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REVIEW

Study on Strengthening Supervision of the Third-party Laboratory by Suzhou Municipal Government

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ABSTRACT

As public service testing structure of testing products, the quality of product testing report issued by the third-party laboratory has a great impact on the healthy development of market economy. In the face of the new situation of rapid economic development, the third-party laboratory develops rapidly, but the government supervision is not in place, which restricts the healthy and orderly development of the third-party laboratory. Therefore, it is very necessary to study how the government effectively supervises the third-party laboratory. This paper takes Suzhou as an example. On the basis of in-depth investigation, using the theory of service government, this paper analyzes the current situation of Suzhou municipal government's supervision of third-party laboratories, and probes into the problems existing in the supervision and management system, the supervision is not comprehensive, and the independence of the supervision team is not strong. Based on the advanced experience of foreign countries in supervising the third-party laboratory, this paper puts forward some countermeasures and suggestions to promote the Suzhou municipal government to strengthen the supervision of the third-party laboratory from the aspects of improving the implementation rules of laws and regulations, increasing the investment, strengthening the equipment update and team building, increasing the punishment for violations of laws and regulations, and giving full play to the masses and industry supervision.

1. Introduction

With the rapid development of China's economy and society, people's living standards are increasing, and people put forward higher requirements for product quality. The third-party laboratory, independent of the impartial and authoritative commodity testing institution, emerged. This is conducive to improving the level of product detection, improving the quality of goods, providing a strong service platform and support for the transformation and upgrading of industry, and helping the government get rid of the "Trust

Crisis". In order to standardize the development of the third-party laboratory, the Metrology Law of the People's Republic of China was adopted at the 12th meeting of the Standing Committee of the Sixth National People's Congress on September 6th, 1985, but it has been developing slowly. Until the end of 1990s, the inspection and testing industry was officially open to the market, and the third-party laboratory grew rapidly. By the end of 2018, 9365 third-party laboratories approved by CNAS have been approved in China, and the operating income of the inspection and testing industry has reached 28.05 billion yuan. Over the

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past 20 years, the third-party laboratory has experienced the development from small to large, from weak to strong. The quantity and turnover are rising rapidly at a rate of more than 15% per year. It is expected that the next five years will still develop at a compound growth rate of 16.24%.

It should be noted that due to the complex structure of the main body of the third-party laboratory, involving a wide range of industries, high technical requirements, its rapid development at the same time, there are uneven quality of the team, different quality of testing equipment, different levels of testing standards, and even a small number of units issued false reports. It is urgent for the government to strengthen supervision, promote the standardized service of the third-party laboratory, and improve the health of the third-party laboratory orderly development. At present, there are still many problems in the government supervision, such as the multi supervision subject, the ineffective implementation of supervision policies, the weak supervision force, and the inadequate supervision work, resulting in many problems in the supervision process of the third-party laboratory. In order to strengthen the effective supervision, the state has issued a series of standards and regulations, which provide the basis for the government and relevant public organizations to supervise the third-party laboratory. Therefore, the relevant government departments and public organizations need to strengthen the research on how to effectively enforce the law, strengthen the supervision of the third-party laboratory and improve the service quality^[1].

Suzhou is located in the forefront of reform and opening up, and its economy is very developed. By the end of 2018, there were 609 inspection and testing institutions in Suzhou, with 689 CMA and CNAS certificates. Relatively speaking, the types of third-party laboratories are relatively complete. Based on the analysis of the current situation and existing problems of Suzhou municipal government's supervision of third-party laboratories by using public product supply theory, collaborative governance theory and other theories, this paper proposes to promote the effective supervision of third-party laboratories by Suzhou municipal government and improve the quality of third-party laboratories. The countermeasures and suggestions of its service also provide reference for other regions^[2].

2. Analysis on the Current Situation of the Third-party Laboratory Supervised by Suzhou Municipal Government

2.1 Development Status of the Third-party Laboratory in Suzhou

By the end of 2018, there were 609 third-party laboratories

in Suzhou, with 689 CMA and CNAS certificates. The total value of fixed assets of laboratory equipment and supporting devices was 8.469 billion yuan, the laboratory area was 1.0242 million square meters, 19983 employees, and 6.2418 million inspection and testing reports were issued. Among them, there are 81 inspection and testing institutions above Designated Size (with inspection and testing income of 10 million yuan or more or with more than 50 employees at the end of the year), accounting for 21.09% of the total number of third-party laboratories, and accounting for 77.62% of the total income of the institutions. Among them, there are 12 laboratories with a total income of more than 100 million yuan. Among the third-party laboratories, there are 214 small institutions with a total income of less than 5 million yuan, accounting for 55.73% of the total number of institutions, but the income only accounts for 4.86%. The total service revenue was about 6.154 billion yuan, an increase of 19.13% over 2017; it accounted for 2.19% of the total revenue of the third-party laboratories in China, accounting for 0.33% of Suzhou's GDP in 2018; the total profit was about 1.367 billion yuan, with an average profit margin of 22.21%. The service sector covers almost all sectors of Suzhou's national.

As a third-party laboratory in high-tech service industry, relevant research shows that there is a high correlation between its service income and equipment input. The equipment configuration of the third-party laboratory in Suzhou has proved this in recent three years. At the end of 2018, the original value of service equipment of 12 third-party laboratories with income of more than RMB 100 million is very high, and the equipment is advanced and complete in types. The total original value of equipment accounts for 47.71% of the total equipment value of the third party laboratory in Suzhou. The service income accounts for 42.22% of the total industry revenue. At the same time, the third-party laboratory industry is also a talented and technology intensive industry. Currently, 19983 employees engaged in the third-party laboratory in Suzhou are sorted out, including 56.51% of the undergraduate and above, and 26.97% of the middle and senior technical titles. In recent three years, the number of employees in the third-party laboratory industry has increased by the largest in 2017, reaching 35.83%, which has declined in 2018, mainly due to the fact that 13 qualification agencies and 29 national accreditation (CNAS) laboratories have not submitted survey statistics this year^[3].

2.2 Analysis of the Current Situation of the Third-party Laboratory Supervised by Suzhou Municipal Government

In view of the possible problems of the third-party

laboratory service, Suzhou municipal government has established a perfect supervision organization for the third party laboratory with clear division of labor. The municipal level is undertaken by Suzhou market supervision and Administration Bureau and Suzhou quality inspection and Certification Association. The supervision institutions of county-level cities and districts are managed and the third-party laboratories are monitored irregularly. Especially, serious problems arise the laboratory focuses on inspection, and the supervision agencies of county-level cities and districts are mainly responsible for the supervision of the daily work of the third-party laboratories.

In order to strengthen the supervision of the third-party laboratory, the state has issued a series of laws and regulations. As early as September 6, 1985, the 12th meeting of the Standing Committee of the Sixth National People's Congress passed the Metrology Law of the People's Republic of China, which was amended on October 26, 2018. On October 16, 2017, China National Certification and Accreditation Administration issued the certification and accreditation industry standard RB / T of the people's Republic of China On March 1, 2018, CNAS-CL01 accreditation criteria for testing and calibration laboratories (ISO / IEC 17025:2017) was issued by China National Accreditation Committee for conformity assessment; on March 20, 2019, Wang Yupu, Minister of the Ministry of emergency management of the people's Republic of China, issued the No.1 order of the Ministry of emergency management of the people's Republic of China management measures for safety evaluation, testing and inspection institutions. Suzhou municipal government and relevant public organizations conscientiously implement the national laws and regulations on the supervision of third-party laboratories, and strictly deal with illegal acts. At the same time, provide effective services for the third party laboratory. For example, the third-party laboratory should provide guidance for the application for qualification, encourage the voluntary application for the accreditation of the third-party laboratory and the accreditation of the laboratory qualification, the China conformity assessment and Accreditation Commission and the provincial market supervision and Administration Commission should entrust experts to carry out document audit and on-site audit, and issue CNAS and CMA qualification certificates. If problems are found in the supervision, the municipal and county level market supervision and Administration Bureau shall timely report to China conformity assessment and Accreditation Commission and provincial level market supervision and Administration Bureau. China conformity

assessment and Accreditation Commission and provincial market supervision and Administration Bureau follow up the seriousness of the problem, and give warning, suspension of qualification, cancellation of qualification and other penalties. The third party laboratory without CNAS and CMA qualification shall not carry out relevant experiments or issue test reports with certification ^[4].

Under the premise that the relevant departments and public organizations of the state conscientiously implement the national laws and regulations, the third-party Laboratory of Suzhou city shall be supervised and reviewed by the China Certification and Accreditation Commission and the provincial market supervision administration every 1-2 years, and participate in the ability verification organized by authoritative institutions and the supervision institutions of county-level cities and districts in the irregular "flight inspection" and regular requirements of the Suzhou market supervision administration Under the daily management, once problems are found, the third-party laboratory should be dealt with immediately to ensure the continuous and effective detection ability and quality control of the third-party laboratory, which also promotes the third-party laboratory to regularly test equipment for measurement calibration in time, and submit the measurement calibration certificate to China Certification and Accreditation Commission, provincial market supervision administration or Suzhou market supervision bureau Supervise the authority for inspection at any time. Of course, if a third-party laboratory encounters complaints or reports, Suzhou market supervision bureau will conduct a special audit on the third-party laboratory. Through a series of supervision, in recent years, Suzhou third-party laboratory has not had any major quality accidents. In recent years, the number and turnover of third-party laboratories in Suzhou have maintained a steady growth trend, the detection level has been continuously improved, and the competitiveness in the country has also been continuously enhanced ^[5].

3. Analysis of the Main Problems and Causes of Suzhou Municipal Government's Supervision of the Third-party Laboratory

3.1 Main Problems

(1) The Supervision and Management System Needs to Be Further Straightened Out

Although Suzhou municipal government stipulates that Suzhou and the market supervision and administration of each county (District) and Suzhou quality inspection and Certification Association are the third party laboratory

institutions, in the actual work process, different levels of government institutions supervise the third party laboratories, such as Jiangsu provincial market supervision and administration and Suzhou market supervision and Administration Bureau both supervise the third party laboratories in Suzhou. The Fang laboratory shall supervise. At the same time, due to the wide range of industries involved in the third-party laboratory, cross supervision will occur among different government departments. For example, Suzhou Environmental Protection Bureau and Safety Supervision Bureau often focus on the third-party laboratory of environmental testing, and the supervision content of the same third-party laboratory is basically the same, but they are carried out separately. To some extent, the repeated supervision has affected the normal operation of the third-party laboratory, increased its burden and affected the efficiency of the government. This requires the use of relevant supporting rules.

(2) Not Effective to Achieve Comprehensive Supervision

From the survey, Suzhou City has not yet achieved the supervision of the third-party laboratory. The supervision and law enforcement of some unqualified third-party laboratories are not effective. According to the laws and regulations, the unqualified illegal laboratory is unable to carry out the testing work and issue the testing report. But at present, according to incomplete statistics, there are more than 100 laboratories in Suzhou, or only registered in industry and commerce, without applying for any qualification, the China conformity assessment and Accreditation Commission and the provincial market supervision bureau can not supervise them according to the requirements of CNAS and CMA, that is, they do not have the testing qualification; or the third-party laboratory whose qualification has been cancelled can not be called the third-party laboratory in a strict sense. They're working in a third-party lab. These two types are not qualified for testing and should be banned according to law, but they are still engaged in testing work. What's more serious is the issue of very poor quality reports, or some even directly in accordance with the requirements of customers to issue false reports, which seriously interferes with the impartiality and reputation of the third-party laboratory, but at present there is no supervision. At the same time, the current part of the qualified private and foreign third-party laboratory supervision. Most of the private or foreign-funded third-party laboratories have CNAS and CMA qualifications. In the promotion, CNAS and CMA qualifications are vigorously promoted to improve their social reputation and attract customers. However, in practice, they do not fully comply with the requirements

of CNAS and CMA. In order to evade supervision, they all stamp CNAS and CMA in their reports. Because they are not stamped with CNAS and CMA, there is no way to supervise these reports. According to the survey, about 70% of the private or foreign-funded third-party laboratories have this kind of illegal phenomenon. In the long run, it will damage the market and reputation of the third-party laboratories in the city. Therefore, it is necessary to strengthen the supervision and punishment.

(3) The Independence of Supervision Team is Not Strong

At present, the supervision team of the third-party laboratory in Suzhou is basically composed of experts drawn from the state-owned or collective owned third-party laboratories, although the experts of the transferred units can not participate in the inspection of their own units and implement the avoidance system. However, they are mainly transferred from large testing institutions to get to know each other. In this way, when the government departments or public organizations supervise the third-party laboratories, the state-owned or collective third-party experiments are not only the subject of supervision, but also the object of supervision, and the objectivity and impartiality of supervision are not high. At the same time, it should be noted that the experts of the state-owned or collective third-party laboratories who are transferred to supervise the personnel of other third-party laboratories on behalf of the government are basically the internal audit experts of their own units. They supervise both other third-party laboratories and internal laboratories. As a result, these experts are not only "referees", but also "athletes". It is easy for them to have "black under the light" self-regulation, which leads to the lack of supervision. Therefore, it is very necessary to establish an independent supervision team.

3.2 Causes Analysis

(1) The Supervision System is Not Perfect

A sound and perfect supervision system is the basis and premise for the government to effectively supervise the third-party laboratory. Especially for the lack of supervision on the state-owned or collective owned third-party laboratories, and the lack of supervision on the laboratories that have not applied for qualification, or the laboratories that have applied for qualification but have not been approved or whose qualification has been revoked and are still engaged in testing work, we should improve the relevant supervision system, establish and improve the supervision system, and form a comprehensive supervision basis. Of course, due to the gap between the government's management performance

and the government's requirements for the supervision of third-party laboratories, under the current situation, the relevant government departments generally implement the supervision according to the principle of "no authorization can not be done without law". They prefer not to do or less, rather than take the responsibility and risk to themselves. As a result, the supervision has no strong motivation to actively strengthen the supervision of third-party laboratories. He is in charge of the work. We need to improve the system.

(2) Professional Testing Ability Needs to be Improved

With the rapid development of high-quality economy, the detection of new products is increasing, which requires the government to speed up the update of professional testing equipment. The introduction of new technical personnel, enrich the testing force and improves the detection level. However, at present, Suzhou municipal government is faced with a large amount of work, heavy task, great difficulty and strong professionalism, especially in the regulatory field with high technical requirements. It is difficult for the government to invest enough manpower and financial resources to update professional equipment and introduce high-level professionals. At the same time, the mature supervision experience of some professional testing talents often have the heart of supervision, but not the power of supervision. It can be seen that due to the lack of funds, the comprehensive supervision and detection ability is obviously insufficient.

(3) The Way of Supervision is Backward

At present, the supervision of the third-party laboratory by Suzhou municipal government is still based on the traditional supervision mode, which can not meet the needs of the market development to speed up the supervision of the third-party laboratory. In most cases, the government supervision is carried out by a single department, lacking of coordination and communication between departments, resulting in repeated supervision. In terms of supervision, there are overlapping phenomena. If it's good for us, we should emphasize the power of departments, which leads to excessive supervision; if it's bad for us, we should pass the buck to each other, so that the supervision of the third-party laboratory can't be solved for a long time. For example, in terms of market access, daily supervision and other work, there is a "two skin" phenomenon. Some local governments only examine and approve without supervision, while other departments turn a blind eye to the existing risks because they are not examined and approved by them. As a result, these institutions carry out all kinds of illegal activities under the "legal coat", brewing all kinds of potential risks.

3.3 Experience of Foreign Testing for Third-party Laboratory

The U.S. government has always advocated market freedom and is not easy to interfere in market behavior. The third-party laboratory in the United States is completely open to the market, and any competent laboratory can carry out the related work of the third-party laboratory. At present, according to the theory of public goods and the theory of government behavior, some scholars require the government to closely supervise the pharmaceutical and food industries. Even if necessary, it will be taken over and operated by the government.

The attitude of the Japanese government towards the third party laboratory has gone through the process of loosening, strictness and re easing. The number and scale of the third-party laboratories in Japan are relatively small, and most of the third-party laboratories only participate in the Japanese domestic market, do not participate in the world market competition, and have relatively little contact with international laboratories. At present, the supervision of the third-party laboratory by the Japanese government is mainly completed by industry associations, and the supervision efficiency is relatively high.

4. Countermeasures and Suggestions for Suzhou Municipal Government to Strengthen the Supervision of the Third-party Laboratory

4.1 Improve the Implementation Rules of Laws and Regulations for the Government to Supervise the Third-party Laboratory

In view of the current situation of ineffective supervision of third-party laboratories, Suzhou municipal government should, in accordance with the national laws and regulations, combine with the actual situation of Suzhou City, from the aspects of supervision system, fund investment, supervision equipment update, supervision talent team construction, supervision procedure, punishment for illegal detection and false report, rewards and punishments for supervision in place and absence, and treatment of illegal rules To formulate relatively perfect supervision implementation rules, and seriously implement the implementation rules, so that the government's supervision of the third-party laboratory can be truly implemented, and constantly improve the quality of supervision.

4.2 Establish a Unified Regulatory Body

The establishment of a coordinated and unified government supervision system with clear rights

and responsibilities is an important guarantee for the realization of comprehensive supervision of third-party laboratories. Therefore, according to the current situation that Suzhou Environmental Protection Bureau and Safety Supervision Bureau also participate in the supervision of the third-party Laboratory of environmental testing, the municipal government should take the lead, integrate the human and material resources of multiple departments, clearly divide the powers and responsibilities of various departments, and coordinate to form a unified supervision body led by the market supervision and Administration Bureau and coordinated by other departments, so as to avoid the occurrence of environmental pollution. At present, the phenomenon of multi supervision is to realize comprehensive supervision, improve the efficiency of government supervision on the third party laboratory, and reduce the phenomenon of repeated supervision.

4.3 Increase the Investment in the Supervision of the Third-party Laboratory

According to the theory of service-oriented government, as the government of the people, providing public goods and services is the basic function of the government. The third-party laboratory supervision is to ensure the quality of testing products, let the people use health and safety products and services, and promote the healthy and orderly development of social economy. It is the basic responsibility of the government to serve the people. In view of the current situation of obsolete testing equipment, weak independence of the team and insufficient ability of the testing personnel in the third-party laboratory supervision in Suzhou, we should increase the investment in supervision, update the testing equipment, increase the training of the testing personnel, establish an independent testing team, improve the ability and level of the third-party laboratory supervision, realize all-round supervision, and ensure the quality of production. To avoid the phenomenon of “fake lamp”.

4.4 Increase the Punishment for Violation of Laws and Regulations

It is the premise to strengthen the crackdown on illegal behaviors to ensure the healthy development of the third-party laboratory. Therefore, the market supervision and administration of Suzhou Municipal Government shall ban those who do not have the qualification for testing, but are still engaged in the inspection work, and shall be banned according to law and fined. For the report with very poor quality, or false report according to the requirements of customers, or some private or foreign third-party laboratories have CNAS and CMA qualifications, they should publicize vigorously during publicity and promotion. However, in order to avoid supervision and regulations, the violation without CNAS and CMA chapters is not covered, supervision should be strengthened, punishment should be strengthened to make the testing market issue real product quality report. The report will improve the credibility and social reputation and promote the healthy and orderly development of the third-party laboratory testing work.

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REVIEW

Analysis of Ecotourism, Culture and Local Community Empowerment: Case Study of Wasur National Park - Indonesia

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ABSTRACT

The focus of this research lies in community empowerment based on culture and local communities as well as sustainable ecotourism, which is directed at a complicated mechanism of empowerment elements, local culture that is thick in ecotourism to get added value for the novelty of ecotourism research. The object of research is Wasur National Park (WNP), Papua, Indonesia. Qualitative methods have been used to obtain accurate data and information, i.e., in-depth interviews with indigenous people to find out the benefits or functions of their culture that can be developed in ecotourism, interviews with leaders and staff of WNP and the Department of Culture and Tourism to find out the potential and processes empowerment and existing tourism potential. As a result, from the perspective of empowerment, local people will easily follow the empowerment process provided that they use methods that are culturally appropriate which is from the viewpoints from the culture of *sasi*, totem and sacred places. The culture adopted by the community is in accordance with the principles of ecotourism that supports sustainability, environmental conservation, protection of environmental resources and increases economic value. However, it is recommended to carry out modified socialization in accordance with the current conditions. Hence, tourists who visit WNP do not become afraid of the very rigid sanctions which are applied to them who violate the existing cultural and environmental customs. Moreover, to get added economic value in the tourism business within WNP, it is necessary to explore the potential of cultural wealth, natural and biological wealth so that it becomes the main attraction in carrying out the economic empowerment of local communities in the field of ecotourism.

1. Introduction

Tourism and ecotourism in Papua Province currently still need to be developed intensively and professionally. This is when viewed from the large quantity of visitors traveling to Papua Province, so it becomes a challenge for

the regional government of Papua Province to develop existing tourism. The tourism sector requires a strategy with a planned or structured tourism development pattern so that its potential can be developed optimally^[1]. The tourism potential in Papua Province is the most important asset to be well explored, where the region has cultur-

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al advantages, natural resources advantages so that the charm can make tourism the host in improving its economy. Tourist attractions that are well known on the island of Papua are Raja Ampat - Sorong which is known to the world for its exotic coral reefs and islands, Cenderawasih Bay National Park in Bintuni Bay, and Wasur National Park in Merauke with various species of mammals. The WNP area holds the potential for tourism products in the form of natural attractions supported by biodiversity, the charm of its landscape and the uniqueness of the culture of its people^[2]. There are 10 types of habitat with a diversity of flora and fauna consisting of 80 species of mammals, 390 species of birds, 39 species of fish, 48 species of attack and 21 species of reptiles that have been identified, 114 species of endemism.

In accordance with the Regulation of the Minister of Home Affairs Number 33 of 2009 concerning Guidelines for Ecotourism Development which states that "ecotourism development must empower the local community" which in this case is in accordance with the principles of ecotourism, namely the active role of the surrounding community in planning, exploiting, and controlling ecotourism activities with respect for ecotourism, socio-cultural and religious values of the community around the tourist area^[3]. The tourism sector has proven to be able to make a significant contribution to the development of the national economy as a foreign exchange earning industry. Tourism is very important in solving many problems faced by many developing countries, especially economic problems with the main reason being unemployment, because with tourism people have a steady income in their lives^[4]. Therefore, with management that does not leave local wisdom, it can indicate the construction of more adequate facilities and infrastructure with the first condition that they have the uniqueness or identity of the area, secondly, tourist attractions provide security, comfort and safety, thirdly support from local government and local communities.

As stated, several elements that must be fulfilled as a tourist destination, namely tourist attraction, accessibility, infrastructure, and community empowerment^[5]. Economically, on average, community empowerment programs are able to increase the income of the beneficiaries and even those outside the project target. The philosophy is simple, that the problem of the poor mainly is not having the capital to do business^[6]. With mentoring interventions, it is possible to mobilize group savings that are used for business capital. The empowerment model developed for tourism has launched sustainable tourism campaigns and poverty alleviation programs as a tool to increase the economic benefits of marginalized communities with the aim of increasing the economic

status of these communities in line with preserving traditional cultures and communities, leading to increased tourist interest in local culture^[7]. In community-based tourism research, community strength and empowerment have been considered as an important issue for community-based tourism^[8], and many conceptual and qualitative studies have been investigated noting the application of the concept of community-based tourism in developing countries by highlighting community involvement in relation to the economic benefits of tourism^[9], however, that the study ignores another important element, namely the culture of the people around the tourism location. Research on ecotourism and culture^[10] explain tourists face many problems in the traditional culture tourism, which is a form of mass tourism, thus, creative cultural tourism came to solve these problems, so it is necessary to study the relationship between ecotourism, culture, and community empowerment.

The novelty of research lies in community empowerment based on culture and local communities as well as sustainable ecotourism, as a follow-up research of Ecotourism Based on Local Community Empowerment in Wasur National Park^[6].

Research focus is directed at a complicated mechanism among the elements of empowerment, local community culture that is thick in sustainable ecotourism to get added value for the novelty of ecotourism research.

Research purpose highlights the issue of the need for further research on how the process of community empowerment and the cultural carrying capacity of local communities towards ecotourism tourism in WNP.

2. Research Methodology

This research method used in this research is a descriptive qualitative, to provide a systematic and accurate description and description of the object of research. Primary data were obtained using field observation methods to obtain an overview of the location and interview methods with informants, community leaders, traditional leaders and national park managers. Meanwhile, secondary data were obtained through library research at WNP Office, WWF Indonesia Region Papua in Merauke, Culture and Tourism Office of Merauke Regency, and data search via the internet.

Research site is the WNP located in Merauke Regency, Papua, which is unique in that the original community as the owner of customary rights still lives in the location of the WNP, with an area of 413,810 ha, according to the Decree of the Minister of Forestry Number 2882 / Kpts-IV / 1997 dated 23 May 1997.

Research on socio-cultural aspects was carried out in Kuler Village, Onggaya Village and Yanggandur Village,

which are villages with the majority of the Kanum tribe. Based on government administration, it is located in the southeastern part of Papua Island within the administrative area of Merauke Regency and 4 sub-districts / districts, namely Merauke, with the following research location boundaries:

- To the East is bordered by Tonda Wildlife Reserve in Papua New Guinea,
- To the west is bordered by Merauke City,
- To the south is bordered by the Arafura Sea,
- North side is bordered by the Maro River area.

3. Finding and Discussion

3.1 Ecotourism Concept

Ecotourism tries to raise environmental awareness by exploring ecology and ecosystems and by providing environmental type experiences. Taking an active role in ecology and getting a direct impression of how ecosystems work influences people's thinking, which ultimately increases awareness of conservation and protection, the important benefits of ecotourism policy and planning benefit local communities and the surrounding environment. Ecotourism includes new jobs, additional income, markets for local products, improved infrastructure, community facilities and services, new technologies and skills, increased cultural and environmental awareness, protection and conservation, and improved land use patterns ^[11].

Obstacles to the success of ecotourism development in order to minimize the negative impacts of ecotourism and maximize the possibilities for conservation and sustainable development one must acknowledge the barriers to ecotourism development. Lack of community capacity to take advantage of ecotourism development and minimize its negative impacts is one of the most significant obstacles ^[12]. Although ecotourism can create jobs for local people, community members are often trapped in low-skilled and low-paying jobs due to a lack of skills and bargaining power. High-skilled jobs are given to foreigners, which contributes to foreign control. Women are particularly at risk of being refused entry to tourism jobs due to skills constraints, indicating that women are given vocational training but lack the education and skills to benefit from it ^[13]. Lack of business knowledge is also an obstacle to entrepreneurial ecotourism in local communities. As is the case with tourism product development, the nature-based ecotourism component often depends on the degree of cooperation between the various providers of these products, and therefore conflicts of interest between these parties cannot be avoided ^[14].

Facilitating formal training, information education pro-

grams and industry networks, as well as the management of various sub-elements of the ecotourism component such as recreational activities can ideally help minimize these conflicts ^[15]. Paying attention to the concept of ecotourism characteristics has many factors that can be drawn into the focus of activities that can be carried out according to the culture and character of the area's conditions and potential as well as the conditions in the WNP to become a tourist spot with the concept of protecting nature and conservation, providing jobs to the community local and respecting the privacy and culture of the local community. The sustainability of tourism attractiveness needs to be maintained in order to strengthen the community's economy. Sustainable tourism has the following characteristics: 1) optimizing environmental resources which are a key element in tourism development; 2) maintaining the ecology of flora and fauna to preserve natural heritage and germplasm; 3) respect the indigenous socio-cultural values of local communities; 4) contribute to intercultural understanding and tolerance; 5) ensure viable long-term economic operation; 6) providing socio-economic benefits for all stakeholders that are evenly distributed including stable employment and income opportunities and social services to accommodate the community; and 7) contribute to poverty alleviation ^[16,17].

3.2 Community Empowerment

A development activity that is based on the values of the people and the local community as the main resource. Local people are the people who know the local conditions best and every development activity must take into account the socio-cultural values of development. Every empowerment activity must pay attention to community participation, considering the composition of women's participation in its implementation, therefore every step of planning decision must reflect local communities who are actively involved in it ^[18]. Comprehensive community involvement will further ensure the conformity of development and management programs with the aspirations of local communities, and according to existing capacities ^[19] (Tjilen et al., 2019), as well as ensuring community commitment because of a strong sense of belonging. This refers to the results of research that the empowerment approach is bottom up that comes from the society strength of themselves can be either (1) natural resources, (2) human resources, (3) a supportive environment, (4) socio-cultural and (5) public participation ^[6].

The concept of development and empowerment ^[20] states that empowerment refers to the ability of vulnerable and weak people / groups / communities, so that they have the power or ability to: (a) fulfill their basic needs so that they have freedom, not just in the sense of freedom of

expression, but free from hunger, ignorance, and pain; (b) reach productive resources that enable them to increase their income and obtain the goods and services they need; (c) participate in the development processes and decisions that affect them. The characteristics of an empowered community are as follows (a) able to know and understand its potential; (b) able to plan and anticipate changing future conditions, self-directed fibers; (c) they have the power to negotiate and cooperate on a mutually beneficial basis with sufficient “bargaining power”; (d) take responsibility for their own actions ^[21,6]. The empowerment process has a positive impact on the community by providing an example or being directly involved with the following principles in running ecotourism: (1) based on the natural environment, (2) having ecological value, (3) providing insight into the environment, (4) having benefits for local communities, and (5) makes it attractive and satisfies visitors ^[22]. Based on this explanation, empowerment and the empowerment process will provide great added value to existing culture and ecotourism yielding long-term, community-based development will enable a high degree of continuity.

3.3 Culture

Culture is the work of humans in maintaining and improving living standards and as a process of adaptation to the environment. As a system, culture needs to be seen from the manifestation of human life related to ideas, behavior and materials. Culture is a characteristic that appears in a certain group of members of society so that it can be used to distinguish it from other groups. Human culture is distinguished by history, background and social development. Culture is an “identity” that has the same innate characteristics (traits) and can be grouped including components of living culture (social, economy, politics, language, religion, aesthetics and livelihoods), wisdom and technology (livelihood, peace, pleasure, etc.), language, education, knowledge, and technology), as well as

culture heritage (artifacts, monuments, manuscripts, traditions, and art) ^[23]. In brief, the factors in the culture can be described as follows:

In developing Indonesian cultural tourism in the era of autonomy and paradigm shift, several main things need attention, namely the integration of the application of the principles of sustainable development, sustainable tourism, resource management and culture. The correlation between these components becomes the framework in the ecotourism system. The benefits of culture in business from ecotourism are an important factor in social empowerment, because the development of ‘community-based tourism’ will provide a strong social dynamic influence for these community groups. Adequate social empowerment for local communities allows them to have political power over the construction of public facilities or the development of an ecotourism business ^[24]. In its implementation, a culture that is packaged in a well-managed ecotourism business culture also allows it to be used to maintain the existence of the indigenous culture of the local population ^[25].

The Kanume people have a high interaction relationship with natural resources. They have their own customary rules to regulate protection and utilization patterns in using forest resources that have been passed down from generation to generation from their ancestors ^[26]. The culture of the Kanume tribe explains that the clans in the Kanume people who inhabit the Wasur National Park area believe that humans are an integral part of nature so that nature becomes a unity that cannot be separated from human life and the community has a culture that protects the nature around them with a belief that has been going on for generations. Indigenous people in Papua believe that the forest and sea are the parents of those who provide food for them ^[24]. The cultural elements of the Kanume tribe which are related to ecotourism can be explained through; *sasi*, totem/*dema* and, sacred place ^[27] with the following explanation:

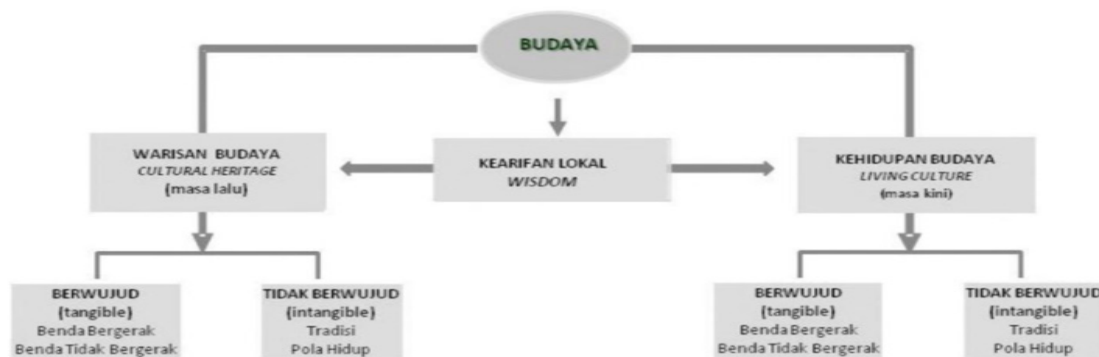


Figure 1. Culture (Source: ^[23])

- a. Sasi. In general, sasi known as a traditional resource management practice, has been carried out from generation to generation in various regions in Maluku and several areas in West Papua [28]. There are differences regarding the origin of the word Sasi, but in essence it is a prohibition or taboo on the use of a part of land, trees or sea, during a certain period.
- b. Totem/dema. Protection of resources also has to do with totemism. The totem is dema changes form into the form of plants, animals or objects and becomes a symbol of the group. The totem in the clan has become a very important symbol of the group. People believe that their ancestors were the incarnation of animals/plants.
- c. Sacred place/pamali, is also used as a place of refuge for ancestral spirits and as a place for ancestral travel. This is an ecological space cannot be separated from the values of belief in their previous ancestors, ancestors, and elders. Therefore, there are ecological areas which are pamali (forbidden), haunted areas, and are believed to be sacred places for ancestors to reside to protect their generations, automatically protected parks established by the community which have very strict customary sanctions which can lead to sickness and death. Therefore, in this management, guests who come are required to be polite, not throwing trash and including arranging speech while in a sacred place [29].

The benefits of culture encapsulated in the function of the sasi, totem and sacred place can be explained ^[30] has the following functions:

- a. Aesthetic function, in terms of traditional beauty, decorated with traditional sasi tools. The tradition of sasi becomes a forum for ritual actors to develop ideas for art creation in the form of sasi buildings. In the implementation of traditional rituals, sasi is a forum for channeling the creative ideas of ritual actors in making traditional buildings, decorating or decorating according to the mood and ideas of beautiful art creations. The ritual performers do not arbitrarily or do not want to install the traditional sasi tools.
- b. Pragmatic functions are seen in the utilization of tradition. The pragmatic function is a function of practicality and utility of an oral tradition in society. The practical function is seen in terms of practicality and the usefulness of the sasi tradition for the village community as a means of fulfilling human instinctive needs to secure goods or plants; 2) as a tool to maintain the integrity of the social structure in society by applying customary laws and norms based on the sasi tradition, 3) as a means of legalizing com-

munity culture, 4) as a means of fostering a sense of solidarity to respect and appreciate each other in a collective, 5) to show superiority someone as a ritual performer who is respected and respected, 6) as a means of disclosing and solving problems, and 7) as a source of knowledge and wisdom in facing the progress of the times.

- c. Ethical function seen from the community using it as an educational tool about the knowledge of natural beauty and events around them life, able to generate a sense of liking, joy, and happiness captured and translated by the five human senses through experience, poured in the form of art.
- d. Historical function, the sasi tradition in terms of identity formation and preservation of the cultural system of the village community. An enduring tradition of sasi living in society has changed both in purpose, function, and the ritual implementation follows the changing situation and condition in society.

Based on the function described and the existing village tradition, being able to form a community identity as the owner of a tradition based on the preservation of a cultural system carried out orally and from generation to generation will produce good synergy for the realization of sustainable ecotourism.

3.4 Synergy of Ecotourism, Culture, and Empowerment

The cultural factor of the Kanume tribe has a close relationship with ecotourism which is unique to the life pattern of the Kanume people related to the positive behavior of the community in protecting and exploiting natural resources (space) and adaptation to the surrounding environment. The pattern of socio-cultural life originates from the cultural, religious and local customs which are a form of traditional wisdom values. The results showed that the Kanume people had wisdom in their relationship with nature which was reflected in a series of natural balances.

The function of the ecotourism business as a factor that supports social empowerment, the development of 'community-based tourism' will provide a strong social dynamic influence for these community groups. As a result, community members will feel included in ecotourism business activities. Social empowerment is a need that creates a situation of a sense of unity and integrity for a community group to become stronger. Social empowerment that can be seen directly and indirectly by carrying out ecotourism business activities is that the community will receive government program assistance and repair of public facilities, such as roads, airports, health, education, and so on. A well-managed ecotourism business culture

factor also allows it to be used as a means to maintain the existence of the indigenous culture of the local population. Adequate social empowerment for the local community enables them to have political power over the construction of public facilities or the development of an ecotourism business. Tourism activities as an alternative to earning income for the community and foreign exchange for the country because it provides a large contribution to the country's economy, tourism still provides employment and business opportunities for the Indonesian people, both formal and non-formal. To overcome the decline in the number of mass foreign tourists and the government's understanding of the negative impacts of mass tourism, at the end of this decade tourism activities have been initiated that lead to Special Interest Tourism by including culture as a differentiator from the tourism industry, which is characterized by several distinctive features, and involves local community so that it has a positive impact on community's economics.

The findings explain the success of the empowerment process in culture and ecotourism on the criteria for community-oriented development as follows:

- a. Advancing the level of community life while preserving local cultural identities and traditions
- b. Increase income economically while distributing it evenly among the local population
- c. The use of development results from ecotourism that is more environmentally friendly and has greater sustainability

4. Conclusions

The empowerment process in ecotourism in WNP is supported by local culture and customs that highly respect the environment, plants and forests, which are trusted as their home and parents. The cultural benefits of *sasi*, totem and sacred places provide heavy sanctions for people who do not respect forests and the environment and customs which are their ancestral heritage, as well as have added value to the community's economy if used properly.

The implementation of empowerment requires the intervention of the government, NGOs and universities, empowerment is very important for tourism, however, the relationship between tourism, culture and empowerment, empowerment in ecotourism does not damage the existing culture and environment.

Too strict protection against the environment will complicate business potential, and economic improvement and welfare are the goals of empowerment. Tourism exploitation with high activity can have a negative impact on the environment, if the existing culture and customs are not considered.

The concept of tourism development which is based on the uniqueness and conditions of the region can be developed by implementing ecotourism business development or the development of sustainable tourism development. Local conditions for its success can be measured through a sustainable socio-cultural process that involves the identity of the local community; sustainable natural resource and environmental cycles; and economic processes that can provide sustainable benefits.

Ecological and cultural tourism business is well implemented, so the tourism industry has the potential to have positive impacts that are beneficial to the environment through environmental protection and conservation efforts where tourism can be a source to finance efforts to protect environmental resources and increase the economic value of resources/environment, as well as their empowerment, in the social and cultural fields of the surrounding communities.

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REVIEW

A Literature Review of the Influence of Social Capital on Commercial Credit

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ABSTRACT

As a typical informal system, social capital plays an important supplementary role in China's economic transition period. Informal finance based on commercial credit plays a role in the economic cycle. However, there is currently a lack of literature to directly examine the impact of social capital on the use of commercial credit by enterprises. This article aims to systematically sort out the theoretical development of social capital on commercial credit, which mainly includes the definition of social capital, its effects, the influencing factors of commercial credit, and the summary of the existing research results of social capital on commercial credit. It is hoped that this literature review will provide guidance for future research.

1. Introduction

During the "14th Five-Year Plan" period, building a financial system that can effectively support the domestic cycle requires activation of the horizontal financial mechanism (Wang Guogang and Pan Deng, 2020) ^[1]. The horizontal financial system is born in the real economy, and its foundation is commercial credit. Commercial credit is an important form of informal finance, and its use is an important part of company operations and investment and financing decisions (Yu Minggui and Pan Hongbo, 2010) ^[2]. Therefore, the research on the influencing factors of commercial credit is of great significance. However, most of the current traditional researches focus on formal systems such as monetary policy and law. In fact, informal

systems have a broader scope than formal systems and have more lasting vitality. In recent years, the informal system centered on social capital has received more and more attention as an important external environmental factor.

By reading related literature, this article will introduce the current research results through four parts: the definition of social capital, the effectiveness of social capital, the influencing factors of commercial credit, and the influence of social capital on the use of corporate commercial credit.

2. Definition of Social Capital

There are a large number of documents explaining the concept of social capital. This article summarizes it from

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two aspects: one is the research on social capital abroad; the other is the research on social capital in China.

2.1 Definition of Social Capital-foreign Research

Coleman (1988)^[3] clearly used the concept of social capital for the first time in sociology and discussed it in depth. Coleman believes that social capital is a social structure resource owned by an individual, that is, an individual's ability to acquire scarce resources in the network or in a broader social structure through their membership. He believes that the main functions of social capital are as follows: 1. Obligations and expectations. When an individual provides services to others, he has social capital, which has the expectation of providing repayable services to others. 2. Information network. Individuals can obtain useful information from the relationships formed by social capital. 3. Standardization and effective punishment. Through the group's conscious resistance to dishonesty behavior, a high-trust social network is formed. 4. Authority relationship, which guides individuals to solve more common problems. Coleman defines social capital from the perspective of functional definition. He points out the role of social capital from multiple angles. His research on social capital is groundbreaking and provides ideas for subsequent research. However, his research also has limitations. He pointed out that social capital is always productive and positive, and denied the possible negative effects of social capital.

Putnam (1993)^[4] followed Coleman's point of view. He compared social capital with physical capital and human capital. He believes that social capital refers to the characteristics of social organizations, such as trust, norms, and networks, which can improve the efficiency of the entire society by promoting cooperative behavior between groups. At the same time, he believes that social capital increases the return on investment in physical capital and human capital. Putnam believes that social capital is a close network structure, which is the active participation of citizens in community public activities, and the high level of trust among people caused by this. In his view, the stock of social capital is the level of people participating in club activities in a community. The measurement standards include reading newspapers, participating in voluntary organizations, and expressing trust in political authority. Fukuyama (1995)^[5] equates social capital with the degree of social trust, and believes that it is easier for network groups with high trust to develop cooperative relations and bring economies of scale advantages.

LLSV (1997)^[6] summarized the research of Coleman

(1990)^[3], Putnam (1993)^[4] and Fukuyama (1995)^[5], and believed that social capital reflects the tendency of cooperation between people in a society. In a society with high social capital, people do not need to consider the "prisoner's dilemma" caused by mutual calculations, but consider enhancing the trust between groups and promoting cooperation between groups to maximize social efficiency.

Portes (1998)^[7] made a systematic expression of social capital. He believes that social capital is a collection of actual or potential resources of individuals in social networks. He believes that social capital is related to the individual's membership in the group, and the available resources are related to institutionalized common knowledge and recognized network of relationships. Individuals are not isolated, but through embedding in social network and various connections, and obtain social power, wealth, prestige and other social resources from it.

Lin Nan (2001)^[8] believes that social capital is a kind of social network resource based on Portes' theory of social resources. Social capital is a resource that individuals mobilize or directly use through their position in the network, and social relations are a type of social capital. The reason why social relations become a resource is because of the imperfection of the market. The information of the market cannot be effectively circulated, and only some people can grasp the information resources. The relationship resources in social networks are not directly occupied by individuals, but directly or indirectly acquired by individuals. Having such resources can enable individuals to better meet their own survival and development needs. The greater the heterogeneity of a person's social network, the higher the status of a member in the social network, and the richer the social resources he has.

2.2 Definition of Social Capital-domestic Research

The domestic research on social capital started relatively late, so the research thinking is more influenced by foreign countries. The current research on social capital is basically based on the perspective of obtaining social capital.

Bian Yanjie and Qiu Haixiong (2000)^[9], based on the research of foreign scholars, believe that social capital is the connection between the subject and the society and the ability to obtain social scarce resources through this connection. His greatest contribution is to extend social capital from the individual level to the enterprise level. The social contacts and contacts formed by the operators in the daily operation of the enterprise are very important to the enterprise. Therefore, these contacts and contacts

are also important corporate capital. We believe that it is the social capital of the enterprise. Corporate social capital is an informal mechanism, a bridge for business operators to communicate with the outside world, a channel for establishing business contacts with other companies, and an important way to obtain scarce resources and competition for the market. Bian Yanjie and Qiu Haixiong (2000)^[9] divided social capital into horizontal, vertical and social perspectives. The orientation of the vertical angle is mainly upward, and the purpose is to obtain scarce resources from government departments or management. The horizontal angle refers to the connection between a company and other companies. The nature of this connection is diverse, such as a business relationship, a cooperative relationship, a bond-debt relationship, a control relationship, and so on. The social angle reflects the social network brought by the group of business operators living in a specific area.

Zou Yibin (2005)^[10] believes that social capital is a kind of network resource, and this resource reflects that the language of mutual help and cooperation has been recognized by the society. In the framework of social capital, social organizations and networks have become important carriers to play this role. People spontaneously establish or participate in certain social organizations, as well as social interactions with relatives, friends and colleagues, etc., to form a certain community-wide social structure and network, so that people have common values, norms of behavior, or mutual affection. Behavior has a stable expectation, that is, it carries the mutual trust between people. Zou Yibin also proposed a more systematic social capital measurement.

Shi Junwei et al. (2007)^[11] also believe that corporate social capital is a social network resource, which is the capital obtained through social relations and its network structure, which is basically similar to previous studies. In addition, it also believes that it should include the company's ability to mobilize related resources, which is different from the simple ability to obtain resources. It also refers to companies using social capital to discover resources that may be beneficial to their own development or to occupy the market opportunity. He divided the social capital of enterprises into two categories: one is the social capital of entrepreneurs, and the other is the social capital unique to the organization in the relationship network. Therefore, in his view, the social capital obtained by an enterprise is the result of the overall role of an enterprise. The amount of social capital acquired by an enterprise is the result of the entire organizational factors. It includes not only the joint efforts of entrepreneurs, management and all employees as a regional social group, but also the

impact of organizational strength.

3. Effect of Social Capital

3.1 Basic Functions

Based on existing research, the basic function of social capital is to promote the efficient sharing and dissemination of information, reduce transaction costs, improve the level of cooperation between groups, and consciously resist untrustworthy behavior.

Because the early definition of social capital was put forward based on the definition of social capital's function, the basic functions of social capital formed a certain consensus. Fukuyama (1995)^[5] believes that social capital has strong externalities, which can promote cooperation, reduce transaction costs, and make up for the shortcomings of the formal system. Portes (1998)^[7] believes that because social capital brings the resistance of social groups to untrustworthy behaviors, which restricts people's behavior. It will also improve the integrity of society as a whole through social morality and public opinion.

Wu Zhiwei (2003)^[12] believes that the social network formed through trust and cooperation has established a relatively stable cooperative relationship between members, and the probability of opportunism has been small, which actually reduces the transaction costs between members. Increasing the market opportunities for enterprises can reduce the search costs of enterprises, and at the same time, corporate social capital can cultivate a good market reputation for enterprises, thereby gaining higher recognition of cooperation from other enterprises, and reducing the cost of enterprises to explore the market.

3.2 Barrier Effect

The main negative impact of social capital is reflected in its barrier effect.

Portes (1998)^[7] was the first to point out the limitations of social capital. He believes that social capital has four negative functions: First, in a group, social capital binds a strong profit relationship between members, and at the same time prevents people from other groups from controlling specific social resources, which leads to new members entering the group. The network has to pay a huge price, which directly reduces the mobility of regional social groups. Second, the closeness brought about by social capital will limit the innovation ability and career development of members, and will adversely affect the development of the region in the long run. Third, the group benefits from social capital, but at the cost of sacrificing and restricting individual freedom, individuals

generally obey the group and even disappear from the group. Fourth, individuals whose group unity has been consolidated or the suppression of other groups has been stabilized, and who are more capable or innovative.

Domestic scholars also agree that social capital has a barrier effect. Luo Danglun and Tang Qingquan (2009)^[13] believe that although social capital brings many benefits to private enterprises, social capital also has negative aspects. Social capital brings strong profit relationships to group members, which actually prevents new groups from obtaining specific social resources. New members have to pay a more expensive price if they want to enter this group. This weakening of liquidity actually reduces the economic efficiency of the region, and it will also cause a lot of unfair competition. Shi Junwei (2007)^[11] believes that social capital is a kind of intellectual capital that can explain corporate competitive advantages and optimize management effectiveness. From a competitive point of view, corporate social capital can be a barrier to entry that prevents competitors from grabbing market share.

Chen Jiagui and Wang Qin (2005)^[14] believe that under the premise that the market system is not sound and the market credit system is not established, social capital does have an important influence in the region and promotes information exchange. But he also pointed out that social capital has a barrier effect, because the natural closeness and exclusivity of social capital exclude the entry of external resources, which is incompatible with modern large-scale production of socialized information technology. Through his research, he pointed out that the further development of industrial clusters in our country, the exclusive social capital with blood kinship and geographic connections as the bond is strengthening itself, which restricts the inflow of external advanced technology and timely information. Strengthening cooperation between enterprises will also lead to the lack of innovative talents and the low management level. Due to the lack of new information and new technologies within the cluster, the learning effect of the cluster is limited to the simple imitation of the low-level internal members or even stagnation. The industrial clusters brought about by this social capital will directly lock the innovation capabilities and industrial networks of enterprises and weaken the competitiveness of the entire cluster in the long run.

3.3 Economic and Financial Effects

Social capital also plays an important role in regional economic growth and corporate financing operations.

Yan Chengliang (2012)^[15] believes that social capital has a significant role in promoting economic growth. Social capital has a virtuous circle. The higher the social

capital, the more important the social capital is, and more resources will be invested to accumulate social capital. An increase in the level of social capital will improve the efficiency of production and research and development of enterprises, and enterprises will choose to hire more staff to promote economic growth. Liu Fengwei (2009)^[16] believed that social capital improved the efficiency of the economy. In regions with high levels of social capital, trust and cooperation among citizens can effectively reduce transaction costs caused by information asymmetry. These advantages promote the efficient operation of the regional economic system. Zhou Jin et al. (2018)^[17] found that social capital has a significant positive effect on the quality of economic growth, and its effect is mainly that it significantly improves the efficiency and sustainability of economic growth, while it has an inhibitory effect on growth stability. The long-term effect of social capital is significantly stronger than the short-term effect. Social capital not only has a direct effect on the quality of growth, but also has an indirect positive effect through technological innovation and financial optimization. Foreign scholar Guiso et al. (2004)^[18] believe that social capital promotes regional economic development by promoting financial development.

Social capital also affects the financial investment and financing business of enterprises. Pan Yue et al. (2009)^[19] believe that social capital affects the investment decisions of enterprises. He explained his point of view from two aspects. On the one hand, in areas with higher levels of social capital, the trust between individuals is higher, and investors therefore trust others more and are therefore more willing to increase investment; on the other hand, On the one hand, because of the higher level of social capital in the region, the degree of trustworthiness of the enterprise is also higher, the investee is also more likely to be recognized by the capital market, and it is easier to reach cooperation with the investor. At the same time, social capital affects corporate debt financing activities. Adler and Kwon (2002)^[20] believes that people in areas with high social trust are more inclined to cooperate, borrowing funds will be easier, borrowing periods will be longer, and borrowing costs will be relatively low. Xiao Zuoping and Zhang Ying (2014)^[21] found that social capital has an important influence on bank loan interest rates, loan amounts, loan terms, and loan guarantees. Existing studies believe that there are three main reasons for this impact: 1. Areas with higher levels of social capital have developed social networks, higher information circulation efficiency, and more transparent information about borrowing companies. This reduces the search and supervision costs caused by information

asymmetry, and eases the moral hazard afterwards (Petersen and Rajan, 1994) ^[22]. 2. The higher the density of the social network, the higher the trustworthiness of the lending bank or credit company to the borrower, so it can provide the borrower with more loan amount, more favorable loan conditions and fewer mortgage guarantees. 3. Enterprises are also willing to use lower-cost debt financing. In areas with higher levels of social capital, corporate management is also more willing to actively use debt to convey the willingness to accept debt constraint supervision to the outside world.

Wei Shouhua (2002) ^[23] found that the advantageous role of social capital in economics and finance is to cultivate capitalist resources, promote trust-based cooperation, and increase the openness of regional corporate culture. Social capital is an advanced factor of production, which can provide a large number of entrepreneurial resources. Due to geographical proximity, trust-based cooperation between enterprises can reduce transaction costs and improve cooperation efficiency. The interconnections between enterprises, such as contracting, subcontracting, product quality, delivery time, and settlement of funds, are themselves based on trust. Repeated cooperation to avoid opportunistic tendencies is conducive to the establishment of social networks based on trust and commitment between enterprises, reducing transaction costs through network relationships, and strengthening mutual cooperation. The development of corporate culture reflects the free flow of talents and information, and promotes the gathering of all kinds of talents, information, and technology.

Wu Chaopeng (2009) ^[24] summarized the two major mechanisms of social capital in the economic and financial fields: First, social capital promotes trust and cooperation between individuals, especially strangers, establishes expectations of trustworthy behavior of transaction parties, and promotes corporate financial Cooperation in the field. Second, by improving people's level of integrity, social capital triggers the group's spontaneous resistance to untrustworthy behavior, which can reduce opportunistic behavior and moral hazard in the execution of commercial contracts, so that contracts can be effectively executed.

3.4 Alternative Protection Effect

Allen et al. (2005) ^[25] put forward the famous "China Mystery", that is, China's legal system is very imperfect, but its economic growth is very strong. This is contrary to the theory of coordinated development of law and economy. Therefore, they believe that China has an alternative protection mechanism for the legal system. Allen et al. (2005) ^[25] believe that China's political

relationship mechanism and reputation mechanism have played a role in replacing legal protection mechanisms, while Ang et al. (2009) ^[26] investigated the important role of social capital in attracting foreign investment in high-tech enterprises, showing that Social capital is also an alternative mechanism of legal protection.

Chinese scholars have also reached the same conclusion. Bian Yanjie and Qiu Haixiong (2000) ^[9] believe that in the cycle of economic transformation in my country, some formal systems such as law and finance are not sound enough, and their protective effects on economic development are limited. To a certain extent, social capital can make up for the system that exists in the transition process. Pan Yue et al. (2009) ^[19] pointed out that in a country like China with relatively incomplete legal protection, social capital is an important mechanism to replace legal protection to promote economic growth.

Dai Yiyi et al. (2009) ^[27] believe that social capital, as an informal system outside the formal systems of the legal system and economic system, uses the elements of trust, social norms and social networks it contains to subtly influence business managers' behavior. You Jiaying and Liu Chun (2011) ^[28] believe that for developing countries like our country where laws are not sound enough and law enforcement efficiency is not very high, social capital as an informal system can make up for the lack and insufficiency of the formal system in the protection of property rights and reduce the company's Operating risks and improve the stability of the company's future cash flow.

Luo Danglun and Tang Qingquan (2009) ^[13] analyzed this alternative protection mechanism from the perspective of motivation. Through the investigation of the institutional environment for private entrepreneurs to participate in politics, it is found that the weaker the regional legal system, the stronger the administrative intervention, and the lower the level of financial development, the more motivated private listed companies to form political relations with the government. The reason is that this kind of political relationship is an alternative protection mechanism to the imperfect and imperfect formal system for private listed companies.

Xiao Zuoping and Zhang Ying (2014) ^[21] analyzed the substitution mechanism of social capital from a game perspective. If the legal rights of creditors cannot be effectively protected by the formal system due to insufficient laws, the importance of social capital will become prominent. Because social capital punishes untrustworthy behaviors to allow traders to comply with the contract as much as possible, reduces the risk of default, and promotes the performance of financial

contracts. Therefore, social capital plays a role of alternative protection.

3.5 Diminishing Role Mechanism

Although there is an alternative protection mechanism for social capital, existing research believes that the strength of this mechanism has been continuously weakened as the marketization process advances.

The theory of “power transfer/elite regeneration” (Szelenyi, 1978; Nee, 1991) ^[29] believes that the advancement of the marketization process will change the existing power structure, and the original redistribution-based mechanism and elite status will gradually decline. In the wave of marketization, new stratification mechanisms and new elites will appear. This theory also pointed out earlier that the role of social capital in the process of marketization will be weakened. Stiglitz (2000) ^[30] pointed out the inverted U-shaped relationship between the intensity of social capital and the level of social development. In the early stage of marketization, the scale of the market economy was small and the formal system was imperfect. Social capital as the core of the informal system made up for the shortcomings of the existing market system and dominated the operation of production factors. With the advancement of marketization and the improvement of formal systems, the original dominance of social networks based on trust and cooperation has been impacted. Mature legal systems and official policies have gradually become the main factors that maintain the smooth operation of the market. The value of social networks will also drop.

Pan Yue et al. (2015) ^[31] analyzed the mechanism of social capital and government intervention affecting the efficiency of inter-regional capital allocation and conducted empirical tests and found that: a higher level of social capital and a lower degree of government intervention help to improve the efficiency of capital allocation; There is an alternative relationship between social capital and government intervention in affecting the efficiency of capital allocation. In areas where government intervention is more serious, the impact of social capital on the efficiency of capital allocation is more significant. His research also pointed out that the strength of social capital will be weakened with the process of marketization. Xu Yekun and Li Weian (2016) ^[32] also pointed out that social capital is constantly weakening with the improvement of formal systems. He used social capital data and Fan Gang's marketization index to confirm the legal substitution relationship of corporate debt financing. Research has shown that in areas with a poor legal environment, social capital has

a more obvious impact on the debt financing of private enterprises, and with the improvement of the legal system, the role of social capital will be gradually weakened. Yang Xingquan et al. (2021) ^[33] also found that the legal system and social capital have an alternative relationship, and social capital in areas with a lower level of legal protection can inhibit enterprises from becoming virtual. In regions with a low level of marketization, the problem of information asymmetry is more serious, and social capital has eased the external agency problem of foreign investment, and companies are more willing to increase investment. However, with the increasing transparency of market informatization, the gap between the information obtained through social capital and the direct market access is getting smaller and smaller, and the motivation of enterprises to invest with the advantage of social capital will continue to weaken.

Luo Danglun and Tang Qingquan (2009) ^[13] pointed out that with the development of the regional private economy, the weight of the private economy in the economy continues to increase, and the private economy has a more urgent need for some policy resources than state-owned enterprises. Actively responding to legal failures, direct participation in politics through participation in people's congresses and CPPCCs at all levels, and the pursuit of formal institutional arrangements in the external environment also means reducing dependence on informal institutions such as social capital.

4. Factors Influencing Commercial Credit

The current research on the factors affecting the use of commercial credit by enterprises is mainly divided into two perspectives: the status of the enterprise itself and the external environment.

4.1 Enterprise's Own Situation

The research on the company's own conditions is mainly based on the company's internal control quality and market position.

The financial data and internal governance of an enterprise affect the acquisition of commercial credit of an enterprise. According to Zheng Jun (2016) ^[34] from internal control analysis, companies with higher internal control quality can obtain more commercial credit financing, because the higher the audit quality, the easier it is for the parties to the transaction to form a trust relationship, and they are more inclined to use lower-cost commercial credit. Fabbri and Klapper (2016) ^[35] pointed out from the company's market position that market position affects the acquisition of commercial credit. The

more customers with negotiation advantage, the more commercial credit they enjoy.

The provision of corporate commercial credit is more affected by corporate financial data and the nature of property rights. Zhang Tiezhu and Zhou Hong (2009)^[36] believe that in order to reduce storage costs and promote sales, listed companies with higher inventory levels will adopt looser credit policies to provide more commercial credit. Xu Xiaoping and Li Meng (2009)^[37] found that the smaller the scale of enterprises, the more commercial credit they provide. Yu Minggui and Pan Hongbo (2010)^[2] researched that enterprises with different property rights make enterprises face different competitive pressures, and private enterprises usually provide more commercial credit than state-owned enterprises.

4.2 External Environment

The external environment of the enterprise also affects the use of commercial credit by the enterprise. Formal systems such as law, finance, and monetary policy all affect the financing and operation of enterprises.

The external environment for enterprises to use commercial credit includes monetary policy, degree of marketization, and legal environment. Monetary policy affects corporate investment, investment, and cash holdings (Zhu Jigao and Lu Zhengfei, 2009)^[38], which in turn affects corporate business credit. The higher the degree of marketization, the more commercial credit financing a company can obtain, and commercial credit financing has significantly improved the company's business performance and market performance (Cao Xiang and Kuang Xiaoping, 2013)^[39]. Qian Xuesong and Fang Sheng (2017)^[40] studied the reform of the security real right system and found that formal systems promote enterprises to obtain commercial credit.

The external environment for enterprises to provide commercial credit includes economic situation, finance, law, etc. The uncertainty of economic policy affects the provision of commercial credit by enterprises, and the increase in uncertainty of economic policy will significantly reduce the provision of commercial credit by companies (Chen Shenglan and Liu Hongling, 2018)^[41]. The level of financial development is an important external factor that affects the provision of commercial credit. In areas with better financial development, companies can more easily obtain bank loans, and thus have more funds to provide commercial credit (Yu Minggui and Pan Hongbo, 2010)^[2]. The legal system is an important determinant to ensure the effective operation of the credit market. In areas with a better legal environment, legal protection of creditors and penalties for debtors'

default will encourage commercial credit financing providers to provide more commercial credit (Allen et al., 2005)^[25].

5. The Impact of Social Capital on Commercial Credit

The social capital of an enterprise belongs to the external environmental factors in which the enterprise is located, and it is also an informal system. Commercial credit is an important informal financial model. At present, there are few literature that directly study the impact of social capital on corporate business credit, but some scholars have focused their perspective on the impact of informal institutions on informal finance. The current research mainly focuses on three aspects: the impact of social capital on corporate financing, the impact of social capital on the substitution effect of bank credit and commercial credit, and the impact of social capital on informal finance through industrial clusters.

The financing ability of an enterprise is an important manifestation of the enterprise's access to social resources, so the social capital of an enterprise is positively correlated with the financing ability of the enterprise. The higher the corporate social capital, the stronger its financing (loan) ability. Financing is the main motivation for companies to use commercial credit, and social capital reduces transaction costs by increasing trust between individuals and strengthening the level of cooperation between parties, thereby promoting the fulfillment of debt contracts. Dai Yiyi et al. (2009)^[27] believe that in areas with better levels of social capital, companies are more likely to obtain loans from other members and can use less collateral to obtain debt financing. It believes that social capital is an important informal system that can reduce the probability of various negative problems in financial contracts. Therefore, it is a productive factor. Enterprises can rely on social capital to obtain financial resources such as loans. The dense social interaction network and the binding mechanism of voluntary associations will reduce opportunistic speculation and the phenomenon of "free-riding", and also make individuals pay more attention to the reputation of the company. In such a high-trust area, you can borrow with little or no mortgage assets and rely solely on credit. Mostafa and Ahsan (2019)^[42] used US data samples and found that corporate headquarters would benefit from the trust environment brought about by higher social capital in the location, and face a more relaxed financing environment, and therefore need to obtain less commercial credit.

Social capital affects the use of commercial credit

and bank credit by enterprises. The research of Xu Yekun and Li Weian (2016) ^[32] is from the perspective of the substitution effect of commercial credit on bank credit. He believes that social capital affects the source of corporate debt, and different levels of social capital affect the choice of corporate financing methods. In areas with abundant social capital, the amount of bank loans in private enterprise debt financing is relatively small, while the proportion of commercial credit is relatively high. Commercial credit can replace limited bank credit resources.

Social capital influences the use of commercial credit by enterprises through the industrial cluster network. Wang Yue and Liu Ke (2008) ^[43] pointed out that informal systems promote the formation of regional cluster network relationships. This kind of agglomeration effect built on trust among entrepreneurs promotes the use of informal finance among enterprises, and finally drives the entire industry. Qian Shuitu and Weng Lei (2009) ^[44] pointed out that multi-party interrelated transactions in an industrial cluster can further strengthen the mutual trust generated by long-term continuous transactions. On the one hand, the informal internal information of the enterprise is shared through the cluster network to reduce the cost of obtaining information; On the other hand, through the social punishment mechanism based on consciously resisting breach of contract to strengthen the cooperative relationship of enterprises within the cluster, the society forms a social capital mortgage mechanism in which personal social capital is used as a substitute for physical asset mortgage. Industrial clusters have in fact strengthened the original local social capital. Through institutional arrangements in the form of informal finance, there has been a benign interaction between social capital and the development of clusters. Enterprises not only rely on informal finance to obtain funds, but more importantly, the social capital hidden in informal finance provides strong support for the development of industrial clusters. As a social resource, social capital provides strong support to the development of industrial clusters through informal financial system arrangements.

6. Conclusions

At present, domestic and foreign scholars have done in-depth research on the influence of social capital on the use of commercial credit and have obtained certain research results. However, there are still many shortcomings. For example, most of the commercial credit currently studied only refers to the acquisition of commercial credit. Therefore, in the future, we will learn from the research methods and ideas of the predecessors,

based on the research perspective of informal systems on informal finance, and study the influence of social capital on the acquisition and provision of commercial credit by enterprises to provide better guidance for the financing operations of Chinese enterprises.

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ARTICLE

Improving the Efficiency of the State Budget Balance in Vietnam**Hoang Anh Dao***

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ABSTRACT

The state budget balance is always an extremely important issue for each government. In 2020, Vietnam has a relatively small-scale economy. Its economic scale and GDP per capita reached 271.2 billion USD and 2,779 USD respectively. Budget revenue is still limited, but the need for recurrent spending and development investment is still very large now and in many years to come. In the past time, budget revenue and expenditure are in a situation of not having the necessary balance, the state budget deficit has been still around 4.5 percent of GDP. The actual state budget revenue and expenditure balance have been revealing several disadvantages. Faced to such a situation, the author would like to present some important issues about the state budget revenue and expenditure and propose key solutions to increase the efficiency of state budget revenue and expenditure in Vietnam.

1. Introduction

The state budget includes all revenues and expenditures of the State estimated and implemented in a year to ensure the performance of the State's functions and tasks. Balancing budget revenue and expenditure is always an important task of the state in any country in the world. We can understand that the state budget balance is an important part of fiscal policy, reflecting the adjustment of the interaction relationship between state budget revenue and expenditure in order to realize socio-economic goals. Associations that the State has set forth in each specific field and area.

In 2020, due to the impact of Covid-19, many countries around the world fell into recession. However, Vietnam is a rare country that maintains positive growth of 2.91 percent. The epidemic is controlled and social security

is ensured. According to the assessment of domestic and foreign economic organizations, by the end of 2020, Vietnam has achieved "dual goals" in the prevention of Covid-19 and maintaining economic growth^[1]. The Economist magazine in August 2020 ranked Vietnam in the top 16 most successful emerging economies in the world. According to World Bank data, with an average economic growth of 6.8 percent per year in the period 2016-2019, Vietnam is among the top 10 fastest growing countries in the world.

In the additional assessment report on the results of the implementation of the Socio-Economic Development Plan 2020 sent by the Government to the National Assembly on March 22th 2021, the Government affirmed that it has better implemented the main targets assigned by the National Assembly, achieved and exceeded 10/12 key targets. In which, there are 2 additional targets exceeding

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the target. The first one is that the growth rate of total export turnover is 7 percent (the reported number is about 1 percent). The second one, the unemployment rate of working age workers in urban areas is 3.88 percent instead of 4.39 percent as previously reported. There are four actual performance indicators that are better than the estimates reported to the National Assembly: (1) The growth rate of gross domestic product (GDP) reaches 2.91 percent (the reported number is about 2-3 percent); (2) The average growth rate of the consumer price index (CPI) reached 3.23 percent (the reported number is less than 4 percent); (3) The trade surplus was about 20 billion USD, equivalent to 7.1 percent of total export turnover (the reported trade surplus was 7 billion USD, equivalent to 2.6 percent of total export turnover); (4) The proportion of the population participating in health insurance reached 90.85 percent (reported number was 90.7 percent). With the efforts of the Government and the whole society, Vietnam's economic scale reached 271.2 billion USD and GDP per capita reached 2,779 USD ^[1].

In 2020, the government has restructured the economy in association with renovating the growth model, improving productivity, efficiency and competitiveness, which has been drastically implemented and achieved many positive results. Growth model gradually shifted from breadth to depth, growth quality was improved. The macro-economy is stable, and inflation is under control, ensuring the liquidity, stability and smoothness of the currency and foreign exchange markets. Credit growth is guaranteed to be in line with directional targets, capital absorption capacity of the economy, coupled with credit quality, and interest rate reduction. Credit structure continued to be positively adjusted, focusing credit sources on production, business and priority fields, strictly controlling credit in potential risk areas.

Despite many difficulties and challenges in the face of the complicated situation of the Covid-19 pandemic, Vietnam has still accomplished many socio-economic goals and important financial and state budget tasks, contributing to successfully accomplishing the common goal of the whole country. Major balances including the trade balance and the budget balance have been secured and improved more positively. Total import and export turnover of goods reached 545.4 billion USD, up 5.35 percent, of which goods export reached 282.7 billion USD, up about 7 percent, reaching the set target. Import of goods reached 262.7 billion USD, up about 3.67 percent ^[2]; trade surplus reached about 20 billion USD - the highest level ever, trade surplus for the 5th consecutive year.

Total state budget revenue in 2020 is estimated at

1,507.1 trillion dong, equal to 98 percent of the estimate while the total budget expenditure is estimated at 1,781.4 trillion dong, timely and fully meeting spending tasks. socio-economic development, national defense and security, state management and payment of due debts. State budget deficit in 2020 is strictly controlled. Thanks to better state budget revenue and thorough savings in expenditures, the state budget deficit is estimated at 265 trillion VND (an increase of 30.3 trillion VND compared to the estimate), equivalent to about 4.2 percent of the estimated GDP to the extent permitted by the National Assembly (below 4.5 percent of GDP). By the end of 2020, public debt will be about 55.9 percent of GDP (in 2019 it is 55 percent of GDP), Government debt is about 49.7 percent of GDP (in 2019 it is 48 percent of GDP), within the allowable limit ^[3].

Although positive results have been achieved, there are still shortcomings, limitations and inadequacies: Economic growth is still not commensurate with the potential and not really sustainable; the competitiveness and autonomy of the economy is still limited; budget revenues and expenditures still have many shortcomings; unsynchronized infrastructure; human resources do not meet the requirements. Especially with the very serious impacts of the Covid-19 pandemic in all fields due to the large openness of Vietnam's economy as well as deeper and deeper international integration, the process of economic restructuring is still slow, the economy's autonomy and ability to withstand unusual fluctuations in the world are still limited.

State budget balance has always been extremely important for the development of the country in general. However, the field of state budget revenue and expenditure in Vietnam also has revealed many shortcomings so that the efficiency of state budget revenue and expenditure is still limited. This article wishes to present more clearly a number of main theoretical issues on revenue - expenditure and efficiency of state budget revenue and expenditure, the current situation of state budget balance in Vietnam and propose solutions mainly to increase the efficiency in the coming years.

2. Methodology

This study almost uses secondary data. The author collected data about state budget in Vietnam from Statistical Yearbook by General Statistic Office and from official reports of communist party and government agencies. Besides, the author also referred data of state budget mentioned in some manuscripts published specialized magazines. After that, the author aggregated necessary statistics for this paper.

After obtaining and integrating data, the author analyzed statistics by using graphs, tables and comparative method to make the study clear and lively. Besides, information technology software such as Microsoft Excel, Paint,... and some computer tools were used to support the study.

3. Results and Discussion

3.1 Some Theoretical Issues on Balance of State Budget Revenue and Expenditure

State budget revenue

The system of national finance is composed of 5 basic parts: (1) State finance; (2) Corporate finance; (3) Household finance and social organizations; (4) Finance of the groups intermediary financial institutions (securities institutions, financial lending institutions...) and (5) International finance (finance of foreigners and international organizations based in Vietnam). All of them are closely related and influencing each other to create efficiency of all system and socio-economy. The larger the purchasing power of the population is, the more people can afford to spend on shopping for goods, travel, medical treatment, enjoyment of culture and art... Thus the more likely they are to contribute to the revenue of state budget. In fact, taxes, fees and charges account for about 84-85 percent of state budget revenue. It shows that residential income and household finance play an extremely important role, having great significance for state budget revenue. Therefore, how to strengthen household finance and corporate finance is a point of great significance for the nation^[4].

According to the Law on State Budget of Vietnam issued in 2015 and Resolution No. 163/2016/NQ-CP dated December 21, 2016 on the implementation of the articles in the Law on State Budget have been clearly stated about state budget revenue, including 14 revenues^[5,6]. The economic development and consumption policy as well as the State's accumulation policy have great impact on balance of state budget revenue and expenditure. Economic sectors including the state, enterprises and households distribute together to find high-paying jobs which is extremely important to increase the scale of the national economy; thereby increasing the mobilization of GDP into the state budget. Therefore, the issue of strongly developing the household economy and increasing the household's financial capacity is of great significance to the increase of the state revenue. The larger the mobilization of GDP into the state budget is, the greater the accumulation capacity for development investment is, and vice versa.

Macroeconomic theory has shown that there are three main sources of funding for development investment of any economy. Firstly, it is the undistributed profits of enterprises that are mostly included in the income of households and are not used for consumption or in other words, it is savings. Issuing equity securities is also an important source of funding because these securities will be purchased with households' savings. Thirdly, credit mobilization through financial intermediaries or bond issuance is also one of popular sources. After all, in order to invest for development, it is essential to implement savings and accumulation. Saving is a function of income, $S = f(Y)$ ^[7]. Saving is positively related to income so the saving curve is upward sloping. At very low levels of income, saving can be negative. This is because at low levels of income, consumption can be more than income and there can be dissaving in the economy. We will consider the investment to be autonomous, and thus, the investment curve is a horizontal line parallel to the x-axis. In the diagram, point E is the equilibrium point where $S = I$. At this point, the amount of money withdrawn from the economy is equal to the amount of money injected into the economy at this level $AD = AS$ in the economy (Figure 1).

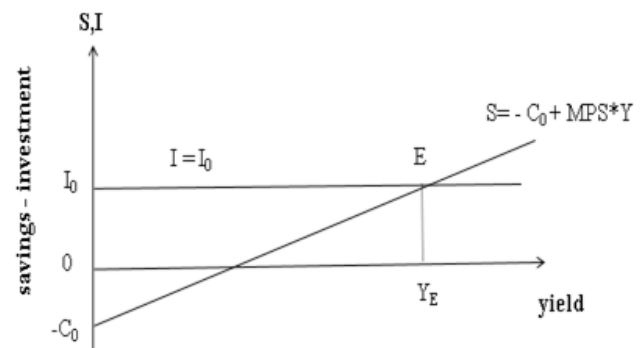


Figure 1. Relationship between savings and investment

If the mobilization of GDP into the state budget reaches Max, the output of the economy will reach Min and vice versa (Figure 2). It means that it is impossible to reach Max for both targets. Therefore, it is necessary to determine how reasonably to mobilize GDP into the state budget so that economic output can reach the necessary high level, creating a premise for the formation of economic resources for the next period^[8]. The key issue is determining the "o" point and how long it is appropriate to maintain this situation. Observing the relationship between consumption and accumulation in another slice also shows a close correlation between savings and consumption. The level of mobilization of GDP into the budget is inversely proportional to the increase in output of the economy. If taxes, fees, charges or GDP are mobilized too much into the state budget, then production will not develop, which means the size of the country's GDP will decrease.

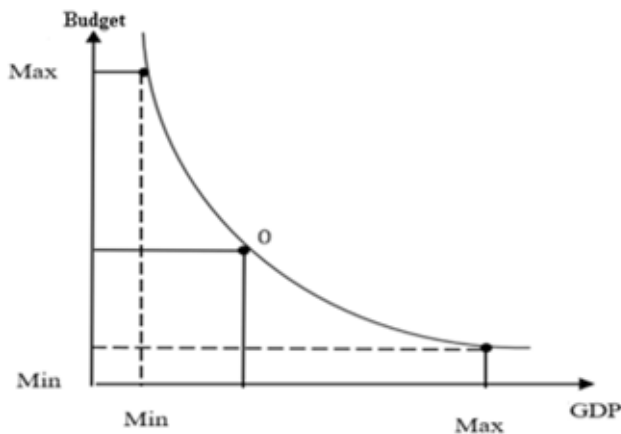


Figure 2. Relationship between the State budget and GDP

A typical example of savings as the primary source of development investment is China. In 1978, China implemented the policy of opening reform associated with the implementation of the four modernizations. To do this, China has implemented the policy of “tighten the belt” and austerity. During the years of 1980-2000, this country achieved a ratio of social investment to GDP about 40-42 percent. Up to now, China has had the second largest economy in the world, surpassing Japan and many European developed countries.

State budget expenditure

The Law on State Budget of Vietnam specified 9 contents of state budget expenditure^[5]. In this, recurrent expenditure and development investment expenditure are important spending that have a decisive influence on the efficiency of state budget expenditure. Recurrent expenditure depends on several factors, of which the number of public employees and the salary regime for the public sector are two important ones. Development investment spending, also known as investment with state budget capital, is an important budget expenditure, usually accounting for about 30 percent of total state budget expenditure. Its effectiveness greatly affects the efficiency of state budget expenditure. Development investment spending includes 4 main parts: (1) Investment in construction of technical infrastructure and procurement of public assets (properties for state agencies); (2) Investment in science and technology development; (3) Invest in human resource training for the public sector; and (4) Invest in building and promulgating laws and policies. It is necessary to consider the effectiveness of state budget investment^[6]. Theoretically, the effectiveness of state budget investment is analyzed through a number of key indicators including contribution rate to GDP growth, rate of job creation for employees, private capital

attraction Index, rate of loss and waste of state budget capital, debt ratio and long construction period.

State budget revenue and expenditure balance

State budget balance is always a big issue, which is one of the important indicators reflecting the sustainable development of the national economy. For Vietnam, the economy is small, so internal capital accumulation is limited. The government must borrow to balance the budget is a problem to do. Public debt and public debt payment are issues that cannot be ignored when discussing budget balance in our country. For a country with a small economy, low GDP per capita, this is also an issue that needs attention to find solutions to reduce the state budget deficit.

According to the government’s announcement, Vietnam’s public debt at the end of 2019 reached 56.1% of GDP (down from 58.4% in 2018). In 2020, the government implemented the policy of raising the public debt ratio by about 2-3% of GDP to have more resources to support businesses and employees amid great damage from the COVID-19 pandemic. With such a level of public debt, it is still within a safe threshold. Actually, by the end of 2020, the national public debt is equivalent to 55.3% of the economy’s GDP, of which foreign debt accounts for 47.3% of GDP^[1,2].

3.2 Situation of State Budget Revenue and Expenditure in Vietnam

In fact, in the period 2011-2019, the population increased by about 1.15%/year and GDP increased by 6.3%, so people’s living standards were improved relatively clearly, labor productivity increased by about 5.1 %/year. In 2019, Vietnam’s GDP per capita was about 35% of Thailand’s, 22.5% of Malaysia’s, and 4% of Singapore’s^[2]. That shows, the ability to accumulate from within the economy of our country is limited. Recently, the economy has developed quite well, the economic openness is increasing, Vietnamese enterprises are participating in economic games on a global scale more and more. The rate of poor households decreased relatively quickly. The ratio of multidimensional poverty in Vietnam in 2020 decreased by more than half compared to 2015, from 9.8% in 2015 to 4.8% in 2020 (Table 1).

The absolute amount of state budget revenue has increased steadily over the years, but the ratio of state budget revenue to GDP has tended to decrease from about 27.8% in 2010 to 24.3% in 2015 and 25.7% in 2019. This indicator is 23.9% in 2020. In the period 2011-2019, the state budget collection rate was at an average of 24.85%

Table 1. Some key socio-economic indicators of Vietnam

| Indicator | Unit | 2010 | 2015 | 2019 | 2020 | Average Growth rate (%) |
|---------------------------------------|-------------------|---------|---------|---------|---------|-------------------------|
| 1. Population | 1,000 | 86,947 | 91,709 | 96,484 | 97,580 | 1.15 |
| Urban demographics | 1,000 | 26,515 | 31,067 | 33,816 | 35,930 | 2.7 |
| 2. Working age population | 1,000 | 50,393 | 53,984 | 55,767 | 54,610 | 1.13 |
| 3. GDP, Nominal GDP | 1,000 billion VND | 2,157.8 | 4,192.3 | 6,037.3 | 7,899.8 | - |
| Real GDP (Price in 2010) | 1,000 billion VND | 2,157.8 | 2,875.8 | 3,738.5 | 3,847.3 | 5.96 |
| 4. GDP per capita (Price in 2010) | USD | 1,317.9 | 2,085.1 | 2,715.3 | 2,779 | - |
| 5. Labor Productivity (Current Price) | USD | 1,309 | 3,657 | 4,792 | 5,135.7 | - |
| Labor Productivity (Price in 210) | USD | 1,309 | 1,658.6 | 2,044.2 | 2,065.3 | 5.1 |
| 6. Export Turnover | billion USD | 72.2 | 162.02 | 264.2 | 282.7 | - |
| 7. Ratio of Poverty | % | 20.4* | 9.8* | 5.7* | 4.8* | - |

*2010: approaching the Vietnamese Government's standards; 2015, 2019 and 2020 approaching Multidimensional approach poverty line

Source: General Statistics Office of Vietnam

compared to GDP and the economy still had an increase of about 6.3% per year. In 2020, due to the damage caused by the COVID-19 pandemic, Vietnam's economy fell into a deep decline and only achieved a growth rate of about 2.91%. Accordingly, the state budget revenue also decreased sharply, but state budget expenditure increased because it had to support businesses to maintain production and support workers and people facing difficulties because of the COVID-19 pandemic.

The structure of state budget revenue has changed a lot (Table 2). Of the total state budget revenue, domestic revenue accounted for from 64.7% to 83.9%. Revenue from state-owned enterprises decreased from 18.7% in 2010 to 15.7% in 2015 and down to about 10.6% in 2019 and 2020. Meanwhile, the rate of revenue from the foreign-invested sector increased continuously. The rate of revenue from the balance of import and export activities decreased continuously from 21.7% in 2010 to 16.6% in 2015 and 13.8% in 2019. Total state budget revenue in 2020 is estimated at 1,507.1 trillion VND, equaling 98% of the estimate. Mobilization rate into the state budget is about 23.9% of GDP, and mobilization from taxes and fees is about 19.1% of GDP. According to management decentralization, central budget revenue is about 90%, down about 89 trillion VND compared to the estimate; local budget revenue reached 108.6%, exceeding 56.8 trillion VND compared to the estimate. For the whole period of 2016-2020, the total budget revenue reached 6.89 million billion VND, exceeding the set plan (100.4%), a very positive level in the context of difficult state budget revenue in 2020 when economic growth was much lower than expected. The structure of state budget revenue is more sustainable. The proportion of domestic revenue in total state budget revenue increases from 68% on average in the period 2011-2015 to 85.5% in 2020. The proportion

of revenue from raw oil and balance income from import and export activities decreased from 30% on average in the period 2011-2015 to about 14.2% in 2020 ^[2]. The fact shows that a reasonable ratio of state budget revenue to GDP (both to increase state budget revenue and to enable the economy to develop quickly) is necessary to focus. For Vietnam, while the economy is still small and the population's income is low, the government needs a lot of budget to solve basic socio-economic problems and modernizing infrastructure of the nation, the ratio of state budget revenue to the total national GDP should be kept at around 24-26 %, which is acceptable ^[3].

From 2010 to 2020, budget expenditure has always been higher than state budget revenue (Table 2). From 109.6 percent in 2010 to 113.1 percent in 2019 and 118.2% in 2020. In 2015 alone, state budget expenditure was equal to 125% of state budget revenue. In other words, in Vietnam, we spend more than we earn. Recurring expenditure is about 62.8% to 67.6% of total state budget revenue. The budget for education spending has always increased, from about 11.9% in 2010 to 14.5% in 2020 ^[2]. But spending on science and technology development is still low, averagely less than 1%. It means that If we keep spending the state budget like in the past, we can't create a factor potential growth because investment in human development and in R&D create factors for long-term growth. Vietnam has nearly 3 million people working in the state sector, ranking first among ASEAN countries (accounting for about 4.8% of the population) ^[9]. Therefore, recurrent expenditure on salary is very large while this number in Thailand accounts for about 4.6%, Singapore 2.4%, Indonesia 1.8%, Philippines 1.2% of the total population ^[10]. State budget expenditure in 2020 has completed the target, with a total budget expenditure estimated at 1,781.4 trillion VND, promptly

Table 2. Some indicators of state budget revenue and expenditure in Vietnam

| Indicator | Unit | 2010 | 2015 | 2019 | 2020 |
|--|-------------------|------------------|------------------|--------------------|--------------------|
| 1. Budget Revenue | | | | | |
| Total state budget revenue | 1,000 billion VND | 599.9 | 1,020.5 | 1,551.1 | 1,507.1 |
| Proportion of GDP | % | 27.8 | 24.3 | 25.7 | 23.9 |
| - Domestic Revenue (Proportion of total revenue) | 1,000 billion VND | 388.6 (64.7%) | 771.9 (75.6%) | 1,273.9 (82.1%) | 1,264.1 (83.9%) |
| - Revenue from state-owned enterprises (Proportion of total revenue) | 1,000 billion VND | 388.6 (18.7%) | 771.9 (15.7%) | 164.9 (10.6%) | 159.2 (10.56%) |
| - Revenue from foreign- invested enterprises (Proportion of total revenue) | 1,000 billion VND | 64.9 (10.8%) | 141 (13.9%) | 210.2 (13.6%) | 224.15 (14.87%) |
| b. Fees and charges | 1,000 billion VND | 22.6 | 47.8 | 81.2 | 83.1 |
| c. Revenue of oil | 1,000 billion VND | 130.4 | 169.3 | 214.3 | 34.6 |
| d. Revenue from balance of import and export activities (Proportion of total revenue) | 1,000 billion VND | 130.4 (21.7%) | 169.3 (16.6%) | 214.3 (13.8%) | 179.30 (11.9%) |
| 2. Budget Expenditure | | | | | |
| Total state budget expenditure | 1,000 billion VND | 657.6 | 1,276.4 | 1,754.5 | 1,781.4 |
| a. Spending on development investment (Proportion of total expenditure) | 1,000 billion VND | 252.7 (38.4%) | 401.7 (31.5%) | 438.4 (24.99%) | 389.7 (21.87%) |
| b. Spending in socio- economic development (Proportion of total expenditure) | 1,000 billion VND | 376.6 (57.3%) | 788.5 (61.8%) | 1,049.0 (59.8%) | 1,041.8 (58.5%) |
| c. Spending on education and training (Proportion of total expenditure) | 1,000 billion VND | 78.2 (11.89%) | 177.4 (13.9%) | 245.2 (14.0%) | 258.75 (14.5%) |
| d. Spend the career of science and technology (Proportion of total expenditure) | 1,000 billion VND | 4.14 (0.63%) | 9.39 (0.74%) | 12.96 (0.74%) | 12.80 (0.72%) |
| 3. State budget deficit | % | 109.6 | 125.0 | 113.1 | 118.2 |

Source: General Statistics Office of Vietnam

and fully meeting the spending tasks of socio-economic development, defense, security, state management and payment of due debts. Moreover, the state budget has spent over 18 trillion VND on epidemic prevention and control and supporting people to overcome the impact of the Covid-19 pandemic. The central budget has used about 12.4 trillion VND in reserve to support localities to overcome the consequences of storms, floods and restore production after natural disasters and epidemics. A bright spot in the implementation of budget expenditure in 2020 is the progress in disbursement of development investment capital compared to the previous year.

Another situation in using the state budget in Vietnam is that the state budget expenditure for development investment also revealed many shortcomings. Of the total realized capital of the state sector, loan capital accounts for about 29.5% in 2019. Although loan capital has decreased in both absolute and relative numbers, it still accounts for about one-third of the total realized capital of the state economic sector.

In the period 2011-2019, the index of attracting private capital is still limited. It means every 1 VND of investment capital with state budget capital can attract 3.62 VND of private capital in 2011. This indicator is

3.63 and 4.14 in 2015 and in 2019 respectively (Table 3). The contribution rate of state budget investment to GDP growth is only about 13 -13.6%; while the proportion of contribution to total social investment capital accounts for about more than 17% ^[2]. This shows that the effectiveness of state budget investment is still not high.

Table 3. Some indicators of investment efficiency by state budget capital in Vietnam

| Indicator | 2011 | 2015 | 2019 |
|---|------|-------|------|
| Contribution to GDP growth (%) | 13.1 | 12.6 | 13.6 |
| Private investment attraction index (times) | 3.62 | 3.63 | 4.14 |
| Rate of contribution to social investment (%) | 17.1 | 17.08 | 16.7 |

Source: General Statistics Office of Vietnam

Entering 2021, facing the huge challenges brought by the Covid-19 pandemic to the world, Vietnam's total state budget revenue in the first six months of the year reached 781 trillion VND, equaling 58.2% of the estimate, an increase 16.3% over the same period in 2020, up 4.5% over the same period in 2019. State budget expenditure is estimated at 694.4 trillion VND, equaling 41.2% of the estimate. State budget balance is guaranteed, in which, the

central budget deficit balance is about 63 trillion VND, the local budget surplus is approximately 150 trillion VND ^[3].

4. Recommendations to Increase the Efficiency of State Budget Revenue and Expenditure

Renovating state budget revenue and expenditure is very necessary and urgent. The management and administration of state budget revenues and expenditures must be in the direction of determining revenue levels that should and should benefit economic growth, encourage enterprises to develop and do profitable business. State budget expenditure should and should be done properly, creating a leap in efficiency. The provinces should also follow the direction to conduct state budget revenue and expenditure in a reasonable manner. To do this, it is essential to implement the following solutions synchronously.

Continuously increase the economic growth rate, sharply increase the size of the national economy basing on modernization; rapidly increase the proportion of non-agricultural sectors along with an increase using high technology in all industries and sectors, thereby increasing high-income jobs nationwide.

In other words, digital transformation and digital economy must be strongly developed. The GDP growth rate has to be above about 6.5-7% per year and goes hand in hand with increasing the ability to mobilize GDP into the state budget, so that the state budget revenue rate is about 23-24% of GDP in the next few years. Moreover, reducing public investment spending is also one of effective solutions. The possible recommendations can be: only investing in projects that the private sector does not work as efficiently, increasing the form of PPP investment, rearranging the contingent of civil servants and public employees to streamline the administrative system...At the same time, in the coming years, Vietnam should still implement the "tight the belt" policy to increase the budget to spend on implementing socio-economic development tasks. It is necessary to strongly develop a number of businesses, including large and global enterprises, striving to have about 10% of large enterprises by 2025 ^[11].

In the very complicated context of the COVID-19 epidemic, a reasonable saving policy of state budget expenditure is an important solution. It means that we must strive to spend the state budget on investment development at an acceptable level, i.e. less than 30% of the total state budget expenditure. Expenditure on education and training development is at 17-20% and expenditure on scientific development is about 1.8-2%

of total state budget expenditure. Economic institutions determine the success or failure of the economy, so guaranteed budget must be devoted to build and implement laws and policies directing to increase the efficiency of state budget spending.

The third solution is improving the capacity of economic development managing system as well as state budget revenue and expenditure one so that the government always plays a decisive role in prosperity, accelerates the national economy and increases the efficiency of state budget revenue and expenditure. Simultaneously with completing the apparatus, it is necessary to promulgate and organize the implementation of policies conducive to economic development as well as to genuine businesses. In addition, the government needs to tighten the appraisal and approval of state budget plans to improve the quality of state budget revenue and expenditure plans and enhance the efficiency of state budget revenue and expenditure activities. To do this, firstly we must improve the quality of civil servants and strengthen the building of e-government to match with the 4.0 era.

Another solution is strengthening decentralization in the field of state budget revenue and expenditure for localities. Localities need to plan to balance their budgets as soon as possible. The following solutions can be considered as effective recommendations for localities to contribute to improving the macro-efficiency in the management of state budget revenue and expenditure balance.

Firstly, exploiting fully and effectively local revenue sources: Thoroughly managing budget revenues from taxes, fees and charges, land use levies, land rents, house rents and other revenues such as collection of fines for traffic safety violations, fines for administrative violations, etc. In addition, potential revenue sources include collection of loans, aid, collection of labor cooperation, revenue from mobilization of the public to invest in construction of public works, implementation of poverty reduction programs.

Secondly, perfecting the decentralization of revenue management between the central budget and the local budget: (1) Revenue from value-added tax levied on state-owned enterprises and foreign-invested enterprises should dedicate 100% to the local budget; (2) Regulatory revenue between the central budget and the local budget should be distributed reasonably such as corporate income tax, value-added tax, tax on remittance of income abroad. The rate of distribution of regulatory revenues is only valid for a stable period of 3 to 5 years. (3) Collecting subsidies for localities, for instant the central budget only provides a

balance supplement for local budget, not the entire deficit. This level of subsidy is about 80% to 90% of the shortfall.

Thirdly, expanding the autonomy for commune-level authorities in exploiting local revenue sources by: (1) Reviewing and developing revenue sources that leave 100% for the commune-level budget; (2) Guiding on mobilization of the public's contributions; (3) Coordinating and directing the management of revenue sources divided by percentage (%); (4) Improving timely settlement of additional revenue from the superior budget for the commune budget; (5) Building a regime to generate revenue and manage commune budget revenues to ensure the spending needs of commune-level units.

Fourthly, improving the capacity of budget management apparatus at all levels: (1) Organizing well the classification of cadres according to the standards of competence, qualifications and ethical qualities to be placed in appropriate positions of managing system; (2) Strengthening professional training and retraining for budget managers and officers in the direction of specializing in management skills, strictly implementing professional processes, exploiting and proficiently using informatics applications to serve the needs of the public.

Fifthly, perfecting the legal system in the management of state budget revenue and expenditure is an important point. In tax policy, it is necessary to form a reasonable tax structure in order to increase revenue sources and the role of the macro-regulatory state. Tax policies must contribute to improving competitiveness, increasing investment in technological innovation to meet the requirements of industrial modernization in the context of Vietnam's integration into the region and the world. The tax system must be simple, stable, highly legal and similar to regional and international practices. Simultaneously with that, the improvement of the accounting regime, finalization of state budget revenues and expenditures to meet the needs of renovation of state budget management play important roles.

Finally, implementing the national policy of thrift in state budget expenditure by respecting financial discipline. Due to limited economic resources, an increase in state budget expenditure will increase the debt and tax burden for the economy in the future, so it is necessary to improve efficiency in resource allocation. State budget expenditures must be aligned with the strategic priorities of the state to ensure overall financial discipline as well as compatibility between the planned budget and the actual budget in order to maximize the allocation of financial resources. This requires the government to pay more attention to outputs in distribution and use of financial resources at the lowest cost. One of modern choices is

issuing local bonds to raise capital for investment in key local economic projects while ensuring strict compliance with bond issuance and payment procedures.

5. Conclusions

State budget balance is an important part of fiscal policy which is one of the most important macroeconomic regulatory policies of the State. The balance of state budget includes several features that are mainly financial in nature. Firstly, it reflects the interaction relationship between state budget revenue and expenditure in the year in order to achieve the set goals. It is both a tool to implement the state's social policies and is influenced by socio-economic indicators. State budget balance is the balance between total revenue and total expenditure, between revenues and expenditures, balance in the allocation and transfer of resources between levels in the state budget system, and at the same time it controls the state budget deficit. Actually, state budget revenue and expenditure balance cannot be achieved absolute balance because economic activities are always in fluctuating situation. The State must adjust revenue and expenditure activities accordingly and need to allocate reasonable revenue to ensure socio-economic stability among localities. In addition, the state budget balance is quantitative and predictive. In the process of balancing the state budget, the governors must determine the state budget revenue and expenditure figures compared with the domestic income situation, detailing each revenue and expenditure in order to devise a mechanism for using the state budget, and manage revenue sources in line with expenditure activities, thereby serving as a basis for resource allocation and transfer between budget levels. The State budget balance must be able to estimate the overall budget revenues and expenditures to ensure the realization of socio-economic goals.

Few could argue that balancing the state budget is an important tool for the State to intervene in the country's socio-economic activities. In other words, balancing the state budget in a market economy plays a decisive role in stabilizing the macro-economy through tax policy, annual spending policy and determining the specific overspending level. The result is an impact on economic activity as well as the balance of international trade, thereby, contributing to stabilizing the implementation of macroeconomic policy objectives such as: increasing the average income level in the economy, reducing the unemployment rate, maintaining inflation at a stable level and maintaining a stable estimated level of inflation. Moreover, balancing the state budget contributes to the effective allocation and use of financial resources, to ensure this role right

from the time of making the state budget, when the state chooses to present a reasonable priority in the distribution of financial resources. State budget allocation and the close connection between the socio-economic development strategy and budget planning. In addition, balancing the state budget contributes to ensuring social justice and reducing inequality among localities. Recently, although Vietnam's socio-economy has been achieving many positive changes in the direction of urbanization and modernization, there are still many regions with very difficult socio-economic conditions. Therefore, balancing the state budget will ensure fairness and reduce inequality between people and regions. The state can mobilize resources from people with high incomes and developed economic regions. Balancing the state budget also contributes to promoting the advantages of each locality, creating economic strengths for that locality based on the available potential of the locality.

In the context of the complicated developments of the Covid-19 pandemic, which has had a serious impact on the world economy. A reasonable balance of the state budget is an important task of Vietnam's government to ensure socio-economic goals and safety for the people.

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ARTICLE

Data Driven Customer Segmentation for Vietnamese SMEs in Big Data Era

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ABSTRACT

Almost Vietnamese big businesses often use outsourcing services to do marketing researches such as analysing and evaluating consumer intention and behaviour, customers' satisfaction, customers' loyalty, market share, market segmentation and some similar marketing studies. One of the most favourite marketing research business in Vietnam is ACNielsen and Vietnam big businesses usually plan and adjust marketing activities based on ACNielsen's report. Because of the limitation of budget, Vietnamese small and medium enterprises (SMEs) often do marketing researches by themselves. Among the marketing researches activities in SMEs, customer segmentation is conducted by tools such as Excel, Facebook analytics or only by simple design thinking approach to help save costs. However, these tools are no longer suitable for the age of data information explosion today. This article uses case analysing of the United Kingdom online retailer through clustering algorithm on R package. The result proves clustering method's superiority in customer segmentation compared to the traditional method (SPSS, Excel, Facebook analytics, design thinking) which Vietnamese SMEs are using. More important, this article helps Vietnamese SMEs understand and apply clustering algorithm on R in customer segmenting on their given data set efficiently. On that basis, Vietnamese SMEs can plan marketing programs and drive their actions as contextualizing and/or personalizing their message to their customers suitably.

1. Introduction

Customer segmentation is a very important step in marketing research. Through customer segmentation allows businesses to understand customers' behavior and preferences, acquire knowledge about different customer groups for the allocation of resources and adaptation of product mixes, the development of new product/market approaches^[31] and for satisfying customer segments

according to their specific preferences and needs^[10], the retention to loyalty customers and capturing new customers^[19].

In Vietnam, businesses usually segment their customers based on four main approaches or mixed of them including Demographic, Behaviour, Geographic and Psychographic. However, different tools which Vietnamese's businesses use to analyze data, different size and complication of

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data set, different results they get. These differences are bigger between big enterprises and SMEs. In Vietnamese SMEs, data sets are usually small size and simple, so they can not employ a Data Driven approach, it means it use data to drive their marketing actions; and three tools that Vietnamese SMEs popularly used are Excel, Facebook analytics and Design Thinking.

With Excel application, it has been using for analyzing sales data of Vietnamese SMEs through describe customer features. It helps in identifying different customer groups with specific business requirements. However, using Excel has disadvantages such as the Excel data file itself only holds 1,080,000 rows without support and integration with other tools. Therefore, it is not suitable for analyzing big data. Besides, Excel bases on descriptive statistics to divide into customer clusters that are simple and not reality.

In recent years, some of Vietnamese medium enterprises have been applying some methods for customer segmenting, with emerging of sale online. These medium businesses track consumer behavior through optimize the entire customer experience on mobile devices, web, bots, in actual life, and more. Marketer can group into customer clusters through Facebook analytics. However, there is some defect of this tool. In order to take advantage of Facebook analytics truly, you must install more tools into your marketing' toolset which almost of Vietnamese SMEs' limitation. And that very toolkit may have exploded in its associations with Google Analytics, Google AdWords, and so on. Besides that, it shows disadvantageous of Facebook not recording the transactions of direct selling at the store like other selling software.

In addition, micro-businesses, especially startups implement traditional market segmentation such as Design thinking. This approach includes some steps such as going to the major stores, observing real groups of customer and tracking how factors of brands creating value (6P & 7P analysis). Outline portraits (5 segmentation criteria) of groups of customers. The most important is assuming the needs (Need), why they come and buy that brand (mapping analysis 6P/7P with assumptions of demand). Group all groups of observed customers into large customer sets in Consumer Segmentation model, eliminating duplicate groups. It only applies this method when the business is small and the customer data are not really much. This leads to enterprises facing difficulties in analyzing big data in order to draw a comprehensive picture of business performance, in which, customer segmentation is associated with an effective marketing strategy that requires a more effective tool to explore and analyze data.

In past ten years, the World's big enterprises as Facebook, Google, Amazon, Netflix, Alibaba, eBay,...

can increase scale quickly by creating new business models. These companies are using the Internet to reach a geographically unconstrained mass market and unlimited customers. Those capabilities provide the barriers to entry that give these giants many advantages to outperform their competitors. In order to follow up this strategy, these companies often build and operate their business models based on Business Intelligence^[26], especially upon customer-centric business intelligence. In this approach, big online retailers can understand customer's behavior through what they performed on platforms such as website, social media. It solves some concerned questions through customer centric business intelligence approach: How long has a customer stayed with each web page, and in which sequence has a customer visited a set of product webpages? Who are the most/least valuable customers to the business? Who are the most/least loyal customers? What are customers' purchasing behavior patterns in terms of various perspectives such as products/ items, regions and time and so on?^[8]

With customer segmentation activity in big data, businesses usually use a clustering algorithm which is analysed in R or Python software. However, when make a comparison between R and Python, R has some advantages such as with complicated and big data, R is more productivity, visual and easy to use complicated function, testing and statistics models than Python.

This article wants to guide Vietnamese SMEs in customers segmentation through case analysing of the United Kingdom (UK) online retailer by using one of clustering algorithm on R package to analyse data. This case analysing is Data Driven in customer segmentation of the UK online retailer on a data set with 330,379 transactions. The primary purpose of this approach is to help businesses use data to drive their actions as contextualizing and/or personalizing its message to its customers, pricing policies, and another marketing programs through understanding its customers. The Agglomerative Clustering algorithm was used to segment customers into four groups. Some fundamental characteristics and recommendations of each segment were proposed. The analysis was performed with R 3.5.3.

The remainder of the paper is organized: In section 2, the background about Data Driven in customer segmentation is provided. In section 3, methodology is presented about the present situation about customer segmentation of Vietnamese SMEs and the performance on the target data set by Agglomerative Clustering analysis. The next section of this article is concluding remarks which review some good points which the customer segmentation approach in case study solved. The

last section is a recommendation in guiding framework to Vietnamese SMEs in customer segmentation.

2. Literature Review

2.1 Customer Segmentation

Customer segmentation is not only “one of the major way to operationalizing the marketing concept” but also helps companies in planning marketing strategy^[39]. It is the key step of a marketing plan and at the center of successful marketing^[16,28].

The importance of segmentation for marketing strategies is undeniable^[21], in both academic and practical marketing^[16]. There were more 100 research articles about this topic^[39] and the number of papers have been increasing. Segmentation gives a good understanding of the need of the customers and helps in identifying the potential customers of the company. Dividing the customers into segments also increases the revenue of the company. It is believed that retaining the customers is more important than finding new customers. For instance, the company can deploy marketing strategies that are specific to an individual segment to retain the customer^[9].

Customer segmentation is subgroups of consumers who will respond similarly to a market mix^[30], a method of grouping customers in the market bases on specific criteria to identify and respond to the need of those customer groups^[18]. At its core, it is about aggregating individual consumer behavior into a manageable number of groups that are mutually exclusive and share well-defined characteristics^[40]. Alternatively, it can be understood “as the process of splitting customers, or potential customers, within a market into different groups, or segments within which customers have the same, or similar requirements satisfied by a distinct marketing mix”^[29].

Segmentation provides businesses the opportunity to develop, target and fine tune products and market rationally and precisely on the demand side of the market^[34]. As a result of customer segmentation, a company will have a portfolio of segmentation and then depending on the strategy of company, one or more segmentations will be chosen to target and differentiated marketing mix programs will be developed for each segmentation.

2.2 Advantages of Customer Segmentation

The customer segmentation could provide four vital benefits to marketing departments and management of a business:

First, customer segmentation allows the effective identification of the important customer groups that include the most profitable and loyal customers^[10,24,39].

This method has also been used to determine the potential profit of customers by research efforts^[6,7,8,14,22,32,38]. With these results, important decisions will be made toward high-value groups of customers with direct and concentrated efforts.

Second, customer segmentation allows businesses to understand customers’ behavior and characteristics, then gain knowledge about diverse customer groups. By this way, it is possible to satisfy customer segments according to their specific preferences and needs^[10]. Such knowledge provides many opportunities to more accurately tailor marketing actions and materials to individual customer expectations^[11,27]. In this respect, several studies have applied customer segmentation to create discriminative customer management and effective marketing strategies for different customer groups^[6,25,37].

Third, segmentation assists in customer retention and capturing new markets, because without a specific focus, customers may turn to market niche players who operate for specific segments^[19]. Therefore, if they fail to identify and apply market segmentation businesses can lose competitive advantages when they compete with their competitors and in particular niche competition.

Finally, segmentation definitions become more relevant for understanding customers, for the allocation of resources and adaptation of product mixes, and for the development of new product/market approach^[31].

2.3 Classification of Segmentation

There are many types of segmentation methods^[17], but every way of segmenting market has merits and limitations which depend on the considered product market and the managerial objectives in segmenting^[16].

Basically, three methods are acknowledged: Geographic segmentation, demographic segmentation, volume segmentation or “heavy_haft” theory^[17,36]. However, a key problem of these methods is descriptive, relying on “an ex-post facto analysis of the kinds of people” rather than based on identifying and analyzing causal elements^[17]. Such methods are now regarded as being not really effective in predicting of the future consumer behaviour^[2].

Another point of view, there are three categories of segmentation such as behavioural, psychographic and profile segmentation^[15]. Even though which kind of segmentation is chosen, also need to focus on the benefits which customers interest. The simple reason is “customers buy benefits, not products; customers buy an answer, a solution, to their specific set of existing needs and demands”^[18], so customers will seek some differential benefits when deciding in buying/using a product/service^[17]. Therefore, there is an existence of true

customer segments which are incurred from differential benefit soughts^[2]. In three types of segmentations above, behavioral segmentation will base on some variables, such as benefits sought from the product (benefit segment), buying patterns such as frequency and volume of purchase, perceptions and beliefs to group the customers^[2].

With the features of the original data set, this article approached on the behavioral segmentation with the chosen variable is buying patterns: frequency and volume of purchase.

2.4 Data Driven in Customer Segmentation

In customer segmentation, there are two ways used: (1) Typological segmentation and (2) Data Driven or post hoc in segmentation^[12,4].

The typological segmentation is similar to “a priori segmentation designates groups of consumers who are similar in terms of some factor or factors that are known or felt in advance to be related to product/service consumer”^[30] and generally multidimensional and conceptual^[3]. Contrarily, a Data Driven segmentation, or post hoc segmentation, is empirical. A company employs a Data Driven approach, and it means it uses data to drive their actions as promotion programs, pricing policies and another Marketing strategy to its customers. The goal of this method is classifying cases according to their measured similarity on observed variables^[3]. With this approach, the first point is an empirical data set, and quantitative techniques of data analysis are used for this data set to derive a grouping^[12]. Generally, the basic difference between typology and Data Driven is conceptual and empirical^[3].

2.5 Clustering Analysis Method

Understanding Clustering Analysis

Most researches, using Data Driven segmentation to group individuals in the market, use a statistical method based on one of the family of cluster analysis^[13]. Cluster analysis is a method for the analysis and organizing an enormous bulk of multivariate or scientific data to decrease information overload and to discover relationship and classes in unorganized data sets. It can assist in discovery the structure or causality in complex bodies of data^[1,13].

Dolnicar (2002) indicates that cluster analysis is “a toolbox of highly interdisciplinary techniques of multivariate data analysis” by dividing number of individuals into subgroups based on “a pre-specified criterion (e.g. minimal variance within each resulting cluster) which is assumed to reflect the similarity of individuals within the subgroups and the dissimilarity

between them”^[12].

Deepak (2019) proposes clustering analysis is a prominent technique to segment market based on benefit sought^[20]. Several studies by Soutar McNeil (1991), Minhas and Jacobs (1996), Brunner and Siegrist (2011) and Li et al. (2011) have used benefit segmentation with factor and cluster analysis method to segment market^[35,33,5,22].

Importantly, cluster analysis conducts classifications from initially uncategorical data, but not a type of identification (also called dissection), it is sorting entities based on certain classes after identifying, in many ways, it is “the reverse-engineering of classification taxonomies”^[13,1].

2.6 Clustering Method

In the last four decades, the computational power has increased, so there are many studies using similar techniques in data mining and pattern recognition^[13,1]. The starting point for clustering analysis is a multidimensional data set. The process of clustering includes deciding which algorithm should be used to analyze the data, which measure of association is the most appropriate, how many groups of respondents should emerge. This complex first step is followed by the actual data analytic step which results in a partition of the respondents (every respondent is assigned to one of subgroups), and forms the basis for interpretation by studying differences in group responses^[12].

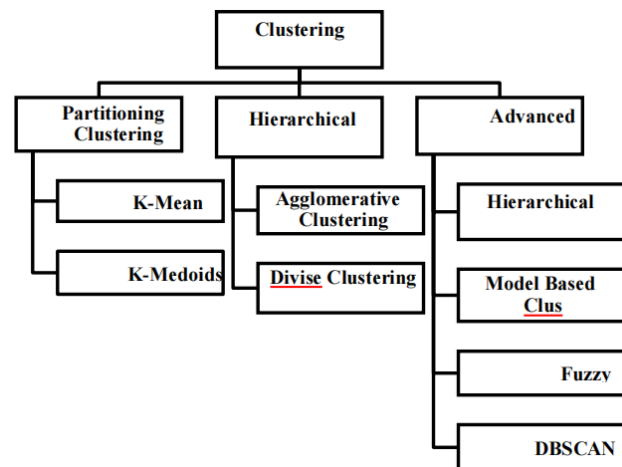


Figure 1. Diagram of clustering analysing techniques.

Figure 1 showed that there are three types of clustering analysis: Partitioning Clustering, Hierarchical Clustering, Advanced Clustering^[23]. Specifically, partitioning clustering is used to classify observations within a data set into multiple groups based on their similarity. Hierarchical clustering is an alternative approach to partitioning clustering for grouping objects based on their similarity in contrast to partitioning clustering, hierarchical clustering

does not require to pre-specify the number of clusters to be produced^[23].

Partitioning Clustering includes three methods: K-Mean, K-Medoids, Clara; Hierarchical Clustering has two methods such as Agglomerative Clustering, Divisive Clustering; and Advanced Clustering includes four methods as Hierarchical K-mean, Model Based Clus, Fuzzy, SOM, DBSCAN^[23].

2.7 Hierarchical Clustering, Agglomerative Clustering

Hierarchical clustering can be subdivided into two types: Agglomerative clustering and Divise clustering. With the data types of this study, numeric data, the Agglomerative clustering is used for analyzing data. Agglomerative clustering in which, each observation is initially considered as a cluster of its leaf. Then, the most similar clusters are successively merged until there is just one single big cluster (root). The agglomerative clustering is the most common type of hierarchical clustering used to group objects in clusters based on their similarity. It's also known as AGNES (Agglomerative Nesting). The algorithm starts by treating each object as a singleton cluster. Next, pairs of clusters are successively merged until all clusters have been merged into one big cluster containing all objects. The result is a tree-based representation of the objects named dendrogram^[23].

3. Methodology

We conducted the study in two steps. The first step is to assess the current situation in customer segmentation activities of Vietnamese SMEs. The survey sample includes 50 Vietnamese SMEs which operates in different industries such as tourism and hospitality, offline and online retailers (clothes, bags and accessories, beauty product, shoes), food & beverage (coffee shop, food store), seafood, real estate. Chief Executive Officers of small businesses and Head of Marketing & Sale Department of medium enterprises are interviewed. Depth-interviewing method by qualitative questionnaires is used. Survey time is from October 2019 to May 2020. The second step is analyzing our dataset mined from a UK online retailer, which had 541,910 transactions of customers across most parts of Europe in years 2010 and 2011.

4. Result

4.1 Reality of Customer Segmentation Activities in Vietnamese SMEs

The survey's result shows that only 30% of companies

surveyed do market research, mainly tourism & hospitality businesses and these business's market research activities mainly comprise some basic steps: identify the problem to be studied, design the content to be surveyed, select the appropriate survey method, collect and analyse data. The remaining 70% of enterprises do not do market research, but mainly analyse available data or follow industrial information to make decisions.

Regarding customer segmentation activities, 42% of businesses segmented customers according to Demographic, Behavior, Geographic and Psychographic; in these 42% businesses, 78% of enterprises use Excel software, the rest use Excel. The remaining 46% of businesses segment mainly based on Demographic, Geographic and the technical tool which used is a combination of Design Thinking and Excel. The remaining 12% of businesses have absolutely no customer segmentation.

Among enterprises that use software to process data, they show that 100% Marketing & Sale staffs are responsible for collecting and analysing data, the convenience in using the current softwares is not too complicated and the Marketing staffs are familiar and have skills to implement on software.

In survey sample, 70% of businesses said that they have heard and known about terms "Big Data applied in Marketing" or something like that, 30% have never heard of it. The reason 70% of these companies not applied Big Data to market research is not knowing how to start, not having ability in engineering, software, cost and capable employees.

Summarily, Vietnamese SMEs mainly use Exel, Facebook Analytics, and Design Thinking approach to segment their customers. The disadvantage is these softwares are not responsive when businesses need deeper and more complex information about markets and customers and big data sets. So, their marketing decision seldom based on data driven, which really shows what their customers' characteristics. This is the biggest barrier to help them maintain their segments or jump into any new segments.

4.2 Clustering in Our Case Study with Dataset from a UK Online Retailer

Data pre-processing Original Data Set

The original data set was from one online retailer, had 541,910 transactions of customers across most parts of Europe in years 2010 and 2011. This data set has 8 variables as shown in Table 1.

From this data set, this article chose transactions to

Table 1. Variables customer transaction dataset (541,910 instances)

| Variable name | Data type | Description; typical values & meanings |
|---------------|-----------|---|
| Customer ID | Nominal | Customer Identifier; a 5-digit integral number uniquely assigned to each customer account |
| InvoiceNo | Nominal | Invoice Number; a 6-digit integral number uniquely assigned to each transaction |
| StockCode | Nominal | Product (item) code; assigned to each distinct product |
| Description | Nominal | Product (item) name; CREAM CUPID HEARTS COAT HANGER |
| Quantity | Numeric | The quantity of each product (item) per transaction |
| InvoiceDate | Numeric | The day and time when each transaction was generated; 6/8/2011 15:26 |
| UnitPrice | Numeric | Product price per unit in sterling; £2.55 |
| Country | Nominal | Delivery address country; England |

become the sample. These transactions are from 1 January 2011 to 31 December 2011, in UK, besides in which these transactions were chosen, some observations that had missing value in one variable or unreasonable value (the price variable is equal 0), were to be excluded. So, size of sample is 3,813 customer identify corresponding to 330,379 transactions, is seen as the original data set.

Data Pre-Processing

In order to conduct the clustering analysis, the original data set needs to be pre-processed.

The major steps involved in this process are:

- Select appropriate variables from the original data set: For this article, there are five variables have been chosen: *Customer ID*, *InvoiceNo*, *InvoiceDate*, *Quantity*, *UnitPrice*.
- Create an aggregated variable named *Amount*, by multiplying *Quantity* with *Price*, which gives the

total amount of money spent per product/item in each transaction.

Separate the variable *InvoiceDate* into two variables *Date* and *Time*. This allows different transactions created by the same consumer on the same day, but at different times to be treated separately. Also, a simpler case is different transactions created by the same consumed in the same month but at different dates to be treated separately.

Sort out the data set by *Customer ID* and create four essential aggregated variables: *First_Purchase*, *Recency*, *Frequency* and *Monetary*. Calculate the values of these variables per Customer ID.

After conducting these steps, a target data set has been generated. The original data set was in MS Excel format and was transformed into the final target data set in SQL Server 2012. Code of the transformative process from the original data set to the target data set are shown in Table 2.

And part of the target data set is shown in Figure 2,

Table 2. SQL Server codes for transformative process from original data set to target data set

```

select a.CustomerID, ISNULL(Fir.d,0) as First_Purchase, rec.rec as Recency, fre.fre as Frequency,
sum(suminvoice) as Monetary, min(suminvoice) as Min, MAX(suminvoice) as Max, round(AVG(suminvoice),2) as Mean
from (
select CustomerID, InvoiceNo, InvoiceDate, YEAR(InvoiceDate) as yy, MONTH(InvoiceDate) as mm, SUM(Quantity*UnitPrice) as suminvoice, COUNT(*) as StockCodeNo
from duliieu
where CustomerID>0 and Quantity>=0 and InvoiceNo <> '' and StockCode<>'' and year(InvoiceDate) > 2010 and UnitPrice>0 and Country='United Kingdom'
group by CustomerID, InvoiceNo, InvoiceDate
) as a
left join (select CustomerID, round(SUM(monthno)/(count(*)),1) as fre from (
select CustomerID, month(InvoiceDate) as mm, COUNT(distinct InvoiceNo) as monthno
from duliieu
where CustomerID>0 and Quantity>=0 and InvoiceNo <> '' and StockCode<>'' and year(InvoiceDate) > 2010 and UnitPrice>0 and Country='United Kingdom'
group by CustomerID, month(InvoiceDate)
) as a group by CustomerID) as fre on fre.CustomerID = a.CustomerID
left join (select CustomerID, (max(MONTH(InvoiceDate)) - MIN(MONTH(InvoiceDate)))) as rec
from duliieu
where CustomerID>0 and Quantity>=0 and InvoiceNo <> '' and StockCode<>'' and year(InvoiceDate) > 2010 and UnitPrice>0 and Country='United Kingdom'
group by CustomerID) as rec on rec.CustomerID = a.CustomerID
left join (
select CustomerID, month(min(InvoiceDate)) as m, day(min(InvoiceDate)) as d
from duliieu
where CustomerID>0 and Quantity>=0 and InvoiceNo <> '' and StockCode<>'' and year(InvoiceDate) > 2010 and UnitPrice>0 and Country='United Kingdom'
and (convert(nvarchar, CustomerID)+'_'+convert(nvarchar, MONTH(InvoiceDate))+'_'+convert(nvarchar, day(InvoiceDate))) + '_' +
convert(nvarchar, DATEPART(hour, (InvoiceDate))) + '_' + convert(nvarchar, DATEPART(mi, (InvoiceDate)))
not in (
select convert(nvarchar, CustomerID)+'_'+convert(nvarchar, month(min(InvoiceDate))+'_'+convert(nvarchar, day(min(InvoiceDate))+'_'+
convert(nvarchar, DATEPART(hour, (min(InvoiceDate))))+'_'+convert(nvarchar, DATEPART(mi, (min(InvoiceDate)))))
from duliieu
where CustomerID>0 and Quantity>=0 and InvoiceNo <> '' and StockCode<>'' and year(InvoiceDate) > 2010 and UnitPrice>0 and Country='United Kingdom'
group by CustomerID
) group by CustomerID) as fir on fir.CustomerID = a.CustomerID
group by a.CustomerID, fre.fre, rec.rec, fir.d

```

| 1 | CustomerID | First_Purchase | Recency | Frequency | Monetary |
|------|------------|----------------|---------|-----------|----------|
| 1626 | 13731 | 4 | 1 | 1 | 610.59 |
| 1627 | 14493 | 24 | 5 | 1 | 2383.24 |
| 1628 | 16208 | 26 | 8 | 1 | 664.26 |
| 1629 | 13650 | 16 | 8 | 1 | 1836.34 |
| 1630 | 15571 | 6 | 2 | 2 | 650.43 |
| 1631 | 14251 | 22 | 2 | 1 | 2879.7 |
| 1632 | 16961 | 0 | 0 | 1 | 234.17 |
| 1633 | 18144 | 15 | 11 | 1 | 2386.1 |
| 1634 | 18053 | 0 | 0 | 1 | 300.02 |
| 1635 | 15427 | 6 | 1 | 1 | 1483.14 |
| 1636 | 17406 | 10 | 0 | 2 | 1498.32 |
| 1637 | 17128 | 0 | 0 | 1 | 157.09 |
| 1638 | 15753 | 0 | 0 | 1 | 79.2 |
| 1639 | 13668 | 3 | 11 | 1 | 6185.93 |
| 1640 | 17966 | 8 | 8 | 1 | 1098.43 |
| 1641 | 17409 | 8 | 2 | 1 | 771.85 |
| 1642 | 13147 | 27 | 2 | 1 | 712.8 |
| 1643 | 14338 | 1 | 2 | 1 | 588.22 |
| 1644 | 13730 | 27 | 0 | 2 | 752.6 |
| 1645 | 14817 | 23 | 2 | 1 | 1110.34 |
| 1646 | 15370 | 15 | 9 | 1 | 2386.05 |
| 1647 | 12821 | 0 | 0 | 1 | 92.72 |
| 1648 | 15189 | 25 | 11 | 3 | 16225.39 |

Figure 2. Samples of the target data set

the variables in the target data set and their descriptive statistics are shown in Tables 3 and 4. Finally, the target data set was uploaded into R 3.5.3 for analysis.

Table 3. Variables in the target data set

| Variable name | Data type | Description |
|----------------|-----------|---|
| Customer ID | Nominal | Customer Identifier |
| First_Purchase | Numeric | Time (Date) after the first purchase per Customer ID |
| Recency | Numeric | Equal to time (month) in the last purchase - Time (month) in the first purchase per Customer ID |
| Frequency | Numeric | Frequency of purchase per Customer ID |
| Monetary | Numeric | Total of money in sterling per Customer ID |

Table 4. Summary of the target data set (3813 instances)

| Variable name | Minimum | Median | Maximum |
|----------------|---------|--------|----------|
| First_Purchase | 0.0 | 7.0 | 31.0 |
| Recency | 0.0 | 3.0 | 11.0 |
| Frequency | 1.0 | 1.0 | 14.0 |
| Monetary | 3.8 | 637.5 | 231822.7 |

Agglomerative clustering Analysis

From the target data set, this study was conducted by Agglomerative clustering analysis to divide customers into some meaningful segments in the view of First_Purchase, Recency, Frequency and Monetary values. With the data types of this study, numeric data, the Agglomerative clustering was chosen to perform with the support of R 3.5.3. Some steps in R with Agglomerative clustering are below:

First, in the target Data set, four variables *First_Purchase*, *Recency*, *Frequency* and *Monetary* were chosen as input for the clustering analysis.

Second, the target data set was converted to a numeric matrix with standardised variables (UK7 Data set).

Third, Euclidean distance and Ward Linkage were used in Agglomerative clustering method.

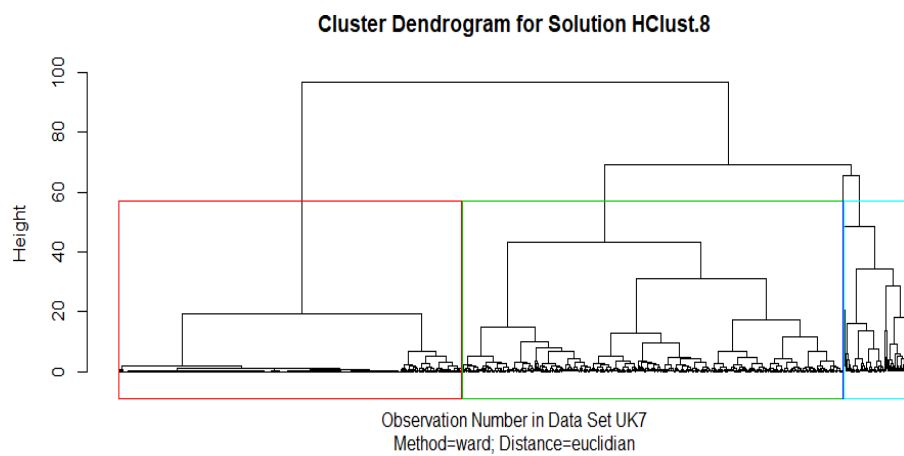
The results with four clusters are shown in Tables 5 and 6, and Dendrogram of four cluster are indicated in Figure 3.

Table 5. Instances in each cluster

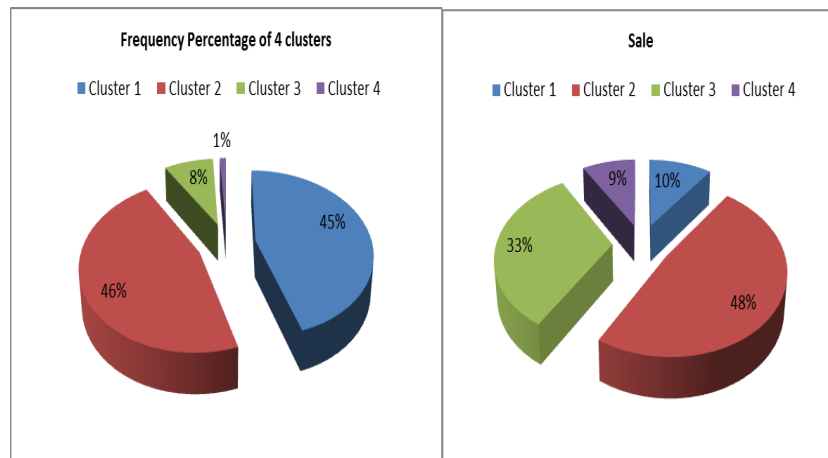
| Cluster. No | Frequency | Frequency Percentage |
|-------------|-----------|----------------------|
| 1 | 1726 | 45 |
| 2 | 1765 | 46 |
| 3 | 319 | 8 |
| 4 | 3 | 1 |

Table 6. Statistics of clusters

| Cluster. No | Minimum | Mean | Median | Maximum | Cluster. No | Minimum | Mean | Median | Maximum |
|----------------|---------|---------|--------|----------|----------------|----------|----------|---------|----------|
| Cluster 1 | | | | | Cluster 3 | | | | |
| First_Purchase | 0.00 | 1.21 | 0.0 | 15.00 | First_Purchase | 0.0 | 16.55 | 17.00 | 31.0 |
| Recency | 0.00 | 0.40 | 0.0 | 4.00 | Recency | 0.0 | 4.26 | 2.00 | 11.0 |
| Frequency | 1.00 | 1.00 | 1.0 | 1.00 | Frequency | 1.0 | 2.34 | 2.00 | 14.0 |
| Monetary | 3.75 | 423.66 | 302.1 | 4481.35 | Monetary | 6.9 | 6954.69 | 1447.14 | 84351.3 |
| Cluster 2 | | | | | Cluster 4 | | | | |
| First_Purchase | 1.00 | 16.91 | 17.0 | 31.00 | First_Purchase | 7.0 | 9.00 | 9 | 11.0 |
| Recency | 0.00 | 6.74 | 7.0 | 11.00 | Recency | 7.0 | 9.33 | 10 | 11.0 |
| Frequency | 1.00 | 1.00 | 1.0 | 1.0 | Frequency | 1.0 | 3.33 | 4 | 5.0 |
| Monetary | 20.35 | 1795.12 | 1223.9 | 19015.38 | Monetary | 168472.5 | 197605.7 | 192522 | 231822.7 |

**Figure 3.** Dendrogram of Agglomerative Clustering Analysis result**Table 7.** Comparative characteristics between 4 clusters

| Cluster. No | Total data (%) | Monetary (Mean) | Frequency (Mean) | Recency (Mean) | First_Purchase (Mean) |
|-------------|----------------|-----------------|------------------|----------------|-----------------------|
| Cluster 1 | 10% | 423.66 | 1 | 0.4 | 1.21 |
| Cluster 2 | 48% | 1795.12 | 1 | 6.74 | 16.91 |
| Cluster 3 | 33% | 6954.69 | 2.34 | 4.24 | 16.55 |
| Cluster 4 | 9% | 197605.7 | 3.33 | 9.33 | 9.0 |

**Figure 4.** Customer segmentation (left) and associated sales (right) by cluster

4.3 Understanding the Clusters and Recommendations

Examining Table 6, 7 and Figures 3 and 4, it is curious to see that each cluster indeed contains a group of consumers that have meaningful and certain distinct characteristics as detailed below:

Cluster 1 related to 1726 consumers, composed of 45 percent of the target data set. Half of this cluster didn't repurchase, and half of existence repurchased after the first time before the 15th. Besides, the total money of cluster 1 was 700726.5, composed of 10 percent of the target data set, the average value of money per one customer was 423.66, and the average value of frequency was only 1.0. With this information, we could see this group distributed second low total money, lowest value of money per customer, frequency and recency. Therefore, this group seems to be the least profitable group. This group includes many customers buying the first time but the size of this group was quite high (2nd high), so, in the long-term view, some consumers might be potentially very highly profitable or not, and the business need to have the suitable marketing policies to attract them.

Cluster 2 related to 1765 consumers, composed of 46 percent of the target data set. Half of cluster 2 repurchased after the first time before the 17th, and half after the 17th. Besides, the total money of cluster 1 was 3297639, composed of 48 percent of the target data set, the average value of money per one customer was 1795.12, and the average value of frequency was only 1.0. So, we can categorize this group as the highest total money, medium value of money per customer, lowest frequency, but the second high recency. From this analysis, this group could be seen as the second profitable group, contribute a large part of regular revenue of enterprises, but the frequency of purchasing wasn't high, so some instantly necessary activities in products' strategies, pricing policies, optimizing customers' experience through shopping platforms, ect to help customers get more value from buying of this online retailer, therefore, they can increase number of purchasing.

Cluster 3 related to 319 consumers, composed of 8 percent of the target data set. Like cluster 2, median of the First Purchase variable in this cluster was 17, it means the dates after the first time (purchase) spread in all dates of month. The total money of this cluster was 2218547, composed of 33 percent of the target data set, the average value of money per one customer was 6954.69, and the average value of frequency was only 2.34. So, we can see this group had the second high total money, second high money per customer, second high frequency, and the

lowest recency. Definitely, this group seems to be the highest profitable group. Therefore, the enterprise should have suitable marketing strategy to increase benefit for customers not only in money but also in users' experience through products strategies, customer care programs to build this segment become a stable loyalty segment.

Cluster 4 related to 3 consumers, composed of 1 percent of the entire population. This segment usually repurchased after the first time from the 7th-11th in month. The total money of cluster 4 was 592817.1, composed of 9 percent of the target data set, the average value of money per one customer was 197605.7, and the average value of frequency was only 3.33. This group had the lowest total money (but the distance not too far from the second low group), the highest money per customer, the highest frequency, but also the highest recency in the context size of this group is the smallest, 3 customers. So, we can see this group related to organizational customers. Considering all benefit aspects of this segmentation, such as distribution of this segment and not too much complicated to serve the small segment with 3 customers, we can see this group as the third profitable segment.

4.4 Implications for Vietnamese SMEs

Given the lack of financial resources of SMEs in market research and customer segmentation, big data-based analytical processing tools will be extremely important. This case analysing gives a framework to guide Vietnamese SMEs in segmenting their customers in a given big data set efficiently as step-by-step below:

Reading data set to define the characteristics which can be used for segmenting in next steps.

Preprocessing original data set to final data set, which is suitable to segmenting characteristics in first step (Use any software suitably: Excel, SPSS, STATA, SQL...).

Run Clustering algorithm on R (as this research did).

Reading, analysing output to get meanings under output.

5. Conclusions

This article's customer segmentation approach gives a guideline for Vietnamese SMEs through case analysing. A case study has been presented in this article to demonstrate how to group customers of online retailer into different segments by Data Driven approach and clustering algorithm on R package. From the characteristics of each group, the business better understands its customers and then adopt appropriate marketing strategies for different segments. Data analyzing process included 2 steps: data pre-processing and data analyzing method conducting.

Vietnamese SMEs should take advantage of rich data sources and have the appropriate strategy to collect and develop their own database to better understand their customers. Thereby creating sustainable competitive advantages over competitors.

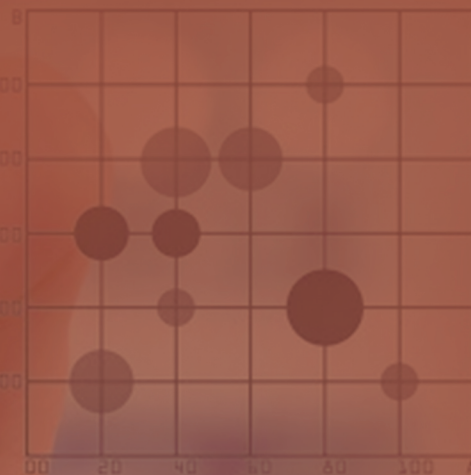
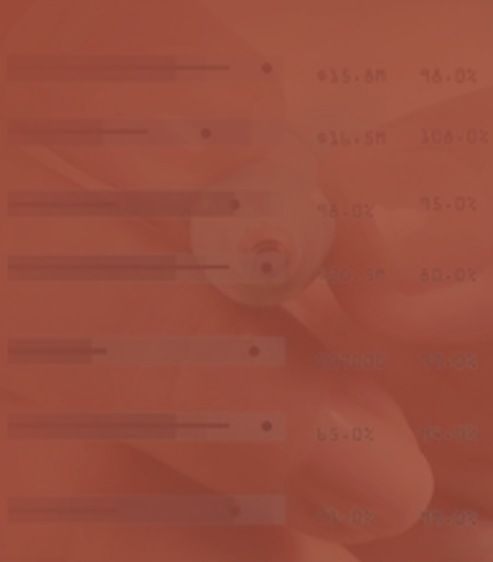
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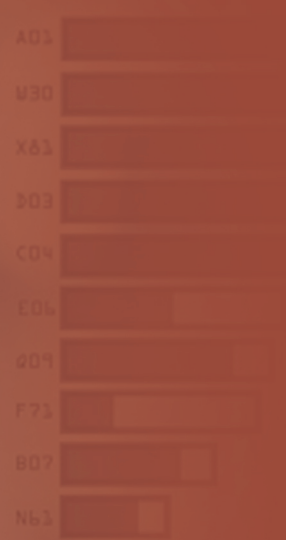
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