input endowment with an average capital growth rate of 13.9% in the 2011-2015 period and 12.9% in the 2016-2018 period. Labour growth was 9.7 and 6.3%, respectively, due to the labour movement from the agricultural sector. The total factor productivity (TFP) growth rate is also quite high, about 2.4% in the 2011-2015 period and 3.9% in the 2016-2018 period. As a result, TFP's contribution to growth increased from 23.7 to 29.6% in respective periods. On average, in the period 2011-2018, increasing TFP contributed 25.9% to the industry's growth [5].

As can be seen, processing and manufacturing industries have achieved relatively encouraging growth, in both quality and quantity. However, compared with some industrialized countries in Asia and the ASEAN-4 countries, the labour productivity of the manufacturing in Vietnam is still low.

According to the Ministry of Industry and Trade of Vietnam, significant achievements in the processing and manufacturing industries in 2019 can be seen in the high growth rate, export turnover and foreign investment attraction.

Processing and manufacturing industries have always been the bright spot of the industry sector with an average growth rate of approximately 10.9% making it a driving force for growth in the economy. Major industries that contribute to the growth of the processing and manufacturing sectors include metal production (+31.7% growth), coke production, refined petroleum (24.5%), production of paper and paper products (12.1%), furniture (11.3%) and textiles (11.3%) [5].

Despite the recent stagnancy of world economy and trade, Vietnam's exports in 2019 grew by 7.8%, which is much higher than the world and regional averages. Export from processing and manufacturing industries also grew at a higher rate of 9.8%. Products with high export growth in manufacturing and processing industries such as wood and furniture, textiles, footwear, electronics, electric cables, toys, and sports equipment, etc., have significantly enhanced the position of the industry.

Industries, in general, and the processing and manufacturing industries, in particular, have also received serious interest from foreign investors. In 2019, Vietnam attracted 3,478 new projects with a total investment of nearly 31.8 billion USD. Processing and manufacturing industries accounted for the highest proportion with a total investment of 21.56 billion USD, accounting for 67.8% of total registered investment capital [5].

The year 2019 was also the first year when the manufacturing and processing industries experienced a trade surplus of approximately 100 million USD. This had proven the effectiveness of the Government's policies and solutions in recent years to promote business development, especially industrial enterprises and industrial development.

With their great contribution to the national GDP, the manufacturing sector is becoming more and more important to Vietnam's economy. There is an ongoing demand to make manufacturing smarter to contribute more to the economy. To fulfil

such demand, firms must deploy more smart tools and machines. The question is: are firms capable and ready for a new change?

3.2. Firms' awareness and preparedness

We conducted a preliminary survey on the status and the implementation of SM for 215 enterprises in the northern, central, and southern provinces of Vietnam. The survey covers the following:

Awareness on the potential benefit of SM and whether it helps (i) improve the quality of decision-making on business operation; (ii) enhance operational efficiency of production line; (iii) reduce labour costs; (iv) reduce materials waste; (v) improve product quality; (vi) increase labour productivity; (vii) better satisfy customer requirements; (viii) enhance the competitiveness and sustainable development; and (ix) strengthen market position and social image.

Difficulties and barriers to the application of SM in enterprise: most SMEs recorded obstacles and difficulties in (i) understanding the value that each application can bring to an enterprise; (ii) limited resource to invest in infrastructure required for the application of SM; (iii) lack of qualified and skilled workers to implement SM; (iv) limited awareness of leaders about SM; (v) given the relative high cost in initial investment, the benefits that SM can bring on short or medium terms may not be higher than investment costs; (vi) limited access to financial resources for investment in SM; (vii) unsupportive environment for innovation investment; and (viii) missing supportive mechanism from the government to attract investment in SM.

Policy priorities: Surveyed enterprises prioritized policies according to its importance to SM promotion as follows: (i) governmental support associations and consultancy centres to help SMEs better understand the value of SM; (ii) further investment in upgrading digital-support infrastructure (especially broadband speed, internet security); (iii) human resource development

for SM application; (iv) promotion strategies for SM application in Vietnam with clear objectives for the next 5 years and a comprehensive action plan; (v) establishing a national committee on SM promotion, which consists of representatives from government, businesses, and other experts to implement the strategy outlined; (vi) providing incentives for enterprises to applying SM in business; (vii) supporting enterprises in accessing to financial resources for SM investment; and (viii) supporting SM service providers to lower the price in Vietnam's market.

Survey results from our research reveal that most industrial enterprises in Vietnam are not very ready for Industry 4.0. Among the four pillars that are relevant to the readiness for Industry 4.0, enterprises have moderate readiness for business management and productivity management and low readiness levels for the digital platform and SM pillars.

There are significant differences in the level of readiness to approach Industry 4.0 across enterprises. Larger state-owned enterprise (SOE) firms tend to self-assess and are thus better in terms of their readiness to Industry 4.0 with higher levels of capital, equipment, scale, technology, manufacturing concentration, and technology than foreign direct investment (FDI) or private firms. They also play a pioneering role in the determination to participate in the Industry 4.0.

Interest in digital transformation and SM is mainly concentrated in manufacturing enterprises. Approximately two thirds of enterprises do not have plans to invest in digital transformation, and many of them do not know what to do. Some enterprises report to have plans to shift their investment options for factory equipment and information technology.

On the other hand, although the SMEs sector is the driving force of economic development in Vietnam (contributing 40% of GDP and accounting for more than 20% of exported value), a recent study by the Japan External Trade Organization (JETRO, 2017)

showed that SMEs in Vietnam face many barriers with the three main obstacles being: (i) lack of ability to continue access to financial resources, (ii) limited participation in domestic and international value chains, and (iii) limited business capacity. Besides, investments in technology innovation of enterprises and government spending on science research and development (about 0.2% of GDP/year) are still modest.

SOEs, due to their status/starting point, have several advantages in terms of size of labour, capital, technology level, concentration, etc., compared to other types of ownership. Increasing their labour productivity, competitiveness, and willingness to undergo digital transformation are very important to ensure their role as the leading group towards Industry 4.0.

Policies toward SMEs, on the other hand, need to focus on improving the wide-spread application of technology 4.0 to improve enterprise size, capital equipment level, concentration index and technology application level, R&D capacity and skills of workers, connectivity, and spill-over.

This study found that the readiness score of the pillar of enterprise management is low. Many enterprises have advanced the implementation of labour restructuring strategies, technical standardization of the entire production chain and connection, management in their departments, applying Enterprise resource planning (ERP) models, supply chain management (SCM), and increased collection and exchange of information about the manufacturing process and products. To improve, there needs to be an upgrade in strategy toward Industry 4.0 based on the current situation of each enterprise. In addition, enterprises should prioritize technology investment and innovation, and consider upgrading or applying high-diffusion and relatively simple/low-cost technologies such as cloud technology, or digitalization.

3.3. Institutional and macro directions

On March 22, 2018, General Secretary and President Nguyen Phu Trong signed Resolution No.23-NQ/TW (Resolution No. 23) on behalf of the Political Bureau on the national industrial development policy until 2030 with a vision toward 2045. Resolution No. 23 has set an important goal for Vietnam; that it will become a modern, industrialized country by 2045. This Resolution No. 23, together with related legal documents and policies, has accelerated the internal restructuring of the industrial sector toward higher added value and smarter production. For SM, it is crucial to maintain and speed up the integration of information technology (IT) and automation in industrial manufacturing. Smart technology standards and manufacturing techniques will also need to be developed and applied across businesses. For example, as the textile, garment, and footwear industries continue their high growth trajectory, they must also participate more in high added-value-creating phases of the supply chain by deploying smart and automated manufacturing processes. The Resolution No. 23 also identify tax reduction and exemption at reasonable levels and over appropriate periods as one promotion tool to prioritize smart industries. This document also focuses on enforcing technical regulations and standards in the industrial sector to protect domestic production and consumers and smart technology standards and manufacturing techniques will be developed and issued as well.

On September 27, 2019, General Secretary and President Nguyen Phu Trong also signed Resolution No.52-NQ/TW on several guidelines and policies to actively participate in the Industry 4.0. Vietnam's government has shown determination and action in accelerating the development and adoption of science, technology, and creative innovation and they have enhanced the ability to access and participate in Industry 4.0. Resolution No.52 also states that two guidelines and six significant policies need to be implemented. They include (i)

innovating thinking and unifying perception and (ii) perfecting institutions to facilitate proactive participation in Industry 4.0 and the process of national digital transformation.

On May 4, 2017, Prime Minister Nguyen Xuan Phuc issued Directive No.16/CT-TTg on strengthening the capacity to tackle challenges posed by Industry 4.0. This Directive focuses on reviewing strategies, action plans, and proposing/formulating targeted plans and tasks to accelerate the development trend of Industry 4.0. The directive also specifies the need to develop strategies on digital transformation including smart administration, prioritizing the digital technology industry, smart agriculture, tourism, and urban areas; review and select national prioritized products with strategic competitive advantages; apply new production technologies and integrate digital technologies.

3.4. Readiness as a harmonious blend

R&D: Vietnam is a country that is in the process of industrialization, modernization, and international integration. Industry 4.0 opens many opportunities in improving technology level, improving production capacity and competition in the product chain; creating a significant change in the service business form; develop opportunities for innovative start-ups; significantly reducing transaction and transportation costs; creating attractive and potential investment opportunities in the field of digital technology and the Internet. It also an excellent opportunity for industrial manufacturing with advanced scientific and technological levels.

However, if Vietnam cannot catch up with the development pace of the world and the region, Vietnam will face challenges and negative impacts such as technological lag, manufacturing, and business decline; a surplus of skilled and low-skilled labour disrupts the traditional labour market, affecting the country's socio-economic situation; insecurity, information security, copyright

infringement, shortage of highly qualified human resources. On the other hand, there is a possibility of a wave of outdated technology from developed countries to developing and underdeveloped countries.

Because of the revolutionary changes in science and technology, it has led to a dramatic change in the structure, economic model, state, and social management systems as well as operating modes of enterprises. Industry 4.0 also presents challenges to many specific industries and fields such as requirements for technological innovation in information technology; accelerate the analysis and management of big data processing science to create new knowledge, support decision making and create competitive advantage; requirements for renewing management models, manufacturing, optimizing business models; establishing supply chains and intelligent logistics in the global value chain network and new tariff models; requirements of intellectual property management system in the digital age; higher requirements on network information safety and security.

Institutional actions: Governmental actions, on June 3, 2020, the Prime Minister issued Decision No. 749/QĐ-TTg approving the “National Digital Transformation Program to 2025, with an orientation to 2030”. The program aims to bring Vietnam into the group of 50 leading E-Government Development Index (EGDI). The objective of the program is to make Vietnam a digital, stable, and prosperous country, pioneering in testing new technologies and digital models. Vietnam will focus on implementing fundamental and comprehensive reforms in governmental management and public administration activities, which then have significant impacts to production and business activities, ways of living and working of the people and build up a safe digital environment. In other words, the National Digital Transformation program aims at developing digital government, enhancing digital economy, and promoting digital society. The program also provides initial resources

for the formation of international-ranking digital businesses.

More recently on August 31, 2020, Deputy Prime Minister Vu Duc Dam issued Decision 1322/QD-TTg approving the national program to support enterprises to improve productivity and quality of products and goods in the 2021-2030 period. This is considered as a major national science and technology program to support enterprises in adopting technological solutions and innovations for digital transformation and SM. The ultimate goal of this program is to support enterprises to improve their productivity and quality of products and commodities (quality productivity) by applying standards, technical regulations, and advanced management systems and tools to improve productivity and quality. This will significantly contribute to the increase of the proportion of TFP in economic growth, improvement of productivity, quality, efficiency, and competitiveness of the economy. Over the period 2021-2025, the targeted harmonious ratio of national standard system to international and regional standard systems is targeted at 65% and during this time it is expected that training and qualified certifications for 600 experts will be deployed in productivity and quality at ministries, departments, cities, and enterprises. Over the period 2026-2030, the harmonious ratio of national standard system to international and regional standard systems is targeted to be approximately 70-75% with over 1000 experts having received training and qualified certification in productivity and quality and of which approximately 200 of them are certified both regionally and internationally. Besides, the program also focuses on supporting enterprises to apply standards, technical requirements, management systems, basic tools to improve productivity and quality, and promoting the application of modern management systems and tools to improve productivity and quality. Other areas of support include measures that encourage the widespread adoption of the system of finding

the origin of products, commodities, apply good agricultural practices (G.A.P), practice production of organic agriculture, and green productivity among Vietnam's enterprises. The Prime Minister also assigned the Ministry of Science and Technology as the focal point in implementing activities in the Program as well as to instruct other related ministries, departments, and local agencies to construct the plan and deploy the tasks in the program.

Ministerial actions: The Ministry of Science and Technology plays the central role in developing national standards, promoting research, application and adoption of SM technologies and solutions. On September 27, 2018, the Ministry of Science and Technology issued Decision No. 2813/QD-BKHCN approving the crucial national science and technology program to 2025: "Research support, development and technology application of industry 4.0". The program was built to accelerate applied research, and commercialization of key technologies in Industry 4.0 that Vietnam has advantages and best benefit from; and to support to pilot projects to digitalize and apply new management and business models in some critical areas. The program also prioritizes digital transformation in areas such as medicine, tourism, finance, agriculture, processing and manufacturing, education and vocational training, transport, construction, information-communication; promote research and adopting digital transformation solutions in business management; develop policies to facilitate access to finance of businesses in terms of research and development and digital technology application.

The Ministry of Industry and Trade has also implemented many activities to support enterprises to improve their capacity to participate in the Industry 4.0, towards SM, such as: providing information, guiding enterprises in the investment activities, technology innovation, digital transformation; connecting enterprises with consulting agencies, reputable technology

and solution providers; or supporting research and development activities, technology transfer amongst enterprises, and pioneering projects in a number of high-tech industrial fields.

The Ministry of Industry and Trade has supported enterprises in implementing a number of pilot projects such as: project on developing smart warehouse model; Supporting the development and application of production monitoring module for LED and electronic product lines at Rang Dong JSC (Hanoi); online production monitoring and operating system (module for energy management and maintenance) at Saigon Beer-Alcohol-Beverage JSC; project on applying digital maps to manage and provide information on Vietnam's leather and footwear industry; the automatic control system for medicinal high extraction equipment meets Industry 4.0; QCS automatic quality monitoring system in the production of industrial packaging paper at Van Diem Paper JSC (Hanoi), etc. In 2020, many projects with direct business participation have been launched. These include development and pilot application of production planning and management software at Pho Yen Mechanical JSC (Thai Nguyen); support a pilot model to apply innovative solutions and a smart warehouse management system at Tien Phong plastic JSC (Hanoi); the Industrial IoT solution to build a model smart factory, applied at Massan Industrial Group (Binh Duong) and Duy Tan Mechanical (Ho Chi Minh city).

Directorate for Standards, Metrology and Quality (STAMEQ) is the governmental body under the Ministry of Science and Technology and is responsible to build a national standard system, including many SM-related standards. Up to now, there are about 500 Vietnam Standards (TCVN) relevant to production including over 200 TCVN of IT (IT infrastructure, IoT, etc.); 35 TCVN of network security (system security, information quality, network safety, risk management, etc.); 16 TCVN of automation (industrial automation, automation integration model, etc.); 5 TCVN of

robotic; 9 TCVN of smart agriculture (concept and terminology of mobile phone, standard of mobile communication, evaluation index of mobile phone, etc.); 5 TCVN of smart transportation (ITS system); over 74 TCVN of Waste control and environmental pollution control; 67 TCVN of traceability; over 30 TCVN of Advanced management systems; 70 TCVN of services (supply chain safety, assessment of supplier capacity, financial services, health services, etc.); 5 TCVN of human resource management and development, among others.

During the past two years, STAMEQ has been a pioneer in Vietnam in promoting SM in Vietnam. In early 2017, STAMEQ proposed Asia Productivity Organization (APO) to support and send SM experts to guide and train Vietnamese managers and enterprises on SM. These are among the first courses on SM in Vietnam. Since then, STAMEQ continued to send staffs, trainees, and enterprises to participate in SM training courses under the APO program to improve their knowledge. STAMEQ also established strong cooperation with Technischer Überwachungsverein (TUV SUD) Digital Service, Kilopasec (KPC), Cost Per Click (CPC), International Gemological Institute (IGI), etc. on promoting research, training, evaluation, and application of SM solutions. Some of collaboration can be mentioned as follows:

STAMEQ cooperated with TUV SUD Digital Service to conduct the first pilot assessment for 15 enterprises in SM access using SIRI. This is the first assessing tool in the world, developed by the Singapore government to promote Industry 4.0 and SM at the national and enterprise level. At the enterprise level, the set of indicators offers a 3-step assessment: technology, process/supply chain management, a practical organizational model to help manufacturers understand the concept of Industry 4.0. The assessment allows enterprise to identify status of production facilities, building an enterprises transformation roadmap and bringing sustainable development values to enterprises.

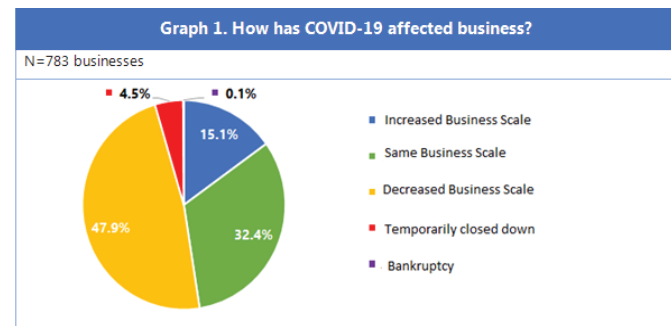
STAMEQ cooperates with CPC in implementing iBench productivity assessment solutions for Vietnamese enterprises, developing online training programs and direct training for Vietnamese enterprises on SM. STAMEQ and CPC also agreed to sign the Memorandum of Understanding (MOU) on the contents of training cooperation on SM for each industry field, each type of enterprise. Every month in 2020, STAMEQ and CPC hold online seminars on SM to connect Vietnamese and Taiwanese enterprises.

STAMEQ cooperates with KPC on SM training programs for enterprises. The two agencies have jointly established a Training Cooperation Centre located at STAMEQ to organize training courses for Vietnamese enterprises. Immediate training activities focus on the strengths of both sides such as quality control, quality assurance and improvement, productivity improvement, production management, SM, and others. In addition, this centre will provide vocational training and diploma services for enterprise employees, support start-ups and new global businesses. The establishment of this centre is expected not only to improve the productivity of Korean enterprises, but also to help improving Vietnamese enterprises by creating excellent human resources. At the same time, this is another source of support for start-ups, promoting cooperation between the two countries and promoting the competitiveness of Korean and Vietnamese enterprises.

3.5. Impact of unwanted “black swan” incidents

As of mid-July 2020, while the world’s countries were at the peak of the epidemic, many Vietnamese SMEs have almost returned to a new normal status. However, 52.5% of the 783 surveyed enterprises still reported to experience negative effects due to the pandemic. About 4.6% of enterprises had to suspend or close or dissolve their businesses. COVID-19 impacts all industries in the survey groups, led by tourism, accommodation, food, and beverage (70% of enterprises downsizing

and dissolving), wholesale and retail (59%), and services (59%). On average, the business results decreased by over 21% compared to the same period last year and business deterioration was experienced in 70% of surveyed enterprises (Fig 1).

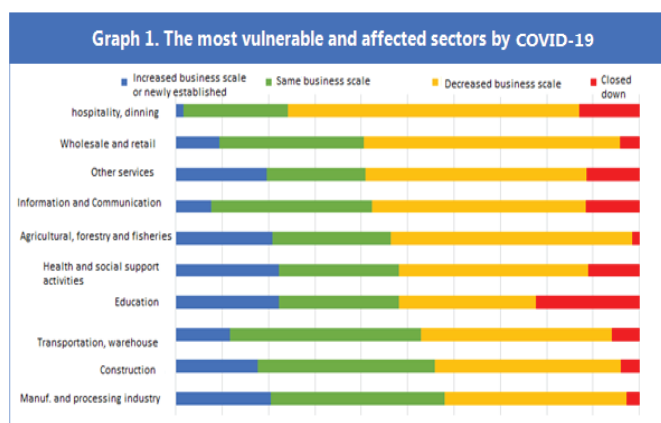


Source: Survey on SMEs in July, 2020.

Fig. 1. How has COVID-19 affected to SMEs.

Survey results also show a negative picture of business performance. This is clearly engraved in the indicators related to finance, production, output market and labour resources. More than 96% of enterprises (out of a total of 783 surveyed enterprises) have difficulties in financial, production and business problems. 96.7% of enterprises have financial problems related to the failure of customers to make payments on time, enterprises cannot collect receivables when due (70.1%), high costs (27%) due to trade difficulties during the social distancing. In addition, 30.5% of enterprises said that financial difficulties lead to their inability to pay due accounts. 96.3% of enterprises have difficulty in production such as being unable or difficult to find sources of raw materials, lack of labour force due to social distancing policy and labour surplus due to reduced production scale. Regarding the business situation, the situation of customers cancelling orders, delayed payment is a common problem (90.6% of surveyed enterprises). Market demand fell sharply, greatly affecting production and business activities (88.3% of enterprises) (Fig. 2).

By June-July 2020, in the “new normal” state of the whole society, the problem of underusing



Note: Businesses may have more than one sector.

Source: Survey on SMEs in July, 2020.

Fig. 2. The most vulnerable and affected sectors by COVID-19.

labour resources seem to have been partly resolved compared to March 2020. Only 15.7% of enterprises (out of a total of 783 surveyed enterprises) as of June 2020 reported a change in the use of labour. The most common measures are to reduce working hours, cut wages (56.5% of businesses), and give workers temporary leave without pay (49.2%), or terminate labour contracts (37%). Enterprises with the size of 50 to 100 employees had the least negative change in labour. Smaller enterprises seemed to implement more changes in labour use. Although there are few large enterprises with negative changes in labour, this change took place, mainly due to the large number of workforces in the business.

Facing such challenging environment, 88% of enterprises (out of 783 surveyed enterprises) had implemented various changes in business strategy to maintain business activities. These include, but not limited to, diversifying products (77.9%), sourcing alternative materials (64.1%) and changing products to fit the market in the context of a pandemic (38.2%). 16.3% of enterprises tried to negotiate with customers and partners to delay payment and reduce rental costs. 10.1% of enterprises sought support from banks such as lowering interest rates and maintaining credit limits. 9.3% of enterprises sought for new cash

flow from loans. Cutting costs and applying for tax deferral/exemption were also two options chosen by enterprises, but with a low rate (7.2 and 5.7%, respectively). The restructuring of the organization and human resource management are reported as painful problems for most enterprises.

In this difficult context, 68% of enterprises think that policies to support SMEs were generally issued promptly and in line with the support, particularly in the three main groups of policies related to tax, finance, and credit, labour and insurance. About two-thirds of the enterprises surveyed rated these support packages as necessary.

4. Related experience

In this section, we spend effort on understanding how economies that are similar to Vietnam act to adapt to the era of SM. Such countries are namely Indonesia and Thailand.

4.1. Indonesia

Indonesia has an economy that is heavily dependent on manufacturing and, like Vietnam, the Indonesian government is well aware of the importance of industrialization and fostering a modern economy and has seriously worked towards that with a thorough report of the Ministry of Industry in 2018. However, the report shows some fundamental blockages such as (i) underdeveloped digital structure; (ii) absence of innovation centres; and (iii) regulation and policy roadblocks to foster cross-ministry collaborations. A common point among these blockages is that Indonesia should develop and promote technology and digitalization at a great span. Once they embrace digitalization and obtain a proper digital infrastructure, Indonesia may boost productivity and reach 150 billion USD in GDP growths (10% of GDP).

Another lesson learned from the Indonesian economy is that the number of small and micro firms outnumbers medium and large companies, however, the latter are found to dominate the former in case of value added. To solve this

situation, Indonesia must improve infrastructure in electricity, transport, trade and other logistics of which electricity infrastructure plays the most important role due to Indonesia's unique structure of several islands.

To obtain its goal of becoming the tenth-largest economy in the world, the government commits to support SM with a clear strategy and roadmap called "Making Indonesia 4.0," which embraces innovation and R&D to promote SM, especially for small and micro firms in private sectors.

4.2. Thailand

Thailand ranks the fourth highest in GDP per capita in Southeast Asia and has several similar characteristics that Vietnam may use a role model. Thailand has the second-largest economy in Southeast Asia and has an industrial sector that accounts for 35% of its GDP where the most important industrial subsector is manufacturing. With close care, Thailand soon adopted various policies to nurture and improve the manufacturing sector as the driving force for Thailand economy [5].

Like many other nations in Asia, low labour cost used to be the main aspect of competitiveness that Thailand possessed. However, movement toward the group of upper middle-income nations restricts this strength. Being aware of that, Thailand has rapidly made changes to its entire supply chain thanks to advances in sensors, machines, and IT systems. The government of Thailand is determined to deploy R&D applications across its industries especially toward "being smart" in the manufacturing sector. The main themes for SM in Thailand are IT-related and a largely adopted population of robots.

5. Policy implications

5.1. Policy implications at micro level

From the findings that most Vietnamese firms are not ready for the Industry 4.0 and a significant gap of readiness between various companies (in terms of size, capital, technology, ownership, shareholders, etc.), we believe that efforts to

improve the readiness level for Industry 4.0 of enterprises need to be an integral part of industrial development policies, business development, SOE reform, FDI attraction, among others.

In order to do that, each firm should build a process to self-assess whether it is ready and possesses enough resource to go with SM. Since Industry 4.0 is dominating, adopting SM technologies has become essential. Therefore, each firm needs a tool in order to self-assess its readiness as well as its capability to go along with SM. The authors collaborated with Dr. Yangho Park and Dr. SangSu Choi (from International Gemological Institute - IGI - Korea) and Dr. Jungyub Woo, Al Jones (National Institute of Standards and Technology) to propose a self-assessment tool as described in Fig. 3. The evaluation process is based on the following groups of issues: equipment; KPI; Labour; Management; Material Handling System; Organization, team, and personnel; Process; Standards; Technologies [6-8].

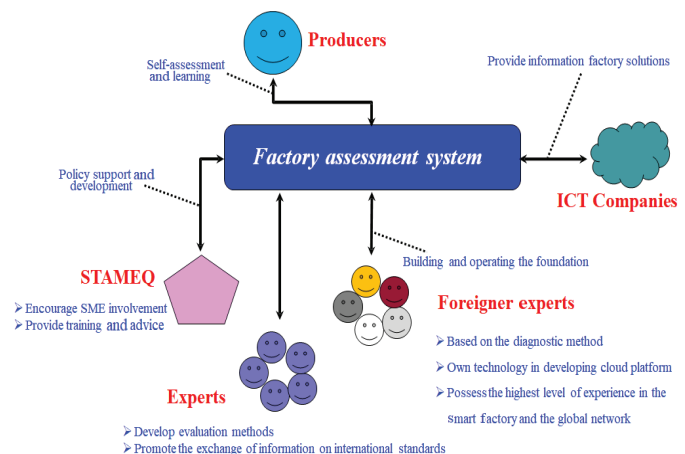


Fig. 3. The SM evaluation model.

For the SM, enterprises need to focus on integrating IT equipping to the production process. Collecting and analysing data will be beneficial to optimize production or product development, and support sales and marketing. In the SM pillar, data collection and analysis are also critical to increase the efficiency of planning, monitoring, adjusting, and optimizing their business and production processes. At the same time, it is necessary to

integrate infrastructure, machines, and equipment with IT systems to automate the process of adjusting processes in a timely and flexible manner.

Enterprises also need to promote external system integration and automated processes to improve the digital transformation infrastructure. Industry 4.0 related skills of workers in each enterprise will also need to be upgrade. This can be done not only with the efforts of individual enterprises, but also through policies to facilitate linkages with leading enterprises, universities, vocational training centres or other professional organizations.

However, it should be noted that (i) inter-connected devices/systems/products require and large-scale investments and this imply high risks. (ii) Not all enterprises need to fully implement SM in their business depending on the impact of Industry 4.0 on the production and business process, enterprises may determine the appropriate level of participation. For example, SMEs may choose to utilize advanced technologies with low cost and wide applicability such as cloud computing technology.

5.2. Policy implications at national level

Although SMEs are a driving force to the economy, Vietnam seems to be lagged in supporting such firms, especially a standardized approach for firms to identify and prepare themselves to be fully adaptive to Industry 4.0. Policies to educate and promote the application of modern technology, improving R&D capacity and training skills for employees are not only decisive factors for enterprises to develop, improve productivity and competitiveness but also provide enterprises with the foundation for Industry 4.0. Solutions should be given to building an “innovation network” among all parties (state, enterprises, academia, social organizations, and investors) to promote technology adoption and innovation. Innovation at business level will also be critical in achieving industrial development goals, enhancing productivity and competitiveness and integrate Vietnam more to the global value chains.

To support enterprises to deploy SM, the formation and development of SM ecosystem is critical. The author proposes the SM ecosystem includes government agencies, policy makers, consulting organizations, training institutions, financial institutions, solution consulting units, international organizations, etc (Fig. 4).

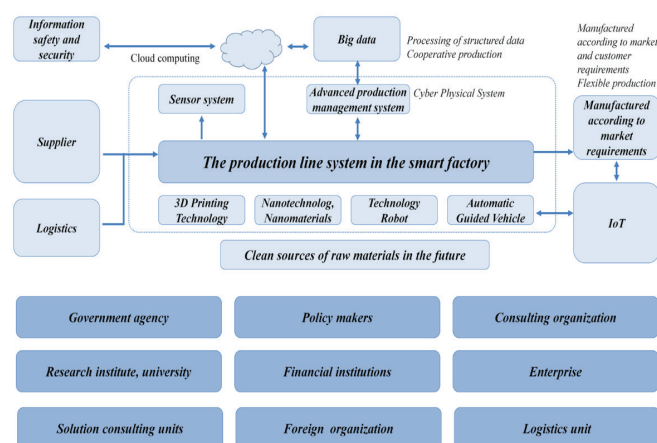


Fig. 4. The SM ecosystem.

The authors urge policy makers to focus on the main role of promulgating regulations policy to promote SM-related activities such as: institutional reform; legal policies; mechanism for research and testing of sand-box; financial mechanism; mechanism for training high-quality human resources for SM; mechanism to encourage the use and connection of data to ensure safety and security; mechanisms to promote enterprises to join the supply chain; financial, tax and investment incentive policies and regimes.

SM consulting organizations: conduct consulting activities on productivity, productivity boosting solutions and digital transformation. Vietnamese enterprises are at a relatively low level of awareness and capability to SM, so consulting organizations need to focus on consulting activities on standard systems and basic productivity tools such as quality management systems ISO 9001; Environmental management system ISO 14000; Food safety management system ISO 22000; Energy management system ISO 50001; Occupational health and safety system ISO 45001; Risk management according to ISO 31000; MFCA; quality control tools; Production line

balance (Heijunka); Anti-mistakes (Poka Yoke); Quick change over; 5S; Intuitive management; KPI; TPM; LEAN; Lean 6 Sigma... On the basis of these systems, SM consulting organizations will continue to support enterprises to deploy digital transformation solutions and SM to improve productivity.

Training organizations: to implement SM training activities for enterprises. First of all, training organizations need to focus on increasing the awareness of enterprises on Industry 4.0, digital transformation, and SM, especially for enterprises leaders. Training organizations should also focus on training on SM standards issues. STAMEQ is expected to announce the standard framework for SM in early 2021. This will be an important direction for training organizations to deploy training courses to support enterprises on SM

standards. ISA 95 or IEC 62264 set of standards is the basic and most important set of standards that need to focus on training Vietnamese enterprises to deploy SM. In addition, STAMEQ also cooperates with KPC and CPC to organize intensive training courses on SM for Vietnamese enterprises.

Solution providers: to support enterprises to build and apply IT solutions in Vietnamese enterprises. Solution providers can help to integrate existing machinery and equipment systems with new systems invested by enterprises. They can also provide solutions that help connect enterprises in the supply chain and help connect Vietnamese with international market. Currently, commonly used IT solutions include Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), SCM, Product Life Management (PLM)...

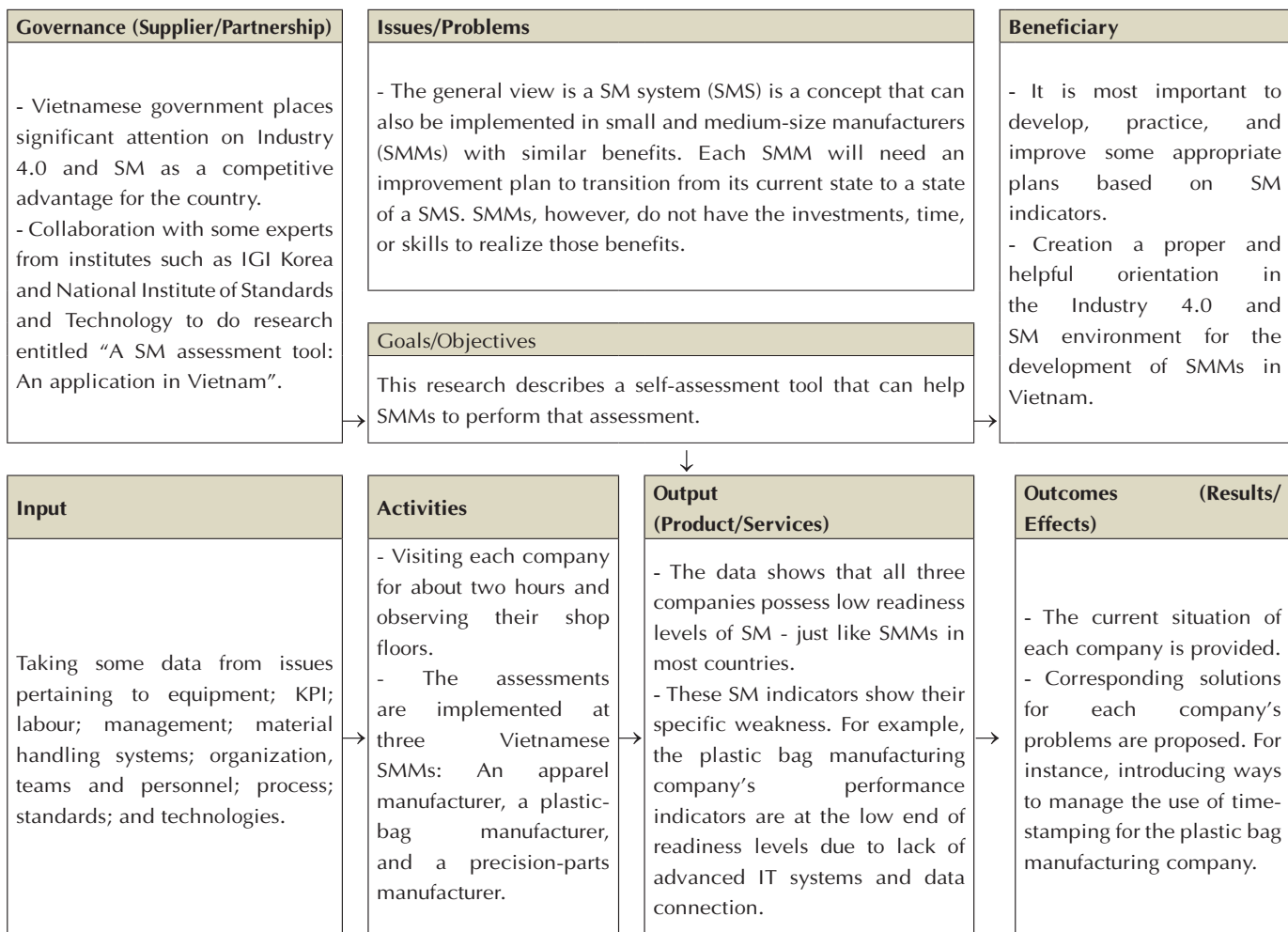


Fig. 5. Policy modelling canvas of the Industry 4.0 Policy in Vietnam.

International organizations: APO is the most important international organization helping Vietnamese SMEs approach digital transformation and SM. APO's annual training programs on SM play a very important role for Vietnamese enterprises. Besides, STAMEQ cooperated to train with CPC on SM; establishing training centres for SM and innovation with KPC; cooperating with TUD SUV on evaluation and construction of SM roadmap for Vietnamese enterprises. STAMEQ continues to strengthen cooperation with international SM enterprises and corporations such as: Avantech, Igi, Malik, Csiro...

Policies toward SMEs need to focus on improving the wide-spread application of technology 4.0 to improve enterprises' size, capital equipment level, concentration index and technology application level, R&D capacity and skills of workers, connectivity and spill-over.

As a country with the population of "golden ages", Vietnam has a huge advantage in luring resources from the world as the people are quick learners, especially for new technologies in ICT and manufacturing. Therefore, Vietnam government and agencies should adopt policies that foster high-technology educational and vocational trainings that meet industrial needs.

5.3. Policy Modelling Canvas

We summarized the Policy Modelling Canvas of Industry 4.0 Policy in Vietnam (see Fig. 5).

Using this canvas, different elements of the Vietnamese economy (i.e., government, firms) can effectively interact and produce good [5].

6. Conclusions

In this paper, we thoroughly mapped out an understanding of the capability of some Vietnamese companies to catch up with the wave of Industry 4.0 to propose some policy implications that Vietnam may adopt in order to facilitate the application of SM in the manufacturing sector. Our findings show that most Vietnamese firms are not ready for the adoption of SM. However, this situation can be mitigated with the appearance of a standardized framework to help firms self-identify the gap between their current status with SM and preparation for embracing SM. Besides this, we

proposed a framework to make the cooperation between policy makers and firms harmonious.

The focus of this research is a survey of enterprises' view and awareness of SM although there is a lack of observation of real-life SM since its application is still in its infancy in Vietnam. Therefore, we aim future works at collecting observed data and the realization of our framework and application of the canvas to real life activities.

CRediT author statement

Van Thanh Nguyen: Conceptualisation, Editing and Reviewing, Minh Hiep Ha: Writing and Editing.

COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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Teachers' awareness of happy schools with UNESCO items: A case study of a primary school in Hanoi, Vietnam

Nam-Phuong Nguyen^{1*}, Van-Thang Le¹, Huong-Giang Nguyen¹, Thi Thanh-Hang Nguyen²

¹Hanoi National University of Education, 136 Xuan Thuy Street, Dich Vong Hau Ward, Cau Giay District, Hanoi, Vietnam

²Quan Hoa Primary School, 477 Nguyen Khang Street, Yen Hoa Ward, Cau Giay District, Hanoi, Vietnam

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Abstract:

This article provides the practice of primary teachers' awareness of happy schools through a survey questionnaire based on 22 items from the UNESCO criteria on happy schools. Their opinions were shared after a number of workshop activities that teach the practice of happy schools in Quan Hoa primary school, Cau Giay district, Hanoi. To add more research detail, the authors performed an in-depth interview with the vice principal. The research results showed that primary teachers' awareness was at a good level (100% agreed). Twenty-seven teachers in this workshop gave a detailed and reflective explanation of happy schools. Then, the authors provided a number of suggestions to spread the idea of happy schools in practice, within primary schools in particular, and for all schools in general, according to the UNESCO items, which are on the move in regulations and curricula at the Bureau of Education and Training of Hanoi these days, especially in the context of the 2018 National Education Curriculum implemented since the 2020-2021 school year.

Keywords: awareness, Hanoi, happy schools, primary school teachers, UNESCO items.

Classification number: 3.2

1. Introduction

The quality of education depends a lot on the educational environment as school is not only a place where learners feel safe and ready to learn, but also happy to learn. There have been a number of studies on happy schools and building happy schools. Given the learners' well-being in schools in general since the first decade of the 21st century, the works on happy schools that have been launched are now quite popular all over the world [1-4] with an example of such an organization being the Eurasia Learning Institute for Happiness and Well-being [5].

Vietnam has been on the move of educational innovation [6] as demands for education quality are ever increasing. In Vietnam, more and more educators care so much for the students' comfort in

every education level that there was a number of international conferences on happy schools [6, 7]. Some research has been conducted in high schools on such issues as student well-being [8], teachers' awareness of mental health [7], and the research on primary schools as well [9].

These days circular signed by the authorities in Hanoi city [10] and its districts [11-13] have paid attention to the practice of happy schools through firmly encouraging this model and sustainably setting up in the entire city [14].

In another aspect, the shift of learning styles (from kindergartens to primary schools) has become so strong that it may take the children some time to adapt to it [6, 15]. Meanwhile, the 2020-2021 school year was such a challenging time for primary school teachers due to it being the very first

*Corresponding author: Email: phuongnn@hnue.edu.vn

year that the 2018 General Education Curriculum (GEC) was officially launched nationwide [16]. It might take the primary school teachers, especially the grade 1 teachers, a lot of time to prepare lesson plans and training workshops for all the new changes in that school year [17]. It is essential to care for the teachers' mental health, for the reason why happy school emerged in practice was to keep the school staff and students mentally and physically healthy.

2. Literature review

2.1. Happiness

Before exploring the concept of happy schools, it is important to understand the terms happiness and well-being. Happiness can be defined as being a human emotional state after satisfying an abstract need. It is a high-level emotion. In mankind, it is deeply human and is often affected by reason. Happiness is associated with the notion of joy in life. It can be achieved by overcoming needs and wants, equanimity, a peaceful mind, or a positive thought. Buddhism believes that happiness is not only central to the individual being, but also something to share with others. This is based on our need for positive relationships in life [18].

Happiness has always been a fascinating topic of human inquiry. There are a number of different ways to identify this word. Many people define happiness as eating a delicious meal or buying a gorgeous dress, while others believe that happiness is when things are on the right track. These are all amazing experiences to be cherished. However, they are not happy. Happiness is when your life fulfils your needs. Happiness is a feeling of contentment, it comes when you feel satisfied and fulfilled [3]. Happiness is hard to achieve and even harder to maintain, but the pursuit of happiness has always been the aspiration of all human beings [1]. Each individual has a unique preference based on their ages, experiences, or sex.

We all know that not all children who go to school feel happy as they become used to being with their parents at home, and, when they have to go to school with lots of strangers and without

parents, they become scared. Furthermore, in schools, learners are also facing the repercussions of such challenges in a world that is more competitive, stressful, and test-focused than ever before [4]. Some students feel lonely in their class, with no one to talk to, while others feel scared of studying because they do not understand the lessons and get bad marks. That is why we need to create a happy environment for students all over the world. A happy school is where everyone can live happily, in which the happiness of learners is considered the highest goal. A happy school is a place where happy teachers and students all comprehensively develop and be themselves in a safe, friendly, and loving learning environment [4].

2.2. Description of happy schools

The meaning of the phrase happy school can be understood as a place where there is no school violence, no violations of teacher ethics, and no acts that offend honour, dignity, or body of teachers and students. A happy school is a place where teachers, students, as well as parents are happy during the process of teaching and learning. A happy school is a place where love between teachers, between students, and between teachers and students is cherished and fostered daily. In addition, a happy school must be a safe place for teaching and learning activities; a place where there is no violent behaviour. In addition to transmitting knowledge, skills, and attitudes to students, a happy school should also focus on educating students to build a beautiful soul. All separate emotions and the creative personalities of teachers and students must always be respected and not mechanically impose the stereotypical, old-fashioned, and outdated way of education.

Happy schools form connections between students, teachers, and parents. A happy school makes everyone feel like they belong to a community where they feel welcomed, where they are safe, and where they can be themselves [2]. Happy schools will help each individual to be happy, feel safe, live as themselves, and be inspired to shine. When teachers and students love to go to school, they teach and learn better and students are more creative, productive, healthier,

and confident. Moreover, teachers are better at their jobs and are no longer under pressure, which makes the school a happy place to teach and learn.

Factors like negative learning environments, unkind teachers, no longer useful content, an overemphasis on academic content, and a high focus on academic results can result in decreasing student well-being or making schools unhappy. Moreover, these contribute to student mistrust, competition, bullying or violence, worries about making mistakes or expressing personalities. Therefore, instead of just being a means of educating, education systems need to address these issues by being an environment that promotes both the growth and development of their learners. It was found that by improving learners' happiness, individuals would be more motivated to contribute to more peaceful and happier societies. This reflects the need for education systems to become a place of true happiness. From there, students will find interest and joy in learning. School will become the second home for students.

2.3. Practice of happy schools all over the world

Happy school projects have been put into practice in recent years. In developed countries, importance is placed not only on attending school but also feeling happy when you are at school. Happy schools are really important to each individual such as students, teachers, and staff. Countries including Bhutan, Japan, the Republic of Korea, Singapore, and Vanuatu have recognized happiness as a goal of their development and education policies.

Under Bhutan's vision of development, happiness is highly prioritised. Gross National Happiness (GNH) is the philosophy, which was founded by the Fourth Druk Gyalpo [Dragon King] of Bhutan in the 1970s. This philosophy guides the government of Bhutan. The concept of GNH is based on four aspects, which have been further elaborated into nine domains of well-being. These four pillars include good governance, sustainable socio-economic development, cultural preservation and environmental conservation. Bhutan's 2011 national policy of educating for GNH emphasized

the role of education in promoting happiness and well-being. The policy aims to infuse GNH through content and teaching with the vision of an educated and enlightened society of *gyalyong gakid pelzom* [happiness and peace for all nations for the realization of all things good and virtuous] [19], which means the society should be at peace with itself, at peace with the world, and built and sustained by idealism and the creative enterprise of its citizens. The policy underscores elements such as collaboration between students, families, and societies; sustainability; community service; and practices that allow students to refresh the spirit. In addition, infusing GNH through content also helps one to consider students' emotional and academic outcomes.

Happiness and well-being were stated to be a growing concern in Japan, which resulted from a great frequency of mental health problems and high levels of stress. A survey [20] revealed that Japan ranked 22nd among 160 countries on the Gender Inequality Index (GII), which uses three dimensions: health, empowerment, and labour market participation in 2017. A survey of 495 Japanese students in junior secondary schools reported academic-related stress was found to negatively relate to feelings of self-growth and academic motivation [21]. The stress may also come from high levels of bullying. These high stress levels were reflected in Japan's suicide rate, which is ranked the highest in the world. Therefore, Japan's education policies reflect the growing concern for happiness and well-being. For example, the 2007 School Education Act placed an emphasis on having a positive attitude towards learning, encouraging individual uniqueness, promoting senses of empathy and self-reliance, and fostering global citizenship while preserving culture and tradition. Additionally, the national curriculum development guidelines emphasise the importance of well-balanced development.

The Akita and Fukui prefectures prioritised the concept of happiness in their sub-national policies and plans. Akita prefecture's strategy allowed students to reach learning goals through

relationships and collaborative problem solving, and through developing relationships with people from all backgrounds, etc. Likewise, Fukui prefecture encouraged the provision of physical and psychological help to eliminate bullying and make sure that children were well-nourished. It also promoted trust in schools and participation in sports and outdoor activities. The priority these prefectures put on happiness and well-being may result in higher academic performances as Akita and Fukui are among the highest-performing prefectures in Japan's national examinations.

The Republic of Korea has the second highest suicide rate in the world. A survey [22] revealed that 15-year-old Koreans reported being the unhappiest among all participant countries. It found that the two highest reasons for stress among students aged 9-11 were exams, homework, and difficulties in their relationships with their parents because of their academic performance. Rising school violence and bullying were also growing issues in the Republic of Korea. An analysis showed that while more than 60% of students hoped to rest at home after school, less than 6% reported doing so. Furthermore, while almost half of the children reported that they wanted to play with peers after school, only around 23% reported doing so in reality.

The government of the Republic of Korea developed a clear policy on promoting happiness in education with the slogan "Happy education for all, creative talent shapes the future". Three key education policies were introduced in the Ministry of Education's plan for 2014 including the Free Semester System, the Integrated Curriculum of Liberal Arts and Science to nurture Creative Talent, focus on humanities, arts, sports, and character-building through activities and clubs, and their Violence-Free Safe Schools Policy.

2.4. Criteria of happy schools

In June 2014, UNESCO Bangkok launched the Happy Schools Project to find out what makes for a happy school based on the voices of students, teachers, parents, and others at the heart of the

school community. The 2014-2015 research study produced the Happy Schools Framework, which consists of 22 criteria for a happy school that are grouped into 3 broad categories of People, Process, and Place [4].

The category of *People*: Human and social relationships within the school community all fall into the first category of People. Friendships and relationships in the school community are considered the most important factor in making a happy school. The project respondents felt that friendship and relationship should be built on trust, respect, and tolerance, while school society should include people from all backgrounds and treat everybody equally. Positive teacher attitudes and attributes are another important criterion in terms of making a happy environment. This criterion refers to characteristics such as kindness, enthusiasm, fairness, and teachers' roles in motivating learners or being creative and happy role models.

The category of *Process* includes ways of teaching and learning that can promote a student's sense of well-being. Creating a more reasonable and fairer workload is an important criterion under this category since it avoids the growing imbalance between study and play. In addition, a happy school should allow students to express their own opinions and learn without worrying about making mistakes. Another important example of criterion under this category of process is that the learning content should be useful and applicable in order for students to realise relevant issues in real life.

The *Place* category refers to the school environment and its atmosphere. Under this category, the importance of a warm and friendly learning environment is highly emphasised through its second rank of criteria contributing to a happy school. Respondents also considered an environment free from bullying a key to making a school happy. For the physical environment, it was found that respondents placed an emphasis on open and green learning and playing spaces. This criterion is believed to promote learners' happiness and well-being.

3. Methodology

The author conducted this research with qualitative and quantitative methods. In terms of qualitative methods, we compiled a large number of documents on happy schools, the practice of this model all over the world, along with lists, comparisons, and analyses of (1) the definition of happy schools, (2) how happy schools have been described theoretically and practically, and (3) UNESCO items of happy schools and their performances given globally.

In terms of quantitative, we the authors conducted a training workshop for all the staff (27 teachers) of the Quan Hoa primary school, Hanoi, with the following targets: (1) to provide grounded information on happy schools with 22 items divided into 3 categories given by UNESCO, (2) to survey the participant teachers' awareness on these items, and (3) to obtain their reflection of the practice of happy schools in primary school. We also interviewed two school managers of Quan Hoa primary school (Hanoi) whose answers provided (i) practice of happy schools from the perspective of an educational manager, (ii) their analysis on the practice, and (iii) their managerial solutions regarding the school practice.

4. Practice of primary school teachers' awareness: reflection in Hanoi, Vietnam

We did a mini workshop of happy schools for teachers in Quan Hoa primary school, Hanoi, prior to the beginning of the 2020-2021 school year (Table 1, Figs. 1, 2).

Quan Hoa primary school, located in Cau Giay district, Hanoi city, was established in 1993. Though this primary school does not have a very large area, it has a long history of establishment and development with considerable pride. This primary school is claimed as one of the most well-equipped and modern schools in the area with 22 classrooms and other facilities like a hall, a lab, a library, a medical room, and a standard school kitchen. In terms of the staff, 100% of the staff are qualified with 65% of the teachers being well-qualified and well-granted by the Bureau of Training and Education of Hanoi. In terms of

the learners, more than 80% of them have good academic achievement. Meanwhile, there are many extra-curricular activities for students to ensure their comprehensive development [23].

Results given by the mini workshop of happy schools.

In terms of school teachers, 100% of participant teachers highly agreed with the 22 items in the UNESCO framework and 100% participant teachers had a full reflection of 22 items (divided into 3 categories) in the UNESCO framework.

The school teachers had diversified ways to verbally and illustratively express the three categories of happy school description.

Three of the four groups chose safety, love, and respect as their own words to describe the happy schools model that should be fostered in Quan Hoa primary school, Hanoi, from this school year on. The other group chose respect, happiness, and joy, and their explanation for these words have little difference from the prior three groups. We the researchers would like to show the argument by asking the teachers' opinions both individually and in teamwork. The teachers in this primary school have had such good consolidation and commitment to adapting the happy school model in their school.

In terms of the school managers' opinions, they confirmed the importance of happy school practice in their school.

"Practically expression of the saying 'everyday going to school, every happy day here' is to engage our school in the happy school model. That means everyone who goes to school, working, staying, or leaving with the happy things. The most important point is that the positive energy should be rooted in the staff themselves" (said Ms. Hoang, Principal of Quan Hoa primary school).

From the answers in the interview, the two school managers supposed the practice of the happy school model exposed step by step in this school with initial considerable achievements. They collected the feedback from teachers, parents, caregivers, and primary school students as well.

Table 1. The agenda of mini workshop on UNESCO items of happy schools in Quan Hoa primary school in the 2020-2021 school year (dated August 4th, 2020).

No.	Content	Method	Facilities	Notes
1	Warm-up			
2	Introduction of happy schools: its model and its practice all over the world	Presentation and illustrations	Slides, videos	
3	Introduction of 22 UNESCO items of happy schools	List of 22 items (divided into 3 categories)		
4	Discussions amongst participant teachers	Group work	Paper, pens, colour crayons	Products after discussion in each group should be illustrated in their own way
5	Reflection	Individual work/ "Lightening" thinking	whiteboard	- Each group choose 3 words to describe their concept of happy schools - Sharing of their practice at workplace is reflected by 3 categories in UNESCO framework of happy schools
6	Closing ceremony	Speech		



Fig. 1. Illustration of mini workshop in Quan Hoa primary school, Hanoi.

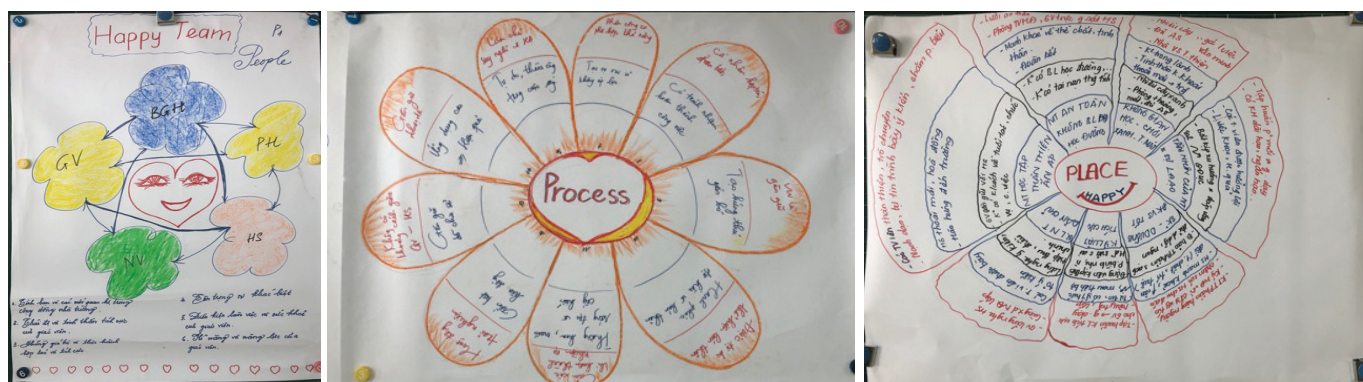


Fig. 2. Group-work products after teacher discussion at the mini workshop of happy schools in Quan Hoa primary school, Hanoi.

“Especially after this mini workshop, we have had insights of happy schools. That is, given in three categories, reasonably we might reflect this framework with its 22 items. Furthermore, we have had firm basis for deploying this model in reality in the next steps” (said Ms. Nguyen, Vice principal of Quan Hoa primary school).

Through the opinions concerning the practice of the happy school model in this primary school, we would like to suppose a number of recommendation to enhance teachers’ awareness of happy schools in particular and spreading this happy school model nationally in general.

5. Recommendations

Firstly, building a safe and friendly learning environment is the first issue that schools need to pay attention to in order to become a happy school. That includes a number of tasks, such as:

Ensuring physical safety, especially physical classroom safety.

Facilitating the school and the working conditions for the teachers, paying more attention to equipment for classrooms and departments.

Providing a system of handwashing faucets to ensure hygiene and disease prevention.

Checking and ensuring teaching facilities, regularly inspect and repair facilities to ensure safe learning and working conditions like electrical systems and equipment, firefighting systems, and other factors posing risks to students and school staff (water tank cover, trees in school area, railings, doors, tables and chairs, etc.).

Focusing on keeping school facilities clean and building a model of a civilized workplace with eco-friendly toilets, etc.

Ensuring safety criteria of food preparation, proper inspection of delivering and receiving food products, examining invoices from food suppliers, ensuring proper hygiene in food processing, distributing to every class, and distributing to each student. Taking all practical steps to prevent diseases like COVID-19, dengue fever, etc., from contaminating or spreading.

Ensuring school safety and discipline. Taking measures to prevent fraud, kidnapping, abuse, and school violence.

Ensuring mental safety and building a friendly learning environment.

Developing, publicising, and strictly implementing the Code of Conduct at schools.

Providing creative, innovative “experience programs”, life skills education activities, extracurricular activities, social activities, charity programs for community, fun, entertaining activities, cultural activities, safe sport and physical activities that are healthy, friendly, fair, age appropriate, and suitable for physiological and psychological characteristics of primary school students.

Taking good measures of preventing and tackling school violence.

Decorating schoolyards, school corridors with plants, flowers, etc., making flower arrangements and building more flower beds in the schoolyard.

Decorating classes, and providing bookshelves contribute to a happy learning environment.

Secondly, happy school means providing teaching and educational activities properly

For schools: Propagating and disseminating the purpose and meaning of building a happy school to officials, teachers, and staff. Establishing an operation committee to build a happy school, assigning tasks to members of the steering committee. A plan should be well prepared to build a model that is suitable for school conditions. Planning teacher training sessions on the happy school project and developing the criteria for supporting a happy school model equivalently in that school.

Encourage officials, teachers, and staff to strictly follow government laws and the regulations of the Sector and the Code of Conduct at schools. Make positive changes in teachers’ awareness, ideologies, and lifestyles to help them provide positive teaching methods and improve their pedagogical skills.

When assigning tasks to officials, school managers, teachers, and staff need to do it in a fair, reasonable, and appropriate way that suits each individual's ability. Officials, teachers, and staff need to be encouraged to actively participate in competitions, writing applied action research, etc., in order to prove their abilities in front of colleagues, parents, and students. Practicing and building courage and experience or acquiring more knowledge and skills. School managers need to assess and evaluate each individual's performance and effort equally and reasonably.

Promptly disseminate documents, regulations on teacher ethics, behaviours inside and outside schools, behaviours in pedagogical council meetings, and trade union activities and professional activities. Provide activities on teacher ethics and ensure that teachers strictly follow the Codes of ethics.

Continuation of the following campaigns: "Each teacher is an example of self-study and creativity"; "Democracy - Discipline - Love - Responsibility"; "Hanoi teachers help students with difficulties"; "Building a cultural school - Exemplary teacher - Elegant student"; and the award "Hanoi teachers are dedicated and creative" including content innovation and providing specific content and criteria for teachers and schools to implement in accordance with current conditions.

Organising seminars and training workshops to help teachers share experiences in pedagogical situations. Creating short videos of pedagogical behaviours at schools.

Acknowledgement, honour, and prompt commendation of individuals or groups who spend great amounts of effort.

Effective implementation of the process of building a happy school. From there, we share the role models who contribute well to the process of building happy schools.

Promptly detect and handle situations to prevent violent behaviours, violations of teacher ethics, or things that offend honour or dignity or threaten teachers and students' lives.

For teachers: Strictly follow the guidelines, policies, and laws of the Government as well as the regulations of the Sector and the Code of Conduct at schools. Having a proper awareness of the importance of building a happy school thereby having a positive teaching method and good pedagogical behaviour skills.

Teachers need to improve their standard behaviours, have good ethics, love teaching, be dedicated, take care, respect students' emotions, actively change their teaching methods, and move from content-oriented approach to ability-oriented approach. In addition, they need to change their behaviours and attitudes to each other, to parents, and to students in a friendly way but still within the framework of school discipline.

Teachers need to behave appropriately based on their current pedagogical situations and ensure that the regulations related to teacher ethics and student educations are implemented effectively. Teachers need to test and evaluate in accordance with individuals' abilities and not to put pressure related to workload or knowledge onto students. Teachers must understand and respect each student, thereby helping them progress [24].

Teachers need to perform well in school psychology counselling, equip themselves with basic but essential skills such as listening, asking questions, or providing feedback, etc., to help students deal with the difficulties they face in the process of learning.

Build a "loving classroom" with many activities that evoke excitement and create closeness with students such as sharing what you want to say, spreading positive energy, happy activity hours, etc. Teachers not only provide knowledge, but they also provide students with opportunities to have fun and relax. They give students opportunities to express their thinking and to show their abilities and creative skills based on each individual's age. Focus on emotional education for children, for example, all their feelings and creative personalities should be respected (not strictly imposed and stereotyped

in an old-fashioned, outdated way of education) to make teachers and students feel happy during the teaching and learning process and spread that feeling to parents and society.

For the staff: Strictly following the School Code of Conduct. Having a proper, friendly attitude to officials, teachers, parents, students, and a dedicated attitude to work. Constantly learning to improve qualifications and professionalism in student care, security and order insurance, and environmental cleaning, etc. Successfully completing all assigned tasks and combine with others to build a model of a happy school.

Thirdly, it is very necessary to build friendly relationships inside and outside school

Providing educational activities related to happy schools such as organising educational activities that connect students with themselves will help them properly behave, recognise their feelings, adjust their emotions, and achieve positive goals.

Organising educational activities that connect students with others. For example, by helping students behave with others properly, to develop empathy with others, to know how to positively maintain relationships, and to be responsible for themselves.

Providing educational activities to connect students with the natural environment, for instance, students should learn to respect and protect the environment while living in harmony with nature.

Building a learning environment that shows:

(i) *Care:* Teachers care about each other and about students while students care about each other.

(ii) *Sharing and compassion:* People share feelings with others at work when there is joy, sadness, or difficulties, which creates closeness and cohesion.

(iii) *Trust:* Teachers trust other colleagues and students and vice versa thereby avoiding suspicion and jealousy.

(iv) *Support:* Managers, teachers, staff, and students support each other in mental aspects by sharing and helping one another.

(v) *Generosity:* Teachers tolerate others including students while students tolerate each other; therefore, all mistakes should be taken lightly. Effectively encourage parents to make them feel responsible enough to actively participate in the educational process.

Create good relationships between staff, teachers, and parents of students by providing opportunities for parents to participate in different educational activities of the school, to participate in dialogues with school leaders, and to experience extracurricular activities alongside their children. Parents are promptly informed of their children's activities through electronic messages or phone calls.

Research gap

Despite the fact that much attention has been paid to happy schools recently, the work available on this subject have mainly been only theoretically illustrated to a certain extent. Because the feelings of happiness and well-being among nations are quite different from each other, the 22 items of UNESCO have been generally regarded within a recommended criteria system. There are not any works that specify these 22 items in detail even with critical national or local characteristics. This paper has already given a showcase of the practice of a happy school in a primary school setting. Thus, the solutions and context of this article are recommended to this school by its staff. We look forward to expanding this kind of research in the future, which demonstrates the practice of happy schools in Vietnam when the component research is all collected.

6. Conclusions

The model of happy schools has obviously been considered a promising future of schools globally and nationally in Vietnam in particular. The requirement and obstacles in the new context, practically and psychologically, especially regarding the status of the "new normal" these days, also give us opportunities to spread values and mindfulness to teachers contributing to this model. Despite the newly set and launched UNESCO items of happy schools, its effectiveness, in fact, as well as teachers' awareness and adaption, considerably show brilliant potential implementation over a larger portion.

CRediT author statement

Nam-Phuong Nguyen: Conceptualisation, Methodology, Validation, Writing; Van-Thang Le: Data collection, Conceptualisation, Methodology, Validation, Writing and Editing; Huong-Giang Nguyen: Data curation, Visualisation, Editing; Thi Thanh-Hang Nguyen: Data analysis, Visualisation, Writing.

COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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The relationship between verbal aggressiveness and mental health of students at secondary school

Dau Thanh Binh Nguyen*, Tien Van Truong

University of Education, Hue University, 34 Le Loi Street, Phu Hoi Ward, Hue City, Thua Thien Hue Province, Vietnam

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Abstract:

This study was conducted to determine the relationship between verbal aggressiveness and mental health of students in secondary school. The Verbal Aggressive Scale (VAS), introduced by D.A. Infante, et al. (1986) [1], and the Strengths and Difficulties Questionnaire (SDQ) by R. Goodman (1997) [2] were used in this study. Survey data was collected from 708 students at two lower secondary schools and two upper secondary schools in Thua Thien Hue province. The results showed that verbally aggressive behaviours are occasionally performed; mental health problems are positively associated with verbally aggressive behaviour and negatively correlated with verbally benevolent behaviour. The prosocial behaviour is positively associated with verbally benevolent behaviour and negatively correlated with verbally aggressive behaviour reversely. Although the level of verbal aggressiveness committed by secondary school students is lower than that of benevolent communication, schools should consider the construct of interventions to reduce the prevalence of verbal abuse; hence building attachment connections among adolescents. The results of this study can provide useful insights into developing nonviolent communication education programs for adolescents.

Keywords: mental health, secondary school students, verbal aggressiveness.

Classification number: 3.4

1. Introduction

Mental health is fundamental to the well-being and productive functioning of individuals. According to the World Health Organization, mental health is a “state of well-being in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” [3]. Mental health is the absence of mental disorders and the ability to think, learn, and understand one’s feelings and the reactions of others.

Adolescence is a period in which health opportunities are immense, and future adult health patterns are formed [4]. According to a UNICEF report, 20% of teenagers encounter more than one mental disorder, meaning it is one of the world’s most enormous disease burdens [5].

Many social studies in recent years show that mental health illness is a severe issue in the population nowadays, especially among adolescents. H.M. Dang, et al. (2013) [6] conducted a survey using the SDQ, the Children Behavior Checklist (CBCL), and the Youth Self-Report (YSR), and determined that there were 13.2% of children ages from 6 to 16 that had mental health problems according to SDQ; this ratio was 11.9 and 12.4% according to CBCL and YSR, respectively. This is a fairly common occurrence that requires prompt consideration as psychological problems can significantly impact a student’s development, learning, and ability to live a healthy and socially helpful life if left untreated.

There are many academic and life factors that affect the mental health of secondary school students of which verbal aggressiveness, also known as verbal abuse, is an important one.

*Corresponding author: Email: daunguyen.thanhbinh@gmail.com

Verbal aggressiveness is the use of language, including spoken and written language, in order to ridicule, insult, threaten, criticise, coerce, demean, or psychologically attack others. Verbal aggressiveness is used with the purpose of damaging social relationships, causing emotional trauma, and feelings of acceptance for the victim. Many studies have shown the negative effects of verbal abuse on the mental health of casualties such as stress, fear, anxiety, depression, post-traumatic stress disorder (PTSD)... [7]. People suffering from verbal abuse might have problems with sleep or have memory impairment, tend to perform self-injurious behaviours, have difficulties with self-control, adverse health outcomes, or a propensity to commit delinquent behaviours [8].

In Vietnam, there are few studies on verbal aggression as well as in-depth investigations on the association between verbally aggressive behaviours and mental health. Based on the inheritance of previous findings, it is necessary to further clarify the association between verbal aggressiveness and well-being state by in-depth studies thereby supplementing the theoretical basis for verbal abuse among adolescents to build more effective school violence prevention programs in the future.

The goal of this study was to determine the level of verbal aggressiveness as well as the relationship between this behaviour and the mental health of secondary school students.

2. Methodology

2.1. Participants

The survey collected data from 708 secondary school students in Hue city, Thua Thien Hue province, of which 42.4% were male students and 57.6% were female students; 67.2% were upper secondary school students and 32.8% were lower secondary school students.

2.2. Measurement

2.2.1. The VAS

This study used the VAS conducted by D.A. Infante, et al. (1986) [1] to collect data on the verbal aggression behaviour of secondary school students. This scale has been adapted to adolescents in Vietnam [9].

The scale comprises 20 items. During the adaptation process, two items were removed to improve the Comparative Fit Index (CFI) of the scale. The remaining 18 items are divided into two factors and each factor has 9 items.

Factor 1 is named "Aggressive" and it correlates with verbally aggressive message selection and generation, which includes aggressively worded items such as *"When individuals are very stubborn, I use insults to soften the stubbornness"*; *"When people simply will not budge on a matter of importance, I lose my temper and say rather strong things to them..."*.

Factor 2 is named "Benevolent" and it includes benevolently worded items that appear to predict non-aggressive and prosocial communication of children, for example: *"I am extremely careful to avoid attacking individuals' intelligence when I attack their ideas"*; *"I try to make people feel good about themselves, even when their ideas are foolish..."*.

The VAS is a Likert-type scale that uses five-point response formats corresponding to the following scores: 1) *almost never true*; 2) *rarely true*; 3) *occasionally true*; 4) *often true*; 5) *almost always true*. The level of verbal aggression in children is assessed by summing across the scores.

In this study, Cronbach's alpha coefficient (.71) shows that all observed variables meet the requirements of the item-total correlation coefficient [10], with the average value of correlation being above .30. The average value of the correlation coefficient between the items ranges from .15 to .50.

This research used descriptive statistical analysis with the parameters of mean score and standard deviation to describe the verbally aggressive behaviour of secondary school students.

2.2.2. The SDQ

In order to assess the mental health status of students, the SDQ [2] was used.

The questionnaire has 25 items divided into the sub-scales of Hyperactivity, Emotional Problems, Conduct Problems, Peer Problems, and Prosocial Behaviour. Each sub-scale includes five items and

is scored on a 0-2 scale: 0) not true, 1) somewhat true, 2) certainly true; excluding the prosocial items which are reversely rated (2: not true, 1: somewhat true, 0: certainly true).

The Total Difficulties scale is figured out by summing the scores of four problem scales (emotional symptoms, conduct problems, hyperactivity, and peer relationship problems) with positively balanced objects rated reversely. The Total Difficulties score can range from 0 to 40. Children with higher overall difficulty scores are more likely to develop psychopathology [11]. The prosocial scale, which has a score that ranges from 0 to 10, is nevertheless positively framed with higher scores reflecting fewer obstacles in prosocial conduct.

SDQ scores are divided into normal, borderline, and abnormal [2, 11]. An abnormal score on the total difficulties score can be used to determine cases with mental health disorders as described in the bandings below.

SDQ items	Normal	Borderline	Abnormal
Total difficulties score	0-15	16-19	20-40
Emotional symptoms score	0-5	6	7-10
Conduct problems score	0-3	4	5-10
Hyperactivity score	0-5	6	7-10
Peer problems score	0-3	4-5	6-10
Prosocial behaviour score	6-10	5	0-4

The SDQ was validated for use in Vietnamese children [12, 13]. Cronbach's alpha of measure for mental difficulties in our data was .66.

2.3. Data analysis

The SPSS program version 22.0 was used to analyse the data. The statistical quantities analysed in this study were percentage, mean score, and standard deviation. In order to evaluate the reliability of the VAS scale and the SDQ tool, Cronbach's alpha index and Pearson correlation coefficient were used.

3. Results

3.1. Verbal aggressiveness of secondary school students

These items performed in Table 1 were based on the VAS reported by D.A. Infante, et al. (1986) [1]. In general, the frequency of using verbal aggressiveness of students was quite low, with the mean score of aggressively worded items being less than 3.0.

Table 1. Mean scores and standard deviations of verbal aggressiveness in secondary school students.

Statements	Mean	Std.
Aggressive		
1. When individuals are very stubborn, I use insults to soften the stubbornness.	1.81	.93
2. When people refuse to do a task I know is important without good reason, I tell them they are unreasonable.	2.70	1.29
3. If individuals I am trying to influence really deserve it, I attack their character.	2.36	1.13
4. When people behave in ways that are in very poor taste, I insult them in order to shock them into proper behaviour.	2.97	1.17
5. When people simply will not budge on a matter of importance, I lose my temper and say rather strong things to them.	2.32	1.12
6. When individuals insult me, I get a lot of pleasure out of really telling them off.	1.94	1.14
7. I like poking fun at people who do things which are very foolish in order to stimulate their intelligence.	1.81	1.06
8. When nothing seems to work in trying to influence others, I yell and scream in order to get some movement from them.	1.91	1.09
9. When I am not able to refute others' positions, I try to make them feel defensive in order to weaken their positions.	1.73	1.02
Total	19.55	5.40
Benevolent		
1. I am extremely careful to avoid attacking individuals' intelligence when I attack their ideas.	3.41	1.09

2. I try very hard to avoid having other people feel bad about themselves when I try to influence them.	2.83	1.28
3. When others do things I regard as foolish, I try to be extremely gentle with them.	3.39	1.12
4. I try to make people feel good about themselves, even when their ideas are foolish.	3.23	1.22
5. When people criticise my shortcomings, I take it in good humour and do not try to get back at them.	3.21	1.28
6. When I dislike individuals greatly, I try not to show it in what I say or how I say it.	3.25	1.31
7. When I attack a person's ideas, I try not to damage their self-concept.	3.57	1.21
8. When I try to influence people, I make a great effort not to offend them.	3.51	1.21
9. When an argument shifts to personal attacks, I try very hard to change the subject.	3.17	1.21
Total	35.71	7.02

In the factor "Aggressive", the behaviours that students tended to perform the most were *"When people behave in ways that are in very poor taste, I insult them in order to shock them into proper behaviour"*, *"When people refuse to do a task I know is important, without good reason, I tell them they are unreasonable"*, and *"If individuals I am trying to influence really deserve it, I attack their character"*.

Overall, the percent of the students using benevolent words was higher than aggressive words and most of the items in the "Benevolent" subscale reached a mean score above 3.0. The most compatible behaviours with students were *"When I attack persons' ideas, I try not to damage their self-concepts"*, *"When I try to influence people, I make a great effort not to offend them"*, and *"I am extremely careful to avoid attacking individuals' intelligence when I attack their ideas"*.

3.2. The mental health of secondary school students

Table 2 presented that 24.4% of adolescents reported being at high risk of experiencing mental problems. The number of students with emotional problems achieved the highest rate of 23%, with the borderline percentage being 17.8%.

Table 2. Distribution of prevalence of mental difficulty among secondary school students.

SDQ items	Normal		Borderline		Abnormal	
	Total	Percentage	Total	Percentage	Total	Percentage
Prosocial behaviour	511	72.2	105	14.8	92	13.0
Emotional symptoms score	419	59.2	126	17.8	163	23.0
Conduct problems score	493	69.6	77	10.9	138	19.5
Hyperactivity score	564	79.7	87	12.3	57	8.1
Peer problems score	272	38.4	311	43.9	125	17.7
Total difficulties score	320	45.2	215	30.4	173	24.4

3.3. The relationship between verbal aggressiveness and mental health of secondary school students

In order to investigate the association between verbal aggressiveness and the mental health of secondary school students, the Pearson correlation coefficient between these two variables was quantified (Table 3).

Table 3. Correlations between verbal aggressiveness and mental health of secondary school students.

SDQ items	Verbal aggressiveness	
	Benevolent	Aggressive
Prosocial behaviour	.32**	-.15**
Hyperactivity score	-.03	.20**
Emotional symptoms score	.05	.13**
Conduct problems score	-.21**	.28**
Peer problems score	-.17**	.15**
Total difficulties score	-.12**	.28**

*p<.05, **p<.01, ***p<.001.

Table 3 reported a meaningful correlation between verbal abuse and some mental health problems. Students who are at risk of peer problems

had low scores in verbal aggressiveness ($r=.15$, $p<.01$) and were negatively related to benevolent words ($r=-.17$, $p<.01$). Conduct problems were significantly and positively related to aggressive communication ($r=.28$, $p<.01$), while negatively correlated to benevolent words ($r=-.21$, $p<.01$). Students who had more serious mental difficulties tended to communicate aggressively; on the other hand, students with healthy minds were likely to use more benevolent words. The data in Table 3 showed that prosocial behaviour is positively correlated with benevolent communication ($r=.31$, $p<.01$) and negatively correlated with verbal aggressiveness ($r=-.15$, $p<.01$).

4. Discussion

4.1. Verbal aggressiveness of secondary school students

Results indicate that teenagers are more likely to behave benevolently than aggressively. Aggressiveness in communication performed below the “occasionally” level. This demonstrates that adolescents prefer to use nonviolent communication to address problems especially when they are in a conflict of ideas so as not to hurt others’ feelings.

The findings in our study are similar with the previous study of V.C. Tran, et al. (2018) [14] suggesting that the proportion of verbal aggressiveness in secondary school students is still low.

Although verbal aggressiveness is not a common phenomenon, this kind of aggression might have tremendously negative impacts on others’ mentality and is considered the main cause of teenage fights or strained relationships. Therefore, schools should enhance the education of nonviolent communication for students.

4.2. The mental health of secondary school students

The proportion in this study is higher than that in other countries like Japan, India, Germany, Switzerland, Spain, Brazil..., which ranged from 12.7 to 22.5% [15]. Compared with previous studies conducted in Vietnam, this result is quite

similar to the research of H.M. Dang, et al. (2006) [16] with 25.8% having mental illnesses. However, this is higher than the percentage from studies by T. Tran (2007) [17] and C.M. Nguyen (2012) [18], which were 15.2 and 18%, respectively. This demonstrates the need for increased attention and care from families, schools, and educational institutions for children’s spiritual lives.

Among all the difficulties, students with emotional problems had the highest rate. This result is close to some earlier research in Vietnam [19] and overseas [20]. Teenagers go through a period of development where they change both physiologically and psychologically. During this period, neurological disorders frequently emerge, particularly when excitability processes increase sharply meanwhile conditioned inhibitory processes decrease resulting in sudden anger, the state of losing temper, or unreasonable reactions by them... [21]. This might explain why emotional disorder is the most common type of disturbance in this age group.

4.3. The relationship between verbal aggressiveness and mental health of secondary school students

Teenagers at risk of mental illnesses tend to behave aggressively, while students who suffer from verbal abuse might have serious mental health problems.

Findings from our study are entirely consistent with many studies abroad. N.K. Vizer, et al. (2016) [22], in a survey of the correlation between verbal abuse and mental health, suggested that verbal aggressiveness is a typical occurrence of potentially catastrophic consequences for mental health and well-being. D. Olweus (1991) [23] found that verbal aggression from students was a result of bad marks and failure in school, depression, and antisocial or conduct-disordered behaviour patterns. The spillover hypothesis can theoretically explain the positive relationship between mental illnesses and verbal aggression. According to this theory, long-term stress sensitizes humans to unpleasant stimuli thereby increasing tension and the propensity for violent conduct [24, 25].

On the contrary, the study of L.S. Aloia, et al. (2015) [26] showed that experiences of verbal aggression harm one's well-being and set an assumption that verbal aggressiveness is negatively and directly related to psychological states of well-being. Our findings indicated a contrasting relationship between verbal aggressiveness and mental health. Verbal abuse experiences might impair health, while poor mental health motivates individuals to use aggressive words.

Adolescents engaging in prosocial behaviour have an inclination to advocate for nonviolent communication rather than verbal aggressiveness. According to J.A. Piliavin (1981) [27], prosocial behaviour is a broad set of activities defined by some substantial part of society and/or an individual's social group as being generally helpful to others. Prosocial behaviours might promote social norms and encourage interpersonal relationships; thus, they must be pro-human first and foremost, contrary to the nature of verbal aggression.

5. Conclusions

Although the level of verbal aggressiveness committed by secondary school students is lower than that of benevolent communication, schools should consider the construct of interventions to reduce the prevalence of verbal abuse; hence building attachment connection among adolescents.

The number of abnormal students is quite high, of which emotional issues are the most prevalent cause. Results indicate that there is a remarkable link between verbal aggression and mental health where aggressive words are significantly and positively related to mental illnesses. In contrast, prosocial behaviour is negatively associated with verbal aggressiveness.

Evidence from this study can yield useful insights into developing nonviolent communication education programs for adolescents.

6. Limitations

We recognise several limitations in this study. First of all, the questionnaire used in this study is

self-reported. Self-reports of verbally aggressive tendencies in children might be conservative estimates due to social desirability biases. The random selection of participants eliminates this concern significantly but does not entirely remedy that shortcoming. Secondly, cross-sectional research cannot explain the causes and outcomes of all school-related factors, as well as psychological and social factors specific to each gender and class. Thirdly, participants were students in Thua Thien Hue province, which results in a study sample that is not genuinely varied or an impartial representation of adolescent samples in Vietnam. Fourthly, there have not been many previous studies in Vietnam that analyse the relationship between verbal aggressiveness and mental health; thus, it is difficult for us to define and remark on the strength of this correlation on the sample in Vietnam. Further research is needed to obtain a better grasp of this link among Vietnamese teenagers.

CRediT author statement

Dau Thanh Binh Nguyen: Conceptualisation, Methodology, Writing - Original draft preparation; Tien Van Truong: Reviewing and Editing.

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COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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The multi-criteria decision making for evaluation of vulnerability to climate change: A case study in Vietnam

Thi Thuy Duong Truong*

Banking Academy of Vietnam, 12 Chua Boc Street, Quang Trung Ward, Dong Da District, Hanoi, Vietnam

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Abstract:

Vulnerability to climate change can reflect systemic weakness and, in particular, a susceptibility to severe events such as storms, floods, high temperature, and droughts. The Intergovernmental Panel on Climate Change (IPCC) defines vulnerability as a combination of characteristics and magnitudes that express exposure, sensitivity, and adaptive capacity. This paper aims at proposing a multi-criteria decision making (MCDM) approach for the evaluation of vulnerability to climate change in coastal provinces in Vietnam. An integrated approach is performed to achieve the most relevant outcome. The Analytic Hierarchy Process (AHP) and Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) are combined to show the most vulnerability in terms of livelihoods in 28 coastal zones in Vietnam. The results, in terms of livelihoods, show that Nghe An, Ha Tinh, and Thai Binh are the most vulnerable to sea level rise as the population density near the coastline significantly contributes to enhanced vulnerability to climate change. In conclusion, this study provides useful information about the climate change vulnerability ranking and suggests how to evaluate the vulnerability degree of zones, thereby helping managers to propose adaptive solutions for the high-risk zones in Vietnam.

Keywords: AHP, climate change, multi-criteria decision making, TOPSIS, vulnerability.

Classification number: 4.1

1. Introduction

Climate change is global matter that has extreme influence on global food security and livelihood security of low-income residents not to mention it causes obstacles to hunger eradication and poverty reduction processes. Every year, harmful weather events like global warming, heavy storms, and droughts have increased pressure on the land system causing the risk of desertification, especially in coastal areas, which then has serious consequences on ecosystems and livelihoods. Climate change continues to be complicated and causes serious impacts. For example, according to the McKinsey Global Institute (2020) [1], Southeast Asian countries will lose 8-13% of GDP each year to 2050. Vietnam is one of five countries that are extremely influenced by climate change. With a 3200 km long coastline, 70% of the population lives near the coast and low-lying areas.

Negative weather events appear more frequently under the impacts of climate change. Study outcomes of World Bank (2020) [2] in developing countries affirm that Vietnam ranks the highest in GDP loss by country. The fact that climate change has already begun occurring means these are no longer just predictions. For example, a widespread and severe drought area has formed in the Mekong Delta in 2019 and 2020 in comparison to the same period in 2006. Water resources in the Central and Central Highlands regions were reduced by approximately 35-70% compared to the same period of previous years. Over the past five decades, the southern region has seen more and more 4-level and 5-level storms. For example, Yen Bai (2017) and Thanh Hoa (2018, 2019) experienced flash floods that caused widespread destruction. The central provinces suffered from consecutive

*Email: duongtt@hvn.edu.vn

storms and heavy rains causing extremely serious consequences to people's lives.

The impact of climate change is clearly threatens food security, resident life, and the country's development. The rising sea levels and high temperatures are unavoidable. The Northern Midlands and Mountain areas will be more at risk from flash floods and landslides due to increased rainfall. Meanwhile, the Central and South-Central Coast, the Northeast, and the Central Highlands suffer from drought and lack of water. In the Mekong river delta, compared with the historic flood in 2000, the sea level rose about 30 cm and the flooded area increased by 25% accounting for nearly 90% of the natural area. In addition, these areas are also affected by subsidence due to geology and groundwater exploitation.

Climate change adaptation is an important issue to many fields. Even as reduction plans for greenhouse gas emission are implemented, climate change still emerges as an inevitable event [3]. The assessment of vulnerability to climate change for subjects such as livelihoods (health, habitat, security), economy, or climate-related hazards (heat waves, flood events, rise in sea levels) is a planning task in environmental decision-making. This task helps to identify issues of high vulnerability in the community thereby allocating adaptation resources, monitoring climate change impacts, and proposing solutions [4].

Determination, measurement, and analysis of vulnerability to climate change have successfully attracted many researchers and managements wishing to identify potential risks and threat impacts by climate change [5-7].

Initially, the trends in this research varied from an impact-based approach to vulnerability-led evaluation. The latter approach focuses on the socioeconomic and environmental factors that will influence how to deal with climate hazards [8]. The concept of vulnerability is understood in a variety of ways due to studied communications. The IPCC (2001) [9] believed that vulnerability is the degree to which a system susceptible to or unable to respond to negative impacts of climate

change. Vulnerability combines external and internal impacts including exposure, sensitivity, and adaptive capacity [10]. The evaluation of vulnerability plays a prioritized role in climate change response plans. It is necessary to consider many aspects during an evaluation of the vulnerability to climate change so that it can be viewed as a MCDM related to the determination of an optimal solution among alternatives under conflict criteria.

MCDM models have been successfully utilized to determine optimal alternatives in vulnerability evaluation [7, 11-13]. G. Lee, et al. (2013) [12] proposed a procedure of spatial tools vulnerability analytics, which integrate the Delphi model and the Technique for Order of TOPSIS. E.S. Chung, et al. (2017) [14] generalized a MCDM method to evaluate water resource vulnerability of the Han river basin using TOPSIS. D.M. Runfola, et al. (2017) [15] implemented the multi-criteria weighted ordered weighted average model to measure the flood vulnerability to climate change in the United States. P.M. Tam, et al. (2019) [7] measured the vulnerable level of 28 zones using AHP and vulnerable indicator. The mentioned approaches have advantages and disadvantages in the decision-making process. Therefore, this study combines two methods, which enhances the outcome validity. This paper aims at building a model to evaluate the vulnerability to climate change in terms of livelihoods of coastal zones in Vietnam. The AHP is employed to determine the weights of attributes that influence the vulnerability. The TOPSIS ranks the vulnerability of zones using the weights of criteria and collected data.

2. Materials and methods

2.1. Materials

In this paper, the vulnerability framework used is based on IPCC. The vulnerability of a system at any scale integrates three components: sensitivity, exposure, and adaptation to deal with effects of conditions. Climate exposure reflects extreme phenomenon such as rise in level, high temperatures, floods, storms, heat waves,

Table 1. Description of vulnerability criteria.

Criteria		Description	References
Exposure (E)	Storms (E_1)	The number of storms per year	[7], [16], [17]
	Sea level rise (E_2) (cm)	Reflects the rising of water levels in the world's oceans	[16], [18], [19]
	Precipitation (E_3) (mm)	Average precipitation per year from monitoring station	[16], [20]
Sensitivity (S)	Population density (S_1) (people/km ²)	Population per unit area	[16], [21]
	Population density near coastline (S_2) (people/km ²)	Population ratio in the coastline area	[18], [22]
	Coastline (S_3) (km)	Length of coastline	[18], [21]
Adaptive capacity (AC)	Gross domestic product (AC_1) (billions VND)	Total value of final products and services by present price in considered year	[16], [22]
	Industrial production value (AC_2) (billions VND)	The industrial production value in GDP	[16], [22]
	Agriculture production value (AC_3) (billions VND)	Agriculture production value in GDP	Expert suggestions
	Poor household (AC_4) (%)	The ration of poor households in area	[16], [23]
	Unemployment ratio (AC_5) (%)	Unemployment ratio in labour age	Expert suggestions
	Average income (AC_6) (millions VND)	The average income of households in area	Expert suggestions

and droughts. Sensitivity shows how system is influenced by impacts. Adaptive capacity (AC) expresses the ability to respond to risks and environmental hazards. The vulnerability index is defined as:

$$VI = w_E E + w_S S + w_{AC} AC \quad [13]$$

After careful consideration, literature reviews, and expert advice, the criteria are defined as presented in Table 1. The data is acquired from authority agencies such as the General Statistic Office, annually synthesized reports from 28 provinces, and the National Centre for Hydro in 2019, which are shown in the Appendix. The data is different from quantitative scales, thus, it is standardized to fit the model. A survey is formed for identifying the importance of criteria. Respondents are experts in socio-economic fields with experiences in evaluation assessment and aggregation annual outcome.

2.2. Methods

In a MCDM process, determining the importance of attributes and ranking alternatives are two important issues. AHP and TOPSIS are two frequency used methods for these tasks. AHP was suggested by L.T. Saaty (2008) [24], which has been confirmed as an effective method in various fields such as selection suppliers [25] and agile manufacturing [26]. AHP is meaningful to achieve goal priorities of alternatives or weights of attributes. It integrates the intangible perspectives involving decision makers by creating pairwise comparisons. In this paper, the model is used to construct a hierarchy system of criteria and sub-criteria to evaluate the relative important of attributes via pairwise comparisons following Saaty's scale. The process includes the following steps:

To obtain the weights of criteria, experts are responsible to evaluate the importance degree by Saaty's seven-point scale, which is given in Table 2. The weights of criteria are determined from an evaluated matrix. The evaluated results of experts are tested using the consistency ratio (CR) where 0.1 is an acceptable degree [24]. This means that if CR is larger than 0.1, then the responses are inconsistent with the evaluation, therefore, the assessment should be eliminated or revised.

Table 2. Saaty's seven-point scale.

Number pairwise value	Definition	Explanation
1	Equally important	Two attributes have the same importance
3 or 1/3	Weakly important	The attribute is slightly more important than another one
5 or 1/5	Strongly important	The attribute is more important than another one
7 or 1/7	Very strongly important	The attribute is much more important than another one
2, 4, 6	Intermediate values between two evaluations	

TOPSIS was proposed by C.L. Huang, et al. (1981) [27], which has been applied to deal with choosing the best value for all alternatives. The fundamental framework is to determine the alternative that is simultaneously nearest to the ideal solution and farthest from the negative solution. TOPSIS takes advantage when representing the human choice. It is a simple calculation process that can handle both the best and the worst aspects simultaneously. TOPSIS has been efficiently proven in many fields [11, 12, 28, 29]. The procedure is expressed as follows:

Let x_{ij} be the value of object A_i under criterion C_j . The criterion has different scales, therefore, it needs to be normalized in forms of r_{ij} by

$$r_{ij} = \frac{x_{ij} - \min_i x_{ij}}{\max_i x_{ij} - \min_i x_{ij}} \quad (1)$$

Denote the normalized performance matrix by $V = [r_{ij}]$, then the overall weighted values of obtained alternatives under criteria is calculated by $R = [\omega_j, \omega_j = w_j r_{ij}]$. In order to select the most appropriate solution with respect to criteria, each alternative is compared to the positive ideal solution (PIS) and negative ideal solution (NIS), which are the maximal and minimal weighted values, respectively, that rely on the benefit or cost criterion and determined as follows:

$$A^+ = (\omega_1^+, \omega_2^+, \dots, \omega_n^+), A^- = (\omega_1^-, \omega_2^-, \dots, \omega_n^-), \omega_j^+ = \max_i \omega_{ij}, \omega_j^- = \min_i \omega_{ij} \quad (2)$$

The distance of alternative A_i to A^+, A^- is the Euclidean distance:

$$d_i^+ = \sqrt{\sum_{j=1}^m (\omega_{ij} - \omega_j^+)^2}, d_i^- = \sqrt{\sum_{j=1}^m (\omega_{ij} - \omega_j^-)^2} \quad (3)$$

The preferred alternative is the one with smallest relative closeness:

$$Rc_i = \frac{d_i^-}{d_i^- + d_i^+} \quad (4)$$

To measure the vulnerability level of climate change, the integrated vulnerability index is determined by:

$$VI = w_E E + w_S S + w_{AC} AC = \sum_{i=1}^3 w_{E_i} E_i + \sum_{i=1}^3 w_{S_i} S_i + \sum_{i=1}^6 w_{AC_i} AC_i \quad (5)$$

where, $w_E, w_S, w_{AC}, w_{E_i}, w_{S_i}, w_{AC_i}$ are the weights of criteria and overall weights of sub-criteria and E_i, S_i, AC_i are the normalized values of provinces under sub-criteria. The normalized data is used to identify the vulnerability degree, and they are used for classification into three groups following interval of the distance:

$$\Delta_{VI} = \frac{VI_{\max} - VI_{\min}}{3} \quad (6)$$

3. Findings

An experts group was asked to evaluate the role of criteria and their crucial level by Saaty's seven-point scale as in Table 2. They drive the pair comparison matrix between criteria and sub-criteria. The assessments of respondents are aggregated by Microsoft Excel to explore the weights of criteria and the consistency ratio of

each evaluation. After shifting and eliminating inconsistent evaluations, the aggregated values were used to calculate the weights of criteria and sub-criteria. The outcomes are expressed in Table 3. The selected data is normalized by Eq. (1) and considered as a performance matrix for achievement of the overall weighted values. The PIS and NIS are determined using Eq. (2). Table 4 represents the distances of alternatives of the PIS and NIS and the relative closeness following Eqs. (3) and (4). The rank of vulnerability of each province is given in the last column.

Table 3. Local weights and overall weights of criteria and sub-criteria.

Weight of criteria	Sub-criteria	Local weights	Overall weights
E	E ₁	0.122	0.068
	E ₂	0.648	0.360
	E ₃	0.230	0.128
S	S ₁	0.198	0.063
	S ₂	0.490	0.157
	S ₃	0.312	0.1
AC	AC ₁	0.370	0.046
	AC ₂	0.232	0.029
	AC ₃	0.195	0.024
	AC ₄	0.099	0.012
	AC ₅	0.060	0.007
	AC ₆	0.044	0.005

The findings in Table 3 show that exposure has the highest weight followed by sensitivity and AC. This expresses that exposure significantly causes the vulnerability in terms of livelihoods. The explanation for this is storms, sea level rise, precipitation, and temperature directly affect and lead to adverse consequences on lives and livelihoods. In overall weights, the sea level rise and population density near coastline account for the most weight, which confirms the remarkable impact these factors have on the vulnerability to climate change.

Table 4. The rank of vulnerability.

Province	d_i^+	d_i^-	Rc_i	Rank of vulnerability
Ho Chi Minh city	0.193	0.118	0.379	13
Nghe An	0.169	0.164	0.491	2
Thai Binh	0.169	0.152	0.473	3
Quang Nam	0.179	0.157	0.467	4
Nam Dinh	0.166	0.141	0.458	5
Kien Giang	0.228	0.062	0.213	22
Ha Tinh	0.152	0.147	0.492	1
Da Nang	0.129	0.092	0.432	8
Thanh Hoa	0.170	0.135	0.442	6
Ca Mau	0.169	0.125	0.4252	9
Bac Lieu	0.209	0.056	0.210	24
Tien Giang	0.214	0.059	0.215	21
Ba Ria - Vung Tau	0.165	0.115	0.410	12
Ninh Binh	0.181	0.139	0.435	7
Tra Vinh	0.217	0.044	0.169	28
Soc Trang	0.216	0.049	0.184	27
Ben Tre	0.212	0.057	0.212	23
Hai Phong	0.165	0.118	0.417	11
Binh Dinh	0.185	0.102	0.356	16
Khanh Hoa	0.183	0.132	0.419	10
Quang Ngai	0.189	0.086	0.312	18
Quang Tri	0.212	0.053	0.201	25
Quang Ninh	0.188	0.113	0.377	14
Quang Binh	0.214	0.053	0.198	26
Phu Yen	0.185	0.105	0.363	15
Ninh Thuan	0.201	0.070	0.258	20
Hue	0.189	0.092	0.327	17
Binh Thuan	0.206	0.074	0.264	19

To measure vulnerability level of climate change, the vulnerability index of each province is given in Table 5. The range of VI is split into three levels, high, medium, and low, which correspond to red, yellow, and green colour, respectively, with domains of less than 0.267, from 0.267 to 0.3, and larger 0.3, respectively.

Table 5. The vulnerability index.

Provinces	VI	Colour display	Explanation
Ha Tinh	0.345	High risk of vulnerability	High risk of vulnerability
Nghe An	0.340		
Thai Binh	0.315		
Nam Dinh	0.300	The risk degree is medium in terms of vulnerability to climate change	The risk degree is medium in terms of vulnerability to climate change
Quang Ninh	0.295		
Da Nang	0.293		
Thanh Hoa	0.292		
Ca Mau	0.291		
Quang Tri	0.291		
Soc Trang	0.288		
Binh Thuan	0.287		
Ben Tre	0.284		
Khanh Hoa	0.280		
Ninh Thuan	0.280		
Ninh Binh	0.280		
Hai Phong	0.280		
Quang Nam	0.275		
Ho Chi Minh	0.275		
Ba Ria - Vung Tau	0.274		
Quang Binh	0.260	Areas have low vulnerability	Areas have low vulnerability
Tra Vinh	0.260		
Kien Giang	0.255		
Tien Giang	0.255		
Bac Lieu	0.254		
Quang Ngai	0.249		
Hue	0.237		
Binh Dinh	0.235		
Phu Yen	0.234		

A comparison of the outcomes of TOPSIS and the vulnerability index show they were significantly consistent. As seen in Table 4 and Table 5, Ha Tinh, Nghe An, and Thai Binh are classified into the first group with high vulnerability to climate change. The VI for Ha Tinh and Nghe An are 0.345 and 0.340, respectively, followed by Thai Binh at 0.315. These provinces frequently suffer more from various extreme weather events such as strong storms, floods during the rainy season, and droughts in the dry season compared to the other

28 provinces. This bad weather greatly affects agriculture production and the livelihood of local people. In of 28 considering provinces, the given data for Nghe An and Ha Tinh reflect high poor rate and low average income, which make it difficult to allocate resources and leads to vulnerability to climate change. Therefore, Nghe An and Ha Tinh have high exposure and low adaptive capacity, which cause high vulnerability. Quang Binh, Tra Vinh, Kien Giang, Tien Giang, Bac Lieu, Quang Ngai, Hue, Binh Dinh, and Phu Yen belong to the third group with low vulnerability. Although they are not as high as the last groups in terms of GDP or income, they are less susceptible to extreme weather and low population densities, and their sensitivity degree is also low, which lead to low vulnerability to climate change in terms of livelihoods. The second group of 16 provinces have medium vulnerability, and their VI scores ranged from 0.274 to 0.3.

4. Conclusions

Human activities have caused an increase of global warming. Countries need to reflect on all aspects of climate change to act and gain clear indications of action. Global greenhouse gas emissions are considerably high degree when compared to minimal requirements. Countries must boost the urgency of action in the carbon dioxide emissions reduction plan. Vietnam is one of the countries that are most seriously influenced by climate change with extreme weather events that directly cause difficulty in the lives and livelihoods of residents.

This study assesses the vulnerability associated with the coastal zones of Vietnam. To evaluate the weights of the attributes, expert survey and AHP methods are employed. The TOPSIS model releases the vulnerability raking of provinces. To check the robustness of outcome, the vulnerable indicator is performed to release the vulnerable level. The results show that both results are consistent. In terms of livelihoods, the findings confirm that Nghe An, Ha Tinh, and Thai Binh have the highest vulnerability followed by Nam Dinh, Da Nang,

Thanh Hoa, and Ca Mau. The exposure factor causes the highest risk zones to climate change. The sea level rise, temperature, and population density near the coastline cause great impacts on vulnerability.

This study provides useful information about the climate change vulnerability ranking and suggests how to evaluate the vulnerability degree of zones. These points will help managers propose adaptive solutions for the high-risk zones in Vietnam.

COMPETING INTERESTS

The author declares that there is no conflict of interest regarding the publication of this article.

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Extent to which people perceive and accept COVID-19 vaccines in north central Vietnam

Thuy Nguyen¹, Thang Ngo², Thi-Hong Diep Pham³, Hong-Thi Nguyen⁴,
Thi-Huong-Lan Nguyen³, Quy Van Khuc^{1, 3*}

¹Vietkaplab, Trung Hoa Commune, Chuong My District, Hanoi, Vietnam

²Faculty of Economics, National Economics University,

207 Giai Phong Street, Dong Tam Ward, Hai Ba Trung District, Hanoi, Vietnam

³Faculty of Political Economy, University of Economics and Business, Vietnam National University - Hanoi,

144 Xuan Thuy Street, Dich Vong Hau Ward, Cau Giay District, Hanoi, Vietnam

⁴Faculty of International Economics, Foreign Trade University,

91 Chua Lang Street, Lang Thuong Ward, Dong Da District, Hanoi, Vietnam

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Abstract:

To achieve herd immunity against COVID-19, the willingness of residents to get vaccinated and successful vaccination policies go hand in hand. This paper aims to understand the perceptions, acceptance, hesitation, and refusal of COVID-19 vaccines in Nghe An, Vietnam. The authors used an online survey to collect data during March of 2021. The Bayesian regression model (BRM) was used to identify the factors affecting vaccination decisions. The empirical results show that respondents' livelihoods were considerably affected by the COVID-19 pandemic, and there was a subtle difference in COVID-19 impacts on the lives of urban residents and their rural counterparts. In addition, respondents reported an overall positive attitude towards COVID-19 vaccination in which 84.28% were willing to get vaccinated, 14.85% were hesitant, and 0.87% refused vaccination. Their vaccination decisions were associated with vaccine side effects, information, income, job type, gender, and trust in government. Our findings offer policy implications for devising strategies for vaccine distribution in the study area and beyond.

Keywords: COVID-19, Nghe An, vaccination, Vietnam, willingness-to-participate.

Classification number: 4.1

1. Introduction

There have been great losses of human life and resources due to the COVID-19 epidemic over the last two years. As of 5 November 2021, there have been more than 248 million COVID-19 infections and around 5 million fatalities [1]. In response, in May 2020, the 73rd World Health Assembly issued a resolution in recognition of the role of extensive immunization as a global public health goal for containment and eradication of COVID-19 [2].

Globally, there are now more than 155 vaccine candidates with 495 ongoing vaccine trials and 24 vaccines against COVID-19 approved by at least one country [3, 4]. Published research carried out mainly in high-income countries has determined that concerns about the quality and safety of vaccines due to speedy vaccine development as the primary reasons for hesitancy [5].

On a global scale, many studies have been intensively conducted to gain insights into

*Corresponding author: Email: qvkhuc.4vina@gmail.com

vaccination decisions and determinants. A global survey of 13,426 respondents on COVID-19 vaccine acceptance done by J.V. Lazarus, et al. (2021) [6] indicates that an overwhelming percentage (75%) were likely to participate in COVID-19 vaccination of which the percentage of willingness to get vaccinated was the largest in China with 90% and lowest in Russia with just under 55%. According to a study on voluntary participation in vaccine trials in France, almost 75% of survey respondents were likely to accept vaccination and 48% agreed to be vaccinated [7]. Similarly, a study by S. Sun, et al. (2021) [8] in China reported that about 64% of the surveyed people decided to participate in vaccination.

On a national scale, while investigating students' decisions on obtaining vaccines in Vietnam, Q.V. Khuc, et al. (2021) [9] found that 83.81% were willing to be vaccinated and side effects were a major obstacle to vaccine acceptance. In stark contrast with a large number of studies, responses in Jordan demonstrate that 36.1% of participants willingly accepted vaccination against COVID-19 while the remaining 63.9% either refused or remained uncertain [10]. Albeit, with many COVID-19-related studies carried out in the last two years [9-11], there is little understanding of the likelihood of vaccination participation in Vietnamese regions, which may limit vaccination strategies to some extent. Thus, this study was designed to keep policymakers and scholars in this realm informed of people's perceptions and intentions on COVID-19 vaccination in Nghe An province, which

facilitates the development and deployment of strong vaccination strategies and/or public health systems in the studied area and beyond.

An in-depth understanding of what factors determine one's decision to get vaccinated is mandatory to increase the national vaccination rate in case of sufficient vaccine supply. Research in China that digs deep into concerns for participation shows that 88.91% were worried about vaccine side effects [8], followed by family dissatisfaction with an individual's vaccination (86.72%), and handicap or death that may ensue (84.36%). Additionally, studies in the UK [12] and the US [13] find that vaccine hesitancy can be attributed to concern over future unknown effects of a vaccine, worry about vaccine safety, and misinformation. Vaccine safety had the closest relationship with vaccination intentions explaining 52% of unique variance in reasons to accept a recommended COVID-19 vaccine, yet, respondents' perceived risk of COVID-19 were loosely related to vaccination intention [14]. Our study aims to shed light on reasons behind respondents' vaccination decisions to assist Vietnamese authorities in encouraging participation in vaccination programmes and stepping up vaccination coverage to achieve the goal of herd immunity.

2. Methods

2.1. Study area

We chose Nghe An as the research area, which is a central province with the 4th largest population in Vietnam (3,547 million people) and many industrial parks. Nghe An basically stopped the first three outbreaks with only a few

cases, but in the fourth wave, the total number of cases had risen to more than 3,000 with no sign of a reduction [15]. Statistically, two-thirds of households in Nghe An are located in rural areas and many people migrate to larger cities to do business. In this 4th epidemic, reports have shown that more than 92,000 people have returned to Nghe An, which makes the pandemic scenario more and more complicated [16]. Besides, people from different places would have different cultures and perspectives that would potentially affect their decisions over vaccination. Therefore, studies on determinants of vaccine acceptance across regions also play a role in a country's vaccination programmes. With these factors highlighted, Nghe An is an ideal representative sample for investigating perceptions toward COVID-19 vaccines.

2.2. Data

Our research was designed as follows. For data collection, we went through several steps [17] including: designing the questionnaire, conducting the pilot and official surveys, and cleaning and analysing data. The first step was to compose the questionnaire, which took us more than two weeks to complete. The first draft of the questionnaire was given to a focus group for further review to ensure that all necessary fields of information were included, and all the questions were concise, clear, easy to understand, and appropriate. The official questionnaire had 31 questions divided into four sections: (1) people's perceptions of COVID-19's reality (including six questions, with some being multiple choices grids), (2) perceived importance of vaccines and vaccine

dimensions, (3) decision to get vaccinated and reasons, and (4) the demographics of the respondents. Throughout the surveying process, we carefully took note of members, held regular meetings to keep track of work progress, and worked out solutions to any problem that arose. For the official (final) survey on a large scale, the questionnaire was randomly distributed by a variety of means such as email and social media in Nghe An province. After nearly one month of surveying from March 2021 to April 2021 and data cleansing, we obtained 229 observations. For data analysis, a dataset was coded and entered into an Excel file for analysis.

2.3. Regression model

Following the previous studies [9, 18, 19], we used descriptive statistics (i.e., Mann Whitney test with 95% confidence intervals) to explore the data and used the BRM to investigate the predictions of people's vaccination decision and its relationships with 12 factors (Fig. 1). The model had 12 independent variables (see more in Appendix Table A1) that were categorized into four major factor groups: perception of COVID-19, perception of the vaccine, respondents' demographics, and vaccination decision. The following section is an example of sampled code (Box 1) that was used to command the Bayesian package to create the hierarchical Vaccination Decision model. Next, Fig. 1 illustrates the logical network of our model in which the arrow denotes the direction from the independent variables to the dependent variable and the length has no symbolic importance.

Box 1. The design of the model.

```
model1a<-bayesvl()
model1a<-bvl_addNode(model1a,"VaccineDeci","binom")
model1a<-bvl_addNode(model1a,"Income_effect","norm")
model1a<-bvl_addNode(model1a,"Gender","binom")
model1a<-bvl_addNode(model1a,"Mem_
quarantine","norm")
model1a<-bvl_addNode(model1a,"Insurance","norm")
model1a<-bvl_addNode(model1a,"Freq_
vaccination","norm")
model1a<-bvl_addNode(model1a,"Satis_gov","norm")
model1a<-bvl_addNode(model1a,"Job_type","norm")
model1a<-bvl_addNode(model1a,"Town","norm")
model1a<-bvl_addNode(model1a,"Vaccine_
Importance","norm")
model1a<-bvl_addNode(model1a,"Sideeffect_
importance","norm")
model1a<-bvl_addNode(model1a,"Chronic_disease","norm")
model1a<-bvl_addNode(model1a,"Age","norm")
```

Model formula (1):

VacciDeci ~ Age + Chronic_disease + Sideeffect_importance + Vaccine_importance + Town + Job_type + Satis_gov + Freq_vaccination + Insurance + Mem_quarantine + Gender + Income_effect

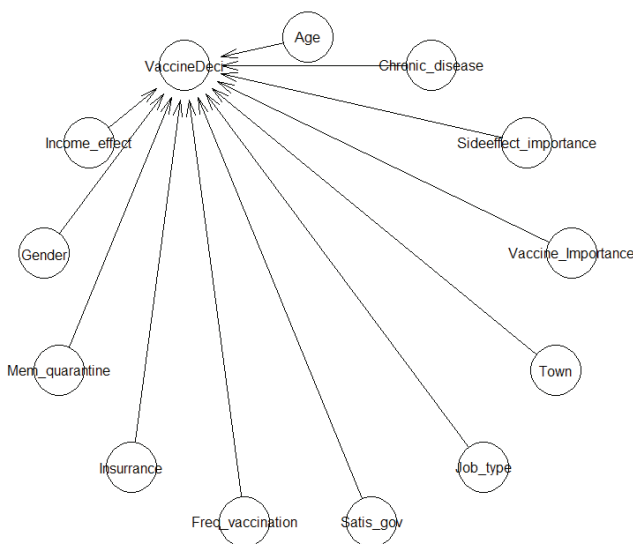


Fig. 1. The model of vaccination decision.

3. Results

3.1. Exploratory results

Table 1 presents households' perceived COVID-19 impacts, perceptions of COVID-19 vaccine, demographics, and vaccination decision. Regarding demographics, males and females accounted for 41.5% and 58.5%, respectively, and those aged 31-50 constituted roughly half (45.42%) of all respondents surveyed.

Notably, residents were reported to sustain considerable adverse effects from COVID-19 (3.35/5), and most Nghe An residents believed that vaccines played an important role in controlling the COVID-19 pandemic with a score of 4.79. Although a large number of people saw COVID-19 as a danger (4.74/5), their confidence in Vietnam's win against COVID-19 (4.83/5) and satisfaction with governing bodies' countermeasures (4.77/5) remained high. Another point worth mentioning is that side effects and vaccine origins received a great deal of attention with rates of 4.6/5 and 4.41/5, respectively.

Figure 2 compares people's decisions on COVID-19 vaccination in rural and urban areas. It can be seen that these two groups recorded a similar patterns in proportions of different categories. In total (Fig. 2C), over four-fifths of respondents agreed to participate in vaccination, which was made up of those who chose to pay upfront for early vaccination (46.29%) and those who proceeded to wait for free vaccines from the government (37.99%). The figure for vaccine-hesitant urban respondents was around 8% higher than that of their rural counterparts. None of the surveyed people in urban areas refused to be vaccinated, and only a few rural residents refused vaccinations (2 in 156).

Table 1. The perception, impact of COVID-19, and the decision on vaccine selection of Nghe An households.

Perception, impact of COVID-19 and decision on vaccine selection of Nghe An households (N=229)		Mean	Std. error	Min	95% confidence interval of the difference			
					Lower	Upper	Max	Range
Perception about COVID-19	Income effect	3.08	.075	1	2.93	3.23	5	4
	Social effect	3.12	.063	1	2.99	3.24	5	4
	Work effect	2.90	.081	1	2.74	3.06	5	4
	General effect	3.35	.064	1	3.22	3.48	5	4
	Danger level	4.74	.040	1	4.66	4.82	5	4
	Infect probability	3.39	.081	1	3.23	3.55	5	4
	Government satisfaction	4.77	.035	1	4.70	4.84	5	4
	Assurance level	4.70	.041	1	4.62	4.78	5	4
	Faith in future victory	4.83	.030	2	4.77	4.89	5	3
Perception about vaccine COVID-19	Vaccine importance	4.79	.034	2	4.72	4.86	5	3
	Origin importance	4.41	.055	1	4.31	4.52	5	4
	Side effect importance	4.60	.044	1	4.52	4.69	5	4
	Price importance	4.24	.064	1	4.11	4.37	5	4
	Effectiveness importance	4.79	.031	2	4.73	4.85	5	3
	Convenient importance	4.59	.046	1	4.50	4.68	5	4
Vaccination decision	Vaccination decision	3.30	.049	1	3.20	3.39	4	3
Demographics	Gender	.41	.033	0	.35	.48	1	1
	Age	3.03	.088	1	2.85	3.20	6	5
	Chronic disease	.34	.045	0	.26	.43	1	1
	Mem quarantine	.09	.024	0	.04	.13	1	1
	Insurance	.94	.021	0	.90	.98	1	1

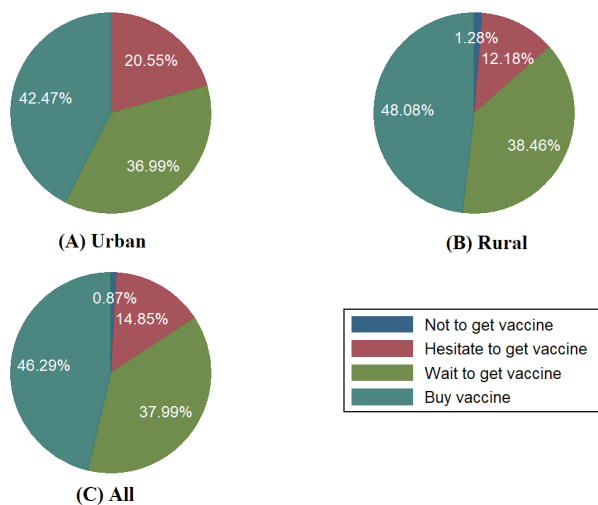


Fig. 2. Decision to participate in COVID-19 vaccination.

Figures 3 and 4 provides information on reasons for vaccine hesitancy and refusal. As clearly presented, vaccine side effects and insufficient information on COVID-19 were two main reasons for COVID-19 hesitancy. To be more specific, 21/34 respondents were discouraged from vaccination by vaccine side effects, followed by “incomplete information” (19/34) (Fig. 3). The number of participants that was put off by vaccine safety, effectiveness and other preventive measures stood at only under 10. Similarly, side effects and incomplete information are found to rank first and second as factors that induce vaccination refusal (Fig. 4).

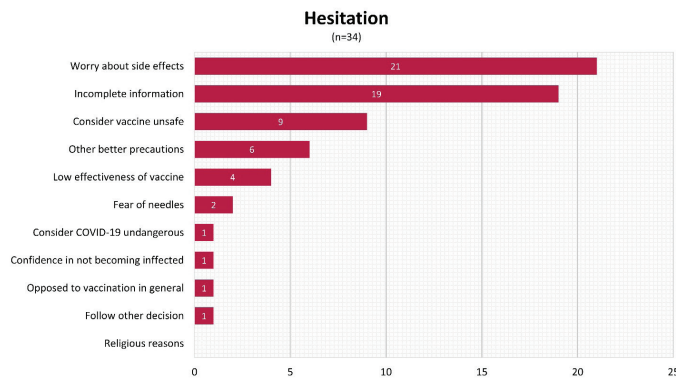


Fig. 3. Reasons for COVID-19 vaccine hesitation.

Table 2 compares perceptions of COVID-19, perceptions of COVID-19 vaccine, demographics, and vaccination decisions among urban and rural residents. By and large, no difference in perceived effects of COVID-19 was witnessed between

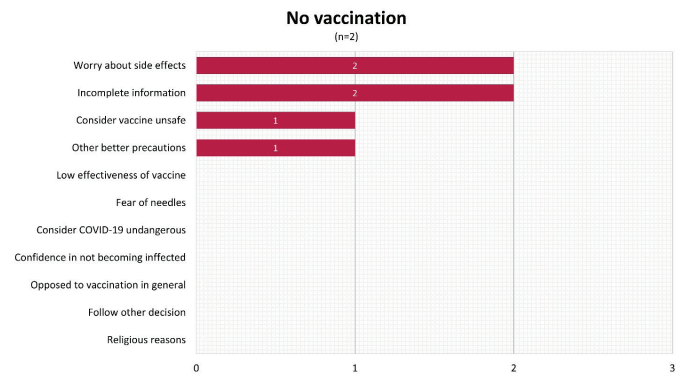


Fig. 4. Reasons for COVID-19 vaccine refusal.

the two groups, and their satisfaction with the government and strong confidence in national future victory were shown to insignificantly differ. The number of urban residents contracting chronic diseases was significantly higher than that of rural residents, yet those in the countryside deemed

Table 2. Difference in perception and decision between the two areas.

Comparison between urban and rural		Urban (N=73)				Rural (N=156)				Sig. (Mann Whitney U test)
		Mean	Std. error	Min	Max	Mean	Std. error	Min	Max	
Perception	Income effect	3.08	.117	1	5	3.08	.096	1	5	.846
	Social effect	3.07	.088	1	5	3.14	.083	1	5	.700
	Work effect	2.86	.137	1	5	2.92	.101	1	5	.938
	General effect	3.38	.113	1	5	3.33	.078	1	5	.592
	Danger level	4.62	.077	2	5	4.79	.045	1	5	.010
	Infection probability	3.26	.145	1	5	3.45	.098	1	5	.301
	Government satisfaction	4.82	.056	2	5	4.74	.044	1	5	.203
	Assurance level	4.73	.065	2	5	4.69	.052	1	5	.858
	Faith in future victory	4.85	.054	2	5	4.82	.036	2	5	.473
Knowledge about vaccine COVID-19	Vaccine importance	3.370	.067	3	5	3.526	.039	2	5	.654
	Origin importance	3.507	.093	1	5	3.686	.068	1	5	.019
	Side effect importance	3.219	.090	1	5	3.417	.049	1	5	.023
	Price importance	3.740	.117	2	5	3.827	.077	1	5	.042
	Effective importance	3.603	.062	2	5	3.641	.035	2	5	.150
	Convenient importance	4.58	.083	2	5	4.60	.055	1	5	.793
Vaccination decision	Vaccination decision	3.22	.090	2	4	3.33	.059	1	4	.272
Demographics	Gender	.42	.058	0	1	.41	.040	0	1	.837
	Age	3.23	.167	1	6	2.93	.103	1	6	.068
	Chronic disease	.53	.092	0	2	.26	.048	0	2	.002
	Mem quarantine	.07	.036	0	2	.10	.031	0	2	.765
	Insurance	.95	.038	0	2	.94	.025	0	2	.843

Table 3. Summary of the estimated coefficients from the hierarchical vaccination decision model.

Variables	mean	se_mean	sd	2.5%	25%	50%	75%	97.5%	n_eff	Rhat
a_VaccineDeci	-5.75	0.03	2.82	-11.37	-7.62	-5.78	-3.85	-0.28	6604	1
b_Income_effect_VaccineDeci	0.71	0.00	0.23	0.28	0.56	0.71	0.87	1.18	8275	1
b_Mem_quarantine_VaccineDeci	2.42	0.02	1.25	0.58	1.56	2.23	3.07	5.37	5988	1
b_Insurrance_VaccineDeci	-1.96	0.01	0.85	-0.70	-2.50	-1.93	-1.38	-0.38	9148	1
b_Freq_vaccination_VaccineDeci	0.41	0.00	0.18	0.07	0.29	0.41	0.53	0.78	7679	1
b_Satis_gov_VaccineDeci	0.75	0.00	0.38	0.03	0.50	0.75	0.99	1.52	8284	1
b_Job_type_VaccineDeci	0.98	0.00	0.35	0.30	0.74	0.98	1.22	1.69	7520	1
b_Town_VaccineDeci	-0.93	0.00	0.48	-1.89	-1.25	-0.93	-0.59	0.01	9619	1
b_Gender_VaccineDeci	1.97	0.01	0.58	0.91	1.56	1.95	2.34	3.16	9275	1
b_Older_children_VaccineDeci	-0.65	0.00	0.43	-1.49	-0.94	-0.64	-0.36	0.20	11149	1
b_Vaccine_Importance_VaccineDeci	0.60	0.00	0.41	-0.19	0.32	0.60	0.87	1.41	8821	1
b_Sideeffect_importance_VaccineDeci	-0.66	0.01	0.48	-1.63	-0.98	-0.64	-0.32	0.23	7694	1
b_Chronic_disease_VaccineDeci	0.33	0.00	0.35	-0.33	0.09	0.32	0.56	1.03	8915	1
b_Age_VaccineDeci	0.08	0.00	0.21	-0.32	-0.06	0.08	0.22	0.50	8332	1

danger from COVID-19 more serious than those in cities (p -value=0.01). Furthermore, there are statistically significant differences in perceptions of vaccine prices (p -value=0.042) and side effects (p -value=0.023) between the respondents of the two regions. It is noted that although differences in residents' attitudes towards vaccine and vaccine effectiveness were negligible, their opinions on the importance of vaccine origins differed significantly.

3.2. Empirical results

Table 3 presents the results of the Bayesian regression model that investigates decisions on vaccination and its interactions with 12 independent variables. Because the effective sample size (n_{eff}) is higher than 1000 and Gelman shrink factor (Rhat) equals 1, convergence is confirmed in our model. Fig. 5 illustrates the trace plots of the posterior parameters. Markov chains fluctuate around a central equilibrium with a high density of plots of variance suggesting that the Markov property is held. Figs. 6 and 7 show the distribution of parameters from the BRM.

As illustrated in Figs. 6, 7 and 8, independent variables such as income effect, gender, insurance,

frequent vaccination, government satisfaction, and job type have a statistically significant effect on vaccination decision. From the simulated posterior results, we found that the perceived effect of COVID-19 on income was positively associated with the intention to get vaccinated (mean=0.71, sd =0.23). The type of job held by the respondent also had a positive relationship with vaccination acceptance (mean=0.98, sd =0.35). Additionally, respondents whose family members were once under quarantine were more likely to agree to be vaccinated (mean=2.42, sd =1.25). It was also suggested that males and respondents without insurance were more likely to agree to vaccination (mean=1.97, sd =0.58 and mean=-1.96, sd =0.85). We also found that age and chronic disease were associated with vaccination acceptance albeit with weak confidence.

4. Discussion

The complicated developments of COVID-19, insufficient related research in developing countries, and Vietnam's diverse cultures encouraged us to design this study to understand perceptions and

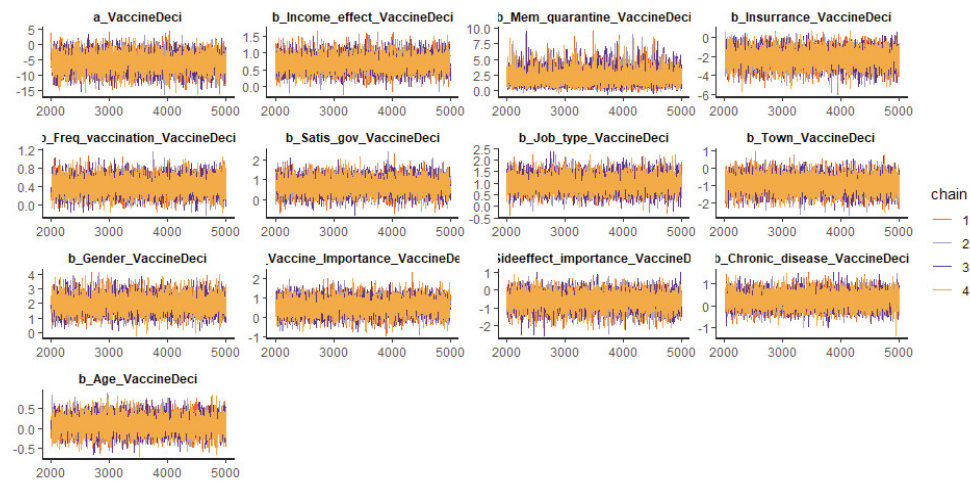


Fig. 5. The MCMC chains for the Bayesian model of vaccination decision.

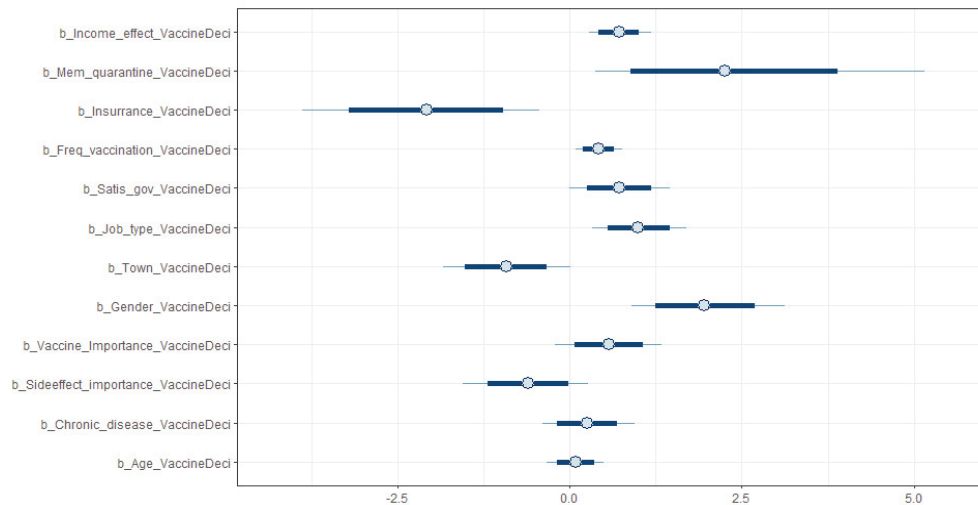


Fig. 6. Distribution of the coefficients of factors influencing vaccine decisions.

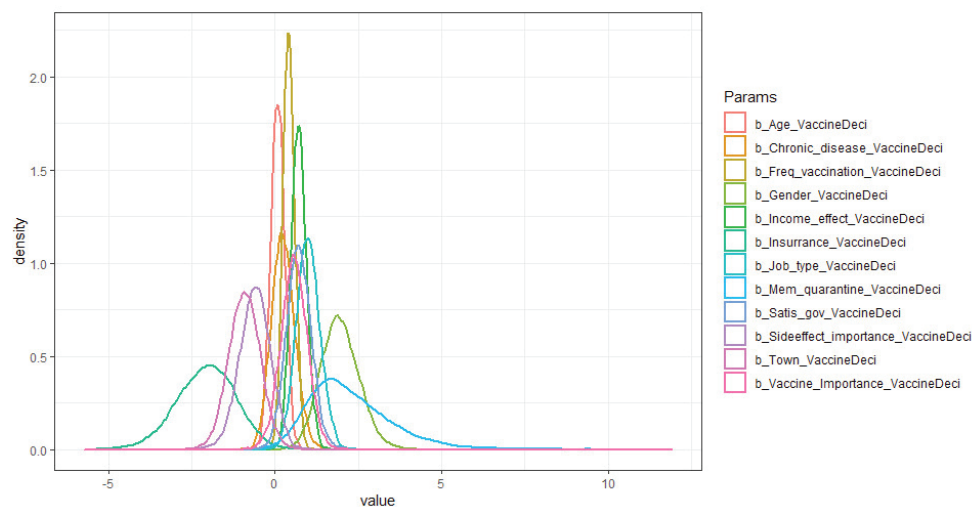


Fig. 7. Posterior coefficients of the vaccination decision model.

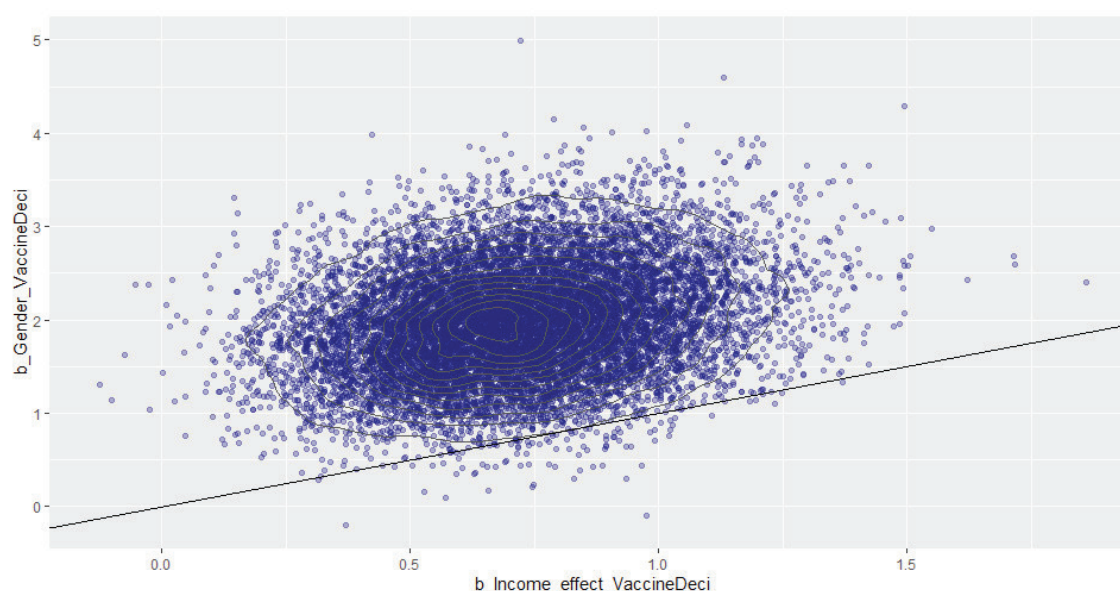


Fig. 8. Comparative densities between *b_Gender_VaccineDeci* and *b_Income_effect_VaccineDeci*.

intentions regarding COVID-19 vaccination in Nghe An province. Using descriptive statistics and a Bayesian regression model, we obtained several findings.

Firstly, our results indicate the high likelihood of success of COVID-19 vaccination because of a high rate of potential vaccination participation. To be more specific, 84.28% of the participants were willing to be vaccinated against COVID-19 if a vaccine was available (Fig. 1). This willingness was in line with many other findings [9, 20, 21]. COVID-19 is reported to emerge as a great danger to most households in Nghe An province (Table 1), which encourages people's acceptance of vaccines [22, 23]. Moreover, those who trust the health system were 3.05 times as likely to accept the vaccine than those that did not [23], and those who adhere to government regulations such as wearing masks, social distancing, or lockdown were more willing to participate in COVID-19 vaccination [24]. Tables 1 and 2 denote a high level of trust in the government and the high

authorities' ability to combat COVID-19, which partly explains the high willingness to obtain vaccines.

Secondly, vaccination hesitancy is associated with numerous variables/reasons including vaccines' side effects and insufficient information (Fig. 3 and Table 3), job type, gender, and trust in government (Table 3). These results are highly consistent with many earlier published works [25-27]. Whether a person has adequate knowledge of COVID-19 vaccines or lacks sufficient information can influence vaccine acceptance or hesitancy [28]. Individuals who found information provided by health authorities inconsistent or contradictory had higher odds of vaccine refusal than those who found the information clear and understandable [29]. Therefore, information on COVID-19 vaccines should be communicated clearly via official channels under government control with a high degree of transparency to promote trust [4]. Similarly, actions must be taken to alleviate fears of vaccine side effects and comfort residents

with huge benefits of vaccination. Besides, it is advisable that policymakers take into consideration other key factors such as gender and job type when devising plans and/or public policies to further increase participation in the vaccination programme.

Thirdly, the differences in perceptions between rural and urban residents were also highlighted in the results. To be more precise, the danger level of COVID-19 appears to be much more severe to rural populations than to its urban counterpart. Rural residents are more concerned about vaccine prices than city dwellers (Table 2).

Fourthly, our study suggests that exploratory analysis coupled with empirical analysis by a Bayesian model could be a favourable approach to capture more information and to identify and confirm the influence of key variables of vaccination decisions.

Following Q.H. Vuong (2020) [30], we fully acknowledge that our research has some limitations. The online survey method has some inherent disadvantages. We, however, improved data quality by carefully designing, revising, and improving the questionnaire with the help of a focus group. We also acknowledged that a small sample size (N=229) may influence the quality of generalized conclusions, but we minimize and overcome this issue by employing a Bayesian model, which, by definition, does not require strict assumptions regarding large sample sizes. The cost associated with the investment in vaccine research and production is also overlooked in this study, and it should be noted in future research [31].

5. Conclusions

The vaccine acceptance rate greatly varies among countries and regions, and the willingness to obtain vaccines is key to a successful vaccination programme. However, there is scant research on this area of interest in developing countries that are heavily hit by COVID-19. The purpose of this study was to gain a better understanding of perceptions of COVID-19 impacts and motivations for vaccine acceptance or refusal in Nghe An by employing descriptive statistics and a Bayesian regression model. Our research findings suggested that those who were willing to obtain COVID-19 vaccines were in the majority, which was in line with previous studies. Vaccine-hesitant respondents considered vaccine side effects as a discouragement to vaccine acceptance. Apart from concerns about side effects, guaranteeing transparency in COVID-19 vaccine information and using official channels as the primary means of communication should be prioritized to consolidate trust and encourage public participation in vaccination programmes. In addition, residents in Nghe An had strong confidence in the government and Vietnam's future victory over COVID-19. Our results provide insights to promote vaccination, and a substantial difference in intentions on vaccination between males and females may assist governing bodies in devising policies tailored to the needs of each group. This study offers implications for developing nations to increase the likelihood of vaccination success and provides guidance for comparative research in other countries and/or regions in Vietnam to speed up vaccine administration for community immunity.

Appendix

Table A1. Variables description.

Variables	Variable code	Meaning	Measurement
Income effect	Income_effect	The impact of COVID-19 on respondents' income. Scale 1-5.	1=Very low; 2=Low; 3=Medium; 4=High; 5=Very high.
Habit effect	Habits_effect	The impact of COVID-19 on respondents' social habits. Scale 1-5.	1=Very low; 2=Low; 3=Medium; 4=High; 5=Very high.
Work effect	Work_effect	The impact of COVID-19 on respondents' work. Scale 1-5.	1=Very low; 2=Low; 3=Medium; 4=High; 5=Very high.
General effect	General_effect	The impact of COVID-19 on respondents' life. Scale 1-5.	1=Very low; 2=Low; 3=Medium; 4=High; 5=Very high.
Danger level	Danger_level	Perceived danger of COVID-19. Scale 1-5.	1=Very safe; 2=Safe; 3=Neutral; 4=Dangerous; 5=Very dangerous.
Infect probability	Infect_prob	Perceived the risk of infection COVID-19. Scale 1-5.	1=Very low; 2=Low; 3=Medium; 4=High; 5=Very high.
Government satisfaction	Satis_gov	Trust in government. Scale 1-5.	1=Very dissatisfied; 2=Dissatisfied; 3=Normal; 4=Satisfied; 5=Very satisfied.
Assure Level	Assure_evel	Perceived safe living in Vietnam. Scale 1-5.	1=Very unassured; 2=Unassured; 3=Normal; 4=Assured; 5=Very assured.
Faith win	Faith_win	Confidence level to win the upcoming epidemic. Scale 1-5.	1=Highly doubtful; 2=Doubtful; 3=Normal; 4=Trust; 5=Complete trust.
Vaccine importance	Vaccine_importance	The importance of vaccines. Scale 1-4.	1=Not important; 2=Less important; 3=Important; 4=Very important.
Origin importance	Origin_importance	The importance of vaccines' origin. Scale 1-4.	1=Not important; 2=Less important; 3=Important; 4=Very important.
Side effect importance	Sideeffect_importance	The importance of vaccines' side effect. Scale 1-4.	1=Not important; 2=Less important; 3=Important; 4=Very important.
Price importance	Price_importance	The importance of vaccines' price. Scale 1-4.	1=Not important; 2=Less important; 3=Important; 4=Very important.
Effective importance	Effective_importance	The importance of vaccines' effectiveness. Scale 1-4.	1=Not important; 2=Less important; 3=Important; 4=Very important.
Convenient importance	Convenient_importance	The importance of vaccines' convenience. Scale 1-4.	1=Not important; 2=Less important; 3=Important; 4=Very important.
Vaccination decision	Vaccination_decision	Respondents' decisions on getting COVID-19 vaccination. Scale 1-4.	1=Not important; 2=Less important; 3=Important; 4=Very important.
Gender	Gender	Gender. Binary variable.	0=Female; 1=Male.
Age	Age	Age. Scale 1-6.	1=under 23; 2=from 24 to 30; 3=from 31 to 40; 4=from 41 to 50; 5=from 51 to 60; 6=above 60.
Chronic disease	Chronic_disease	Chronic disease. Binary variable.	1=yes; 0=no; 2=I don't know.
Mem quarantine	Mem_quarantine	Friends or family are quarantined. Binary variable.	1=yes; 0=no; 2=I don't know.
Insurance	Insurance	Insurance of respondents. Binary variable.	1=yes; 0=no; 2=I don't know.
Older children	Older_children	Families with children/the elderly. Binary variable.	1=yes; 0=no; 2=I don't know.
Job type	Job_type	Working area of respondents. Scale 1-4.	1=No working; 2=Working for private; 3=Working for state; 4=Retired.
Town	Town	Urban/Rural. Binary variable.	1=Urban; 0=Rural.

CRedit author statement

Thuy Nguyen: Conceptualisation, Methodology, Validation; Thang Ngo: Data curation, Visualisation, Writing; Thi-Hong Diep Pham: Data collection,

Conceptualisation, Methodology, Validation; Hong-Thi Nguyen: Writing and Editing; Thi-Huong-Lan Nguyen: Data analysis, Visualisation, Writing; Quy Van Khuc: Conceptualisation, Writing, Reviewing and Editing.

COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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Public interest in social research ethics: An analysis of the top 50 articles in Altmetric database

Van Kham Tran^{1,2*}, Huy Cuong Pham³, Thanh Nam Tran⁴, Thi Thai Lan Nguyen³, Thi Kim Nhung Nguyen³

¹National Ageing Research Institute, Royal Melbourne Hospital,

Royal Park Campus, Gate 4, Building 8, 34-54 Poplar Road, Parkville, Victoria 3052, Australia

²University of South Australia, 101 Currie Street, Adelaide City, South Australia 5000, Australia

³University of Social Sciences and Humanities, Vietnam National University - Hanoi,

336 Nguyen Trai Street, Thanh Xuan Trung Ward, Thanh Xuan District, Hanoi, Vietnam

⁴University of Education, Vietnam National University - Hanoi,

144 Xuan Thuy Street, Dich Vong Hau Ward, Cau Giay District, Hanoi, Vietnam

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Abstract:

This study aims to identify and characterise the top 50 articles with high Altmetric attention scores (AASs) in social research ethics, which have received the most significant amount of attention from the general public and scholars. Using the Altmetric database, we searched for 438 AAS articles with content in social research ethics, which were published in 172 journals in social sciences using the Web of Science and Scopus databases. We determined the top 50 articles with the highest AASs using the Altmetric.com databases and then analysed them with some criteria of the journal, year, type of article, a field of research, main topic, and ethical research consideration. Among the 50 chosen articles, the journal that published the most articles on social research ethics that received the most attention on social media was the International Journal of Social Research Methodology (n=7). The most frequent keywords appearing in these articles are ethics (n=20), research ethics (n=14), social media (n=13), and privacy (n=7). The research areas with articles with high AASs are philosophy and religious study (27), medical, pharmacology and health sciences, and studies in human society. Our study presents a detailed list and analysis of the top 50 articles with the highest AASs in social research ethics, which paint a significant picture of public attention in social research ethics. Indeed, this picture shows that despite having public interests in this topic, the level is less considerable compared to its vital position in social research in contemporary life.

Keywords: AAS, Altmetric, social research, social research ethic.

Classification number: 4.1

1. Introduction

Citation is an important indicator of identifying the worthiness of a published work and its impact and competence of its author(s) as well [1, 2]. Traditional citation analysis has been criticised because it requires time after publication and reflects the academic field [3, 4]. A new web-based metric (Altmetric), established in 2011

aims to have a fast and dynamic analysis of the influence of social media networks such as Twitter, Facebook, and Mendeley, which are all well-known to influence the public and politics [5].

Recently, a limited number of studies have been implemented to investigate the top AAS articles in specific fields such as medicine, dentistry, and strokes [6-8]. There is deficit of those fields in

*Corresponding author: Email: k.tran@nari.edu.au

the area of social sciences in general and in the topic of social research ethics in particular. This research aimed to show the characteristics of the Altmetric top 50 articles on the topic of social research ethics.

2. Methods

2.1. Search engine

The Altmetric Explorer is a web-based application that can be used to search the following sources of research output to achieve the most relevant and updated overview of online activity and discussion [5]:

- Public policy documents.
- Mainstream media.
- Online reference managers.
- Post-publication peer-review platforms.
- Wikipedia.
- Open syllabus project.
- Blogs.
- Citations.
- Research highlights.
- Social media (Facebook, Twitter, Linked, Google...).
- Multimedia and other online platforms.

The AAS is an automatically calculated and weighted count of all the attention a research output has received in three factors: volume, sources, and authors. Each colour of the Altmetric donut represents a different source of attention.

2.2. Search strategy

The search for “social research ethics” was performed in Altmetric on 2020-02-13 for articles published with no period restriction. Two researchers, read the entirety of the papers of the top-50 articles and extracted the following information by consensus: journal name, journal ranking and H-index, year of publication, article topic, article type, and article keywords.

3. Results

The Altmetric Explorer presented 438 articles as being referred to online in the topic of “social research ethics”. The total AAS mentions were

7,478, including 6,938 social media, 179 news and blogs, 85 of policy and patents, and 21 of other forms. The top 50 research articles with the highest AASs were chosen for further analysis. The Scopus Database is used to identify the number of citations in this database, the journal ranking, and the research topics.

3.1. Research ethic topic in AAS

The outputs of 438 articles were from 172 journals. The top 15 journals with the highest mentioned outputs and total mentions in social networks are presented in the following Table 1.

Table 1. Overview of 438 articles in social research ethics from Altmetric.

Journal title	Number of mentioned outputs	Total mentions	News	Blog	Policy	Patent	Twitter
International Journal of Social Research Methodology	42	1151	0	9	6	0	1130
Social Science & Medicine	25	144	16	7	16	1	95
SSRN (Social Science Research Network)	22	95	0	10	0	0	74
Journal of Empirical Research on Human Research Ethics	15	272	3	2	1	0	262
Research Ethics	14	174	23	0	2	0	140
Ethics and Social Welfare	13	82	0	0	0	0	82
Forum: Qualitative Social Research	10	61	0	7	2	0	52
Journal of Medical Ethics	9	494	9	4	2	0	465
Energy Research & Social Science	7	153	0	0	0	0	146
Social Media + Society	7	637	9	5	2	0	616
Journal of Business Ethics	6	31	0	0	2	0	23
Social Studies of Science (Sage Publications, Ltd.)	5	57	0	2	0	0	55
BMC Medical Ethics	5	50	0	2	0	0	46
Qualitative Social Work	5	14	0	0	3	0	10
The American Journal of Bioethics	5	80	4	0	1	0	71

The mentions were presented in 92 countries worldwide, with the top 15 countries listed in the following Table 2.

Table 2. Overview of location for AAS mentioned in searched articles in social research ethic from Altmetric.

Country code	Country name	Number of posts	Number of profiles
	Unknown	2507	1358
GB	United Kingdom	1729	876
US	United States	1047	720
CA	Canada	323	201
AU	Australia	287	192
FR	France	94	61
ES	Spain	74	68
DE	Germany	69	57
NZ	New Zealand	66	38
NL	Netherlands	59	40
IE	Ireland	55	42
CH	Switzerland	53	26
MX	Mexico	33	27
IN	India	30	15
SE	Sweden	26	20
IT	Italy	21	18

The timeline for these social mentions is given in Fig. 1:

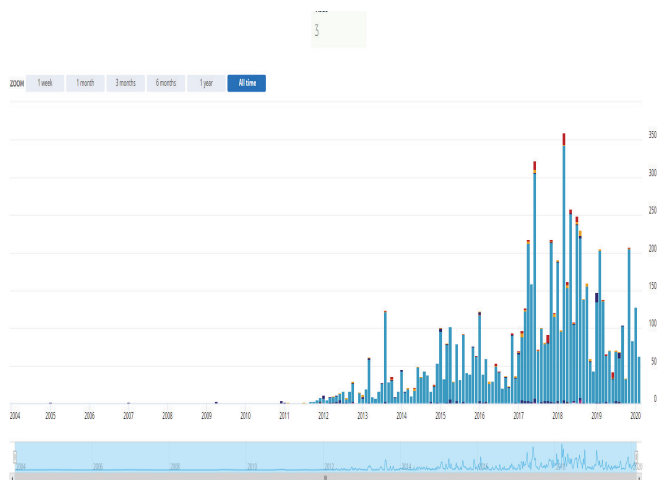


Fig. 1. The timeline for social mentions among searched articles of social research ethics in the Altmetric (Source: altmetric.com).

Almost mentions are tweets and presented around 2018-2020. They started in 2011 as the first introduction of AAS worldwide. It is found that the mentions are increasing over a period. Distribution of AAS in 438 mentioned articles (Table 3):

Table 3. Distribution of AAS in the searched articles in the Altmetric.

No.	Number of AAS	Number of articles	%
1	From 1-10	309	70.5
2	From 11-20	61	13.9
3	From 21-30	31	7.1
4	From 31-40	15	3.4
5	From 41-50	3	0.7
6	From 51-60	7	1.6
7	From 61-70	2	0.5
8	From 71-80	2	0.5
9	From 81-90	0	0.0
10	From 91-100	1	0.2
11	101 and above	7	1.6
	Total	438	100

3.2. Distribution of the top 50 articles in social research ethics

As guided from the search strategy, the top 50 articles with AAS are described in the Table 4.

Among these 50 articles, there are various mentions of 77 from news, 31 from blogs, 13 from policies, 4,197 from Twitter, 46 from Facebook, 6 from Wikipedia, 12 from Google+, 4,492 from Mendeley and 1,777 of Dimension citations. The total AAS is 2,850, while the total citation from Scopus is 1,660. These articles are from high journal ranking based on Scimago statistics: Q1 with n=43, Q2 with n=2, Q3 with n=1 and no ranking with n=4.

Table 4. Top 50 articles in social research ethics from Altmetric with highest AAS.

Rank	AAS	Scopus	Title	Journal	Journal ranking	Publication	Annual Scopus citation
1	274	45	"Participant" perceptions of twitter research ethics	Social Media + Society	Q1	2018-03-10	22.5
2	183	38	Towards an ethical framework for publishing twitter data in social research: taking into account users' views, online context and algorithmic estimation	Sociology	Q1	2017-05-26	12.7
3	141	1	Facebook's flawed emotion experiment: antisocial research on social network users	Research Ethics	Q1	2015-05-15	0.2
4	132	37	Research led by participants: a new social contract for a new kind of research	Journal of Medical Ethics	Q1	2015-03-30	5.4
5	132	30	Fund my treatment!: a call for ethics-focused social science research into the use of crowdfunding for medical care	Social Science & Medicine	Q1	2016-11-01	7.5
6	119	24	A framework for public involvement at the design stage of NHS health and social care research: time to develop ethically conscious standards	Research Involvement and Engagement	Q1	2017-04-04	8.0
7	110	92	The social licence for research: why care.data ran into trouble	Journal of Medical Ethics	Q1	2015-01-23	18.4
8	94	26	Attitudes toward the ethics of research using social media: a systematic review	Journal of Medical Internet Research	Q1	2017-06-06	8.7
9	72	4	How scientists can take the lead in establishing ethical practices for social media research	Journal of the American Medical Informatics Association	Q1	2019-01-29	2.0
10	71	11	Enhancement, ethics and society: towards an empirical research agenda for the medical humanities and social sciences	Medical Humanities	Q1	2015-08-10	2.4
11	68	13	Mining social media data: how are research sponsors and researchers addressing the ethical challenges?	Research Ethics	Q1	2017-10-26	4.4
12	67	220	Facebook as a research tool for the social sciences: opportunities, challenges, ethical considerations, and practical guidelines.	American Psychologist	Q1	2015-09-01	44
13	60	NA	Using social media for health research: methodological and ethical considerations for recruitment and intervention delivery	Digital Health	NA	2018-05-07	NA
14	58	NA	Research ethics and new forms of data for social and economic research	OECD Science, Technology and Industry Policy Papers	NA	2016-11-08	
15	55	12	Addressing ethical, social, and cultural issues in global health research	PLoS Neglected Tropical Diseases	Q1	2013-08-08	1.8
16	54	53	Using social media as a research recruitment tool: ethical issues and recommendations	The American Journal of Bioethics	Q1	2017-02-16	17.7
17	52	2	New directions in qualitative research ethics	International Journal of Social Research Methodology	Q1	2017-03-07	0.6
18	52	3	Rethinking research ethics, power, and the risk of visibility in the era of the "alt-right" gaze	Social Media + Society	Q1	2018-05-02	1.5
19	51	313	Ethical fading: the role of self-deception in unethical behaviour	Social Justice Research	Q1	2004-06-01	19.6
20	50	15	Ethical issues in social media research for public health	American Journal of Public Health	Q1	2018-03-01	7.5
21	49	270	Ethics creep: governing social science research in the name of ethics	Qualitative Sociology	Q1	2004-12-01	16.8
22	43	20	On ethical principles for social research	International Journal of Social Research Methodology	Q1	2014-06-17	3.5
23	38	93	Ethics of social media research: common concerns and practical considerations	CyberPsychology, Behavior & Social Networking	Q1	2013-09-01	13.3
24	38	0	Towards a broader climate ethics: confronting the oil industry with morally relevant facts	Energy Research & Social Science	Q1	2020-04-01	0
25	38	0	NIH support of mobile, imaging, pervasive sensing, social media and location tracking (MISST) research: laying the foundation to examine research ethics in the digital age	Digital Medicine	NA	2018-01-15	0

26	38	65	Ethical issues in using social media for health and health care research	Health Policy	Q1	2013-05-01	9.3
27	38	3	The ethics ecosystem: personal ethics, network governance and regulating actors governing the use of social media research data	Minerva A Review of Science, Learning and Policy	Q1	2019-02-07	1.5
28	37	15	Ethics regulation in social computing research: examining the role of institutional review boards	Journal of Empirical Research on Human Research Ethics	Q1	2017-08-23	5.0
29	35	9	Voiceless subjects? Research ethics and persons with profound intellectual disabilities	International Journal of Social Research Methodology	Q1	2017-02-13	3.0
30	34	6	Social media channels in health care research and rising ethical issues	AMA Journal of Ethics	Q3	2017-11-01	2.0
31	34	24	Ethics and privacy implications of using the internet and social media to recruit participants for health research: a privacy-by-design framework for online recruitment	Journal of Medical Internet Research	Q1	2017-04-06	8.0
32	34	5	Law school marketing and legal ethics	Social Science Research Network (SSRN)	NA	2012-12-21	0.6
33	33	3	(Re)framing big data: activating situated knowledges and a feminist ethics of care in social media research	Social Media + Society	Q1	2018-05-02	1.5
34	33	8	Ethics as methods: doing ethics in the era of big data research - introduction	Social Media + Society	Q1	2018-07-19	4.0
35	32	5	Whose climate and whose ethics? Conceptions of justice in solar geoengineering modelling	Energy Research & Social Science	Q1	2018-10-01	2.5
36	32	0	Whose results are these anyway? Reciprocity and the ethics of "giving back" after social network research	Social Networks	Q1	2019-11-01	0
37	30	1	Palliative care research centre's move into social media: constructing a framework for ethical research, a consensus paper	BMJ Supportive & Palliative Care	Q1	2016-01-28	0.3
38	29	11	Addressing conceptual gaps in big data research ethics: an application of contextual integrity	Social Media + Society	Q1	2018-05-02	5.5
39	29	3	Enriching ethical judgments in history education	Theory and Research in Social Education	Q1	2017-11-07	1.0
40	27	5	Ethical challenges of community based participatory research: exploring researchers' experience	International Journal of Social Research Methodology	Q1	2017-03-05	1.7
41	27	8	From "a fair game" to "a form of covert research": research ethics committee members' differing notions of consent and potential risk to participants within social media research	Journal of Empirical Research on Human Research Ethics	Q1	2018-01-19	4.0
42	27	16	Citizen social science and citizen data? Methodological and ethical challenges for social research	Current Sociology	Q1	2014-04-17	2.6
43	26	9	Presenting and representing others: towards an ethics of engagement	International Journal of Social Research Methodology	Q1	2017-02-14	3.0
44	26	51	Social responsibility and research ethics in community-driven studies of industrialized hog production.	Environmental Health Perspectives	Q1	2002-05-01	2.8
45	25	3	Is it time to re-evaluate the ethics governance of social media research?	Journal of Empirical Research on Human Research Ethics	Q1	2018-08-24	1.5
46	25	18	Pitfalls, potentials, and ethics of online survey research: LGBTQ and other marginalized and hard-to-access youths	Social Work Research	Q2	2016-04-01	4.5
47	25	15	Integrating critical realist and feminist methodologies: ethical and analytical dilemmas	International Journal of Social Research Methodology	Q1	2013-12-20	2.1
48	25	35	The apomediated world: regulating research when social media has changed research	Journal of Law, Medicine & Ethics	Q2	2013-06-01	5.0
49	24	4	A philosophical framework for pharmacy in the 21st century guided by ethical principles	Research in Social and Administrative Pharmacy	Q1	2018-03-01	2.0
50	24	7	Bystander risk, social value, and ethics of human research	Science	Q1	2018-04-12	3.5

Table 5. Journal/collection titles of top 50 articles with highest AAS.

Rank	Journal/Collection title	Journal ranking	H-index	Number of articles
1	International Journal of Social Research Methodology	Q1	50	7
2	Social Media + Society	Q1	16	5
3	Journal of Empirical Research on Human Research Ethics	Q1	23	4
4	Energy Research & Social Science	Q1	39	2
5	Journal of Medical Ethics	Q1	65	2
6	Journal of Medical Internet Research	Q1	116	2
7	Research Ethics	Q1	7	2
8	AMA Journal of Ethics	Q3	12	1
9	American Journal of Public Health	Q1	236	1
10	American Psychologist	Q1	208	1
11	BMJ Supportive & Palliative Care	Q1	21	1
12	CyberPsychology, Behavior & Social Networking	Q1	119	1
13	Digital Health	NA	NA	1
14	Digital Medicine	NA	NA	1
15	Health Policy	Q1		1
16	Journal of the American Medical Informatics Association	Q1	79	1
17	Medical Humanities	Q1	23	1
18	Minerva A Review of Science, Learning and Policy	Q1	33	1
19	PLoS Neglected Tropical Diseases	Q1	110	1
20	Qualitative Sociology	Q1	46	1
21	Research Involvement and Engagement	NA	NA	1
22	Social Justice Research	Q1	49	1
23	Social Networks	Q1	85	1
24	Social Science & Medicine	Q1	213	1
25	Social Science Research Network (SSRN)	NA	NA	1
26	Sociology	Q1	96	1
27	The American Journal of Bioethics	Q1	54	1
28	Theory and Research in Social Education	Q1	29	1
29	Current Sociology	Q1	55	1
30	Social Work Research	Q2	48	1
31	Environmental Health Perspective	Q1	249	1
32	Journal of Law, Medicine and Ethics	Q2	51	1
33	Research in Social and Administrative Pharmacy	Q1	37	1
	Total			50

The journals with the the greatest number of top articles are the International Journal of Social Research Methodology, Social Science & Medicine, and the Journal of Empirical Research on Human Research Ethics (Table 5). The same trend is found for all 438 articles on the topic of social research ethics. The other 30 journals have a limited number of chosen articles, which also presents the situation of less academic consideration to the research ethics in the social sciences (Table 5).

Philosophy and Religious studies is a research area with the highest number of articles in the top 50 AAS (n=27). Other areas such as medical, pharmacology and health sciences, studies in human society, sociology, public health and health services, and applied ethics also have a significant number of articles with 13, 13, 12, 11, and 11, respectively (Table 6).

Table 6. Research areas of top 50 articles with highest AAS areas of 50 top articles.

No.	Areas	Number of articles
1	Philosophy and Religious Studies	27
2	Medical, Pharmacology and Health Sciences	17
3	Studies in Human Society	13
4	Sociology	12
5	Public Health and Health Services	11
6	Applied Ethics	11
7	Psychology and Cognitive Sciences	9
8	Information, Information Systems and Computing Sciences	8
9	Law and Legal Studies	2
10	History	2
11	Policy and Administration	1
12	Language, Communication and Culture	1
13	Cultural Studies	1

The most frequent keyword in these articles is ethics (n=34), which includes the other aspects of guidelines, care, regulation, and research. In the list of the most frequent keywords, there are more considerations to the ethical content while doing research like current national regulation mentions such as privacy, integrity, consent, confidentiality,

recruitment, risk, transparency, involvement, moral, etc (Table 7). The keyword 'social media' is also frequently used (n=13). Besides that keyword, other words like internet, Facebook, and Twitter are witnessed in this frequent keyword list.

Table 7. Most frequent keywords in the top 50 articles in social research ethics.

No.	Keyword	Total
1	Ethics (guidelines, of care, regulation)	20
2	Research ethics	14
3	Social Media	13
4	Privacy	7
5	Context integrity	5
6	IRB/Research committee	6
7	Twitter	5
8	Consent	4
	Internet	4
	Moral	4
9	Confidentiality	3
	Facebook	3
	Public involvement	3
	Recruitment	3
	Review literature	3
	Risk	3
	Transparency	3

4. Discussion

As internet and social networks continually develop, interest in Altmetrics also increased remarkably since it was first launched in 2011 [9]. This paper is the first study on examining and evaluating online attention in social research ethics. The top rank of the article in our study had an AAS of 274. The 50th ranked article has a score of 24. Citation rates differ for each speciality and might depend on the size of the scientific community. On the other hand, Altmetrics may depend not only on the size of the research field but also on interest from the general population.

Our analysis indicates that, among the 438 articles in social research ethics from Altmetric, the International Journal of Social Research

Methodology had the highest number of mentioned articles (n=42). It is in the same position in the top 50 articles with the highest AAS (n=7). Our research also found that the top Altmetric articles were newly published work with 39 papers from the last 5 years (2015-2020) having 2,439 AAS mentions and 765 Scopus citations. This shows that Altmetric is particularly sensitive to recent news and that more recent publications receive more AASs. Notably, among these articles, there is no publication from Vietnam, which assumes that research of social research ethics is less apparent in Vietnamese context.

The most common subjects/areas were philosophy and religious study (n=27), followed by medical, pharmacology, and health sciences (n=17), and studies in human society (n=13). This demonstrates that considerations of social research ethics mostly originate from the health science and philosophical backgrounds. Other areas with a specific subject have fewer mentioned papers, which also shows that there is less consideration from specific academic domains in social research ethics.

The most frequent keywords from these 50 articles are ethics in general (n=20), research ethics (n=14), and social media (n=13). Other keywords in terms of research ethics content such as privacy, consent, confidentiality, risk, transparency, and public involvement are mentioned but at a low ratio of mentions.

This study has some limitations such as limiting our analysis to articles that directly mention social research ethics. Therefore, some other aspects of research ethics may have been excluded from the list. In addition, we used only data supplied by Altmetric.com for assessing the top articles. Other tools such as Plumx, Crossref, Impactstory, and Article-Level Metrics-Plos provide other metrics that use different online sources and algorithms, which could offer different results [10].

5. Conclusions

In conclusion, our research presents a detailed list and analysis of the top 50 Altmetric articles published in social research ethics, which represent significant public attention in this research area. The top mentioned articles in Altmetric were most often recently published and in the essential background of social research ethics and mostly from developed countries. Further research of social research ethics considerations in developing countries, in general, and Vietnam, in particular, is suggested, which could provide substantial research outputs and attract public interest as well.

CRediT author statement

Van Kham Tran: Conceptualisation, Methodology, Validation, Writing and Editing; Huy Cuong Pham: Data curation, Visualisation, Writing; Thanh Nam Tran: Data collection, Conceptualisation, Methodology, Validation; Thi Thai Lan Nguyen: Methodology, Validation; Thi Kim Nhung Nguyen: Conceptualisation, Writing and Editing.

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COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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Gestational surrogacy under the legal systems of countries around the world and experiences for the improvement of the law in Vietnam

Thi Huyen Le Nguyen*, Thi Hoai Nguyen

University of Law, Hue University, Vo Van Kiet Street, An Tay Ward, Hue City, Thua Thien Hue Province, Vietnam

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Abstract:

Recently, the fast development of science and technology has impacted many social relations. On which, giving birth with assisted reproductive technology in general and gestational surrogacy, in particular, is one of the countless legal issues being strongly influenced by different scientific, technological, medical, and/or biological factors. This is also a matter of concern in many legal systems across nations all over the world each with very different legal views. In Vietnam, provisions on surrogacy were passed due to the influence of many different theoretical and practical factors. The actual implementation of the law over the past few years has proved that regulations on surrogacy have brought happiness to many families and have made a positive contribution to the stability and general development of society. Within the scope of this article, the authors focus on analysing gestational surrogacy under the legislative views of nations representing groups of different outlooks. Thereby, based on assessments of the current provisions of countries around the world, the authors propose recommendations to improve the law on altruistic gestational surrogacy in Vietnam.

Keywords: assisted reproductive technology, gestational surrogacy, giving birth legislative views.

Classification number: 6

1. Introduction

The Law on Marriage and Family 2014 was passed on June 19, 2014, and took effect on January 1, 2015, with many important amendments. One of the most interesting pieces of content is the first time altruistic gestational surrogacy was recognized and permitted by law. This has created hope for couples who, despite applying other methods of assisted reproduction, still do not have parent rights to blood-related children. Currently, the regulation on surrogacy also limits disputes from surrogacy that are taking place due to the lack of both adjustments to the law and supervision mechanisms by the authorities. Surrogacy is just one matter related to many factors such as human rights, morality, humanity, customs, and habits, etc. Therefore, based on diverse perspectives on surrogacy, different countries have their own legislative views on this issue. Through arguments defending each country's legislative views, and

the development of science and technology, there have been strong impacts on giving birth with assisted reproductive technology, and surrogacy has become a controversial issue in modern society.

In Vietnam, provisions on surrogacy were passed due to the influence of many different theoretical and practical factors. The actual implementation of the law over the past few years has proved that regulations on surrogacy have brought happiness to many families and have made a positive contribution to the stability and general development of society. This has shown that the construction of provisions of altruistic surrogacy is appropriate and headed in the right direction. However, an improvement of suitable provisions on surrogacy with objectivism, as well as learning from legislative experiences of other countries, are necessary to protect this legal relationship during inherent human development.

*Corresponding author: Email: ntlhuyen.dhl@hueuni.edu.vn.

2. Research purpose

This research aims to study legislative views of surrogacy from countries around the world and to compare the provisions of law in these countries to Vietnam. The research is used to analyse the limitations and inadequacies of the current Vietnamese law, thereby proposing some opinions in order to improve the provisions of Vietnamese law on altruistic gestational surrogacy through learning from international legislative experiences.

3. Research methods

This research uses a method called a “case study”. A case study is used to learn about a complex instance, which is based on a comprehensive understanding of that instance obtained by an extensive description and analysis of that instance taken as a whole and in its context. By choosing typical countries that represent different views of jurisdictions on surrogacy, this research explains the opinions of allowing, allowing with conditions, or completely forbidding surrogacy in each representative country.

The legislative views and legal systems on surrogacy researched in this study can be divided into three groups of jurisdictions. *Firstly*, the group of jurisdictions that absolutely does not allow surrogacy includes France, Germany, the Philippines, Spain, Switzerland, and Sweden. From this list, we chose the French Republic as a typical country to research because its legal system has strict provisions on banning surrogacy and express concerns about the risk of infringing on human rights. On the other hand, the French Republic has had real disputes related to surrogacy. This is the basis of learning about their experiences on setting legal consequences for illegal surrogacy in Vietnam. *Secondly*, the group of jurisdictions that only allow altruistic gestational surrogacy include countries such as Vietnam, the United Kingdom (UK), Canada, Australia, Denmark, Hungary, Netherlands, Belgium, Israel, South Africa, and Greece. The UK and Australia are chosen for further research as these two countries promulgated acts to separately and directly regulate surrogacy, and these provisions are similar to the provisions

of Vietnam. However, UK and Australian law have more clear and different provisions than in Vietnam. According to our opinions, these experiences can be learned from to improve Vietnamese law. *Thirdly*, a small group of jurisdictions that recognizes both altruistic gestational surrogacy and commercial gestational surrogacy as a rightful service include the Russian Federation, Ukraine, South Africa, Cyprus, and some states of the United States. In recent times, Ukraine has become known as an ideal destination for international intended couples especially after Thailand and India - both “famous surrogacy places” - forbade commercial surrogacy. Because of their loose provisions, Ukraine has become faced with many legal issues and related consequences. Therefore, we choose Ukraine in this study to point out the negative impacts on society when commercial surrogacy is recognized in order to develop and improve Vietnamese law.

Moreover, this research uses comparative and analytical methods to evaluate the provisions of Vietnamese law in comparison with the laws of countries represented by the groups that allow surrogacy, prohibit surrogacy, or only allow altruistic gestational surrogacy thereby pointing out inadequacies and drawing lessons to improve Vietnamese law.

4. Gestational surrogacy under legislative views of some nations in the world

There are many opposing views on surrogacy among nations around the world. According to a survey of The International Federation of Fertility Societies (IFFS), gestational surrogacy was carried out in 105 countries in 2013, and there were 62 countries having responses. Of which, 19 countries had clear provisions of laws on surrogacy; 24 countries following Mohammedanism and Christianity strictly forbade surrogacy; and 14 countries did not have concrete provisions of law but allowed surrogacy on relevant laws. It can be assessed that, although they may all share the same view on human rights, each country has a different view on surrogacy. However, surrogacy is still one social relation that has caused a lot of controversy, especially the issue of whether or not to allow surrogacy.

4.1. Legislative view of some countries in favour of allowing surrogacy

Currently, Ukraine, some states of the United States of America, the Russian Federation, and Georgia are typical representatives of the group of countries that allow surrogacy including commercial gestational surrogacy. Surrogacy is a one good solution for incurable infertility cases. On the other hand, surrogacy provides a link between couples who greatly desire to become parents with poor women wishing to get rid of the economic burden. Because of their open view, many couples chose these countries as destinations to give birth through a route called “birth tourism”. For example, Ukraine is one typical place in Europe chosen by intended couples [1]. These couples can easily find a sperm or egg donor in Ukraine at an affordable price, and this is one of the main reasons that people from European countries come to Ukraine for surrogacy [1]. This is partly responsible for worrying legal problems such as not recognizing children after they are born, which eventually become a burden to society and directly affect the lawful rights of children as well as the birth registration and identification of the child’s nationality when the child is transferred to the intended couple; and the risk of turning pregnant women into international “surrogates tools”. In particular, allowing egg and sperm donation like Ukrainian law means that the child may not be of blood relation to the intended couple due to the risk of children’s rights being infringed upon. Therefore, our point of view is not in favour of the commercial gestational surrogacy. It is the fact that some countries, which were ideal destinations to ask for commercial gestational surrogacy such as India and Thailand, also faced huge consequences that negatively affected not only the surrogate mother, but also the intended couple, the child born, and social order [2]. These consequences have forced the governments of these countries to amend surrogacy law by promulgating legal documents prohibiting commercial gestational surrogacy in order to protect citizens and stabilize social relations. This is demonstrated as follows:

In 2019, *The Surrogacy (Regulation) Bill* in India was introduced and passed by the Indian Ministry of Health and Family Welfare in Lok Sabha (House of the People) - the lower house of India’s bicameral Parliament with the upper house being the Rajya Sabha. Under this Law, India has also implemented a ban on commercial surrogacy: “No person, other than a close relative of the intended couple, shall act as a surrogate mother and be permitted to undergo surrogacy procedures as per the provisions of this Act; No person including a relative or husband of a surrogate mother or intended couple shall seek or encourage to conduct any surrogacy or surrogacy procedures on her except for the altruistic surrogacy purposes; Those who do not have an Indian passport, single parents and gay people will be prohibited from having children through using this method...” [3].

The reason given to explain this change is that after a period of complying with the regulation of surrogacy in India, it was found that with the loose and open regulation, quite a lot of women considered surrogacy as a profession and repeated the act many times [4]. This is very dangerous and shows that surrogacy has not been able to change their lives. On the other hand, even though they are not of the same blood relation, many mothers feel hurt by separation from the child. Thus, it is clear that the opinion on surrogacy in this country has also gradually reached a consensus with the common opinion of many countries around the world: that commercial surrogacy is inhumane and should be prohibited absolutely.

Thailand is a similar case. Thailand had once allowed both commercial surrogacy and altruistic surrogacy. However, The National Legislative Council of Thailand passed the Surrogacy Bill in November 2014. In February 2015, The National Legislative Assembly of Thailand enacted the Act banning commercial surrogacy called The Protection for Children Born through Assisted Reproductive Technologies Act (ART Act) (BE2558) [2]. By enacting this Act, Thailand made a clear change of their views on surrogacy. The Act contains seven prohibition articles including: sex selection; trading eggs/sperm; commercial gestational surrogacy; advertising for commercial

gestational surrogacy; cloning; intermediary for commercial surrogacy; and prohibiting commercial gestational surrogacy for foreigners [5]. This change is explained by the fact that the provisions of the Act related to surrogacy were not clear or strict enough. Therefore, foreigners were seeking a surrogacy agreement through the ART Act in Thailand because of the advantage of low cost. However, they would be willing to give up their child if it was born with a birth defect, which creates a burden for the surrogate mother and negative impacts on Thai society [6]. Thus, through the practice of Thailand and India, which have certain socio-cultural similarities with Vietnam, it can be seen that the current prohibition of commercial surrogacy is very necessary. Besides the prohibition regulations, the construction of strong sanctions to prevent commercial surrogacy also needs attention and constant improvement.

4.2. The legislative view of some countries strictly prohibiting surrogacy

Typical countries represented in this group are Germany, France, Austria, Spain, Switzerland, and Italy, in Europe; or Taiwan and Japan in Asia. To explain the “strict” regulations of not accepting surrogacy for any purpose, most of these countries have put forward legislative views that surrogacy is an infringing act to human rights because surrogacy can cause physical impairment to the surrogate mother, create psychological damage to them and even to the child born. At the same time, surrogacy is an act that can infringe on the body and human dignity even if it is done for any purpose. If surrogacy is allowed, it also easily creates risks for the exploitation and commercialization of the surrogate mother.

The French Republic was the first country in the world to consider surrogacy as an illegal activity and to completely prohibit it. From a different perspective on human rights, surrogacy for any purpose, whether paid or unpaid, also represents the use and exploitation of a woman’s body to give birth thus turning the woman into a “birth machine” for intended couples because of their needs for a child. Therefore, French law prescribes:

“All agreements relating to procreation or gestation on account of a third party are void” [7]. In order to create a legal framework for the development of sanctions to be applied in a violation of surrogacy, the French Penal Code provided that it is possible to punish any person who participates as an intermediary in a transaction involving surrogacy.

Accordingly, Article 227-12, paragraph 3, of the French Republic Penal Code stipulates that “Acting for pecuniary gain as an intermediary between a person desiring to adopt a child and a parent desiring to abandon its born or unborn child is punished by one year’s imprisonment and a fine of €15,000” [8]. In particular, the most recent move of the French Government was the Controversial Bioethics Bill, which was considered by the Senate for the second time in early February 2021 confirming the ban on surrogacy. However, surrogacy still attracts attention in France with a series of legal issues raised, especially surrogacy that French citizens carry out abroad and notably the identification of the parent-child relationship for the child. These controversies began with a matter involving an intended couple who were French citizens asking a woman in California (USA) for gestational surrogacy. After birth, the child was registered for birth in San Diego County (California). However, when they returned to France, the couple requested a birth record for the child in France, but it was refused. Therefore, they initiated a lawsuit in the French Court, but this request was also denied on the grounds that the surrogacy agreement in California violated Articles 16-7 of the French Civil Code and the child was not recognized as a child of this couple because it was contrary to the public order of the country. When the request was denied, the couple appealed to the European Court of Human Rights [9]. In a judgement on June 26, 2014, the European Court of Human Rights held that the previous French court judgement violated Article 8 of the Convention for the Protection of Human Rights and Fundamental Freedoms related to the right to private and family life and the French state must pay a sum to the two applicants for damages. This long and complicated case was finally resolved

by Judgment No. 648 of October 4, 2019 (10-19053) of The Plenary Assembly - French Court of Cassation - ECLI: FR: CCASS: 2019: AP00648. Accordingly, the French Court of Cassation made the following judgment: pursuant to Article 8 of the Convention for the Protection of Human Rights and Fundamental Freedoms, which was interpreted by the European Court of Human Rights to have good interest of the child, while the child being born abroad as a result of the surrogacy agreement is prohibited under articles 16-7 and 16-9 of the Civil Code, it cannot be invoked to cause inequalities to the child and infringe upon the right to respect private and family life, thus preventing competent State agencies abroad from copying of birth certificates for the child's biological father and mother. According to this judgement, the Court of Cassation accepted a copy of the birth certificate and determined that the intended couple is the legal parent only if this couple is blood related to the child. If they are not related by blood, they can only adopt that child [10]. We believe this judgement is extremely valuable as a reference to the identification of parent-child relationships in cases of commercial gestational surrogacy in Viet Nam. There is a similarity in the resolution of the authorities of the previous French Republic and the current Vietnamese Court that does not recognize parent-child relationships between the child born and intended couple in case commercial surrogacy because this agreement is prohibited by law. However, this method of dispute resolution will lead to the risk of serious violations of children's rights because children face the possibility of being abandoned or not cared for. Therefore, we find that the failure to recognize the parent-child relationship between the intended couple and the unborn child will turn the child into a "victim" of an illegal agreement by the signed parent. Our view, in any circumstance, is that children should always be the object of priority and maximum protection. Thus, this principle needs to be codified: "In all cases, the interests of the child born always come first and must be considered paramount". Therefore, even though it was a result of a commercial surrogacy, the child who

is determined to be blood relative of the intended couple should still be identified as the child of this couple to ensure that the child receives love and caring. Despite the prohibition under the law, it is also necessary to build provisions to prevent couples from continuing to perform commercial surrogacy by regulating that intended couples and the surrogate mother must bear strong enough sanctions for their violations to ensure deterrence and strictness of the law.

4.3. Legislative view of some countries only allowing altruistic gestational surrogacy

Typical countries for this group are the UK, Australia, and Vietnam. From a humanistic perspective, the main point of view is approached from the direction of allowing altruistic surrogacy for the following reasons: firstly, altruistic gestational surrogacy will create opportunities for couples who are unable to conceive and give birth to satisfy their desire to be parent because this is a unique opportunity to realize the desire to have children of infertile couples. Secondly, the clear regulation that only allows altruistic gestational surrogacy will create a legal basis to protect the birth mother from the risk of being commercialized and becoming a "surrogacy tool" for others and protecting them against the negative effects of commercial abortion and to ensure that a child is born in the happiness of parents and relatives, and not born by arrangements dominated by material factors. Thirdly, altruistic surrogacy also creates a legal corridor to better control illegal surrogacy with many consequences if the law does not allow it. If there are no specific regulations, couples still find solutions including asking someone else to have a baby in one way or another. Therefore, the illegal surrogacy market was formed with hidden risks for the parties, which negatively impacts individuals, families, and society. These legislative positions are reflected in the laws of some typical countries given below.

The UK Law:

The Surrogacy Arrangements Act 1985 of the UK does not recognize surrogacy contracts as completely legal but recognizes it as a practice in

society. This means that this Act does not prohibit surrogacy, but affected parties cannot, in pursuant to civil agreement, claim the exercise of rights such as parenthood. Because, under this Act, the mother is the one who gives birth, and the father is the mother's husband during the marriage regardless of the origin of the foetus, whose sperm, and the woman's eggs, may come from a third party. However, The Surrogacy Arrangements Act 1985 of the UK accepts that intended couples must reimburse the "reasonable" costs and does not accept the commercialization of this service, that is, not to pay rent for this service. In cases where surrogacy leads to the birth of a child, parenthood can be accepted through a parentage order and through an adoption process. In other words, parents who provide their own sperm and eggs for conception must "adopt" (their biological child) from the surrogate mother. In the case that the father cannot be identified in the surrogacy agreement, the law automatically considers the husband or partner of the surrogate mother giving birth as the father of the baby. If the dispute cannot be resolved, The Surrogacy Arrangements Act 1985 of the UK still considers the surrogate mother as the mother of the baby, even though they are not related by blood. In disputes, this woman is considered as the first parent, and motherhood will only be transferred to the "real" mother (second parent) after the proceedings are completed in a legal procedure. Thus, this Act recognizes the legality of transferring parenthood from surrogate mother to intended couple, and the parent-child relationship is established by the decision of the Court after the child is born. Even though an artificially inseminated child has only the bloodline of one of the intended couple, the surrogate mother is still recognized as the child's mother. After six weeks from the birth of the child, the intended couple have the right to apply for a "parental order" to the Court. Only at this time will the intended couple have full rights as a father and mother to the child [11].

The Australian Law:

The point of view on surrogacy in Australia varies from state to state. However, most states in Australia allow altruistic gestational surrogacy such as Queensland, New South Wales, the Australian Capital Territory, South Australia, and, recently, Tasmania [12]. Of which, it is noteworthy that the Surrogacy Act 2010 No 102 in New South Wales strictly prohibits commercial surrogacy with strict regulations on conditions and procedures for identifying parent-child relationships, rights, and obligations of affected parties. Accordingly, the intended couple must be someone who cannot conceive; or if it is possible to conceive, there is a possibility of not being able to conceive a child on medical grounds, or likely to be unable, on medical grounds, to carry a pregnancy or to give birth, unlikely to survive a pregnancy or birth, or likely to have her health significantly affected by a pregnancy or birth, or affected by a genetic condition or disorder, the cause of which is attributable to the woman, or likely to conceive a child who is unlikely to survive the pregnancy or birth, or whose health would be significantly affected by the pregnancy or birth. In addition, the birth mother must be at least 25 years old, and, in case they are under 25 years old, it must be approved by the Court. Thus, in addition to some similar provisions, the Surrogacy Act of New South Wales also has different provisions compared to the Vietnamese Law as mentioned above. It is particularly interesting in the New South Wales Law on altruistic surrogacy that the interests of children born from this technique are always put first and must be considered as a priority and paramount. This can be considered as the basic principle for the establishment of legal relationships in a surrogacy agreement. It is also the principle for the settlement of disputes about surrogacy by the Court. Under the provisions of this Act, parentage is ordered according to the principle of law, however, if the dispute may affect the interests of the child, the Court still has the power to decide without following the established order.

5. International experience in improving Vietnamese legislation on surrogacy

Through analysis of the views of some typical countries representing the three different groups on surrogacy, it can be seen that this is one matter that legislators are quite concerned about. Although each country has different provisions, we find some issues that are really valuable for reference in developing and perfecting Vietnam's law on surrogacy, as follows:

Regarding identification of parent-child relationship: Firstly, the provisions on the time of identifying the parent-child relationship. Identifying the parent-child relationship is an important content in the institution of surrogacy. This is the basis for determining the rights and obligations towards the child born and also for dispute resolution if it happens. The provisions of Vietnam's Article 94 of the Law on Marriage and Family 2014 provide that if "Child was born in the case of altruistic surrogacy is the common child of intended couple from the time the child is born". Thus, under this article, the child born from surrogacy will be identified as the child of the intended couple. However, regarding the time to identify children, we still need to consider more because there is a risk of affecting the interests of the parties, especially the legitimate rights of children, and causing negative impacts on the intended couple in many different legal relationships.

For example, when the surrogate mother has not transferred the child for various subjective or objective reasons, the surrogate's husband only have "the same rights and obligations as parents in taking care of the reproductive health of their children" and take care of and raise the child until the time of handing over the child to intended couple; and must hand over the child to the intended couple. Therefore, when the child has not been transferred, not only problems of care and nurturing arise, but a series of other legal issues are also raised such as the right to life of the foetus and the child born; civil rights or some rights related to the criminal field, and rights in the field of social insurance of the surrogate. Therefore,

if the surrogate mother is only considered as a parent in the upbringing and care, it is clearly not appropriate and comprehensive.

The issue of determining the subjectivity of the parties in the period from pregnancy to child transfer is extremely important and has a great impact on the humanistic element of this institution. One international experience we find valuable for reference is the provisions of Article 4 and Article 39 of the Surrogacy Act 2010 of New South Wales (Australia). In this case, the birth parent of a child means a person (other than an intended parent) who is recognized by law as being a parent of the child at the time when the child is born, and, on the making of the parentage order in relation to a child, the child becomes a child of the intended parent or parents named in the order and they become the parents of the child, and the child stops being a child of a birth parent and the birth parent stops being the parent of the child. Under this provision, the birth mother and even her partner are attached with the responsibility and obligation to take care of and raise the baby as their own child to ensure the best conditions for the baby. Clearly identifying the legal parent has both a legal impact and raises awareness of the birth mother about binding themselves to the child. They must be truly aware that they are the legal parents of the child that the wife/woman is carrying, and not merely acting as a surrogate parent for someone. When this perception changes, the birth mother is also more aware of its responsibility to let the child, recognized by the law as theirs, be born in the best conditions, thus, avoiding the mentality of just being "as" the father/mother, which could easily lead to neglect in their obligations to nurture and care for the foetus, which adversely affects the health and comprehensive development of the foetus. On the other hand, the provisions of Article 4 and Article 39 of The Surrogacy Act of New South Wales (Australia) mentioned above will solve many relevant legal issues such as, during the time when the child has not been transferred, the birth mother can enjoy legitimate benefits such as maternity or sickness leave and relevant issues from a criminal perspective such as determining

the subject of the crime of killing or aborting a new born child. This is humane for both the birth mother and the child born and is also appropriate with relevant legal documents.

Identification of parent-child relationship in case of commercial gestational surrogacy: Commercial gestational surrogacy is a prohibited act, but these cases still occur in fact. Therefore, when there is a dispute over the identification of the parent-child relationship in these cases, that agreement will be declared invalid. However, the problem is how the legal consequences of these invalid surrogacy agreements will be resolved. Current Vietnamese law does not have specific guidelines on this issue. Through the settlement method in Judgment No. 648 dated October 4, 2019 (10-19053) of the Court of Cassation - Plenary Assembly - ECLI: FR: CCASS: 2019: AP00648 of the French Republic that was mentioned above, we think that this issue should be adjusted such that if in the case that the subject has violations of regulations on surrogacy including the implementation of commercial surrogacy, it should be resolved that the child born related by blood to the intended couple is still identified as the child of the couple to ensure maximum benefits for the child. This method of settlement may take the opposite side that couples will defy the provisions of the law to have children, but, placed in the “balance” of interests, the lawful rights of children always have to be put first. In all circumstances, children are always the object to be protected from the illegal acts of adults and they should not have to bear adverse consequences. Therefore, in order to prevent violations of surrogacy, it is necessary that the provisions of the law be strict enough that the subjects, no matter how much they desire to have children, cannot violate and disregard the law, or be irresponsible in the assessment leading to illegal acts.

Regarding the age conditions of the surrogate mother: Point c, Clause 3, of Article 95 of the Law on Marriage and Family 2014 stipulates that the surrogate woman must be “at a suitable

age”. However, the current law does not have any provisions on what is deemed “suitable”. Therefore, the matter of age should be specified and considered on the basis of social practice, as well as medical research results, to ensure that the legal corridor on surrogacy is still maintained and too “strict”. Above all, the health benefits, the safety of surrogate the mother, and especially the comprehensive development of the foetus, are still a top priority. Therefore, the suitable age is significant in increasing the possibility of conception, saving costs, limiting damage caused by failure for the intended couple, and to ensure the health and safety of pregnant women and children. The Surrogacy Act 2010 of the State of New South Wales (Australia) provides that “The birth mother must have been at least 25 years old when she entered into the surrogacy arrangement”. We believe that a regulation of the minimum eligible age limit of the birth mother is very necessary. If the birth mother is too young, it could lead to negative effects on many psychological and physiological factors of the birth mother, as well as an effect on the development of the child. On the other hand, the provision on age limit creates a clear legal framework for the application of the law instead of the general provision of “suitable age” like the current Vietnamese law. The provision of a suitable age limit for childbearing does not create legal disturbances because the stability and sustainability of the biological characteristics of people are unchanged. However, we think that the provision of the age of 25 is quite strict because it is very difficult for couples today to find a suitable surrogate mother due to different conditions. Therefore, we think that it is appropriate to limit the age but widen the gap from 20 to 40 years old. The above-mentioned age is not too young nor too old to be pregnant and give birth, so it can ensure health and safety issues for surrogate mother as well as the child born.

Regarding the application of sanctions to violations of surrogacy: Violations of the law on

surrogacy have been prescribed in a number of important legal documents in Vietnam such as the Code of Criminal Law 2015, Decree 82/2020/ND-CP that provides the sanction of administrative violations in the field of judicial assistance; judicial administration; marriage and family; civil enforcement; and bankruptcy of enterprises and cooperatives, which creates a basis for the application of the law to handle violations of the subjects. However, it can be seen that many issues have not been regulated such as referrals, advertisements, violations of the prescribed obligations of intended couple, surrogate mother, and medical facilities. Currently, advertising activities for commercial surrogacy in Vietnam are still relatively common. Meanwhile, Article 60, Decree 82/2020/ND-CP stated above just stopped at stipulating administrative sanctions for violations of regulations on childbirth such as: Article 60 of Decree 82/2020/ND-CP providing that “A fine of between 5,000,000 VND and 10,000,000 VND for the act of giving birth by assisted reproductive technology for commercial purposes, asexual reproduction, and commercial surrogacy”. This has generally created certain difficulties for the authorities in handling the current surrogacy advertising practices. Therefore, in our opinion, the sanctions set out in the laws of some countries such as Thailand and Australia are very valuable for reference. For example, Article 10 of the Surrogacy Act 2010 of the state of New South Wales (Australia) does “Prohibit advertising of surrogacy agreements”. With clear provisions on prohibited acts such as advertising and brokerage, there will be contributions to raising people’s awareness and a creation of a legal basis for the handling of violations by the authorities is accurate. On the other hand, the application of criminal sanctions to violations in Vietnam shows that, it is still not really strong enough or a deterrent. The only provision to criminal prosecution for violations of the law on surrogacy is Article 187 of the Penal Code 2015 on the crime about “organizing

commercial surrogacy”. Accordingly, the highest penalty frame applied is imprisonment from 1 to 5 years and a fine ranging from 50,000,000 to 200,000,000 VND. With successful agreements to organize commercial surrogacy, organizers can receive hundreds of millions of VND, while the penalty frame specified in Article 187 of the 2015 Penal Code is not strict, so there is no matching. This can lead to the subject to defy the implementation because of a much higher profit. Also on this issue, Indian law stipulates that the level of criminal punishment for violations of the law on commercial surrogacy is quite high. Accordingly: “violators will be sentenced with imprisonment for a term which may extend to ten years and with fine which may extend to ten lakh rupees equivalent to USD 15,000” [4]. We believe that, in order to effectively prevent violators of the law on surrogacy in practice, when there are conditions for amending and supplementing, the Vietnamese law should have more strict sanctions. For example, violators will be sentenced with imprisonment for a term which may extend to 5 years and with a fine depending on the level of seriousness of the violation ranging from 100,000,000 to 300,000,000 VND.

6. Conclusions

Through an assessment of legislative and provisions of law of some typical countries representing three different groups of views on surrogacy in the recent period, it can be seen that this is one matter that has received considerable interest from legislators. In each country, governments have different measures to protect their legislative positions. The view of surrogacy has been approached in different ways, but they all have the common goal of building legislation on the basis of ensuring the legitimate rights and interests of citizens and human rights. It can be seen from a legal perspective that surrogacy is a really complex and highly sensitive matter. After more than 5 years of implementation, these

provisions of surrogacy have made an important contribution to the protection of the rights of subjects participating in this legal relationship. Because surrogacy is one of the new legal relations without practical experience, it is understandable that an amendment of this issue should always be considered carefully. Therefore, it is necessary to evaluate and learn the legislative experience of countries around the world. Each group of countries representing different legislative points of view provides valuable perspectives in the development and improvement of Vietnamese law. For example, the legislative views of countries that completely prohibit surrogacy demonstrate experiences we can refer to on how to deal with legal consequences for surrogacy agreements that violate the law, especially when identifying the parent-child relationship. The group of countries that only recognize altruistic surrogacy provides important legislative experiences in adjusting regulations on conditions, rights, and obligations of affected parties thereby creating the basis for improvement of Vietnamese law. Even countries that allow commercial surrogacy reveal legal problems and exist so that Vietnam can consider expanding or narrowing the provisions on surrogacy today. From the above analysis and assessment, we find that the development of the law on altruistic gestational surrogacy in Vietnam has basically protected the legitimate interests of the subjects, however, it is still necessary to make appropriate amendments to improve the effectiveness of provisions on this issue and avoid the risks of negatively affecting the legitimate interests of individuals, families, and society.

CRedit author statement

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COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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Law on corporate social responsibility for consumers

Duy Phuong Nguyen*, Duy Thanh Nguyen

University of Law, Hue University, Vo Van Kiet Street, An Tay Ward, Hue City, Thua Thien Hue Province, Vietnam

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Abstract:

The law on corporate social responsibility (CSR) towards consumers is codified in the 2010 Law on Protection of Consumer Rights (LPCR). After more than 10 years of implementation, there are still some shortcomings and limitations that are not completely suitable nor fully meet the requirements of current economic development trends. On the other hand, due to various reasons, the systems of law enforcement agencies used to protect the interests of consumers in Vietnam has not been very effective as the number of undetected violations of enterprises remains high. Because of that, on March 29, 2021, the Ministry of Industry and Trade submitted statement No.1695/Ttr-BCT on the proposal to develop another LPCR (amended). In that context, the authors of this article focus on clarifying the legal provisions on CSR for consumers and the practice of law enforcement on CSR for consumers thereby pointing out the advantages and limitations of the law as well as its practical implementation. At the same time, this article provides solutions to improve the law on the responsibility of enterprises in protecting the interests of consumers.

Keywords: consumers, protect interests, responsibility of enterprises.

Classification number: 6

1. Introduction

Protection of consumers¹ rights is one issue that has attracted the attention of society as a whole. Currently, a very common situation is taking place, not only in Vietnam, but also in many countries around the world; that is, the rights and interests of consumers are being regularly violated to various degrees. Therefore, many countries have recently passed laws to protect the legitimate rights and interests of consumers.

In Vietnam, the 2010 LPCR, passed by the National Assembly on November 17, 2010, was a major turning point in the legalization and socialization of consumer protection. In order to implement the 2010 LPCR, the Government,

relevant ministries, and agencies also issued various legal documents stipulating and guiding fields related to consumer rights protection.

Through the study of the legal system on consumer rights protection, it can be seen that the CSR of protecting the interest of consumers is an important issue that has been raised by different stakeholders in Vietnam for nearly 40 years, especially since Vietnam became the 150th official member of the World Trade Organization (WTO) in 2007. This is an important milestone in assessing the extensive international integration of the economy. Indeed, integration has brought about many new opportunities to Vietnam, but has also posed many challenges that each require domestic enterprises to prioritize the responsibility of protecting the interest of consumers. In addition, the legal practice also posed many challenges to the implementation of the LPCR due to the

¹The term consumers are understood as individuals or groups of people who use the output of a business including products and services. According to Clause 1, Article 3 of the 2010 LPCR: "Consumers are the buyer or user of a goods or service for consumption or day-to-day activities of a person, a household or an organization".

*Corresponding author: Email: duyphuongluat66@gmail.com

increasing number of foreign enterprises present in Vietnam. Therefore, it is necessary to study legal provisions on the responsibilities of enterprises as well as law enforcement in protecting the interests of consumers.

2. Overview of the law on CSR towards consumers

2.1. The concept of CSR

CSR is no longer a new concept, however, now there exist schools of thinking such as: “social responsibility implies raising corporate behaviour to a level consistent with prevailing social norms, values and expectations” [1], and “CSR encompasses the economic, legal, ethical, and philanthropic expectations of society towards organizations at a given time” [2]. I. Maignan, et al. (2004) [3] also introduced the following concept of CSR: “A business has a social responsibility when its decisions and activities aim to create and balance the different interests of the individuals and organizations involved”. According to the Private Economic Development Group of World Bank, CSR is “the commitment of businesses to contribute to sustainable economic development, through activities to improve the quality of life of employees and members of their families, for the community and for society as a whole, in a way that benefits both the business as well as the overall development of society” [4].

2.2. Legal concept of CSR to consumers

According to the *United Nations Guidelines for Consumer Protection* in 1985, the responsibility of enterprises towards consumers includes contents “related to fair marketing practices, protection of health and safety, and sustainable consumption, dispute resolution and compensation, data and privacy protection, access to basic products and services, addressing the needs of disadvantaged and vulnerable consumers, and education” [5]. In 1999, these guidelines were supplemented with provisions on sustainable consumption.

These guidelines called on countries to protect consumers from health and safety risks, promote and protect the economic interests of consumers, enable them to make informed choices, provide education to consumers, make effective consumer compensation available, promote sustainable consumption patterns, and ensure the freedom to form independent consumer groups [6].

In Vietnam, liability is understood in two senses of positive and negative. In a positive sense, one author believes, “responsibility is the duties legal subject are forced to do under supervision of others” [7]. Another author argues that *responsibility* “is often understood as the ability of people to be aware of the results of their behaviours, and at the same time, the ability to voluntarily perform the obligations that are set for them” [8].

In addition to the CSR that are understood in the positive sense, such as obligation and duty, the law also has provisions on legal liability in the negative sense. That is, the sanctions that will be applied to the enterprises in case those entities commit violations in the field of consumer protection, which are given specifically as follows:

- Administrative liability applied to individuals and organizations that commit administrative violations. The matters of violations, sanctioning forms, sanctioning levels, remedial measures, and authority to make records of administrative violations and sanctions are specified in Decree No. 98/2020/ND-CP dated August 26, 2020, of the Government on “prescribing penalties for administrative violations against regulations on commerce, production, trade in counterfeit and prohibited goods, and protection of consumer rights”.

- Criminal liability, which is applicable to individuals and legal entities committing criminal acts in accordance with the provisions of the Penal Code 2015 that was amended and supplemented in 2017.

- Civil liability, which is compensation for damage to consumers, is a civil handling method whereby the law protecting consumer interests stipulates that violators causing damage must compensate the consumers. The valuation of compensation for damage is based on the provisions of the LPCR and the Civil Code 2015.

From a legal perspective, the CSR in protecting the interests of consumers are general provisions of the law issued by the state to regulate the behaviour of enterprises, stipulate the obligations of enterprises in the production process to ensure the interests of consumers and regulations, as well as to sanction the businesses that violate the interests of consumers. These provisions are recognized in various legal documents, but the most concentrated is in the 2010 LPCR.

3. Present legal status and practice of law enforcement on the CSR in protecting the interests of consumers

3.1. Responsibility for providing information to consumers

Under international as well as Vietnamese law, consumers have the right to demand enterprises to practice fair marketing, genuine and unprejudiced information, as well as fair contracts to provide information about products and services that are easily understood by consumers. This allows consumers to make informed decisions on consumption and purchases and to compare the characteristics of various products and services.

Fair contract processes aim to protect the legitimate interests of both suppliers and consumers by minimizing imbalances in bargaining power between the parties. Responsible marketing practices can include providing information on social, economic, and environmental impacts throughout the entire value chain.

Detailed information about products and services provided by the supplier plays an important role in purchasing decisions as those

pieces of information may be the only data available to consumers. Marketing and information that is unfair, incomplete, or misleading can lead to the purchase of products and services that do not meet customer needs, resulting in a waste of money, resources, time and could even be harmful to consumers or the environment [9]. It can also lead to a decline in consumer trust as consumers do not know who or what to believe, and this could adversely affect the growth of the market for more sustainable products and services.

Businesses must disclose all prices and taxes, terms and conditions of products and services, and delivery costs. When giving credit to the consumer, companies should detail the actual annual interest rate as well as the annual fee percentage, including all associated costs in total, the payment amount, and the payment term each time. They must also provide complete, accurate, understandable, and comparable information in the official or common language of the place of sale and in accordance with applicable regulations.

The responsibility of third parties in providing information about goods and services to consumers is specified in Article 13 of the 2010 LPCR. Based on this provision, in recent years, many disputes related to purchases and sales through sales programs on TV or purchases on e-commerce service providers have been successfully resolved thanks to the coordination and direct support of the advertisement and e-commerce website providers.

The 2010 LPCR also clearly defines this content: 1) Forms of contracts concluded with consumers comply with the civil law; 2) A written contract with a consumer must use plain and understandable language, which is Vietnamese unless otherwise agreed by involved parties or provided by law; 3) When a contract is concluded electronically, a goods or service trader shall create conditions for a consumer to review the whole contract before its conclusion.

3.2. *Protecting the health and safety of consumers*

In protecting the health and safety of consumers, the organization should take the following objectives, as well as pay special attention to vulnerable groups (with special attention to children) who may not have the ability to recognize or evaluate potential hazards.

“Businesses need to provide products and services that are safe for users as well as others, safe for their property and the environment, under normal and reasonably foreseeable conditions of use. Evaluate the adequacy of laws, regulations, standards and other technical requirements to address all aspects of health and safety”². Enterprises need to go beyond the minimum safety requirements and demonstrate that higher requirements can achieve significantly better protection demonstrated by the low frequency of “meeting minimum requirement product or service” related accidents, or by the availability of products or product designs to reduce the number or severity of accidents.

Enterprises must hold the responsibility of reducing risks associated with product design by identifying potential user groups, intended use, reasonably foreseeable misuse of the process, product, or service, the hazards that arise at all stages, as well as conditions of usage of the product, or service, and, in some cases, the provision of products and services specifically designed for vulnerable groups including pregnant women, and especially, in terms of time allotment, communication process, and risk reduction, by using the following prioritized list: inherent safety design, protective equipment, and user information. When developing products, the use of hazardous chemicals including, but not limited to, those that are carcinogenic, genetically modified,

toxic to recycling, or those that do not degrade or biologically accumulate should be avoided. If products containing these chemicals are offered for sale, they should be clearly labelled, a risk assessment of products and services to human health should be conducted before introducing new materials, technologies or production methods and, if it is appropriate, have documentation available to consumers that communicates essential safety information by using symbols where possible and preferably using internationally known symbols along with documented information. Additionally, enterprises should instruct consumers in the correct use of the product and adopt measures to prevent the product from becoming unsafe through improper transportation or storage by the consumer.

The 2010 LPCR also stipulates: “A consumer may have his/her information kept secure and confidential when making transactions and using goods or services except upon request by a competent state agency”³.

Products that do not ensure the health and safety of consumers must be recalled. The regulation on recalling defective goods is new content and, at the time of promulgation of the Law, many arguments for the implementation of a program to recall defective goods had partly proved the weakness of enterprises in the production of the goods. However, the reality of the past few years has shown that 100% of the programs to recall goods with defects are proactively implemented by enterprises and then notified to state agencies. The number of withdrawal programs tends to increase from year to year. In addition, the summary report of 13 enterprises shows that, currently, 7 out of 13 enterprises have actively implemented the program to recall defective goods in accordance with the provisions of the 2010 LPCR while 1 out of 13 enterprises implemented, but not fully, and properly complied with relevant regulations [10].

²TCVN ISO 19011:2003: Guidelines for auditing quality management systems and/or environmental management systems; TCVN ISO 22000: Food safety management systems - Requirements for organizations in the food chain.

³Article 8, the 2010 LPCR.

3.3. *Protecting consumer data and privacy*

The purpose of data protection and consumer privacy aims to protect the privacy of consumers by limiting the types of information collected and how the information is obtained, used, and secured. The increasing use of electronic communications, including financial transactions and genetic testing, as well as the growth of large-scale databases, has raised concerns about methods used to protect the privacy of consumers, especially regarding personally - identifiable information.

To prevent the collection and processing of personal data from infringing on privacy, commercial entities should limit the collection of personal data to information that is essential to the provision of products and services or from voluntary consumers and those with informed consent. Commercial entities should not use services or claims of special offers in an agreement with the consumer for the intended use of data for marketing purposes and they should collect data only by lawful and fair means. Enterprises must specify the purpose for which personal data is collected, both before and during data collection, and they should not disclose, make available, or use personal data for purposes other than those specified, including marketing, unless the consumer has been notified and allowed it. Enterprises should give consumers the right to verify if the organization has data related to them and to verify this data as required by law. If the verification is successful, the data should be deleted, corrected, completed, or modified, as appropriate. Commercial entities need to protect personal data with adequate security measures. Additionally, they need to disclose the development, practices, and policies related to personal data and make available the means to establish the existence, nature, and primary uses of personal data, and disclose the identity and permanent position of the person responsible for data protection within the organization (sometimes called a data controller) and hold that person accountable for compliance with the measures above and relevant laws.

The law of the State of Vietnam also recognizes this as follows: “Consumers are assured of their safety and confidentiality when participating in transactions and using goods and services, except for the request of authorized state agencies”⁴.

In case of collecting, using, and transferring consumer information, organizations and individuals trading in goods and services shall have to: “Disclose the purpose of collecting and using consumer information; use the information in accordance with the purpose notified to the consumer and must be agreed by the consumer; ensure safety, accuracy, and completeness when collecting, using, and transferring consumer information; update and adjust information when detecting that such information is incorrect by themselves or by taking measures for consumers; only transfer consumer information to third parties with the consent of consumers, unless otherwise provided for by law”⁵.

As for the responsibility of protecting consumer information, although it is a new regulation, the summary report of 13 enterprises shows that 10 out of 13 enterprises have issued documents to regulate the protection policy of consumers; 11 out of 13 enterprises implement technical measures and guide for employees to implement internal policies and regulations on consumer information protection; and 100% of enterprises use consumer information for the right purposes as notified to consumers [10].

3.4. *Ensuring the right to use essential services*

To ensure this right of consumers, businesses providing essential services should not interrupt the provision of essential services when unpaid without giving consumers or groups of consumers a reasonable opportunity to pay. Organizations should not stop providing collective services to punish all

⁴Clause 1, Article 6 of the 2010 LPCR.

⁵Clause 2, Article 6 of the 2010 LPCR.

consumers regardless of payment. In pricing and fees, whenever permitted, organization should provide subsidized rates to those in need, operate in a transparent manner by providing information regarding pricing and fees, expand the scope and provide services of the same quality and level to all groups of consumers without discrimination, manage any cuts or interruptions in supply in a manner that is reasonable, avoid discrimination against any group of consumers, and maintain and upgrade its systems to help prevent service disruptions.

3.5. Ensuring good service performance, consumer support and complaint and dispute resolution

Service, consumer support, and complaint or dispute resolution are organizational mechanisms used to address consumer needs after products and services have been sold or provided.

These arrangements include proper installation, warranties and guarantees, technical support related to usage, as well as terms of return, repair, and maintenance.

Products and services that do not provide satisfactory features due to omissions, failures, or misuse may lead to violations of consumer rights as well as a waste of money, resources, and time.

Suppliers of products and services can enhance consumer satisfaction and reduce complaints through the provision of high-quality products and services. They need to give clear advice to consumers on proper usage and request or remedy for feature failure. Suppliers can also monitor service effectiveness, after-sales support, and dispute resolution procedures through user surveys [11].

To realize those requirements, businesses need to take measures to prevent complaints by providing consumers, including those who purchase products via telemarketing, the ability to return products within a limited time frame or take other appropriate remedial measures as well as review complaints and improve complaint response practices. If

applicable, businesses need to provide warranties longer than the statutory warranty period and in accordance with the expected service life of the product as well as clearly inform consumers on how to access after-sales services and support like dispute resolution and compensation mechanisms. Businesses should provide a satisfactory and effective system of support and advice, provide maintenance and repair at reasonable prices and at appropriate locations, and provide information on the desired availability of replacement parts for the product and adopt dispute resolution, conflict resolution, and redress procedures based on national or international standards, free of charge or at minimal cost to consumers, and that do not require consumers to waive their rights to seek legal recourse.

This content is also recognized as one of the rights of consumers in the 2010 LCPR: "To lodge a complaint or denunciation or initiate or request a social organization to initiate a lawsuit to protect his/her rights under this Law and other relevant laws"⁶.

In practice, the process of reporting and processing consumer information with businesses has improved to be more convenient, simpler, and faster. This result, on the one hand, is due to the development of information technology that has made the application of contact methods more reasonable and convenient to business costs. On the other hand, it is also necessary to recognize the activities and the perception of businesses towards listening and resolving customer opinions. Referring back to the summary report of 13 enterprises shows the following: 100% of enterprises have issued policies to receive and handle consumer requests, 100% of enterprises have a specialized department in charge of receiving and settling complaints, 100% of enterprises built a database system of consumer complaints, and finally 10 out of 13 businesses apply a variety of methods to receive and exchange information with consumers (i.e., hotline, email, online chat, Facebook) [10].

⁶Clause 7, Article 8 of the 2010 CSR.

4. The advantages and limitations of the law on CSR in protecting the interests of consumers

4.1. The advantages of the law on the CSR in protecting the interests of consumers

Firstly, the provisions of Vietnamese law recognize the basic principles of protecting consumer rights.

Article 4 of the 2010 LPCR affirms: “Protecting interests of consumers is the common responsibility of the State and the whole society. The rights of consumers are respected and protected under law. Consumer rights must be protected promptly, fairly, transparently and lawfully”. That is, consumer protection is not the job of a particular department, agencies, or certain entity, but a common responsibility of society as a whole. Unlike many other fields, consumer protection involves various individuals and organizations, so it is of great significance to affirm that this work is a common responsibility of the entire society. Each agency, mass organization, individual, organization, and consumer must have responsibilities in this work.

Secondly, the provisions of the law recognize the basic rights of consumers. Article 8 of the 2010 LPCR stipulates eight basic rights of consumers. On that basis, the law mentions the responsibilities of businesses trading in goods and services. Chapter II of the 2010 LPCR has specified the responsibilities of enterprises in providing information about goods and services, performance of a model contract, and implementation of general trading conditions. In addition, the responsibilities include providing proof of transactions, warranties for goods, components, and accessories, recovery of defective goods, and compensation for damage caused by defective goods. Ensuring the responsibility of enterprises is one of the most important factors for consumer interests to be guaranteed.

Thirdly, the responsibilities of organizations and individuals trading goods and services are

recognized. The 2010 LPCR introduced new and strict regulations on the responsibilities of business organizations and individuals to consumers.

The Law has new provisions that focus on the issue of liability for warranty and recall of defective goods, and compensation for damage caused by defects of goods to consumers. Accordingly, business organizations and individuals must fulfil their warranty obligations for the goods they provide. During the warranty period, providers must compensate consumers with similar goods for temporary use or propose another settlement method accepted by consumers, they must also bear the cost of repair and transportation of goods and components under warranty, etc. For defective goods, business organizations and individuals must make a public announcement on websites or mass media, then withdraw and report the results to the state management agency in charge of protecting consumer interests.

4.2. The limitations of the law on the CSR in protecting the interests of consumers

Besides these advantages, the current provisions of Vietnamese law on CSR in protecting the interests of consumers still has some limitations that need to be overcome.

Firstly, the regulations on CSR in protecting the interests of consumers are still largely formalistic and difficult to implement. The 2010 LPCR lists seven groups of rights that businesses must pay attention to when providing goods and services to consumers and consumers can use it to protect their rights when they are infringed. However, mechanisms to enforce these rights are not yet available or have not been effectively implemented. Therefore, it is still difficult to apply these provisions to protect consumer interests.

Secondly, the regulations on realization of the contract between enterprises and consumers are still general as there are no regulations binding

the responsibility of enterprises in the process of contract realization. Model contracts in some exclusive business areas, such as electricity, water, etc., have not yet had specific regulations to avoid consumers being restricted and disadvantaged in terms of benefits, especially when disputes arise.

Thirdly, on the warranty period, Article 21, Clause 2 of the 2010 LPCR stipulates: "When the goods trader replaces parts or accessories or change the goods, the warranty period for such parts, accessories or goods shall be counted from the time of replacing those parts or accessories or changing the goods".

The above regulation only determines the time of applying the warranty, as there is no regulation to determine the warranty period for renewed parts, accessories, or goods. Many businesses, when replacing newly replaced parts and accessories, often do not announce a new and regulated warranty period, or often in a very short time. For example, in some cases, the warranty period of newly replaced parts and accessories would be considerably shortened when compared with the warranty period of old parts and accessories.

Fourthly, on the time limit for reporting the results of the recall of defective goods, Article 22, Clause 4 of the 2010 LPCR stipulates the responsibility to report the results of the recall of defective goods, specifically: "After completing the recall, report its results to a provincial-level state management agency in charge of consumer right protection of the locality in which defective goods are recalled or to the central state management agency in charge of consumer right protection when defective goods are recalled in 2 or more provinces". In fact, there is no regulation on a time limit for enterprises to report recall results to competent authorities. That leads to the situation of determining the behaviour of not reporting, and the competent authority has no basis to define this behaviour.

5. Some suggestions to improve the law on CSR in protecting the interests of consumers

The 2010 LPCR has been implemented for more than 10 years. This is considered a specialized legal document that comprehensively regulates those activities related to the protection of consumer interests. In addition, many other relevant legal guidance documents are also continuously issued to create a complete and unified legal system governing relationships in this field of law. However, through the study of the law and its practical application, there are limitations and obstacles, as analysed above, that we would like to propose some changes related to regulations on CSR in protecting the interests of consumers, as follows:

Firstly, we suggest supplementing the provisions related to the contract for the consumption of goods and services.

In the 2010 LPCR, there is no clear regulation on the provision of service contracts, especially the contract of continuous service provision, which stipulates the conditions that consumers can terminate the contract as well as clearly define the responsibilities of service providers for consumers. The law also does not have specific regulations on the responsibilities of the management boards of high-rise buildings as well as the responsibilities of the construction units of civil works to ensure the best service quality for consumers.

In our opinion, the LPCR should stipulate principle issues related to contracts such as: contract interpretation (in favour of consumers), contract language (clear and easy to understand), content that is prohibited from being included in the contract (content that lose or limit the rights of consumers), invalid terms in the contract (e.g., terms contrary to the provisions of the law that are unfavourable to consumers), and the right to cancel the contract of the consumer in case the consumer realizes that the provisions do not reflect his will and may be detrimental to him. At the same

time, it is also necessary to pay attention to some specific types of contracts to which consumers are vulnerable, such as contracts for continuous service provision, contracts of merchants selling mobile goods, contracts for the supply of essential goods and services, and consumer credit, etc.

Secondly, it is necessary to supplement regulations on product liability and compensation for damage and losses caused by defective products.

Consumers are beneficiaries of various activities to protect their legitimate rights and interests, so when choosing products for themselves, it is necessary to have certain knowledge about the quality of products and goods in general. Currently, the responsibility of the manufacturer for their products has been stipulated in the law on product quality, and therefore cannot be directly regulated by the LPCR. In fact, consumers often have no intention to establish a direct legal relationship with manufacturers, so by the time that products and goods reach consumers, they have gone through many stages of the distribution system, especially imported goods. This will lead to the situation that the supplier of the product or goods is demanded to be responsible for the defect of the product that they did not create themselves. From here, the legal regulation of product liability arises whereby the manufacturer of the goods is liable to compensate the consumer for damage and loss caused by the defective product even as the consumer may not deal directly with the manufacturer. As a result, product liability is not a liability arising directly from a business-to-consumer relationship and therefore the liability regime for a breach of a civil contract, according to civil law, is not available to protect the interests of consumers. Therefore, it can be affirmed that, in the long term, in order to better protect the interests of consumers, improving the caution of manufacturers and traders, the issuance of regulations on product liability, and regulations on compensation for damage caused by defective products are necessary.

Thirdly, we suggest amending and supplementing a number of provisions on product warranty in several related documents.

In principle, an enterprise is obligated to provide a warranty for its goods and services to consumers for a certain period, called the warranty period, as agreed by consumers or as prescribed by law. However, the LPCR also needs to further stipulate the following: if during the warranty period, the consumer discovers that there is a defect in the goods or services covered by the warranty, the organization or individual that produces and trades such goods and services is obliged to either repair with no cost, replace the defective goods or services with new quality goods or services according to the standards and regulations of law, reduce prices, or refund after allowing consumers to return the commodity.

In addition, the provisions of the 2005 Commercial Law on warranty have contributed to protecting the legitimate interests of consumers as well as genuine businesses. Indeed, Article 49 of the Commercial Law provides:

"1. Where goods are purchased and sold under warranty, the seller shall have to provide a warranty for such goods according to the agreed contents and duration.

2. The seller must fulfil the warranty obligation as soon as the practical situation permits.

3. The seller must bear all warranty expenses unless otherwise agreed".

However, the content of the above regulation has many problems that make it difficult for both consumers and businesses to implement, such as:

- The 2005 Commercial Law has no specific provisions on the rights of purchasers to claim the warranty and warranty obligations of the providers as well as responsibilities in case both parties do not have an agreement on the warranty in the contract. Thus, when such cases occur, the purchasers and providers must apply the relevant provisions of the civil law and the LPCR.

- The 2010 LPCR can only be applied to the case of warranty of goods related to the consumer who is the person who buys and uses the goods or services for personal consumption as well as living purposes of an individual, family, or organization. In the case that problems arise concerning the warranty of goods related to non-consumption and living purposes, consumers and businesses have no basis on which to solve.

- In addition, the provisions of Articles 446, 447, and 448 of the 2015 Civil Code on warranty obligations and the right to claim the warranty and repairs of objects during a warranty period are also not clear and consistent. In which, Article 447 stipulates: "If a purchaser discovers a defect in a purchased object during the warranty period, it has the right to require the seller to repair the object free of charge, or reduce its price, or replace it with another object, or it has the right to return the object in exchange for a refund". This means that if a difficult dispute occurs, the buyer can rely on Article 447 to ask the seller to return the money or exchange the goods. However, the seller can also invoke Article 448 of this civil Code or Article 49 of the 2005 Commercial Law to refuse this request of the purchasers.

Therefore, for clearer regulations that ensure the most optimal solution for both parties, it is necessary to amend and supplement Article 49 of the 2005 Commercial Law and provide clearer provisions on the warranty obligations of the manufacturer in order to clarify the rights, obligations, and responsibilities of the parties in the warranty of goods, warranty measures, and the process of implementation of warranty measures.

Fourthly, we suggest implementing a model contract.

Model contracts are prescribed in the LPCR 2010 and Decree No. 99/2011/ND-CP dated October 27, 2011. One of the most important conditions of the model contract and general transaction

conditions is: "A written contract with a consumer must use plain and understandable language, which is Vietnamese, unless otherwise agreed by involved parties or provided by law"⁷. However, in practice, many enterprises draft contracts that are often prepared with many general provisions and clauses that make it difficult for consumers to understand. The law also stipulates that, "when concluding a model contract with a consumer, a goods or service trader shall give a reasonable time for the consumer to study such contract"⁸. However, businesses often only provide contracts to consumers for a brief time before signing, so consumers do not have enough time to review and understand all the terms of the contract. Therefore, it is necessary to further stipulate (i) the specific and clear terms and conditions of the model contract and (ii) the specific time the enterprise should allow the model contract to be with the consumer before signing.

Fifthly, we suggest adding a number of issues that have arisen in practice, but have not been regulated by law.

5.1. Business use of a technology platform

Along with the emergence of the internet, a technology-based business model has appeared that connects transaction participants with each other and conducts value-creating interactions anytime and anywhere. Vietnam promulgated two laws, namely, the Law on E-transactions in 2005 and the Law on Information Technology in 2006, which are the legal bases for the recognition of electronic transactions including e-commerce. To concretize these documents, on May 16, 2013, the Government issued Decree No. 52/2013/ND-CP to regulate e-commerce relations. This document includes a range of important rules of principle and specific guiding regulations on standards for signing and realize e-commerce contracts.

⁷Clause 1, Article 7 of Decree 99/2011/ND-CP dated October 27, 2011.

⁸Article 17 LPCR 2010.

In Vietnam, a number of businesses using a technology platform in the transportation industry appeared like Uber in June 2014, Grab in February 2014, and Vietnamese enterprises such as Go-Viet born in July 2018, Be in December 2018, and Airbnb, Agoda, and Traveloka in the travel industry.

For the implementation of a business model in the form of a technology platform, there are several concerns such as the issue of the publicity and transparency about the operating mechanism, the security of user information, pricing methods, and legal responsibilities of platforms [10]. From that, it can be seen that protecting the interests of consumers in the platform economy is an urgent issue, especially in the context of the specialized legal material that has not yet been adjusted and the management of the operation of the business model according to the technology platform. Therefore, the issue of protecting the interests of consumers in e-commerce has not been included in legislation.

5.2. Regulations on responsibilities and methods of commercial dispute resolution of e-transactions

Article 26, Clause 3, Section c of the Government's Decree No. 52/2013/ND-CP, on e-commerce stipulates: "In case the sellers directly post information about their goods and services on e-commerce websites, the traders or organizations providing e-commerce services and the traders or organizations providing infrastructure are not the third party providing information as prescribed by the LPCR".

The above regulation currently creates the problem of binding the responsibility of traders and organizations providing e-commerce services with traders and organizations providing infrastructure in ensuring information provided on websites for e-commerce platforms like Lazada.vn, Shopee.vn, etc. However, the provisions of the 2005 Law on Electronic Transactions, Decree No. 52/2013/ND-

CP, and Decree No. 22/2017/ND-CP are general in nature and there are no specific regulations that are suitable with the flexible and fast-moving characteristics of e-commerce transactions. The current law does not have clear specific provisions on the application of online dispute resolution (ODR) methods to resolve e-commerce disputes. Chapter VI of Decree No. 52/2013/ND-CP also provides only principled regulations on e-commerce dispute settlement, and there are no specific regulations on the mechanism to conduct ODR. Decree No. 22/2017/ND-CP of the Government on commercial mediation is one of the legal documents that regulate the content of online commercial mediation, initially facilitating the formation of dispute settlement and online mortgages. Contents such as the scope of dispute using the ODR method and the order, procedures, and legal value of dispute settlement decisions have not yet been specified and there are no guidelines, so dispute cases cannot be handled [10]. This leads to legitimate rights and interests of consumers being difficult to protect when participating in online commercial relations.

6. Conclusions

Following the trend of the Vietnamese economy integrating more and more deeply with the world, the protection of consumer interests, as well as the promotion of the responsibility of enterprises in ensuring the interests of consumers, are posed as an indispensable and increasingly important requirement. Vietnam has gradually tightened the management of consumer rights protection in all aspects of the economy, and gradually build and perfect the legal system of consumer rights protection. Up to now, the legal system of Vietnam has met the basic requirements of consumer protection. The provisions of Vietnamese law on the principles of protecting interests and rights of consumers, as well as obligations and responsibilities of enterprises in protecting consumer interests, are quite similar to the laws

of many developed countries around the world, which are basically suitable and compatible with the requirements laid out in the current situation. These are remarkable efforts of the legislators in Vietnam over the past 10 years.

However, upon analysis of the Vietnamese legal system on protecting the interests of consumers, we still find there are some shortcomings and limitations that are not completely suitable nor fully meet the requirements of current economic development trends. On the other hand, due to various reasons, the systems of law enforcement agencies used to protect the interests of consumers in Vietnam has not been very effective as the number of undetected violations of enterprises remains high. The handling of acts of violation of the interests of consumers has not yet achieved desired results. Therefore, we need to continue to improve the legal system and enforcement mechanisms to protect the interests of consumers both to meet the requirements of the integration process and to serve the development of the country.

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COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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Law on settlement of civil disputes involving foreign elements at the Courts in Vietnam

Thi Huong Vu*, Thi Dien Do

University of Law, Hue University, Vo Van Kiet Street, An Tay Ward, Hue City, Thua Thien Hue Province, Vietnam

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Abstract:

The settlement of civil disputes involving foreign elements is a relatively complicated issue due to conflicts of laws and conflicts of jurisdictions in private international law. It can be seen that the laws on the mechanism for settlement of civil cases involving foreign elements at Vietnamese Courts have gone through a long development process and have obtained significant progress in solving conflict of jurisdiction of national Courts and applicable laws. With the rapid development of civil relationships involving foreign elements and to ensure national interests, public interests, legitimate rights, and interests of the citizens, as well as to create a safe, stable, and effective legal framework, the laws need to be completed to settle civil cases involving foreign elements, to develop a good mechanism for settling disputes, and to meet the demands of the integration process. This article analyses Vietnamese laws on identification of jurisdictions of the Courts and identification of applicable laws to settle civil disputes involving foreign elements. On those grounds, this article points out certain shortcomings of the laws and provides an orientation for the completion of Vietnamese laws.

Keywords: applicable laws, civil disputes, courts, foreign elements, jurisdiction.

Classification number: 6

1. Introduction

Under Vietnamese laws, foreign elements in a civil dispute are identified in accordance with Clause 2, Article 464 of Civil Procedure Code 2015. Accordingly, civil cases involving foreign elements are civil cases that belong to one of the following cases: i) at least one party is a foreign individual, agency, or organization; ii) all parties are Vietnamese citizens, agencies, or organizations but the relationship is established, changed, developed, or terminated in a foreign country; iii) all parties are Vietnamese citizens, agencies, or organizations but the object of the relationship is placed overseas.

In principle, when there is a civil dispute involving foreign elements, the first legal issue is to identify which countries have jurisdiction of the case. Due to the nature of having foreign elements in a civil case, the case could be under jurisdiction of different judicial bodies of different countries.

This issue, that is, where a civil case involving foreign elements could fall under jurisdictions of judicial bodies of different countries, is called conflict of jurisdictions.

For a civil case involving foreign elements, the Court needs to settle two issues: i) whether that case is under jurisdiction of the country of the Court or under jurisdiction of the Court of another country and, if the case is under jurisdiction of the country of the Court, then which specific Court has jurisdiction. This issue raises two levels of identification of jurisdictions of the Court: international level (identifying the country of which the Courts have jurisdiction by application of legal norms in conflict of laws and international conventions) and national level (identifying a specific Court according to national laws that has been selected to directly settle the case). The second issue is ii) to identify applicable laws to settle civil disputes involving foreign elements.

*Corresponding author: Email: huongvt@hul.edu.vn

2. Overview of Vietnamese Courts to settle civil disputes involving foreign elements

2.1. Jurisdiction of the Courts to settle civil disputes involving foreign elements

For civil disputes involving foreign elements, each country has its own regulations to identify jurisdiction of national courts. However, in general, jurisdiction to settle civil disputes involving foreign elements of the courts of many countries can be divided into common jurisdiction and exclusive jurisdiction.

Common jurisdiction is jurisdiction to cases that the courts of that country have competence, but courts of the other countries can also settle (depending on whether international private law provisions of the other country stipulate that its courts have jurisdiction or not). When courts of more than one country have jurisdiction of a civil case involving foreign elements, then determining which court has jurisdiction depends on the filing of the parties.

Exclusive jurisdiction is the case when one country states that only courts of that country have jurisdiction to certain cases. In the case where courts of other countries settle cases that belong to the exclusive jurisdiction of that country, then the judgments and decisions of the courts of other countries shall not be recognized or enforced in that country.

First, on common jurisdiction of Vietnamese Courts, according to regulations of Civil Procedure Code 2015, common jurisdiction of the courts is stipulated in Article 469 and exclusive jurisdiction is stipulated in Article 470. Regulations on common jurisdiction and exclusive jurisdiction of Vietnamese courts in Civil Procedure Code 2015 have new points compared to regulations of Civil Procedure Code 2004. Indeed, Article 469 of Civil Procedure Code 2015 amends many provisions compared to regulations of Article 410 of Civil Procedure Code 2004 such as the provision: “The defendant is an agency or organization which is headquartered in Vietnam or the defendant is an agency or organization has a branch or a representative office in Vietnam, applicable to cases related to the operation of the branch or

representative office in Vietnam of such agency/ organization”.

Whereas, according to Article 410 of Civil Procedure Code 2004, the defendant only needs to have “headquarters in Vietnam or have a management unit, branch, or representative office in Vietnam” then Vietnamese courts have jurisdiction. Article 469 of Civil Procedure Code 2015 also removes the following regulations at point e), Clause 2, Article 410 of Civil Procedure Code 2004: “disputes arising from a contract which is wholly or partly implemented in the territory of Vietnam”, because such regulation is no longer suitable with practice and is controversial. Also, Article 469 of Civil Procedure Code 2015 is re-structured by transferring Clause 1 Article 410 of Civil Procedure Code 2004 to Clause 2 Article 469 of Civil Procedure Code 2015, as well as transferring Clause 2 Article 410 of Civil Procedure Code 2004 to Clause 1 Article 469 of Civil Procedure Code 2015 and clearly identifying at Clause 2 Article 469 of Civil Procedure Code 2015 that, following the identification of the jurisdiction of Vietnamese courts, then courts can identify jurisdiction of a specific court to settle civil cases involving foreign elements based on Chapter 3 of the Code.

Second, the exclusive jurisdiction of Vietnamese Courts to civil cases involving foreign elements is stipulated in Article 470 of the Code. This Article is also divided into two Clauses as regulated in Article 411 of Civil Procedure Code 2004, but with new points and an amendment on the choice of court agreement of the parties stipulated at point c) Clause 1 of Article 470; adding the case stipulated at point a) Clause 2 Article 470 “claims without dispute arising from civil legal relationships specified in Clause 1 of Article 470” to the list of civil cases involving foreign elements under exclusive jurisdiction of Vietnamese courts; and remove regulation at point b) Clause 1 Article 410 of Civil Procedure Code 2004 “disputes arising from transport contracts where the courier has headquarter or branch in Vietnam”.

Therefore, prior to the Civil Procedure Code, legal instruments governing jurisdiction to settle civil cases with foreign elements regulated in different documents were incomplete and

unsystematic. Since 2004, by promulgating Civil Procedure Code 2004, regulations on identification of jurisdiction have step by step completed with clear advancement. To 2015 by replacing Civil Procedure Code 2004 with Civil Procedure Code 2015, the identification of jurisdiction to settle civil cases with foreign elements has advancement compared to Civil Procedure Code 2004. Civil Procedure Code 2015 has been reinforced and significantly completed in regard to jurisdiction to settle civil cases with foreign elements.

The law on jurisdiction of Vietnamese courts to settle civil cases involving foreign elements prior to Civil Procedure Code 2015 is listing, mutually inclusive, and does not meet the need of international integration in the new era. Since Civil Procedure Code 2015, the codification of the law has been enhanced to be suitable with the current situation and the above-mentioned shortcomings are significantly overcome in both formality and substance. First of all, on formality, the legalization of regulations on jurisdiction of the courts to civil cases involving foreign elements contributes to the stability of procedural legal norms and enhances the unification of the legal system for greater completeness. Second, on substance, the issue of identification of jurisdiction of Vietnamese courts to settle civil cases involving foreign elements is regulated more clearly, specifically, and has become gradually suitable for the current practice of Vietnam and also gradually compatible with foreign laws and international conventions that Vietnam is a member.

2.2. Laws applicable to civil cases involving foreign elements

Civil Code 2015 regulates on the scope of application of the law, conditions for application, etc., in part 5 on applicable law to civil relations involving foreign elements.

First, on the scope of application:

Clause 1 Article 663 of Civil Code 2015 stipulates that: *“If any regulation of law providing for applied law to civil relations involving foreign elements complies with Article 664 through Article 671 of this Code, it shall prevail; if it does not comply with those Articles, Part 5 of this*

Code shall prevail”. Therefore, Civil Code 2015 stipulates that if regulations on applicable law to civil relations involving foreign elements are not contrary to regulations of the Code, then such regulations can be applied. This regulation adheres to the principle of freedom, voluntary commitment, and the agreement in civil relations in the context of international integration.

Second, on the principle to identify applicable law to civil relations involving foreign elements:

Article 664 of Civil Code 2015 stipulates on principle to identify applicable law to civil relations involving foreign elements.

The principle to identify applicable law to civil relations involving foreign elements according to Civil Code 2015 is as follows: first, the parties apply international conventions of which Vietnam is a member or Vietnamese laws. In the case that international conventions in which Vietnam is a member, or Vietnamese laws stipulate that parties have the right to choice of law, then the applicable law to civil relations involving foreign elements is identified as chosen by the parties or the parties can choose to apply international customs if the consequence of the application is not contrary to basic principles of Vietnamese laws. In case of failure to identify applicable laws in the above situations, the law applied is the law with the closest links.

Therefore, the principle to identify applicable law to civil relations involving foreign elements according to Civil Code 2015 is the priority of selected applicable law, especially Civil Code 2015, which only allows the parties to a choice of applicable law in cases where international conventions that Vietnam is a member or Vietnamese laws stipulate. Besides, Civil Code 2015 also adds the principle to apply law with the closest links with Civil relations involving foreign elements.

A supplementary principle to apply law with the closest links to identify applicable law in cases where failing to identify applicable law helps competent authorities, especially adjudicating bodies in the process of settling civil disputes involving foreign elements. In essence, the

referred laws in conflict of laws provisions are the laws which have the closest links to that civil relation involving foreign elements and are usually pointed out, for example, nationality laws, residence, etc., depending on each specific civil relation involving foreign elements. However, due to the diversity of civil relations involving foreign elements, in many cases, the laws do not cover all of the related applicable laws. This way of regulation shall ensure the necessary flexibility for the adjudicating bodies to handle cases, and avoid the direct application of Vietnamese laws without base while also expressing the integration of laws governing civil relations involving foreign elements.

Third, on the application of referred laws:

Civil Code 2015 has separated Article 668 to have clearer regulation on application of referred laws.

Therefore, Article 668 of Civil Code 2015 identifies the scope of the referred laws. Accordingly, in case parties in civil relations involving foreign elements have an agreement on the choice of applicable law, then the applicable law is regulations on rights, obligations of parties of the contract, and exclusive of regulations on identification of applicable law, which means that the referred law is substance related only and not a conflict of law provisions. In case there is no agreement on choice of applicable law, the referred laws include regulations on identification of applicable law and regulations on rights and obligations of the parties (including conflict of laws provisions). This provision also allows reverse referral and Clause 3 of Article 668 also allows referral to law of a third country, however, in case of referral to the law of a third country, laws of that country on rights and obligations shall be applied.

Fourth, agreement on choice of law, international customs:

Civil Code 2015 stipulates that in civil relations involving foreign elements, parties have the right to an agreement on choice of international customs for application if the consequence of such application is not contrary to fundamental principles of Vietnamese laws (Article 666 of Civil Code 2015).

From general regulations on applicable laws, Civil Code 2015 has specific regulations on applicable laws to civil relations involving foreign elements. Accordingly, parties in civil disputes involving foreign elements can only choose laws applicable to ownership right and other rights related to movable properties in transit (Article 678 Clause 2); contract (Article 683); performance of acts without authorization (Article 686); and compensation for non-contractual damage (Article 687).

Fifth, cases that cannot apply foreign laws:

Relating to the issue of non-application of foreign laws when referred to, Article 670 of Civil Code 2015 stipulates that *foreign laws, which are referred to cannot be applied in case: i) the consequences of the application of foreign law is contrary to fundamental principles of Vietnamese laws; or ii) the substances of foreign laws cannot be identified even though already apply necessary measures in accordance with procedural laws.*

Therefore, Civil Code 2015 stipulates “the consequence of the application”, that is, the application of foreign laws that are contrary to fundamental principles of Vietnamese laws shall not be applied.

Besides, in the case of not applying foreign laws when the substances of foreign laws cannot be identified even though necessary measures are already applied in accordance with procedural laws, competent authorities of Vietnam can only cite this provision for not applying foreign laws in case necessary measures have already been carried out in accordance with procedural laws but still cannot identify foreign laws governing such civil relations.

3. Shortcomings of Vietnamese laws on settlement of civil disputes involving foreign elements by litigation

3.1. Jurisdiction of Vietnamese Courts to settle civil dispute involving foreign elements

The jurisdiction to settle civil cases involving foreign elements are divided by Civil Procedure Code 2015 into common jurisdiction and exclusive jurisdiction. Through research of legal norms, shortcomings still

exist on the matter of jurisdiction of Vietnamese Courts to settle civil disputes involving foreign elements which need amendment and supplement.

First, point a), Clause 1 of Article 469 of Civil Procedure Code 2015 stipulates that “civil cases that the respondent is an individual who resides, works, or lives for long-term in Vietnam”. The use of criteria “resides, works or lives for long-term” under Vietnamese law makes this article hard to interpret and complicated because these terms are not yet clarified in any regulations under Vietnamese law.

For example, what is “resides”? According to Clause 1, Article 11 of the Law on Residence 2020, “resides” can be understood as an individual’s residence that is either temporary or permanent. Then, Clause 8 and 9, Article 2 of the Law on Residence 2020 stipulates that: a place of permanent residence means a place where a citizen resides stably, for a long-term, and has registered his/her residency.

A place of temporary residence means a place where a citizen resides in a certain period other than permanent residence and already registers his/her temporary residence. In another example, what is “works, lives for long-term”? Currently there are no regulations that clearly interpret what “works, lives” mean or for how long could be deemed as “long-term”. This causes many difficulties for the courts in the process of identifying jurisdiction to settle civil cases involving foreign elements. Therefore, the criteria “works, lives” is unnecessary as criteria to identify jurisdiction of Vietnamese Courts.

Therefore, point a), Clause 1, Article 469 of Civil Procedure Code 2015 needs to be amended in the direction that Vietnamese Courts have jurisdiction to civil cases involving foreign elements in cases where the respondent is an individual having residence in Vietnam. Or the term “works, lives” can be deleted and the criterion “long-term” can remain [1]. The respondent who is an individual residing in Vietnam for the long-term. Regarding “long-term”, first the Supreme People’s Court needs to issue judicial interpretation to clearly explain

this definition, as well as to identify a specific period of time to identify whether a respondent is deemed a long-term resident of Vietnam.

Second, the respondent has properties in the territory of Vietnam (Item c, Clause 1, Article 469 of Civil Procedure Code 2015).

The criterion “the respondent has properties in the territory of Vietnam” is used to identify a civil case involving foreign elements that falls into common jurisdiction of Vietnamese Courts without any other criterion attached to identify the connection of the case with the territory of the Courts (Vietnam) is still not justified. Only the fact that “the respondent has properties in the territory of Vietnam”, then Vietnamese Courts shall have the jurisdiction, without any appraisal of the value of the properties. The hypothesis raised here is that, in this case the values of the properties are too small compared to the value of the dispute, but the respondent resides in or has headquarters in another country and the claimant initiates the suit in Vietnamese Court. So, in this case, according to regulation at point c), Clause 1, Article 469 of Civil Procedure Code 2015, Vietnamese Courts shall have jurisdiction. Therefore, in this case, the interests of both claimant and respondent are not ensured when participating in the legal proceedings at Vietnamese Court [1].

Therefore, the author think that point c), Clause 1, Article 469 of Civil Procedure Code 2015 should be amended with the direction that Vietnamese Courts shall have jurisdiction to settle civil cases involving foreign elements when “the respondent has properties in the territory of Vietnam and the value of the properties is equal (or equivalent) to the value of the dispute” or when Civil Procedure Code 2015 is amended, the criterion on the place of properties of the respondent should not be used to identify jurisdiction of Vietnamese Courts but using another specific criterion instead with the direction: Vietnamese Courts have jurisdiction to settle civil cases involving foreign elements when the case has a connection with the territory of Vietnam (and take the criteria about properties of the respondent, place of performance of the

contract, place of conclusion of the contract, etc., as the criteria to identify the jurisdiction).

Third, divorce cases between a Vietnamese citizen and a foreign citizen or a stateless person if both spouses reside, work, or live permanently in Vietnam.

According to point b), Clause 1, Article 470 of Civil Procedure Code 2015, a divorce case between a Vietnamese citizen and a foreign citizen or a stateless person if both spouses reside, work, or live permanently in Vietnam shall belong to exclusive jurisdiction of Vietnamese Courts. However, this regulation is still not fully justified. According to the Law on Marriage and Family 2014, at Clause 3, Article 5: “Getting married means a man and a woman’s establishment of the husband-and-wife relation according to the provisions of this Law on marriage conditions and registration” and Clause 14, Article 3 stipulates “Divorce means termination of the husband-and-wife relation under a court’s legally effective judgment or decision”.

According to Clause 2, Article 7 of the Law on Civil Status 2014, the authority to register marriage involving foreign elements belongs to the District-level People’s Committee. In the case of a marriage between a Vietnamese citizen residing in the border area and a citizen of a neighbouring country residing in the border area with Vietnam, according to Clause 1 Article 7 of the Law on Civil Status, the authority belongs to Commune People’s Committee of the place of residence of the Vietnamese citizen.

The Commune People’s Committee of the place of residence of the Vietnamese citizen registers marriage between Vietnamese citizen and foreigner; between Vietnamese citizen residing in Vietnam and Vietnamese citizen residing in a foreign country; between Vietnamese citizens residing in a foreign country; and between Vietnamese citizen having nationality of a foreign country and Vietnamese citizen or foreigner. In the case where a foreigner residing in Vietnam requests to register marriage in Vietnam, the District-level People’s Committee where one of the two parties resides shall register marriage.

Overseas representative offices of Vietnam like the embassy or consulate have the authority to register marriage between Vietnamese citizens in a foreign country or between a Vietnamese citizen and foreigner. Therefore, according to Vietnamese law, authorities having competence to register marriage involving foreign elements are District-level People’s Committee (Commune People’s Committee in case of border area) and representative offices of Vietnam overseas. These government authorities exercise their power in accordance with the laws and obviously these activities have the nature of the State’s power.

If the marriage relationship is established based on registration at competent government authorities of Vietnam, then the termination of these marital relationships shall also be under jurisdiction of Vietnam. According to the principle of sovereignty equality among nations, other nations cannot suspend the effectiveness of a marital registration certificate issued by Vietnamese competent authorities, and also cannot terminate a marital relationship that has been registered by Vietnamese competent authorities. On the contrary, Vietnam also cannot terminate a marital relationship (even when one party is Vietnamese citizen) that has been established in accordance with the laws of a foreign country on marriage conditions and registration at competent authorities of foreign country. There is an exception when Vietnam and the related country have concluded international convention in which there is regulation that competent authorities (the Courts) of the signatories have jurisdiction to terminate a marital relationship that has been established in accordance with the laws and regulations on marriage conditions and registration of the other signatory.

In our opinion, point b), Clause 1, Article 470 of the Civil Procedure Code 2015 needs to be supplemented as follows: “Divorce between a Vietnamese citizen and citizen of a foreign country or a stateless person, in case the marriage is registered at competent authorities of Vietnam and both spouses reside, work, live in Vietnam,” or “Divorce between a Vietnamese citizen and citizen of a foreign country or stateless person, in

case both spouses reside, work, live in Vietnam and have no property dispute in a foreign country”.

Fourth, cases where the parties can choose Vietnamese Courts.

Other civil cases where the parties select Vietnamese Courts to settle in accordance with Vietnamese laws or international conventions that the Socialist Republic of Vietnam is a signatory, and the parties agree to select Vietnamese Courts.

According to this article, only when the parties select Vietnamese Courts then Vietnamese Courts shall have exclusive jurisdiction. This regulation of Civil Procedure Code 2015 is suitable with international practices and ensures the unification with other specialized legal normative documents of Vietnam when regulating jurisdiction of Vietnamese Courts as well as the right to select the Court of the parties.

Article 14 of the Law on Investment 2020 on dispute settlement in investment activities stipulates that disputes relating to investment activities in Vietnam are settled through negotiation and/or mediation. In case of unsuccessful negotiation and/or mediation, the dispute shall be settled at Arbitration or Court.

Disputes between domestic investors, economic organizations having foreign invested capital, or between domestic investors, economic organizations having foreign invested capital with competent State authorities relating to investment activities in the territory of Vietnam shall be settled by Vietnamese Arbitration or Vietnamese Courts except disputes between investors in which at least one party is a foreign investor or economic organization, then the dispute can only be settled by one of the following bodies or institutions: Vietnamese Court; Vietnamese Arbitration; Foreign Arbitration; International Arbitration; or Arbitration selected by the parties.

Disputes between foreign investors and competent State authorities relating to investment activities in the territory of Vietnam are settled by Vietnamese Arbitration or Vietnamese Court, except when there is another agreement in the

contract or international conventions that the Socialist Republic of Vietnam as a signatory provide otherwise. As can be seen from the above regulations, the right to select the court to settle their disputes falls into the scope of these specialized legal normative documents. For disputes about investment, Vietnamese laws do not allow the parties to select the court of a foreign country to settle the dispute.

Therefore, the unification between regulations of Civil Procedure Code 2015 and other legal normative documents such as Article 14 of the Law on Investment 2020, the criterion to identify jurisdiction of the Court to settle disputes between foreign investors and competent State authorities relating to investment or business in the territory of Vietnam, even though the article is not clear but exclusive jurisdiction of Vietnamese Courts can be identified. However, in this case it is not regulated in Clause 1, Article 470 of Civil Procedure Code 2015 causing difficulties in dispute settlement.

The Article 470 should supplement the case with: “Civil cases relating to foreign investors and competent State authorities related to investment activities, business in the territory of Vietnam” because of its necessity, unification between legal normative documents, and creation of favourable conditions in application of the laws to settle disputes involving foreign elements.

The Hague Conference developed a convention on the choice of Court (Vietnam is not a signatory member of this convention yet) in which there is specific regulation on jurisdiction of the Court based on choice of the parties. Point c, Clause 1 of the Civil Procedure Code of Vietnam 2015 is stipulated based on reference to Article 3 and Article 5 of the Hague Convention 2005 on the Choice of Court Agreements. The essence of this regulation is that in case the parties selected Vietnamese court to settle the dispute but later one party requests a foreign Court, Vietnamese Arbitration, or foreign Arbitration to settle the dispute, then the foreign Court or Arbitration must refuse admission of the party's request.

Clause 7, Article 3 of Civil Procedure Code of Japan stipulates that parties have the right to have an agreement on choice of Court of any country to settle their dispute. Choice of Court agreements must be made in writing (in case data message is unrecognizable, then such message is not deemed in writing and shall be invalid). However, Civil Procedure Code of Japan also stipulates an agreement of jurisdiction for dispute settlement (choice of Court agreement), which has more stringent conditions for validity in case of consumer contracts and labour contracts.

Agreement on the choice of jurisdiction to settle consumer contract disputes according to sub-point i), point 5, Clause 7, Article 3 of Civil Procedure Code of Japan, even when a trader already signed an agreement with the consumer on the exclusive jurisdiction of the Court in which the case can only be submitted to a Court of the country where the headquarter of the trader located, this agreement also has certain requirement to become valid. Specifically, this agreement is only valid when the selected Court is the Court of the country where the consumer resides at the time of conclusion of the consumer contract and this agreement is not exclusive. According to this regulation, in a case where a consumer submits a case to a Court of a foreign country other than the Court which has been selected in the consumer contract, the trader cannot argue that this Court has no jurisdiction for adjudication on the grounds that this is not the selected Court by the parties [2].

While an employer can, when terminating labour contracts, engage in an agreement with an employee to restrict adjudication jurisdiction to the employee at the end of the term of employment, the employee still has the right to sue the employer at another Court and obviously, in this case, the employer also cannot argue that the parties already had a choice of Court agreement in the contract to object jurisdiction of the other Court. In this case, the validity of agreement on choice of Court is restricted, except the case when the employee cites choice of Court agreement, or the employee initiated the suit at the selected Court in the labour contract.

In our opinion, there are no criteria to identify jurisdiction of the Courts in Civil Procedure Code 2015 regarding consumer and employee cases to protect legitimate rights and interests of the parties that are deemed “weaker” in cases of consumer contracts and labour contract cases.

Singapore issued the Choice of Court Agreements Act 2016, which came into effect on 01 October 2016, which was amended and came into effect on 30 November 2017 [3]. This Act has specific regulation on choice of Court agreements. For example, Article 3.2 Section 1 stipulates that a choice of court agreement between two or more parties which satisfies the following requirements is deemed to be an exclusive choice of court agreement, unless the parties to the agreement expressly provide otherwise.

The agreement is concluded or documented in writing or by any other means of communication that renders the information communicated accessible so as to be usable for subsequent reference [3].

The Choice of Court Agreements Act of Singapore also excludes certain issues outside of the scope of application such as choice of court agreement relating to consumers, employees, and collective bargaining agreements, etc. [3]. Besides, in the Civil Procedure Code of Japan 2011, Japanese Courts have exclusive jurisdiction in cases relating to existence or value of intellectual property rights from registration in compliance with Japanese laws. Accordingly, issues relating intellectual property right registration in Japan shall be under exclusive jurisdiction of Japanese Courts [4].

However, regulation at point c) Clause 1 Article 470 of Civil Procedure Code 2015 just provides direction for parties to select Vietnamese Courts. Vietnamese laws do not regulate in the direction that parties can have agreement on choice of foreign Courts to settle cases and the choice of foreign Court jurisdiction is exclusive as regulated in Hague Convention 2005 or laws of other countries such as Singapore and Japan. Besides, this article does not regulate on the formality of the choice of court agreements and restriction of validity in

case of choice of Court agreements in consumer contracts and labour contracts. Accordingly, in case of choice of Court, specific requirements on formality of choice of court agreement of the parties should be regulated. In our opinion, the choice of court agreements to settle civil disputes involving foreign elements should be made in writing or other forms which have equivalent validity. The validity of choice of court agreements in labour contracts and consumer contracts should also be restricted in the direction that employees, consumers still can bring the case against employers, traders to the Court of the country other than selected Court in the contracts, except the case that consumer, employee cites the agreement or initiates the case at the selected Court in the contract.

Civil Procedure Code 2015 is silent on regulation on exclusive jurisdiction of Vietnamese Courts in the area of intellectual property. Clause 4 Article 10 of Law on Intellectual Property 2005 regulates the State management on intellectual property, in which the registration and implementation of other procedures relating to the issuance of copyright registration certificate, related rights registration certificate, industrial property registration certificate (including patent registration certificate, utility solution registration certificate, industrial design registration certificate, semiconductor integrated circuit layout design registration certificate, trademark registration certificate, geographical indication registration certificate), plant variety protection certificate. According to Article 53, Article 93 and Article 169 of this Law, these certificates are effective on the entire territory of Vietnam. However, cases involving foreign elements relating to intellectual property which must be registered in Vietnam, Civil Procedure Code has no regulation on the exclusive jurisdiction of Vietnamese Courts.

Therefore, Clause 1 Article 470 of Civil Procedure Code 2015 needs to be supplemented a new point, that is: "...d. Disputes relating intellectual property rights must be registered in Vietnam such as patent registration certificate, trademark registration certificate etc." shall be under exclusive jurisdiction of Vietnamese Courts.

3.2. Shortcomings of Vietnamese laws on applicable laws to civil disputes involving foreign elements

First, on the agreement on choice of applicable laws:

Civil Code 2015 has extended regulations on agreement on choice of applicable laws to civil relationships involving foreign elements compared to regulations of Civil Code 2005. Specifically, ownership rights and other rights related to moveable property in transit regulated in Clause 2 Article 678; for contracts in Article 683; for performance of acts without authorization in Article 686 and compensation for non-contractual damage in Article 687.

Agreement on choice of applicable laws for civil relationships involving foreign elements in Civil Code 2015 is regulated as follows:

One, ownership rights and other rights related to moveable property in transit.

Clause 2 Article 678 stipulates: *"Ownership rights with respect to moveable property in transit shall be determined in accordance with the law of the country of destination, unless otherwise agreed"*.

Civil Code 2005 only stipulates ownership rights to property, however, Civil Code 2015, Article 676 stipulates further with other rights related to property because apart from ownership right, there are other rights to property such as rights to adjacent real estate, surface right, usufruct right. For moveable property in transit, Vietnamese law allows parties to agree on choice of applicable laws, and other rights to property in this case is usufruct right only because in essence, property in transit is moveable [5].

For property in transit, Article 38 of Private International Law of China stipulates that: Parties can agree on choice of applicable laws for the change of rights to moveable property in transit. If the parties have no agreement, the law of the country of the destination of the property shall be applied.

As can be seen, Vietnamese law and Chinese law both regulate that parties are allowed to have agreement on choice of applicable laws to moveable property in transit. However, regulation of Vietnamese law is more advanced because agreement on choice of applicable laws is applied not only to ownership of moveable property in transit but also applied to other rights.

Regarding ownership right to moveable property in transit, both Civil Code 2005 and Civil Code 2015 regulate that parties are allowed to have agreements on choice of applicable laws in case of moveable property in transit. What should be noticed is the formality and the timing of the agreement. In our opinion, in order to ensure unification of the laws, this regulation should be regulated like agreement on choice of applicable law for contracts, it means that parties are allowed to choose formality and timing of the agreement on choice of applicable law to identify ownership right of moveable property in transit. Similarly, parties can have agreement on choice of applicable laws anytime and can alter this agreement without infringing interests of the third person.

Two, civil contract involving foreign elements.

Article 683 of Civil Code 2015 stipulates: Parties in a contract may agree to select applicable laws to the contract, except cases regulated in Clause 4, 5, and 6 of this Article. In case the parties have no agreement on choice of applicable law, the law of the country with which such contract closely associates shall apply.

Civil Code 2015 stipulates “parties in a contract may choose applicable law to the contract”. This regulation covers all matters of the contract but not just only within the scope of rights and obligations of the parties.

Article 683 also stipulates that parties cannot have agreement on choice of applicable law to the contract in the following cases:

- If the object of a contract is an immovable property, the law applied to transfer of its ownership rights and/or other property-related rights, lease of immovable property or using the immovable

property as the guarantee for performance of obligations shall be the law of the country where the immovable property is located.

- If the applied law selected by contracting parties in a labour contract or a consumer contract affects adversely minimum interests of employees or consumers as prescribed in the law of Vietnam, the law of Vietnam shall prevail.

Article 41 of Private international law of China also stipulates: Parties may agree on the choice of applicable law to the contract, and in case there is no such agreement, the law of the country where the party who demands for performance of the major activities of the contract resides, or any other law that the contract closely associates shall be applied. Civil Code 2015 has clear and specific regulation in case parties cannot select applicable laws.

However, some aspects of applicable law are not clearly regulated in cases where parties have an agreement on dispute settlement in general and civil contract involving foreign elements in particular. Whether the applicable law selected by disputing parties can be applied to separate parts of the contract or not remains unregulated. Clause 1, Article 683 of Civil Code 2015 does not clearly identify whether the scope of application of the selected law to the contract is for the whole contract or part of the contract. This content is almost not mentioned in Civil Code 2015 and other related specialized laws.

Civil Code 2015 remains silent or, put it another way, lacks regulations on the formality, timing, and validity of the agreement on choice of applicable law for civil contract involving foreign elements.

Regarding formality, the agreement must be in writing, or could be formed by behaviour, or even “implied”. There is an opinion that “Agreement on choice of applicable law must be in writing or a Clause in the contract. In case the agreement on choice of applicable law fails to satisfy formality requirement, it shall be deemed invalid” [6].

In our opinion, this requirement is unjustified and too rigid. In the current trend of expanding

the freedom to choose law, one should not restrict this freedom by a regulation on formality. Important international conventions on applicable law to contractual obligations, as well as laws of other countries around the world, all express the freedom in formality of the agreement on choice of applicable law. Both Rome Convention on the law applicable to contractual obligation 1980 and Rome I Regulation accept expressed and implied agreement [7].

Private international law of China also lacks regulation on formality of agreement on choice of applicable law between parties, and Chinese Courts had judgments that applied the law selected by the parties. Chinese Courts accept an agreement in writing, by behaviour, and even “implied” between parties [8]. Therefore, there is a current trend in private international law around the world to accept the freedom in formality of agreement on choice of applicable law to contracts [8]. On the other hand, in our opinion, if we have strict regulations on this type of agreement, and do not accept “implied” agreement, it will be against common practices of Vietnamese Courts and current Arbitration [9].

From the analysis above, it can be seen that recognizing the freedom of agreement on choice of applicable law to contracts, even “implied” agreements, are suitable with international practices as well as practices in Vietnam. From both theoretical and practical analyses, we think that there should be regulation on the formality of agreement on choice of applicable law to contracts with foreign elements that Vietnamese laws regulates that parties may have agreement on choice of applicable law with the freedom of expression of parties, even if it is “implied”.

Besides, the timing of agreement on choice of applicable law is not clearly stipulated in Civil Code 2015. Noticeably, on this matter, both Clause 2, Article 3 of the Rome Convention and Clause 2, Article 3 of Rome I Regulation recognize that: “The parties may at any time agree to subject the contract to a law other than that which previously governed it. Any change in the law to be applied

that is made after the conclusion of the contract shall not prejudice its formal validity or adversely affect the rights of third parties”. Scholars in Vietnam all agree on the opinion that regulation on this matter should follow the same direction as in the Rome Convention and Rome I Regulation mentioned above. It means that parties can have an agreement on choice of applicable law at any time and can change this agreement without affecting the validity on formality of the contract or adversely affect the rights of third parties [10, 11]. In our opinion, apart from two factors, which are the legality of the contract and adversely affect the rights of third parties, it seems that we should notice another issue in which the change of the choice of applicable law of parties can not affect the validity of the contract.

Therefore, it should be regulated that parties may have agreement on choice of applicable law to the contract at any time and can change this agreement without prejudice to the legality or validity of the contract or adversely affect rights of third parties. Noticeably, the formality of the change of agreement on choice of applicable law should be regulated with the freedom of formality. This is suitable with practices of Vietnamese Courts and Arbitrations; that is, when the Courts or Arbitrations apply law other than which has been selected by the parties, but the parties raise no objection, then it could be deemed change of agreement on choice of applicable law in an implied manner.

Three, compensation for non-contractual damage.

Civil Code 2015 also allows parties to select applicable law for non-contractual damage relationship. Article 687 of Civil Code 2015 stipulates that: *“Contracting parties may agree to select the law applied to the compensation for non-contractual damage, except for the case prescribed in Clause 2 of this Article. In case there is no such agreement, the law of the country where the consequences of such acts arise shall prevail”*.

Therefore, Article 687 of Civil Code 2015 allows parties to have agreement on choice of applicable

law for compensation for non-contractual damage but “in case the party causing damage and the aggrieved party, being for natural persons having residence, or for juridical person having place of establishment, are in the same country, the law of such country shall prevail”. Thus, parties cannot have agreement on choice of applicable law in this case.

Article 44 of Private International Law of China stipulates that compensation for non-contractual damage is governed by the law of the country where the behaviour which causes the damage occurs. In case parties reside in the same country, the law of the country of common residence shall prevail. After the occurrence of the behaviour causing damage, parties have agreement on choice of applicable law then the law applied is the law of the country selected by the parties.

Regulation in Article 687 of Civil Code 2015 bears some similar characteristics with regulation of Chinese law. However, while Chinese law stipulates clearly when parties can have agreement on choice of applicable law for compensation for non-contractual damage which is after the occurrence of the behaviour causing damage, Vietnamese law is silent on this matter.

However, Civil Code 2015 has no regulation on formality and timing of agreements on choice of applicable law. About the formality of the agreement, due to the nature of the relationship of compensation for non-contractual damage, there has been no prior agreement between the parties, therefore, it would be justified and unified if there is freedom in formality of agreement on choice of applicable law in this case. For the timing of the agreement, Article 101 of Private International Law of Belgium stipulates that *“parties can select, following the occurrence of dispute, applicable law for obligation arising from the behaviour which causes damage”*. Similarly, Article 44 of Private International Law of China stipulates that *“in case parties selected applicable law, following the occurrence of illegal acts, the agreement shall be applied”*. Regulation (Règlement) 864/2007 in

2007 of the European Union stipulates in Clause 1 Article 14 that parties can select applicable law to obligation arising from non-contractual relationship with an agreement, following the occurrence of the damage [12]. Therefore, there is a trend in legislation of many countries around the world that only agreement on choice of applicable law following the occurrence of the damage is accepted. Vietnamese scholars also support this opinion [6]. Besides, we think that parties can change their agreement on choice of applicable law at any time, even during the litigation process, and this change also allows freedom in formality.

Four, for performance of acts without authorization.

Article 686 of Civil Code 2015 stipulates: “Contracting parties may agree to select the law applied to the compensation for non-contractual damage. In case there is no such agreement, the law of the country where the acts without authorization are performed shall prevail”. This is a new regulation that shows the advance of private international law in Vietnam by recognizing freedom of will of parties in civil relationship involving foreign elements and not bearing its imposing nature [6].

Article 47 of Private International Law of China stipulates that obligation arising from illegal gain therefrom, and performance of acts without authorization are governed by law selected by the parties. In case there is no such agreement, the law of the country of common residence shall prevail; in case there is no common residence, the applicable law is the law of the country where the illegal gain therefrom and performance of acts without authorization occur.

However, we could not find any regulation of Civil Code 2015 stipulating formality and timing of agreements on choice of applicable law. Like compensation for non-contractual damage, for this relationship, we think that agreement on choice of law following the performance of the acts should be allowed with freedom of formality.

Second, in case there is no agreement on choice of applicable law:

In case the parties of civil disputes involving foreign elements are not allowed to select applicable law or in case there is no agreement of choice of applicable law of parties, the applicable law is the law that conflict of law provisions refer to.

For contractual relationship, Article 683 of Civil Code 2015 stipulates that the law applied is the law of the country has the closest association with the contract. Accordingly, Clause 2, Article 683 lists the law of country that has the closest association, however, such regulation technique is non-exhaustive and, like other listing technique, it would be difficult for parties when their situation does not fall into any listed categories that the law foresees. This means for un-listed contracts, the law of the country which has the closest association is the law of which country, it is difficult to identify, especially for mixed-type contracts [13].

For other civil relationships, the law referred to could be international conventions, law of another country, international customary, etc. Vietnamese law also has specific regulations relating to the scope of reference in Article 558 of Civil Code 2015.

Besides, in case a law of another country is applied based on agreement of the parties or referred to by conflict of laws, Article 670 of Civil Code 2015 stipulates that law of another country shall only be applied if satisfying a condition that the consequence of application of the law of that country is not contrary with fundamental principles of Vietnamese law. This is an important condition to protect fundamental principles of the nation of the court without being influenced by the law of other country. However, this regulation still conflicts with regulations in other legal normative documents of Vietnam. Specifically, Clause 2, Article 5 of the Commercial Law 2005 stipulates: "Parties to commercial transactions involving foreign elements may agree to apply foreign laws or international commercial practices if such foreign laws or international commercial practices

are not contrary to the fundamental principles of the Vietnamese law"; or Clause 3, Article 5 of the Maritime Code 2015 stipulates: "foreign law can be applied in Vietnam to contractual relationship relating to maritime activities, if such law is not contrary to fundamental principles of Vietnamese law". The articles cited above show that the conditions to apply foreign laws can be regulated under different forms and in different legal normative documents. In Civil Code 2015, the condition that is recognized is the consequence of application of foreign laws is not to contrary with fundamental principles of Vietnamese law, but in other specialized legal normative documents regulate that foreign law can only be applied in case the contents of foreign law are not contrary to fundamental principles of Vietnamese law. The current inconsistency shall cause different interpretations and applications in practice in case the Courts apply foreign laws. Therefore, this is a shortcoming in legislation technique on this matter.

Besides, the definition of "fundamental principles of Vietnamese law" is not recognized in previous regulations. Currently, there are no legal normative documents that officially interpret what are the fundamental principles of Vietnamese law. Therefore, there should be guidance to explain this definition so that the Courts can systematically apply them in practice and avoid any discretion when settling the cases.

Therefore, the regulations of specialized legal normative documents in cases of not applying foreign law in accordance with Civil Code 2015 should be amended "foreign law shall not be applied in case the consequences of the application of foreign laws are contrary to fundamental principles of Vietnamese law".

4. Conclusions

It can be seen that the laws on the mechanism for settlement of civil cases involving foreign elements at Vietnamese Courts have gone through a long development process and have obtained significant progress in solving conflict of jurisdiction of national Courts and applicable laws. With the rapid development of civil relationships

involving foreign elements and to ensure national interests, public interests, legitimate rights, and interests of the citizens, as well as to create a safe, stable, and effective legal framework, the laws need to be completed to settle civil cases involving foreign elements, to develop a good mechanism for settling disputes, and to meet the demands of the integration process.

Therefore, Vietnamese laws on the settlement of civil disputes involving foreign elements need to be amended and supplemented in order to:

First, amend regulations on jurisdiction of the courts in Civil Procedure Code 2015:

One, amend point a), Clause 1, Article 469 in the direction that Vietnamese courts have jurisdiction to civil cases involving foreign elements in cases: The defendant is individual who has residence in Vietnam or the defendant is an individual who has a long-term residence in Vietnam.

Two, amend the regulation at point c), Clause 1, Article 469 in the direction that Vietnamese courts shall have jurisdiction to settle civil cases involving foreign elements when “the defendant has properties in the territory of Vietnam and the value of the properties are equal (or equivalent to) the value of the dispute” or Vietnamese courts shall have jurisdiction to settle civil cases involving foreign elements when the case has territorial connection with Vietnam (and take the criteria on defendant’s properties, place of execution of the contract, place of conclusion of the contract, etc., as criteria to identify jurisdiction).

Three, supplement the regulation at point b), Clause 1, Article 470 of Civil Procedure Code 2015 as: “Divorce case between Vietnamese citizen and foreign citizen or person with no nationality, if the marriage is registered at Vietnamese competent authority and both spouses reside, work, live in Vietnam and have no dispute on property abroad”.

Four, in the case of choosing the Court, there needs to be specific regulation on the formality of choice of court agreement between the parties. In our opinion, the agreement on choice of court to settle civil disputes involving foreign elements

must be made in writing or by other formality having equivalent legal validity. There needs to be restrictions on the effectiveness of agreement on choice of court in employment contracts and consumer contracts in the direction that employees and consumers can initiate cases against employers and traders to the court of the country other than the court selected in the contract except for the case that the consumers or employees cite the agreement or imitate the case at the court selected in the contract.

Five, Clause 1, Article 470 on exclusive jurisdiction of Vietnamese court also needs to have new point, which is “...d. Disputes relating to intellectual property rights which are registered in Vietnam such as patent, certificate of trademark registration, etc”.

“Civil cases between foreign investor and competent authority relating to investment activities, business in the territory of Vietnam” is necessary, unified among legal normative instruments, creating favourable conditions in application of laws to settle disputes involving foreign elements.

Second, on applicable laws to settle civil disputes involving foreign elements:

One, in the trend of extending the freedom to choose the law currently, we should not restrict the freedom of agreement by certain regulation on formality. Therefore, an agreement on choice of law for civil relations involving foreign elements needs to be allowed in Article 678, Article 683, Article 686, and Article 687 of Civil Code 2015 in the direction that, except when the parties have agreement, and in case of not having agreement, other formality of the agreement on choice of law should be accepted even if there is an “implicit” agreement.

On the timing of an agreement on choice of law, it should be in the direction that parties can have an agreement on choice of law to govern their contractual relationship at any time and can change this agreement, but this does not affect the validity or effectiveness of the contract or have adverse impacts on rights of the third party.

Two, we recommend to amend regulations of specialized legal instruments in the case of not applying foreign laws such as Clause 3, Article 5 of the Marine Code 2015 and Clause 2, Article 5 of Commercial Law 2005, etc., in the direction that they are unified with Civil Code 2015: “shall not apply foreign laws if consequences of the application of foreign laws are contrary to fundamental principles of Vietnamese laws”.

CRedit author statement

Thi Huong Vu: Conceptualisation, Methodology, Writing and Editing; Thi Dien Do: Conceptualisation, Writing, Reviewing and Editing.

COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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Scientists' motivation to patent and commercialise their inventions at universities and research institutes

Huu Can Nguyen*

Vietnam Intellectual Property Research Institute, 39 Tran Hung Dao Street, Hang Bai Ward, Hoan Kiem District, Hanoi, Vietnam

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Abstract:

Inventions and patented technologies have recently been a more important contributing factor of economic growth in Vietnam. However, statistics showed that the number of patent applications from universities reached its highest level of about 160 applications, with about 110 applications from research institutes (in the year 2020). This number is still much lower than that of individual and enterprise applicants (about 340 applications from individuals and 390 applications from enterprises in 2020). Self-determination theory (SDT) and a literature review suggests that scientists' motivation to patent and commercialize their inventions is effort expended by a variety of intrinsic and extrinsic reasons. Based on qualitative analysis results, we found explorative evidence that both intrinsic reasons belonging to the scientists themselves and extrinsic ones arising from the environment of the scientists' inventive activities are positively associated with the scientists' motivation. Therefore, to implement the Intellectual Property Strategy to 2030, policymakers need to consider a variety of factors including not only extrinsic rewards, but also personal and social aspects related to intrinsic desires.

Keywords: commercialize, motivation, patent, scientist, self-determination.

Classification number: 7

1. Introduction

Universities and research institutes (hereinafter referred to as "academic organizations") are considered to have a key role in creating and developing knowledge for society [1]. Patent protection, the fruit of innovative and inventive activities, is regarded as an important factor in promoting technology transfer from academic organizations to private sectors and industry [2], as well as innovative start-ups [3]. For academic organizations, one of the most important goals of patenting and commercializing scientists' inventions is to encourage inventive activity and to recoup investment costs for reinvesting in research and development [4]. Thereby more inventions are created, while technology dissemination is promoted, and inventions increasingly contribute more positively to economic growth in many

countries and regions around the world [5]. In Vietnam, according to D.D. Luong, et al. (2017) [6], the total value of patent licensing of Ho Chi Minh city University of Technology alone was over 90 billion VND in 2012. The revenue from transferring research outputs of regional universities such as Bach Khoa, Da Nang, etc., to production facilities in the Central, Central Highlands, and Mekong river delta is about 20 billion VND/year, which contributes to bringing a great source of revenue for those academic organizations as well as local economic growth.

In general, scientists in academic organizations carry out the tasks of education, research, and development. Despite their importance as inventors, the scientists' motivations and inventive activities have been relatively neglected study topics. There have been a few studies that focus on

*Email: nhatviet00@gmail.com

the roles of individual inventors in the academic organizations and explore why academic scientists file patent applications and commercialize their patents. In Vietnam, there is little literature on this topic and that demands more clarification of the reasons for the motivation to patent and commercialize scientists' inventions to implement the Intellectual Property Strategy to 2030.

2. Self-determination theory framework

SDT introduced by E.L. Deci, et al. (2000) [7], R.M. Ryan, et al. (2000) [8], M. Gagne, et al. (2005) [9] provides some useful insights on the multidimensional nature of human motivation, especially within the framework of inventive activities and intellectual property. In this theory, motivation is considered as the outcome of the interaction between external regulatory processes and individual internal psychological needs for autonomy. It is supposed that scientists are motivated to act when believing that the activity will lead to desired results; the theory not only differentiates the content of outcomes and regulatory processes but also places emphasis on self-determination behaviour in the motivational process, which is particularly commensurate with scientists who enjoy considerable self-control in their work. In SDT, there are three main states: intrinsic motivation, which refers to doing something for its inherent joy or satisfaction; extrinsic motivation, which refers to doing something for a separable outcome or external reward; and finally, a motivation, which means not having any intention to act because of lacking interest in the activity [10]. Based on these concepts, SDT suggests that a scientist's motivation can range from a motivation, which is wholly lacking in autonomy to intrinsic motivation, which is a typical self-determined behaviour stemming from an individual's spontaneous interest rather than driven by external reasons. The degree of self-determination in the extrinsic motivation can range from fully externally regulated behaviour to a fully internally integrated one which approximates the intrinsic motivation. Based on SDT, T.M. Amabile, et al. (1994) [11]

argued that some highly self-determined individuals (e.g., creative scientists) may be both strongly intrinsically interested in the activity and extrinsically motivated to acquire rewards such as prestige, promotion, and salary for that activity.

3. Reasons for patenting and commercializing scientists' inventions

Patenting is theoretically considered as a mechanism to privatize technical information by excluding others to acquire monopoly rights to commercially use the inventions. Scholars around the world have identified various reasons to file patent applications in academic organizations. In this paper, the analysis of reasons for patenting and commercializing scientists' inventions builds on theories of motivation in social psychology, namely, SDT. Based on these theories, the above-mentioned reasons include intrinsic and extrinsic factors affecting the motivation in which intrinsic ones have long been recognized by scholars as a pervasive and powerful driver of scientists' motivation (Fig. 1). Firstly, these studies suggest that scientists have the desire to expend their effort to benefit others and their community during their activities, which is regarded as *prosocial* reasons, a specific form of intrinsic factors [12]. Moreover, S. Lindenberg (2001) [13] suggested that *having fun or the joy of achievement* is the other important enjoyment-based intrinsic reason. This reason underpinning inventive behaviour is a longstanding idea [14, 15]. Creative scientists are motivated to get their patents because of puzzle-solving nature of patented inventions, i.e., the scientists have successfully "solved the long-existed challenging technical problems", that make them satisfied. In addition to those intrinsic reasons, the prevention of imitation, blocking, securing the freedom to operate, signalling and generating licensing opportunities are considered as the most important extrinsic reasons [16, 17]. One of the most prevalent reasons for filing patent applications is the *prevention of imitation of inventions* [18], which is the reason for the existence of the patent system because patents

reward inventors for disclosing the invention with the exclusive legal right to exclude others from using it [19, 20]. Using patents to “block competitors”, or patent fencing, is another important reason for patenting. Scientists often seek patents for their inventions that may not be incorporated into their products or processes, and such patents can be used as tools to prevent competitors from exploiting substitute technologies [21, 22]. The other reason for filing patent applications is to secure ‘freedom to operate’ [23], which is defined as the right to exploit the invention in advance [24]. Since patent applications are published 18 months after the filing date, publication makes the applied invention prior art and prevents any third party from patenting the same invention and reduces the risk of being excluded by third parties from using their own inventions [25]. Sending signals to investors, potential cooperative partners, and customers is another use of patenting. Since patents contain important technical information on inventions, they inform the public about the technological quality and the inventive step of the inventions, and premium profits might be attainable as the patents offer the possibility to build an economic monopoly. *Generating revenues from licensing* is a final reason for patenting [26]. Out-licensing can be a profitable option for academic organizations due to their lack of the demanded resources and supplementary assets required to manufacture and sell products based on new inventions [27]. Licensing is also attractive for academic organizations whose core activities are research and development rather than manufacturing or production.

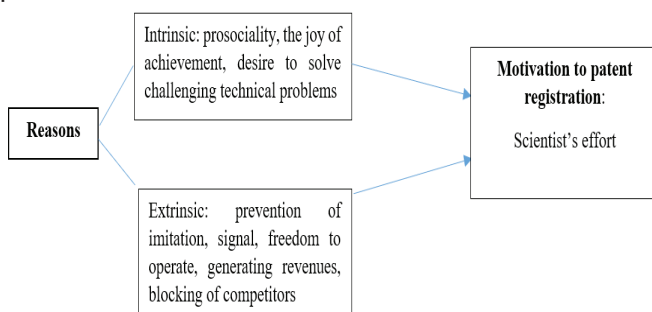


Fig. 1. Reasons for scientists’ motivation to patenting.

Due to the tasks of academic scientists, the important mechanism in which their technologies contribute to economic growth is mainly by transforming patented inventions into innovation through licensing their research outputs. In this paper, our discussion on commercializing patents is focused on licensing activity, including spin-offs, because this relates directly to the transfer of technical knowledge for commercial use. In their commercial pursuits, scientists may be motivated by a variety of intrinsic and extrinsic reasons (Fig. 2). Firstly, B.T. Eiduson (1962) [28] and S. Cotgrove (1970) [29] suggested that *the desire to engage in solving challenging technical problems* is the hallmark of a dedicated scientist who is intrinsically motivated to solve long existing technical problems and who derives joyful satisfaction from engaging in solving challenges and inventive activities. This view suggests that the reason why a scientist’s pursuit of creativity and knowledge could take place in the context of technology application and the exploitation of patented inventions. Some extrinsic reasons for scientists’ motivation to commercialize their inventions are *the recognition and prestige* bestowed by their professional peers and other rewards such as promotion and salary, which usually originate from the degree of recognition achieved [30, 31]. J. Owen-Smith (2003) [32] pointed out that academic organizations can use patents as an alternative tool for obtaining more invested resources beyond traditional rewards. Some scientists are prompted to use commercial activities as a means to further their academic careers because of the increasing reputational returns associated with commercialization success [33]. In addition to personal pecuniary gain, L. Alice (2011) [34] argued that scientists have opportunities to reap financial rewards from commercial activities based on the existence of

an entrepreneurial context. Scholars have agreed that access to financial resources, i.e., research funding, is also critical for scientists and this need is another extrinsic reason for scientists' motivation to commercialize their inventions, e.g., during the course of seeking more resources for continued research that convert early stage inventions into marketable products or processes.

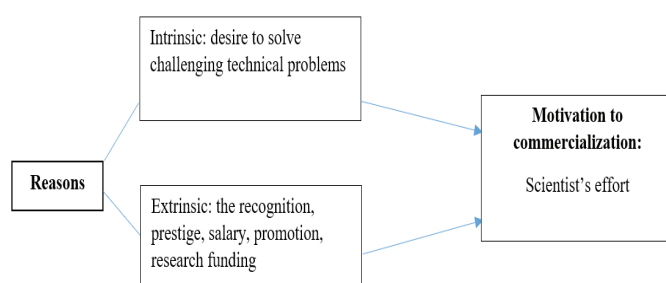


Fig. 2. Reasons for scientists' motivation to commercializing patents.

Intrinsic and extrinsic motivation for patenting and commercializing patented inventions can co-exist and motivate scientists to different degrees in their effort to file patent applications and commercialize their patented inventions. In the context of academic organizations, scientists can choose whether to engage with filing patent applications or commercializing their patents according to the degree of autonomy and their beliefs about the potential values and benefits of such activities. Therefore, these engagements can be either autonomous or controlled activities depending on how far scientists have internalized values associated with them. The process in which scientists identify with the behaviour for their self-selected values is similar to the identification process mentioned in SDT [8] and may be activated by intrinsic and extrinsic motivation in patenting and commercializing patented inventions.

Based on SDT, some researchers in the field of creativity, motivation, and inventive activities, e.g.,

A.M. Grant, et al. (2011) [35], defined motivation as the desire to expend effort based on interest of the activity itself or outcomes external to the activity, such as recognition, welfare of other people, or rewards. Therefore, in this article, the scientists' motivation is measured finally by their effort. In the context of both academic and entrepreneurial studies, A.M. Grant (2008) [12] suggested that scientists, like other professionals, have the desire to expend effort to benefit others and community. Within the motivation mechanism, scientists' desires play a role as reasons that stimulate and sustain effort made by scientists, and that effort denotes their motivation.

4. Some insights on Vietnamese scientists' motivation in academic organizations

In this paper, the qualitative method is applied to explore reasons affecting scientists' motivation in patenting and commercializing their inventions in academic organizations. In particular, the author conducted in-depth interviews based on questions designed to explore the experiences of these scientists. Among those questions, the question "what are reasons for encouraging the scientist to file a patent application?" and "what are reasons for encouraging the scientist to commercialize his/her invention?" are the most important open-ended questions. The in-depth interviews include five researchers specializing in research and/or management in the field of patents at large academic organizations such as the Foreign Trade University, Vietnam National University, Hanoi, the Department of Science and Technology of Thua Thien Hue, Vietnam National University, Ho Chi Minh city, and the National Institute of Patent and Technology Exploitation. According to the results of the qualitative analysis, in Vietnam, the reasons that directly influence the motivation to patent and commercialize scientists' inventions in academic organizations are also divided

into intrinsic and extrinsic groups as suggested by R.M. Ryan (1995) [10]. While the intrinsic reasons belong to the scientists themselves, such as prosociality, the joy of achievement, desire to solve challenging technical problems, or extrinsic reasons arising from the environment for scientists' inventive activities such as prevention of imitation, signalling, freedom to operate, generating revenues, blocking competitors from patenting, and rewards like recognition, prestige, salary, promotion, or research funding (for commercializing). This result is also consistent with the SDT theory introduced by E.L. Deci, et al. (2000) [7], R.M. Ryan, et al. (2000) [8], and M. Gagne, et al. (2005) [9] in which intrinsic reasons such as desire to engage in solving challenging technical problems has long been recognized by these scholars as a powerful driver of scientists' motivation. A mix of these reasons play a very important role in encouraging scientists to file patent applications and commercialize their patented inventions. Of these reasons, extrinsic reasons seem to play a more important role than intrinsic reasons, especially "generating revenues" for patenting and "research funding" for commercializing. These findings are similar to the argument of T.M. Amabile, et al. (1994) [11] that highly self-determined scientists may be extrinsically motivated to acquire rewards such as pecuniary or financial incentives for their patents. The reply of a researcher from the Foreign Trade University to the question of what drove scientists to file patent applications is illustrative: "... researchers are less interested in filing patent applications because they think the invention is not in their possession. Even if a researcher can apply for patent protection and is able to receive remuneration from exploiting the invention, the possibility of such remuneration is not clear... many researchers are sceptical about their rights and their own interests...". It is inferred that, for scientists, the lack of financial resources such as

revenue generated from inventions, salary, research funding, etc., seems to be a factor hindering the motivation to apply for patents. The following quote by a researcher of Vietnam National University, Hanoi is indicative: "Inventions which are created with the fundings of the academic organizations personally registered by the scientist who is the inventor and individually commercialized by him or her. It is very difficult for the organizations to control this undue situation. The rights and responsibilities of scientists for inventions created by the state budget or organizations' fundings have not been clearly and adequately defined".

Our evidence based on these deep interviews also suggests that prosociality, which is a very important reason for patenting, may affect the extent to which patented inventions are commercialized and improve the university-industry collaboration of inventive and innovative activities. The majority of those interviewed believed in positive social benefits of the patented inventions based on a desire to help others and this prosocial behaviour can make the relationship between academic organizations and industrial enterprises closer and as an extension of the inventive activities. Without this factor, the patenting seems to be hindered because of lacking customer and market satisfaction. The following quote by a manager of the Department of Science and Technology of Thua Thien Hue is suggestive: *"Due to the fact that the research outputs are not applicable and not commercially viable, so the scientist in charge of registering patents is not interested in filing patent applications for these results"*. To these scientists, patent commercialization represents a kind of technical solving activity that benefit a community or society. The following interview quote vividly expresses this issue experienced by a manager of Vietnam National University, Ho Chi Minh city: "There should be a mechanism to allow universities and research institutes to hire a third

party specializing in negotiating and licensing inventions to enterprises in order to enhance commercialization activities. There is the fact that scientists generate their inventions but enterprises do not need them and adversely, technical solutions that enterprises need cannot reach those scientists”.

In the specific context in Vietnamese academic organizations, based on a sample of 153 scientists working at the Vietnam Academy of Science and Technology (VAST), V.T. Nguyen, et al. (2018) [36] finds that international publications are determined as the result of research funding, which have become more attractive to scientists regarding both financial and reputation perspectives. These findings are similar to comments of a researcher of the National Institute of Patent and Technology Exploitation: “... the reason for limiting the number of patent applications at research institutes, universities... that it is easier to publish international articles than to have inventions patented... the fundings for publishing international articles is much more... the time to complete the article is faster... the international articles are given priority in considering the scientists’ academic rank over the inventions”. These findings suggest that the recognition, prestige, and promotion, which are extrinsic reasons not only associated with the scientists’ motivation to commercialize their inventions but also to patenting. Based on a survey that was conducted using stratified random sampling from 255 scientists from academic organizations, and the structural equation modelling was employed to estimate the correlations. D.C. Doanh, et al. (2021) [37] argued that regulatory support, such as government assistance for scientists with commercializing their inventions, was not found to have a direct role in shaping intention to commercialize the scientists’ inventions.

5. Discussion and implications for practice

Inventions and patented technologies have recently been a more important contributing factor of economic growth in Vietnam. However, statistics showed that the number of patent applications from universities reached its highest level of about 160 applications, with about 110 applications from research institutes (in the year 2020). This number is still much lower than that of individual and enterprise applicants (about 340 applications from individuals and 390 applications from enterprises in 2020). In the Intellectual Property Strategy to 2030, it is supposed that the rate of inventions commercialized is also quite low, about 5% of patents, but needs to be increased by 8-10%. This current situation reveals that scientists’ motivation to patent and commercialize their patents have not been sufficiently encouraged due to lack of consistent policies.

Drawing on the motivation theory in social psychology (i.e., STD) as well as literature review and qualitative analysis, this paper offers important insights into the diverse reasons driving motivation to patent and commercialize patented inventions of scientists in academic organizations. In Vietnam, we found that both the intrinsic and extrinsic reasons directly influence the scientists’ motivation in patenting and commercializing their inventions in academic organizations. The intrinsic reasons include prosociality, the joy of achievement, desire to solve challenging technical problems, while the extrinsic reasons include prevention of imitation, signalling, freedom to operate, revenues generation, blocking competitors (from patenting), and rewards like recognition, prestige, salary, promotion, and research funding (for commercializing). Beyond the extrinsic reasons such as pecuniary or financial rewards, this paper highlights the role of intrinsic reasons, especially prosociality and the desire to solve challenging technical problems, in driving

the patenting and commercializing endeavours of those scientists. This is because intrinsic reasons have long been recognized by social psychologists as factors influencing inventive activities but are neglected in many of the existing studies on scientists' motivation. The prosocial reason plays an important role in encouraging scientists to file patent applications. In addition, some authors argue that for those scientists, patenting and commercializing engagement represents a kind of puzzle that satisfies their desire for solving technical challenges and pursuing inventive activities. Based on these arguments, policy makers need to consider a variety of factors including not only extrinsic rewards, but also personal and social aspects related to intrinsic desires.

Based on qualitative analysis, we contribute the following initial explorative findings to this context and some discussions. Firstly, we recognize that weak university-industry collaboration is one of the most typical and common features of academic organizations in Vietnam. This limitation seems to be due to the lack of entrepreneurship among scientists as well as the focus on prosocial-related aspects when defining and solving the technical problems of the inventions leading to obstacles to patenting and negative affection of the scientists' motivation to file the patent application and commercialize their patented inventions. The more useful the invention is, i.e., the invention satisfies a need of the market and industries, the more likely it is to be successfully commercialized and benefit scientists. Conversely, many inventions that are created but are not useful or commercially viable will not contribute to economic growth or increase social benefits. Therefore, in view of public policy, in order to further motivate scientists so that more new and useful inventions are generated and patented, policy makers need to focus on prosociality of inventive activities. Apart from taking a much

account to education of students' creative capacity, the current policies in education, especially in the fields of technology and technical sciences, should be improved to form a perspective of taking and benefiting the community when students come to solve technical problems. Simultaneously, to explore and identify existing technical problems, practical activities in the curricula of education may allocate sufficient time for students' social experience and an essential goal of the practice should be based on finding relevant solutions benefiting the community. Secondly, we also find that, in academic organizations, financial benefit is a particularly important factor in encouraging scientists to file patent applications and commercialize their patented inventions, however, in practice this has not been paid sufficient attention by these organizations. From a policy perspective, scientists need to be guaranteed adequate financial benefit, which is commensurate with the commercial value of their inventions through the regulations on transparently allocating that benefit between the organizations and its scientists. We also argue that it is necessary to have a policy on harmonizing materials and benefits for scientists in the case of international publications and patents, according to which in addition to the benefit of being honoured and promoted in academic rankings similar to the international publications, a scientist with commercialized patents also enjoys regular income from the commercialization of their inventions. Thirdly, our analysis draws attention to an improvement of internal capacity of patented technology commercialization in academic organizations by development of their own technology transfer offices (TTOs). While the public financial resources supporting scientists need to be reallocated with a view to intensifying a firm's budget, there is the fact that TTOs may be relatively poor sellers of patented inventions. TTOs need to prioritize building a patent licensing system

that engages closely with enterprises to increase the applicability and marketability of patented inventions as well as scientists' opportunities, capacities, and rewards. TTOs could enhance patent licensing outcomes by paying attention to the mix of reasons for motivating scientists in patenting and commercializing patented inventions rather than to the technologies or inventions themselves. Focusing on those reasons can lead to early collaboration with industry on research design and invention development as well as consideration of marketability and applicability of inventions as an essential part of inventive activities.

COMPETING INTERESTS

The author declares that there is no conflict of interest regarding the publication of this article.

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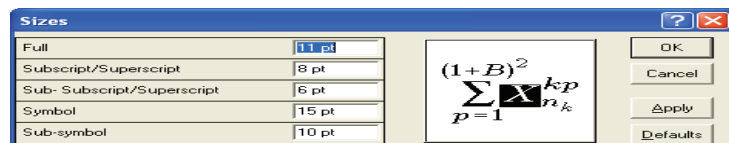


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