

รายงานผลการประชุมวิชาการนานาชาติและการนำเสนอผลงานวิจัย
 WURZBURG INTERNATIONAL BUSINESS FORUM 7th INTERNATIONAL BUSINESS
 CONFERENCE. (รูปแบบ Hybrid)

ตามระเบียบมหาวิทยาลัยสุโขทัยธรรมาราช ว่าด้วยการให้ทุนฝึกอบรม ตูงาน
 และประชุมทางวิชาการแก่บุคลากรของมหาวิทยาลัย

2. รายละเอียดเกี่ยวกับการไปประชุมประชุมวิชาการนานาชาติ

2.1 รายงานการประชุมวิชาการนานาชาติ

(1) หัวข้อเรื่อง และวัตถุประสงค์ของการประชุม/สัมมนา

การประชุมวิชาการนานาชาติ WURZBURG INTERNATIONAL BUSINESS FORUM 7th INTERNATIONAL BUSINESS CONFERENCE. (รูปแบบ Hybrid) ในการประชุมวิชาการนานาชาติครั้งนี้มีวัตถุประสงค์ในการนำเสนอผลงานวิจัยในระดับนานาชาติ แลกเปลี่ยนเรียนรู้จากงานวิจัยและสร้างเครือข่ายวิชาการในระดับนานาชาติ

(2) ผู้เข้าร่วมประชุม/สัมมนา ผู้เข้าร่วมประชุมประกอบไปด้วยอาจารย์ นักวิชาการ นักวิจัยจากประเทศต่าง ๆ ทั่วโลก 20 ประเทศ จำนวน 120 คน และนักศึกษาจาก Dogus University, Istanbul, Turkey จำนวน 80 คน

(3) วิธีการประชุม/สัมมนา

Würzburg International Business Forum เป็นการจัดประชุมวิชาการนานาชาติเป็นการจัดประชุมวิชาการนานาชาติในรูปแบบ Hybrid โดยการประชุมวิชาการดังกล่าวจัดขึ้นเมื่อวันที่ 23 พฤษภาคม 2567 ถึงวันที่ 24 พฤษภาคม 2567 การจัดประชุมวิชาการนานาชาติดังกล่าวเป็นความร่วมมือในการจัดประชุมของ 2 หน่วยงานคือ 1) University of Applied Sciences Würzburg-Schweinfurt ประเทศเยอรมันนี่ ซึ่งเป็นมหาวิทยาลัยวิทยาศาสตร์ประยุกต์ Würzburg-Schweinfurt เป็นมหาวิทยาลัยเทคนิคในประเทศเยอรมนีซึ่งก่อตั้งขึ้นในปี 2350 และได้รับการปรับโครงสร้างใหม่ในปี 2514 มหาวิทยาลัยแห่งนี้เป็นหนึ่งในมหาวิทยาลัยวิทยาศาสตร์ประยุกต์ที่ดีที่สุดเยอรมนีที่มีมหาวิทยาลัยพันธมิตรกว่า 150 แห่งทั่วโลก และ 2) คณะบริหารธุรกิจ Dogus University, Istanbul, Turkey การประชุมดังกล่าวเป็นรูปแบบการอภิปรายทางวิชาการและการนำเสนอผลงานวิจัยจากนักวิจัยทั่วโลก 20 ประเทศทั้งในรูปแบบออนไลน์และออนไซต์ โดยแบ่งออกทั้งหมด 4 ห้องย่อยซึ่งทั้งแบบ Online โดยการนำเสนอผ่านโปรแกรม Zoom และแบบ On Site ได้ประชุมแบบเผชิญหน้าที่ Dogus University, Istanbul,

Turkey โดยมีที่อยู่และตั้งอยู่ที่ Esenkent, Dudullu Osb Mah, Nato Yolu Cd 265/ 1, 34775 Ümraniye, Istanbul, ประเทศสาธารณรัฐตุรกี

- (4) เข้าประชุม/สัมมนาในฐานะวิทยากรบรรยาย (เดี่ยว/กลุ่ม) หรือผู้อภิปรายกลุ่ม หรือเป็นผู้เสนอบทความทางวิชาการในที่ประชุม/สัมมนา (ในกรณีดังกล่าวโปรดจัดทำบทสรุปย่อในส่วนของท่านด้วย)

การเข้าร่วมประชุมครั้งนี้กระผมได้เข้าร่วมประชุมในฐานะผู้นำเสนอบทความวิชาการจำนวน 2 เรื่อง คือ

เรื่องที่ 1 The Impact of Social Enterprises on Employment, Income and Economic Growth in Thai Economy และ

เรื่องที่ 2 The Solar Farm Model as The Responding to Bio Circular Green Economy of Kuchinarai Agricultural Cooperatives Limited, Kalasin Province, Thailand

- (5) กรณีเข้าร่วมประชุม/สัมมนา ควรประมวลข้อบทความทางวิชาการและเอกสารประกอบการประชุม/สัมมนา ที่เห็นว่าน่าจะเผยแพร่ให้ผู้อื่นได้ทราบ

เรื่องที่1 Global Security 2050 - Information and Energy มีสาระสำคัญสรุปได้ดังนี้ The UN World Population Prospects (2019), which shows the analyses produced by the UN, presents many Scenarios, with the global population in 2100 expected to be between 7.3 billion and 21.6 billion. This upper bound of the implicitly assumes that humans, by their very nature, are not adaptive. Many of the false fears like overpopulation, energy or climate crises are solvable. By 2050, global population dynamics and energy consumption will probably be stagnant, energy efficiency will have improved for 200 years, the unit cost of computing will have fallen by 38% per year since 1900, and the rate of robot expansion will be 10% per year. Solving the climate crisis does not require asceticism, it requires foreign policy and foreign economic instruments of the group of developed and democratic countries (the enlarged NATO) to reduce the share of coal/hydrocarbon energy and maintain the current world order through carbon taxes and carbon subsidies. Let us briefly outline some of the theorems of anthropology and positive psychology that may help us to get our bearings.

Demographically - technologically there is a good chance to reduce the global risk level substantially; the Century-long information/energy rate acceleration is well calculable and partly predictable. Some other lessons: 1) Global population declines after 2085, 2) Global energy consumption does not increase after 2050. 3) HDI (pcGDP) is reciprocally related to TFR, 4) Robot density can be predicted by HDI/TFR ratio, 5) The UN 17 sustainable development goals achievements are similar to the happiness level of countries 0-10. The main question is what to do politically regarding the world order there

is a chance that China-centered dictatorial regimes (Russia, Iran) and their fellow travelers (hesitant India and Brazil) will gradually increase their power relative to the power of enlarged NATO; whether the democratic and developed countries of the enlarged NATO or the fast developing and typically undemocratic BRIC and its fellow travelers win the global race depends on two things: (a) closer cooperation within enlarged NATO, (b) further improving and better Protecting the key techniques of the enlarged NATO alliance countries.

เรื่องที่ 2 Why SMEs are overlooked in FDI promotion and facilitation, what are specific instances of SME-neglect, and what can be done about it? มีสาระสำคัญสรุปได้ดังนี้ SMEs typically operate with limited financial resources and managerial expertise compared to MNEs. This is especially true in the field of FDI (e.g. setting up Greenfield projects). Recent research shows that internationalization efforts by SMEs are in decline. Not only on account of SMEs being affected disproportionately by the pandemic, but due to a worsening international context for internationalization.

The World Investment Report (UNCTAD, 2021) shows clearly that FDI-activity by SMEs was in decline well before COVID-19. It is in particular a deteriorating international policy environment, protectionist and regulatory overshoot and growing trade tensions, all raising the level of risk and complexity, which are bedeviling SMEs.

Despite Foreign Direct Investment (FDI) being widely recognized as a key driver for economic growth and employment generation, and despite SMEs constituting the majority of firms in pretty much any national economy (and thereby providing the majority of employment), we can observe a consistent neglect of SMEs in FDI investment promotion and facilitation strategies. This article seeks to explore the practical forms of such neglect and starts to flesh out initial policy proposals to address these. Investment Promotion and Facilitation policies essentially fall into Inward Investment Policies, seeking to attract FDI from foreign nationals into the home nation. Policy measures are fiscal and financial incentives (mostly granted in the form of tax holidays), access to financing (e.g. KfW loans) and streamlined regulatory processes to ease the administrative burden. On the Outward Investment Policy side (supporting home country firms investing abroad), we usually count strong programs facilitating access to finance (e.g. through loan-guarantees), or the international equivalent of streamlined processes – namely international trade and investment agreements.

เรื่องที่ 3 Examining the Net Promoter Score (NPS): Is NPS Impacted by Consumer Demographics? มีสาระสำคัญสรุปได้ดังนี้ Net Promoter Score (NPS) has been claimed to be one of the best single-item predictors of customer retention (de Haan et al. 2015) and one of the most widely used customer feedback metrics in business (Morgan et al. 2005). It is a method to predict customer purchase and referral behaviors (Rowe, 2021), and it helps firms find loyal users (Rajasekaran and Dinesh, 2018). A typical survey question to calculate NPS is: "On a scale of 0 to 10, how likely is it that you would recommend [organization, product, and service] to a friend or colleague?" The responses are classified as detractors (scores of 0-6), passives (scores of 7-8), and promoters (scores of 9-10). NPS is determined by subtracting the percentage of detractors from the percentage of promoters.

Because NPS is widely accepted to be among the best single-item predictors of customer retention (de Haan et al. 2015) and the most widely used customer feedback metrics (Morgan et al. 2005), the findings of this study also support that measuring NPS is a useful metric for businesses to track Consumer satisfaction and feelings about their brands. Our results show that capturing regular customers, offering loyalty programs, and repeatedly using loyalty cards are significant factors to increase the likelihood of being recommended and NPS. Therefore, companies entering new Markets, domestic and/or international, could develop strategies to attract new customers. The findings of this study could help domestic or international companies to identify the effects of consumer demographics and the key drivers on NPS, which could be utilized in improving NPS and leading to higher recommendations to increase sales and profits. This study can be further extended by surveying the customers who are not members of the loyalty program of the company and other convenience stores in the USA and different countries.

เรื่องที่ 4 Media Communication and International Entrepreneurship in Southeast Asia มีสาระสำคัญสรุปได้ดังนี้ Amidst the rapid digital revolution, media communication dynamics are evolving profoundly, leaving a noticeable impact on various sectors, including entrepreneurship. These changes have been particularly significant for entrepreneurs seeking to harness these advancements to scale their businesses globally. This paper delves into the nexus of media communication and international entrepreneurship in Southeast Asia - a vibrant region witnessing significant economic growth and becoming a global magnet for entrepreneurial ambitions. This research offers an extensive exploration of the current literature and empirical data to comprehend the unique dynamics of media communication in Southeast Asia's international entrepreneurial arena. It navigates the trials and opportunities that are unique to media communication-driven international

entrepreneurship in the region, investigating factors such as the digital media platforms predominantly used, the nuanced cross-cultural communication skills required, and the innovative marketing strategies being adopted. In addition, it scrutinizes the complexities of the entrepreneurial environment in the region. Factors such as language barriers, differential access to funding and technological infrastructure, and evolving regulatory norms are considered in detail. This study goes beyond just examining the potential of media communication to enable cross-border entrepreneurship; it illuminates how these influences are reshaping the international business landscape in Southeast Asia. With the empirical insights it provides, the research holds valuable implications for entrepreneurs, policymakers, and academics alike, offering a deeper understanding of the transforming dynamics of international business in the context of Southeast Asia and potentially beyond.

เรื่องที่ 5 FDI Inflows in Turkey between 1990-2022: Sectoral Trends and Entry Modes of Multinationals มีสาระสำคัญสรุปได้ The topic of foreign direct investment (FDI) inflows has been at the top of the agenda of the Turkish economy. FDI inflows in Turkey have always been in a fluctuating manner historically. In some years the level of inflows was significantly high while in some other years it was significantly low. Mainly this was related to the fact that Turkey has not really been able to attract green-field FDI in big chunks, but rather FDI over foreign acquisitions. And, in many cases such acquisitions were related to the sale of very large institutions such as banks or privatization of large-scale state-owned companies or assets. Though, in recent years, FDI inflows reflect a declining trend, of course, foreign capital inflows into Turkey will not stop. On the contrary, it should be expected that foreign capital inflows will always be in the agenda; because the Turkish economy has already crossed the critical threshold in the international economic integration process. The aim of this study is to identify FDI inflows in Turkey between 1990-2022. It is a case study based on secondary qualitative data which were gathered over the secondary sources such as published statistics and review of financial news, and relevant reports. It should also be noted that this paper is a shortened conference version for discussions. The detailed final version will be submitted for publication at somewhere else.

(6) การนำเสนอบทความวิจัยของรองศาสตราจารย์ ดร. อนุชา ภูริพันธ์ภิญโญ

The Impact of Social Enterprises on Employment, Income and Economic Growth in Thai Economy

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Since 2008, Social enterprises in Thailand originated from grassroots communities including co-operatives and community enterprises. The research objective was to examine the impact of social enterprises on employment income and economic growth in Thai Economy. The yearly secondary data were collected from Community Enterprise Promotion Division, Department of Agricultural Extension, Ministry of Agriculture and Cooperatives, The Royal Thai Government and Bank of Thailand (BOT) from 2013 to 2022. Data were analyzed by the multiple linear regression in form of the double natural logarithm. The study findings expressed that social enterprises in Thailand has the significantly tiny positive impact on employment, income, and economic growth on Thai economy. The increasing of 1 percent of numbers of social enterprises generated the employment, income and economic growth in Thai economy by 0.000062473, 0.000000020, and 0.000000009 percent respectively. Social enterprises in Thailand are mainly concentrated in the sectors of agriculture, health, and education. Although, it has a tiny positive impact on employment, income and economic growth in Thai economy. Focusing on the grassroots policy of economic development in Thailand. Social enterprises in Thailand still has the key impact on employment, income and economic growth in Thai economy.

Introduction

Thailand boasts a rich history of social entrepreneurship, dating back to a century ago when low-income farming communities pioneered the

establishment of the first cooperatives to address rural poverty. In the 1970s, the inception of the first social enterprises took place, with some even receiving royal patronage. During the 1990s, Thailand experienced another surge in the establishment of mission-driven businesses. However, according to a survey, the majority of existing social enterprises have been founded since 2008, aligning with concerted efforts by the Thai government to enhance and support the sector during this specific period.

In the early 2010s, the Thai leadership initiated efforts to promote social enterprises, intending to foster economic growth while mitigating social inequalities. The culmination of these efforts was witnessed in 2019 with the enactment of the Social Enterprise Promotion Act. This legislation aimed to formally define and support social enterprises, introducing a registration system and establishing a fund to offer loans and grants. Social enterprises were also granted preferential treatment in public procurement. A 2014 report from the National Social Enterprise Office estimated that just over 116,000 social enterprises were actively operating throughout Thailand.

Social enterprise plays the crucial role in Thailand as a part of economic driver engine in Thai economy with co-operatives meeting social enterprise criteria operating for over a century. Early entrepreneur-led social enterprises emerged in the 1970s, notably through royal projects focused on creating employment opportunities for ethnic minorities in remote mountainous areas. These regions lacked access to public services and were heavily involved in illicit crop cultivation. Over

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time, these projects evolved to adopt more commercial business models, ensuring financial sustainability for their operations. Notable examples from this period include Doi Kham and Doi Tung, whose operations and brands continue to be influential in the current domestic market.

Numerous significant social enterprises in Thailand have originated from grassroots communities, including co-operatives and community enterprises, officially registered and promoted by the Ministry of Agriculture and Co-operatives. Despite meeting the typical criteria of social enterprises, there is minimal recognition of these organizations as such, both within their communities and among regulators and the wider public.

A more recent wave of social enterprises emerged from 2010 onward when the Thai government initiated a social enterprise promotion policy. These enterprises have received acknowledgment from the Thai Social Enterprise Office (TSEO) through publications and media coverage. Subsequently, they were certified by the National Board on Social Enterprise Promotion after the closure of the TSEO. Presently, the Office of Social Enterprise Promotion (OSEP) serves as the certifying body for social enterprises in Thailand.

As a part of economic driver engines in Thai economy, it has been and still be a crucial economic driver to push up Thai economy generated from the grassroots of Thailand. It is very interesting to focus on the impact of social enterprises on employment, income and economic growth in Thai Economy.

Research Objective

The research objective was to examine the impact of social enterprises on employment income and economic growth in Thai Economy.

Materials and Methods

Data Collection

The yearly secondary data were collected from 2013 to 2022 which comprised of 1) the numbers of social enterprises were collected from the Community enterprise information system, Community Enterprise Promotion Division, Department of Agricultural Extension, Ministry of Agriculture and Cooperatives, The Royal Thai Government, 2) the numbers of employments, income and the economic growth were collected from Bank of Thailand (BOT).

Data Analysis

The data analysis was applied the multiple linear regression in form of the double logarithm which

were comprised of the multiple linear regression form as followed:

$$\ln(\text{ooo})_t = \alpha + \beta_1 \cdot \ln(\text{ooo})_t + \beta_2 \cdot \ln(\text{ooo})_t + \beta_3 \cdot \ln(\text{oo})_t + e$$

Where:

$\ln(\text{ooo})_t$ stands for the percentage change of natural logarithm of numbers of social enterprises at time t

$\ln(\text{ooo})_t$ stands for the percentage change of natural logarithm of numbers of employment at time t

$\ln(\text{ooo})_t$ stands for the percentage change of natural logarithm of income at time t

$\ln(\text{oo})_t$ stands for the percentage change of natural logarithm of economic growth rate at time t

$\alpha, \beta_1, \beta_2, \beta_3$ stands for the constant term, the coefficients of $\ln(\text{ooo})_t, \ln(\text{ooo})_t, \ln(\text{ooo})_t$ respectively,

e stands for the error term

Results and Discussion

The Impact of social enterprises on employment, income and economic growth in Thai Economy could be expressed in table 1:

Table 1. The Impact of Social Enterprises on employment, income and economic growth in Thai Economy

Dependent Variable: $\ln(\text{ooo})_t$		
Independent Variables	Coefficients	T-value
Intercept (α)	-860.254	-2.644**
$\ln(\text{ooo})_t$	0.000062473	2.157**
$\ln(\text{ooo})_t$	0.000000020	3.242**
$\ln(\text{oo})_t$		0.000000009
		8.869**
F		44.305**
\bar{r}^2		0.853

** Statistical Significance at 95 percent

Source: The Researcher's Calculation

The multiple regression could be written as:

$$\ln(\text{ooo})_t = -860.254 + 0.00006247388 \cdot \ln(\text{ooo})_t + 0.000000020 \cdot \ln(\text{ooo})_t + 0.000000009 \cdot \ln(\text{oo})_t + e$$

According to table 1, the increasing in numbers of social enterprises by 1 percent would be led to the increasing in numbers of employment in Thai

economy by 0.00006247388 percent, the increasing in numbers of social enterprises by 1 percent would be led to the increasing in income by 0.000000020 percent, and the increasing in numbers of social enterprises by 1 percent would be led to the increasing in economic growth rate of Thai economy by 0.000000009 percent.

Following the research results, it is obviously shown that the impact of social enterprises in Thailand had the positive impact on employment, income and economic growth rate in Thai economy. The results also expressed that the impact of social enterprises has the tiny positive impact on employment, income and economic growth rate in Thai economy. These study evident showed that the social enterprises in Thailand has the fact that social enterprises in Thailand predominantly operate in the fields of agriculture, health, and education. Legislation in Thailand has been expedited by the government to bolster social enterprises, aiming to propel the nation's economic and social advancement. Despite these efforts, there is still work to be done, given existing disparities between investors' stances and the government's agenda.

A recent study of British Council of Thailand (2022) indicates that social enterprises in Thailand face significant challenges, primarily stemming from limited access to funding and a lack of public comprehension regarding their impact. Despite the government's endeavors to bolster the sector, these hurdles remain prominent.

Despite the substantial government support for Thai social enterprises, particularly in terms of access to finance. Nearly a quarter of social enterprises cite challenges in accessing capital, encompassing both loans and equity, as a major obstacle. Just over a fifth of these enterprises face difficulties in securing grant funding. Additionally, one-third of respondents encounter challenges in finding investors due to a limited network.

Conclusion

Many impactful social enterprises in Thailand have emerged from grassroots communities, notably co-operatives and community enterprises officially registered and endorsed by the Ministry of Agriculture and Co-operatives. Despite meeting the conventional criteria of social enterprises, these organizations often lack recognition within their communities, among regulators, and in the broader public sphere. Social enterprises in Thailand are mainly concentrated in the sectors of agriculture, health, and education.

Social enterprises in Thailand has been and still be the economic driver engine of Thai economy. Although, it has a tiny positive impact on employment, income and economic growth in Thai economy. Focusing on the grassroots policy of economic development in Thailand. Social enterprises in Thailand still has the key impact on employment, income and economic growth in Thai economy. Social enterprises are small-scale ventures designed to creatively manage the resources of a community, promoting self-reliance and sustainability within families and localities. In this context, capital extends beyond financial resources to encompass assets like production, knowledge, wisdom, cultural richness, and social connections, ensuring effectiveness and lasting impact. The primary emphasis is on the community members as proprietors, engaging in collaborative endeavors such as producing goods or offering services. These activities bring together individuals with shared interests and lifestyles, operating collectively, whether in a corporate or non-corporate structure. The overarching objective is to generate income and foster self-sufficiency within families and communities.

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I would like to thank Sukhothai Thammathirat Open University for the financial support. Thank my beloved family---Wittayakorn and Puripunpinyoo for the endless love and support. My great-grandfather who was the Medicine Doctor, Pharmacist, and Philanthropist has been my good role model throughout my life.

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The Solar Farm Model as The Responding to Bio Circular Green Economy of Kuchinarai Agricultural Cooperatives Limited, Kalasin Province, Thailand

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Kuchinarai Agricultural Cooperative Limited launched the solar farm model as one of the responding models to the Bio Circular Green (BCG) economic model, which has been introduced and promoted by the Thai government as a new economic model for inclusive and sustainable growth. The research objective was to: 1) study the cost and benefit structure of the solar farm model; 2) evaluate the financial feasibility of the solar farm model; and 3) study the responsiveness of cooperatives' members to the solar farm of Kuchinarai Agricultural Cooperatives Limited. The primary data were collected from Kuchinarai Agricultural Cooperatives. Data were analyzed by financial criteria such as benefit-cost ratio (B/C ratio), net present value (NPV), Internal Rate of Return (IRR), payback period, sensitivity study, and content analysis. The research results revealed that: 1) the solar panel size of 250 m², with an investment of \$9,032, amount of electricity produced of 59,200 kWh/hour/year, amount of electricity sold of 56,000 kWh/hour/year, annual maintenance fee of \$50/year, net income after expenses of \$1,980/year, and accumulated income throughout the project life of \$490,322/25 years; 2) the financial feasibility expressed that B/C Ratio, NPV, IRR, and Payback Period equaled to 3.141, \$85,438, 15%, and 9.712 years, respectively. The sensitivity expressed that changes in the income of investment projects by decreasing in investment project income by 55% would make the investment project not worth the investment, while the cost of investment projects has changed by increasing in cost of investment projects by 125% would make the investment project not worth the investment, and 3) according to the solar farm project responding to the green energy, all cooperatives' members gave their acceptances and full satisfactions. The solar farm did not generate greenhouse gases or renewable, clean energy. The solar farm also

economically generates local income and employment for both cooperative members and the community.

Introduction

The Bio-Circular-Green Economy (BCG) model was introduced by the Thai government as part of its post-pandemic recovery and national development plans. The BCG model focuses on four strategic sectors: agriculture and food, wellness and medicine, energy, materials, and bio-chemicals, and tourism and the creative economy. It emphasizes the use of science, technology, and innovation to turn Thailand's comparative advantage in biological and cultural diversity into a competitive advantage. Its objectives are to support the sustainability of biological resources, support local economies and communities, boost Thai BCG industry sustainability and competitiveness, and increase adaptability to global changes (Ministry of Higher Education, Science, Research, and Innovation, 2023). The approach is anticipated to improve Thailand's economy, society, and environment through sustainability and inclusivity (The Royal Thai Embassy, Washington, DC, 2023).

One of the nations that joined the UN and ratified the 2030 Agenda for Sustainable Development was Thailand. Since that time, the nation has made some strides and had some success in meeting the Sustainable Development Goals (SDGs) of the UN. Thailand rose from 55th place in 2017 to 43rd place out of 165 nations in the SDG Index for 2020. As a result, it is anticipated that the Bio-Circular-Green Economy will prosper (The Royal Thai Embassy, Washington, DC, 2022).

The BCG policy of the Thai government lists four primary strategies to concentrate on as part of the Gross Domestic Product of the Thai economy, with agriculture and food being one of them. Product differentiation, waste reduction, improved resource and land use efficiency, customer behavior analytics, optimized waste production, smart farming technologies, traceability, food and product

safety, and the development of high-value and novel food products like food for special groups of people and functional foods can all increase the value of this sector (National Science and Technology Development Agency, 2023).

Through encouraging and providing assistance to those working in the agricultural sector to establish agricultural cooperatives across Thailand, cooperatives have served as one of the Thai government's economic tools for more than a century. Agricultural cooperatives are primarily created to help their members, who are involved in agriculture, produce, enhance, and market their agricultural goods through self-help and mutual aid to raise their standard of living (National Science and Technology Development Agency, 2023).

Agricultural cooperatives are established to accomplish the following goals, which can be distilled into one sentence: 1) to offer members loans at reasonable interest rates for beneficial and productive uses; 2) to promote savings and deposits among members to promote thrift; 3) to offer members affordable prices on agricultural items as well as daily necessities; 4) to encourage effective farming practices and distribute technical knowledge to assist members in lowering production costs and increasing yields. Members have adopted good agricultural practices, the use of fertilizers, and the application of insecticides with the help of the government; 5) to offer members farm equipment at a minimal cost, such as tractors, water pumps, etc., 6) to enable members to offer items at competitive prices and uphold fairness in price structures for weight and measurement; and 7) to provide members with information on cooperative principles and techniques (The Cooperative Promotion Department of Thailand, 2023).

Some Thai agricultural cooperatives are now socially responsible for the BCG economy model. Kuchinarai Agricultural Cooperatives Ltd., Kalasin Province, located in the northeastern part of Thailand, adopted and responded to the Thai government's BCG policy. It reacted in line with the BCG economic model. In doing so, it embraced technology that enables solar radiation to be converted into electricity and put up the solar power plant (The Cooperative Promotion Department of Thailand, 2023).

A genuinely renewable energy source is the solar power plant. It is available every day and can be used everywhere in the world. Unlike some other energy sources, solar energy will never run out. Additionally, solar energy will be available for as long as there is a sun; as a result, we

will have access to sunshine for at least 20 more years (The Cooperative Promotion Department of Thailand, 2023).

The widely used term for renewable energy that is abundant in nature is solar energy. It is possible to use it to generate electrical energy using a silicon semiconductor solar cell. Direct-current electricity is produced directly from sunlight by solar cells (The Cooperative Promotion Department of Thailand, 2023). When used, solar energy systems and power plants don't emit any greenhouse gases or pollute the air. When solar energy replaces or lessens the usage of other energy sources with greater environmental impacts, it can have a positive, indirect impact on the environment (U.S. Energy Information Administration, 2023).

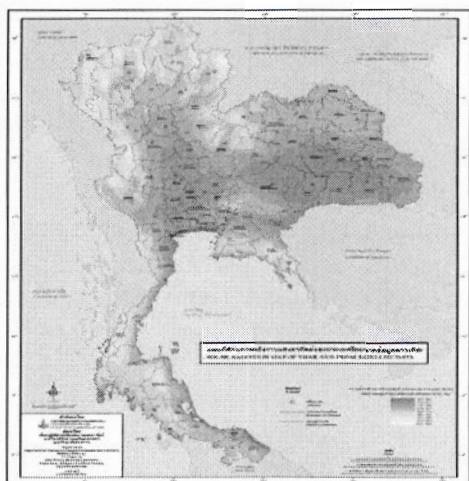
When in operation, solar energy systems and power plants don't release any greenhouse gases into the atmosphere. When solar energy replaces or eliminates the use of other energy sources that have more significant negative effects on the environment, it can have a positive or indirect influence on the environment (U.S. Energy Information Administration, 2023).

The development and use of solar energy technologies are not without environmental concerns, though (U.S. Energy Information Administration, 2023). One of the most eco-friendly energy sources is solar power. It is committed to offering residents solar power at prices that are affordable compared to conventional fossil fuel-generated electricity (Wittayakorn-Puripunpinyoo, A., 2019).

In 2022, Thailand had 39 solar farms distributed in 13 provinces throughout the country, including Nakhon Ratchasima, Khon Kaen, Sakon Nakhon, Nong Khai, Udon Thani, Nakhon Phanom, Roi Et, Surin, Buriram, Lop Buri, Nakhon Sawan, Lampang, and Phitsanulok. In total, they have an area of over 5,000 rai, with a total production capacity of 260 megawatts (MW) at the largest solar farm in ASEAN (Electricity Generating Authority of Thailand, 2023).

Kuchinarai Agricultural Cooperative Ltd. is one of the agricultural cooperatives that adopted and reacted to the BCG policy of the Thai government. The location of the cooperative is in Kalasin province, which has the potential for a solar farm in terms of the concentration of solar power to produce electricity at a rate of 19-20 MJ per square meter per day around the year (Figure 1) (Electricity Generating Authority of Thailand, 2023). Technically, the settlement of the solar farm of Kuchinarai Agricultural Cooperative Ltd. has high potential. In response to the BCG model, the cooperatives set up the solar farm as a Bio Circular project.

This research has been constructed to evaluate 1) the cost structure of the solar plant and financial analysis, and 2) study the responsiveness of cooperative members to the solar farm as a Bio Circular project responding to the BCG model of Thai government policy. The research findings would be beneficial as the responsiveness of the Royal Thai Government of BCG policy extended the research results to promote and extend to other Agricultural cooperatives and others around Thailand.



Picture 1. The Concentration Area of Solar Power to Produce Electricity

Source: Electricity Generating Authority of Thailand, 2023.

Research Objective

The research objectives were to: 1) study the cost structure of the solar plant and financial analysis of Kuchinarai Agricultural Cooperatives Ltd., Kalasin Province, Thailand, as a startup project to pursue the BCG model; 2) study the responsiveness of cooperative members to the solar farm as Bio Circular project responding to the BCG model of Thai government policy.

Materials and Methods

Data Collection

A survey research methodology was applied to collect the primary data from Kuchinarai Agricultural Cooperatives Ltd., Kalasin Province, located in the northeast part of Thailand. There were 2- main primary data collections, with the following:

Part 1: the solar power plant's cost-benefit analysis as a startup project following the Bio Circular model, as well as the views of the cooperative's members who were involved in the solar power plant. The management team of the cooperative provided information on the solar power plant's cost structure.

Part 2: A focus group and in-depth interview with 40 participants were used to gather cooperative members' responses to the solar power plant as a startup project of Kuchinarai Agricultural Cooperatives Ltd. in Kalasin province, Thailand.

Data Analysis

Part 1: The following financial indicators were used to examine the cost-benefit of the cooperative solar plant in response to the Bio Circular model: 1) Benefit-Cost Ratio (B/C Ratio), 2) Net Present Value (NPV), 3) Internal Rate of Return (IRR), 4) Payback Period, and 5) Sensitivity Study.

Part 2: A focus group and in-depth interview were analyzed by the content analysis.

Two of the research objectives' components could be expressed in the research findings:

Table 1-3 explains Part 1: the cost-benefit structure of solar power plants as follows:

Table 1. The Cost-Benefit Structure of The Solar Farm Model as The Responding to Bio Circular Green Economy of Kuchinarai Agricultural Cooperatives Limited, Kalasin Province, Thailand

Investment Details and Returns	Quantity	Unit of Measurement
Solar Panel Size	250.00	Square Meter
Investment	9,032.00	\$
Amount of Electricity Produced	59,200.00	kWh/ Hour/ Year
Amount of Electricity Sold	56,000.00	kWh/ Hour/ Year
Amount of Household Electricity Consumption Demand	3,200.00	kWh/ Hour/ Year
Annual Maintenance Fee	50.00	\$/Year

Net Income After Expenses	1,980.00	\$/Year
Accumulated Income throughout the Project Life	490,322.00	\$25 years

Source: Survey from Kuchinarai Agricultural Cooperatives Ltd., Kalasin Province, Thailand

Table 1 shows the cost-benefit of a solar power plant with an investment of \$9,032.00 and solar panels measuring 250.00 square meters. It produced 59,200.00 kWh/hour/year while selling 56,000.00 kWh/hour/year of power. This indicated that the annual household energy usage was only 3,200.00 kWh/hour. It stated that they only paid \$50.00 in annual maintenance fees, which was a negligible sum in comparison to their annual salary. After expenses, the annual net income was \$1,980.00. Additionally, throughout the project's 25-year lifespan, income was \$490,322.00.

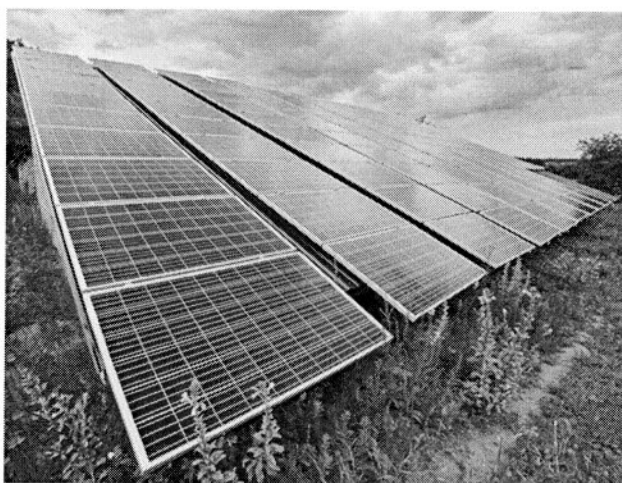


Fig. 2. The Solar Farm Model as The Responding to Bio Circular Green Economy of Kuchinarai Agricultural Cooperatives Limited, Kalasin Province, Thailand

Table 2: The Results of Financial Analysis of the Solar Farm Model as the Responding to Bio Circular Green Economy of Kuchinarai Agricultural Cooperatives Limited, Kalasin Province, Thailand

Investment indicators	Indicator Analysis Results	Unit of Measurement
Net Present Value (NPV)	85,438.000	\$
Benefit-Cost Ratio (B/C Ratio)	3.141	-
Internal Rate of Return (IRR)	15.00	%
Payback Period (PB)	9.712	Year

Table 2 shows that the financial analysis determined that the Solar Farm Model's Net Present Value (NPV) was \$85,438.000. This positive number indicates that the Solar Farm Model's present value of benefits exceeded its present value of costs. The benefit-cost ratio (B/C Ratio) was 3.141, which meant that for every \$1 spent, there was a \$ 3.141 benefit. At 15.00 %, the Internal Rate of Return (IRR) outperformed the interest rate. The Solar Power Plant's Payback Period (PB) showed a value of 9.712 years, which indicates that benefits would last for 15.288 years before outweighing costs.

Table 3: Sensitivity Analysis Results of Financial Analysis of the Solar Farm Model as the Responding to Bio Circular Green Economy of Kuchinarai Agricultural Cooperatives Limited, Kalasin Province, Thailand

Factors Causing Change	Decrease in Investment Project Income (%)	Increase in Cost of Investment Projects (%)	Impact on investment projects
Changes in Income of Investment Projects	55		The investment project was not worth the investment.

The cost of investment projects has changed.	125	The investment project was not worth the investment.
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Source: Calculation

From Table 3, sensitivity analysis results for financial analysis showed that the solar power plant investment project was not worthwhile if changes in income of investment projects by 55 percent caused the fall in investment project income. The price of investment projects has altered, and a 125 percent increase in that price has made some projects unprofitable investments.

Part 2: The Responsiveness of Cooperative Members to the Solar Farm as Bio Circular project responding to the BCG model of Thai government policy could be explained as follows:

Kuchinarai Agricultural Cooperative Ltd. , in Kalasin province, has launched a project called the 25-year Solar Farm Model. The solar farm model was a for-profit endeavor that produced electricity for both domestic use and sale to the Provincial Electricity Authority (PEA) to supplement cooperative members' incomes.

Following the Bio-Circulation-Green Model (BCG Model), which is known as the Thai national policy of the Royal Thai government to boost the Thai economy for a better standard of living, the cooperatives' Solar Farm Model setting was expressed as the startup project of the cooperatives based on the focus group and in-depth interview of 40 participants. The Solar Farm Model was adopted by the cooperative's members as a component of Thailand's agricultural Gross Domestic Product (GDP).

The BCG model included the bio-economy, which placed a strong emphasis on biological resources, particularly those found close to home or in communities. The cooperative's members also understood that the bio-economy was primarily concerned with converting raw materials into products with added value. So they decided to invest in the Solar Farm Model, which had low annual maintenance costs and was environmentally benign. The solar power plant adopted its role in the circular economy by reusing and recycling solar power resources, which are pollution-free, renewable sources of clean energy, and which do not release any greenhouse gases once they are installed.

This new venture served to launch a community in the shape of agricultural cooperatives. It also revealed the significant potential for the Solar Farm Model's application in other villages around Thailand (Wittayakorn-Puripunpinyoo, A., 2019). In a practical sense, the Solar Farm Model also participates in the green economy. Sustainable development was achieved by maintaining the equilibrium of the economy, society, and environment through the green economy practice. The Solar Farm Model, a startup project of Kuchinarai Agricultural Cooperatives Ltd. , Kalasin Province, Thailand, was found to meet both the financial analysis and the responsiveness of cooperative members as investors in the first and second parts of the research findings.

Conclusion

Kuchinarai Agricultural Cooperatives Ltd.'s solar power facility in Thailand's Kalasin province is in line with the study's conclusions. It was evident that the solar power plant followed the BCG Model policy of the Royal Thai Government as a startup project. The Solar Farm Model presented itself as clean, renewable energy that is free of pollutants and greenhouse gases. According to both financial analysis and cooperative members' responsiveness, a solar power plant ought to be one of the initial initiatives to implement the Bio Circular Model. Other towns across Thailand would be included in this new project's expansion. The Royal Thai Government has made the Solar Farm Model an official national policy ever since. In addition, it helped the local economy by economically creating jobs by hiring solar panel producers and solar installers.

Acknowledgment

I would like to thank the National Research Council of Thailand (NRCT) for the research fund. Thanks to Sukhothai Thammathirat Open University for providing me with facilities during the period of my data collection. I extended my thanks to my beloved father and mother for their endless love. Thanks to my family— Wittayakorn and Puripunpinyoo—for all of their support.

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ภาพการเข้าร่วมประชุมและนำเสนอผลงาน

รายงานฉบับสมบูรณ์การเข้าร่วมประชุมและนำเสนอผลงานวิจัย WURZBURG INTERNATIONAL BUSINESS FORUM 7th INTERNATIONAL BUSINESS CONFERENCE. (รูปแบบ Hybrid) ระหว่างวันที่ 23-24 พฤษภาคม 2567, Dogus University, Istanbul, Turkey รศ ดร. อนุชา ภูริพันธ์วิญญู



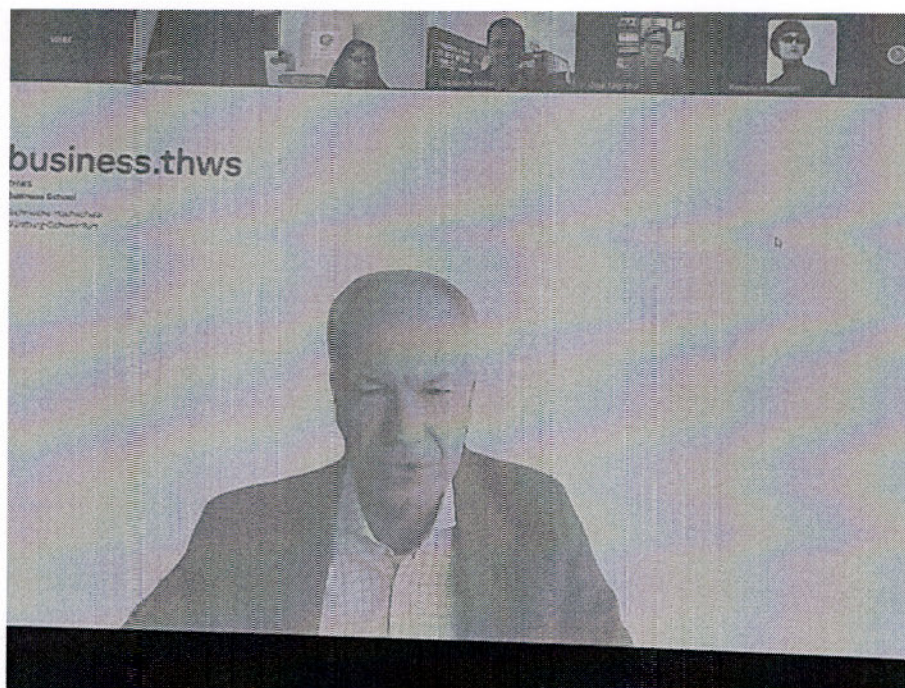


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2	Ospedechi Babiker	
3	Ahmet Camberli	
4	Seydi İsvik	
5	Meltem Çirak	
6	Hüseyin Balçık	
7	Aimecha Witsayakorn-Paripangitrasol	✓ Aimecha
8	Diana Abshirbayeva	
9	Görsel Hacı	
10	Emineoğlu Fehime	
11	Meltem Sengül	
12	Alfredo Vito	
13	Valentina Ciccolone	
14	Georgia Camilleri	
15	Cristina Abreguena Nieto	
16	Çağrı Durgunç	
17	Naimi Bircin	
18	Sıla Kaya	
19	Aimecha Witsayakorn-Paripangitrasol	✓
20	S. Rhythm Prasad	
21	Sylvester O. Mujakporuo	
22	Rainer Webner	
23	Markus Fugert	
24	Fatih Akpaçlı	
25	Güler Eray Çapan	
26	Hanife Caudir Simgel	
27	Deniz Parlak	
28	Halit Turgan Oval	
29	Dilara Abdeniz	

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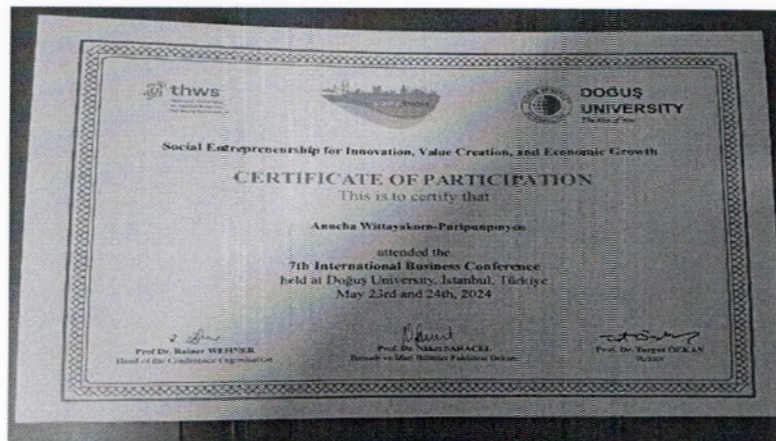
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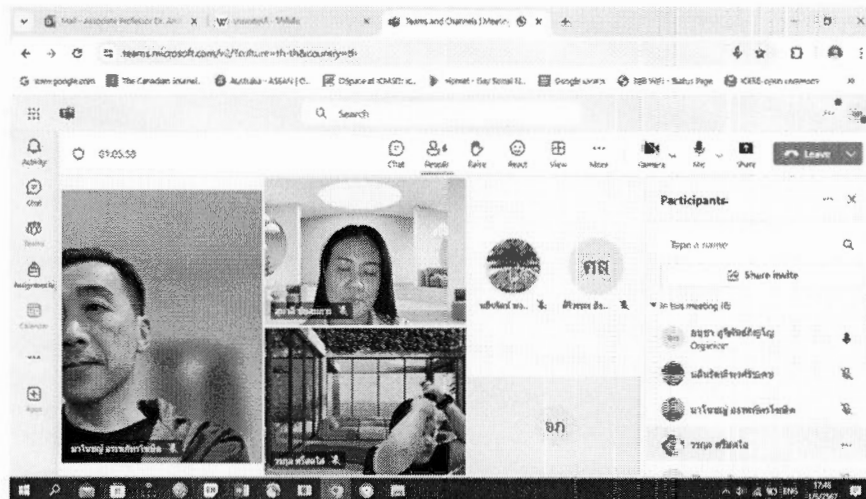
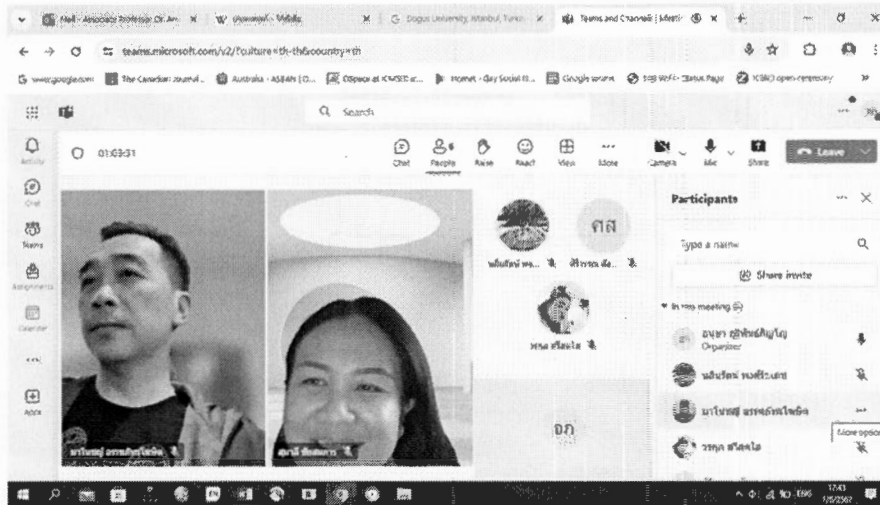


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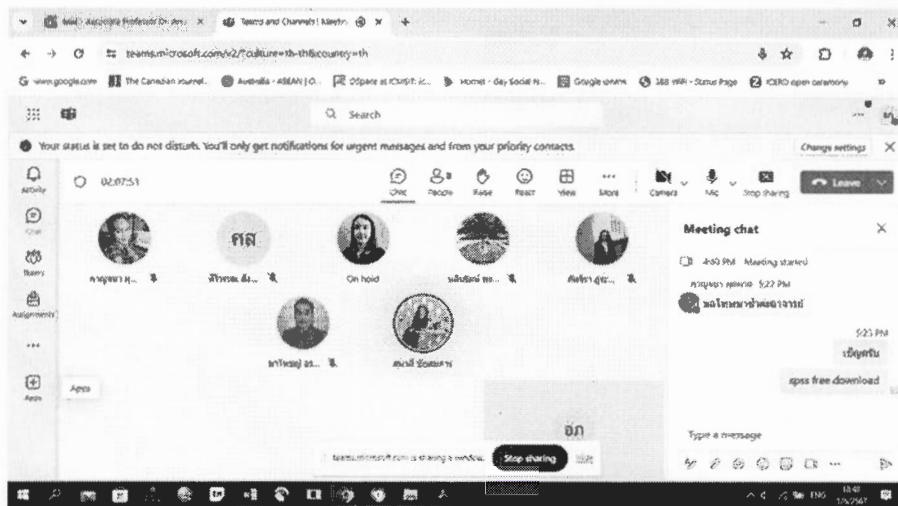
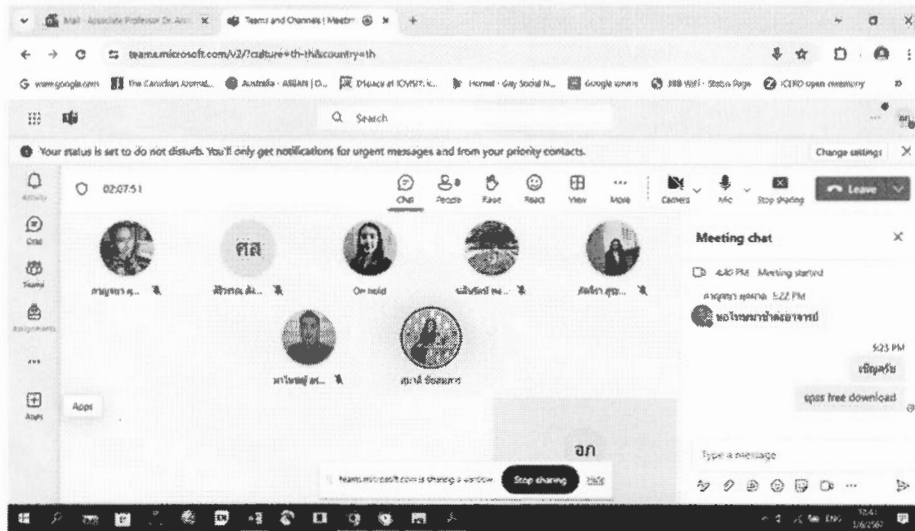


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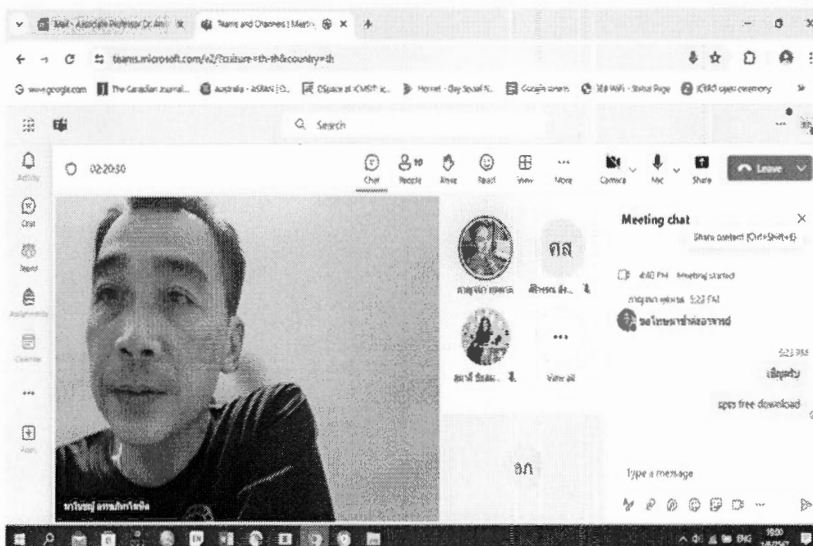
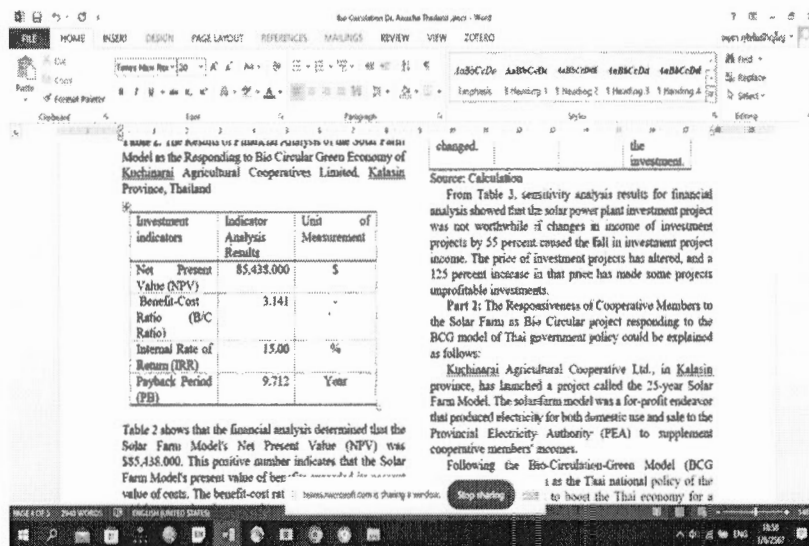
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ภาพกิจกรรมการแลกเปลี่ยนเรียนรู้และการถอดบทเรียนจากงานวิจัย
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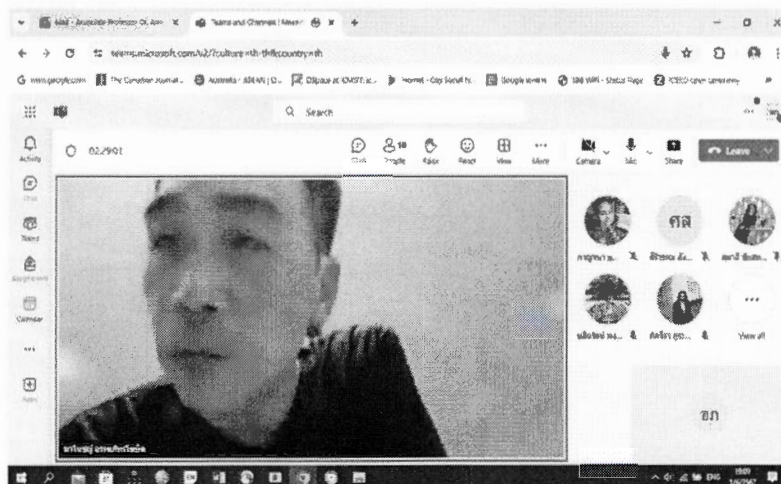
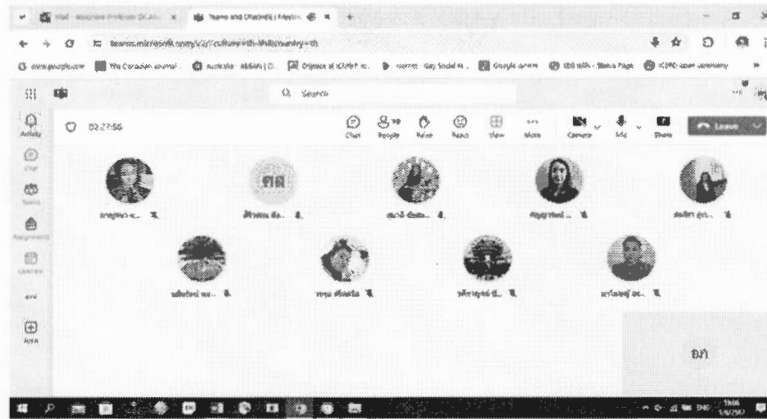
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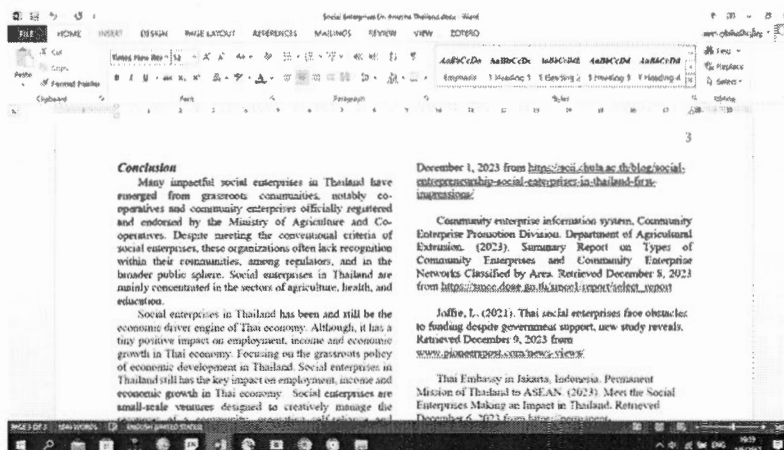
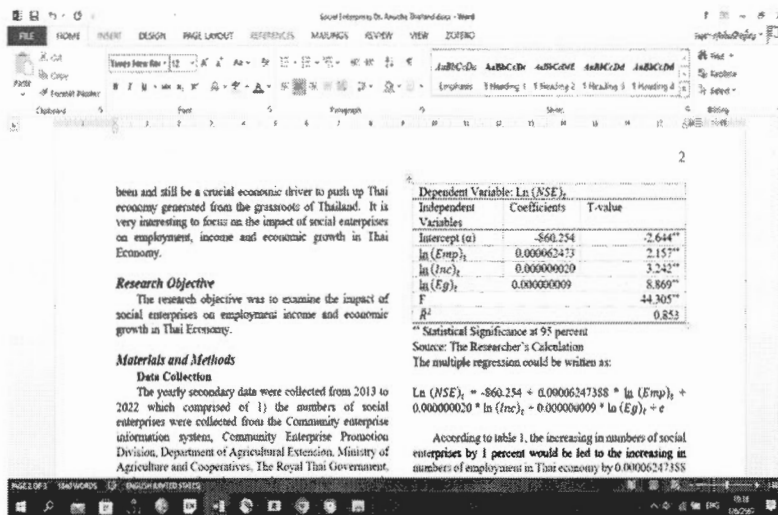
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(7) ประโยชน์ที่ได้รับ

7.1 การแลกเปลี่ยนเรียนรู้จากเข้าร่วมประชุมและการนำผลงานวิจัยในระดับนานาชาติ

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7.2 การสร้างเครือข่ายทางวิชาการกับต่างประเทศ เช่น ประเทศเยอรมันนี ประเทศ
ตุรกี สหรัฐอเมริกา และประเทศอื่นๆในทวีปเอเชีย ยุโรป และแอฟริกา เป็นต้น

(8) ข้อเสนอแนะ

มหาวิทยาลัยสโชนท์ทรรมาธิราชควรสนับสนุนการเข้าร่วมประชุมวิชาการนานาชาติ
แก่บุคลากรเพื่อเป็นเวทีในการนำเสนอผลงานวิจัยและการสร้างเครือข่ายทาง
วิชาการในระดับนานาชาติ

หมายเหตุ 1. กรณีไปฝึกอบรม ดูงาน ประชุม/สัมมนา เป็นหมู่คณะโปรดระบุชื่อผู้ไปร่วมกิจกรรม
ดังกล่าวทั้งหมด และเสนอรายงานในชุดเดียวกัน

2. รายงานควรมีความยาวประมาณ 5 - 10 หน้าและถ้ามีรายงานต่างหากเพิ่มเติมก็ให้
แนบไปด้วย ทั้งนี้ เพื่อที่ผู้สนใจซึ่งมิได้ไปฝึกอบรม ดูงาน ประชุม/สัมมนาจะสามารถหาความรู้จาก
เนื้อหาสาระดังกล่าวได้ตามสมควร

3. ให้ผู้ที่ได้รับทุนส่งรายงานการฝึกอบรม หรือดูงานหรือประชุมทางวิชาการจำนวน 1

ชุด