Modern Agriculture

Agenda

- Business Overview
- Business Outlook
- SMEs Business Opportunities

Business Research
January 2024

The evolution of Thailand's agricultural sector : Overview

The agricultural sector plays an important role in the development of the Thai economy. The development of the agricultural sector in Thailand began with traditional farming, which is agricultural 1.0, to now which is agricultural 4.0.

1.0

Traditional Farming

In the first era (Agricultural 1.0), prior to 1986, this was the stage of traditional farming. Farmers cultivated their crops with inappropriate knowledge.

2.0

Chemical Farming

The second era (Agricultural 2.0) was between 1986-1999 which farmers gained agricultural knowledge and technique especially chemical products. However, Farming process was still cultivated with the same pattern. Farmers used this technique to increase their products, at the same time, the sector required more labors.

3.0

Transformational Farming

The third era (Agricultural 3.0) is between 2000 and 2016, a period of change in the quality of agriculture. In this era, consumers and producers became aware of the effects of using chemicals that caused serious diseases (such as cancer). Therefore, during this period, the government began to research and release new rice varieties based on their quality. Labor shortages also began during this period. This was due to the effects of labor migration to other industries.

4.0

Technological Farming

The latest era (Agricultural 4.0) began in 2016 under the government's Thailand 4.0 policy. **Farmers can cultivate by adopting new agricultural technologies (AgriTech) such as agricultural drones**, smart technology equipment, and IOT technology. The shortage of agricultural labor can be solved by using agricultural drones and smart farming systems to help farmers plan their cultivation and manage resources better than ever before.

Source: LH Bank Business Research analysis based on data from DEPA

Thailand's Farm Management Industry Value Chain: Overview

Production

- **Individual Farmers**

Small –Scale farmers

Agricultural products sold to integrated players

- **Integrated Players**

- **Supporting Business**

Harvest

Distribution

Brokers

In-House Distribution

End Users

- Retailers, Supermarket
- Consumer
- Restaurants,
- Food/beverage producer
- Wholesalers
- Exporters

Source: LH Bank Business Research analysis based on data from Speeda

Technology providers in the agricultural supply chain : Overview

Production and Harvest

- **Preparing farmland and Cultivation**
  - Tractor, Tillers
  - Transplanters
- **Drone** (SMEs)
  - Water spraying
  - Pesticide spraying
  - Data collection and analyzing
- **Crop Seeding Robot**
  - Automated crop seeding
- **Crop Scientist**
  - Autonomously collect data on traits for plant health
- **Weeding Robot**
  - Automated non-chemical weeding
- **Harvest**

Thai Company

Red Ocean

HG ROBOTICS

TEVADA Tevada Corp Co.,Ltd.

Blue Ocean

JAO CHANG เกษตรพัฒนา

SAKPATTANA

Foreign Company

Kubota YANMAR ISEKI JOHN DEERE NEW HOLLAND AGRICULTURE

dji 3DR YUNEEC Parrot

ROWBOT

EARTHSENSE AGRICULTURAL INTELLIGENCE

AGERRIS Field Robotics and Intelligent Systems ecorobotix

AGEROBOTICS AUGEAN ROBOTICS YANMAR Kubota

AgTech app

AgTech app in each supply chain activity (Example)

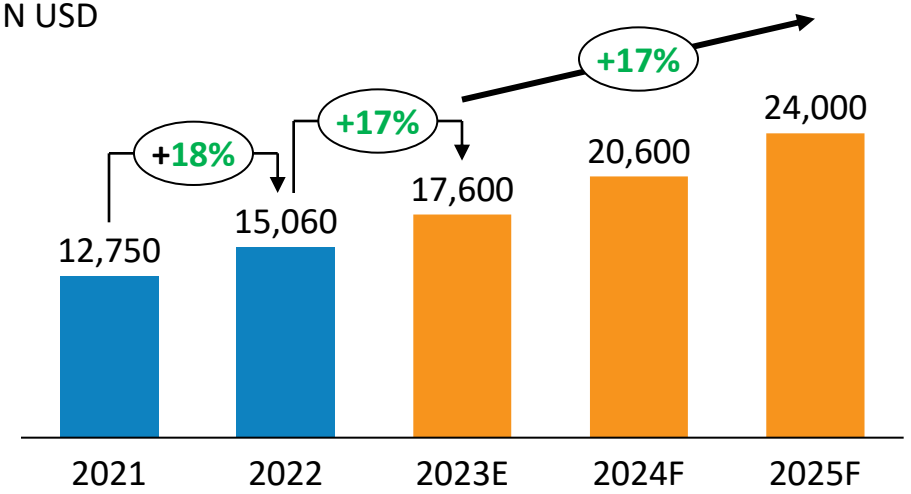
- Resource Utilization
- Inputs
- Production
- Harvest
- Market

Source: LH Bank Business Research analysis based on data from DEPA

Modern Agriculture Industry : Overview

Global Modern Agriculture / Smart Farming Market Size

Unit: MN USD

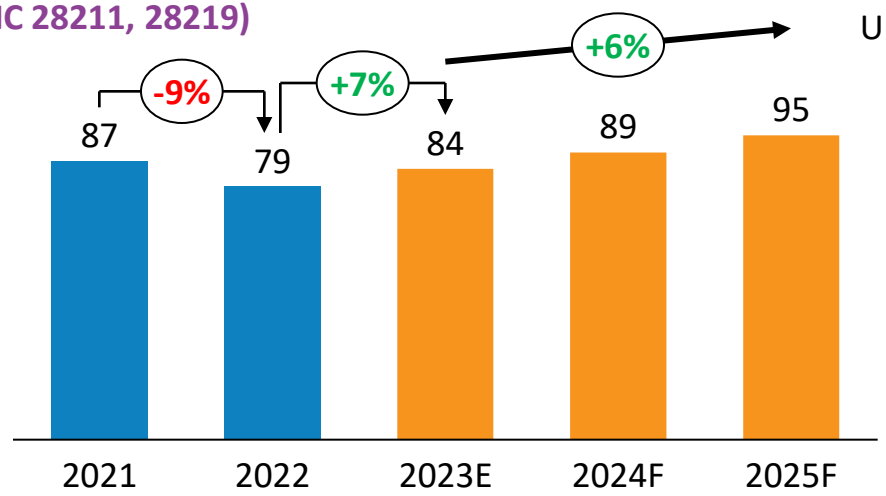


- **The growth of the global modern Agriculture /smart agriculture market is expected to be driven by the increasing adoption of IoT and artificial intelligence**. Digital farming operations Increasing reliance on advanced technology to improve global production
- **The hardware segment is expected to have the highest market share**. Hardware equipment is increasingly being used in various farming operations. (added intelligence or integration with sensors and navigation systems), while software focuses on precision farming. Livestock tracking and management segment.
- **North America leads the smart agriculture market**, with growth driven primarily by increased research and development activities and wider adoption of digital technologies.

Estimated Revenue of Thai Smart Farming Machinery

(KEY TSIC 28211, 28219)

Unit: BN THB



- **Thailand's modern agriculture / smart farming is mainly driven by the hardware or machinery market due to the expansion of 5G network coverage area,** such as smart tractor, agricultural drones, smart sensors.
- **Revenue/industry growth is still lower than global levels due to very high investment costs.** While most Thai farmers have small acreage, it is not worth investing in modern machinery or systems.
- Therefore, service farms or the aggregation of large agricultural plots play an important role in helping farmers gain access to modern technology.

Source: LH Bank Research Analysis based on information from BIS research, Transforma Insights, Kubota and DBD

Modern Agriculture Business, such as the use of agricultural drones, is expected to expand. This expansion has the potential to alleviate labor shortages in the industry. As the technology becomes cheaper and more efficient, farmers are interested in using drones to spray crops. Drones save up to 30-50% on chemical costs and are 40-60 times more efficient than human labor.

Types of Drones for Agriculture

Survey Drone will be utilized for monitoring farmland and assessing the condition of crops. The data captured from the drone photos will be transmitted to the application.

Spray Drone will spray chemicals and water on agricultural fields that are 21 rai or larger.

Details of spray drone, classified by size

Size (liters)	Minimum Cover Area (rai)	Maximum Cover Area (rai)	Drone Price + 5-Year Battery Costs (THB)
5	21	30	120,000 + 45,000
10	32	100	199,000 + 60,000
16-20	More than 100	More than 100	269,000 + 112,500

Small 5-liter spraying drones have the highest market penetration due to their affordability and suitability for rice fields ranging from 21 to 30 rai, which covers over 1.2 million households of farmers.

Opportunities and Threats for Thailand's Agricultural Drone Business

	Types of drones for agriculture		
	Small Spray Drone (5 liters)	**Large Spray Drone (>10 liters)**	**Survey Drone**
Target Customer	General farmers with agricultural land ranging from 21-30 rai.	Smart farmers with a land area of 32 rai or larger.	Major players in the sugar cane and sugar industries.
Opportunity	-The problem of labor shortages in the agricultural sector is expected to be exacerbated by the aging population of farmers (over 55 years old). -Affordable price.	-Smart farmer groups have potential to adopt new technologies. -The number of registered drone operators for agriculture is significantly lower, approximately 10,000, in comparison to the number of smart farmers which exceeds 50,000.	Target customers want to use drones to survey the premises, map the production area and develop plans for expanding production.
Threats	-Elderly farmers reject the use of novel technology.	-Drones need to be imported because of Thailand's constraints on production technology.	Insufficient technological infrastructure hinders the use of drones for area surveillance.

Source: Complied by LH Bank Business Research based on data from NBTC

The Thai government aims to promote Thai agriculture towards modern agriculture through the BCG economic strategy.

2025 Thailand BCG economy's strategic goal on Agriculture

1.6 TN THB	30 Percentage	100,000 THB
GDP Agriculture From 1.3 TN THB	Share of premium Agriculture products	Farmer revenue /Household/Year

Goals and strategic plans for promoting Thailand modern agriculture industry:

- Research and development of technology and innovation By establishing an innovation fund to utilize big data and AI.
- Investing in research infrastructure, technology and innovation, such as genetic resource databases Agricultural and ecological innovation area.
- Amend laws that hinder research, technology development, and technology utilization, such as the Agricultural Land Reform Law. Laws to promote modern agriculture in line with the changing environment.

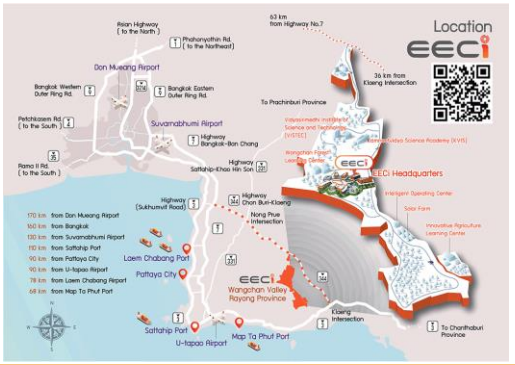
BOI's Investment Incentives for 'Modern Agriculture Industry'

BOI provides **CIT tax exemptions for 8+ years for investment in the smart farming area and related to BCG economy**, such as

- Manufacture or service of machinery and equipment of modern agricultural and modern agricultural system such as detection. system, tracking system or relevant resources (water, fertilizers, medicines) management systems and smart greenhouse systems.
- Grading and storage of agricultural products including cold storage and transportation.
- Trading center or digital trading platform for agricultural goods.

EECi 's support promotion for Modern Agriculture Industry

Investment in EECi area (the Wangchan valley) under modern agriculture or smart farming categories, BOI provides **CIT tax exemptions up to 13 years** including other non-tax incentives.



Source: LH Bank Research Analysis based on information from NSTDA, BOI and EECi

Factors influencing Modern Agriculture Businesses in Thailand

Tailwind

Agricultural labor shortages are expected to be exacerbated by an ageing farmer population (over 55 years), which will have a positive impact on AgriTech adoption.

Use AgriTech to increase the production and price of agricultural products by managing farms from growing to marketing.

The problem of **diminishing agricultural land** due to the expansion of the urban society and the **rapidly changing climate** will lead to farmers being interested in the use of AgriTech for the development of farming methods.

The trend towards new generations of farmers who are interested in the use of technology and innovation, including the trend towards the importance of the environment. This saves farmers time, labor and money and improves their quality of life.

Support from government agencies in terms of funding, advice and productivity development from production processes to distribution.

Headwind

Many farmers still have limited knowledge, understanding and skills in using AgriTech, especially older farmers and still do not trust the services of AgriTech providers.

The debt problem of the agricultural households is high and causes a lack of investment potential to adapt the production process to make it more efficient.

Inadequate technological infrastructure and limitations in production technology in Thailand create barriers to the use of AgriTech and require imports from abroad.

Most Thai farmers have small plots of land. As a result, the benefits of investing in AgriTech are not worth the investment.

AgriTech service providers in Thailand face problems with online marketing, which is not very effective. As a result, there is still a need to market by organizing events and meeting farmers directly, which is costly and takes time to organize.

Source: Compiled by LH Bank Business Research

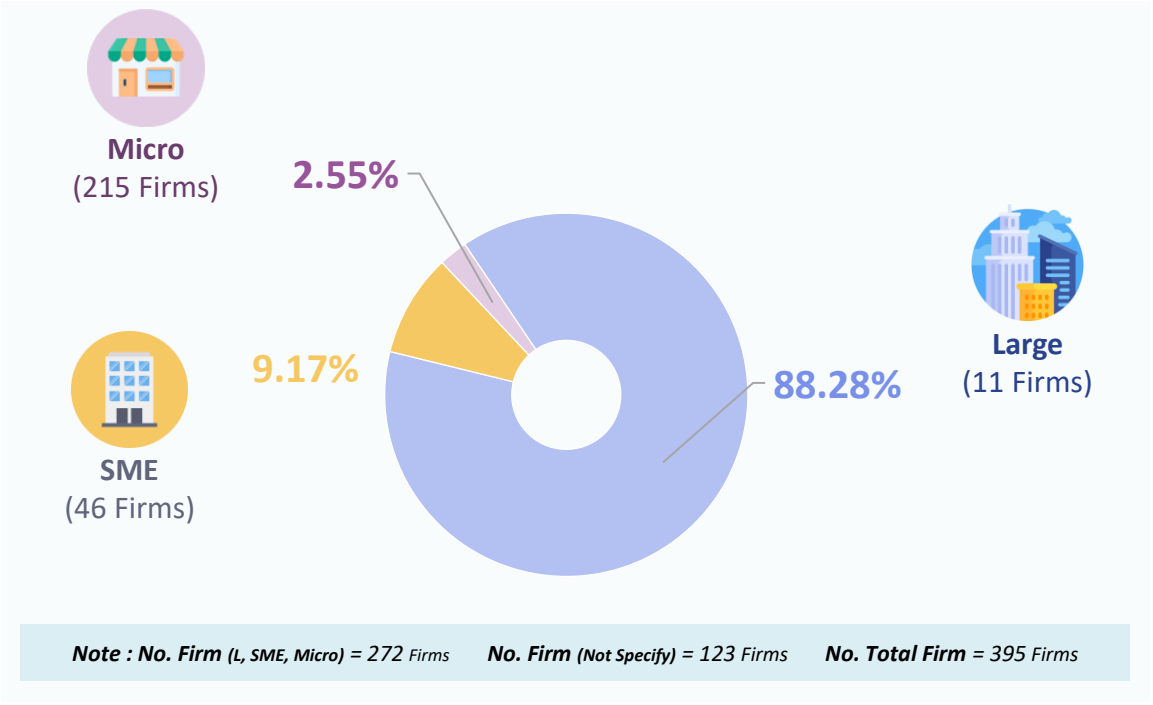
Modern Agriculture Business : Market Overview

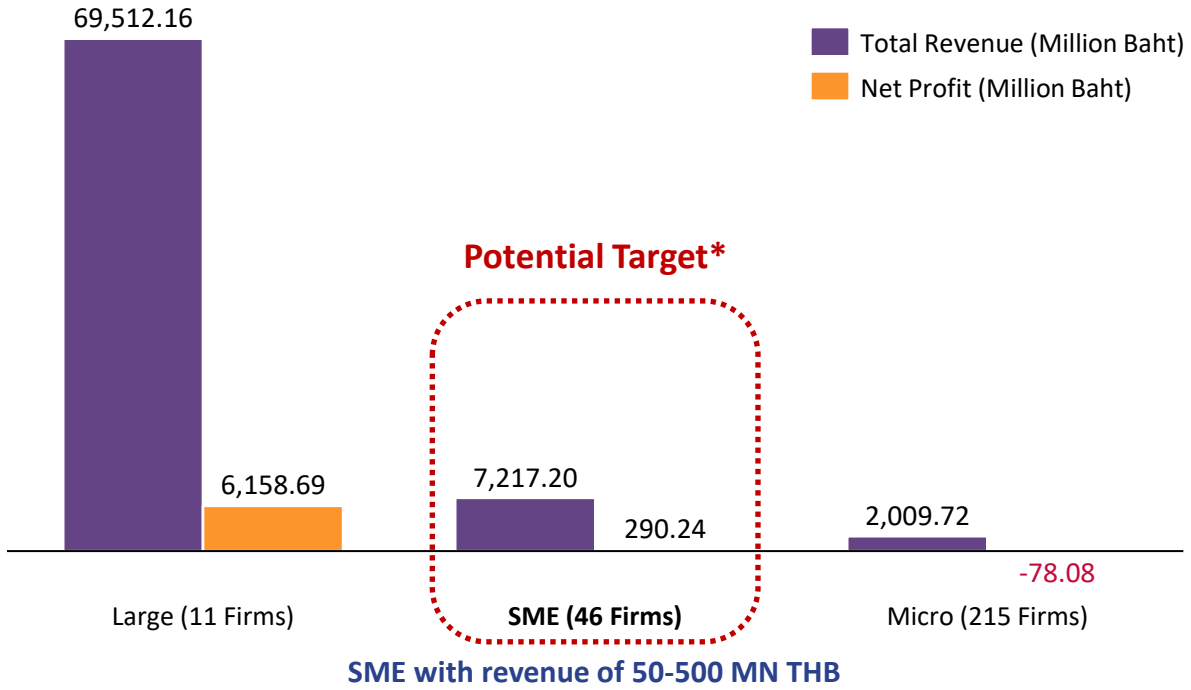
Based on selected TSIC groups (in 2022), Thailand's Modern Agriculture Business was valued at 78,739.08 million baht, with large enterprises accounting for 88.28% of the market share. This is followed by SME with 9.17% and micro with 2.55%.

Share of Modern Agriculture Business Value by firm size

(28211, 28219)

Market Value *(L, SME, Micro)* **=** 78,739.08 Mn THB
Total Firms = 395 Firms



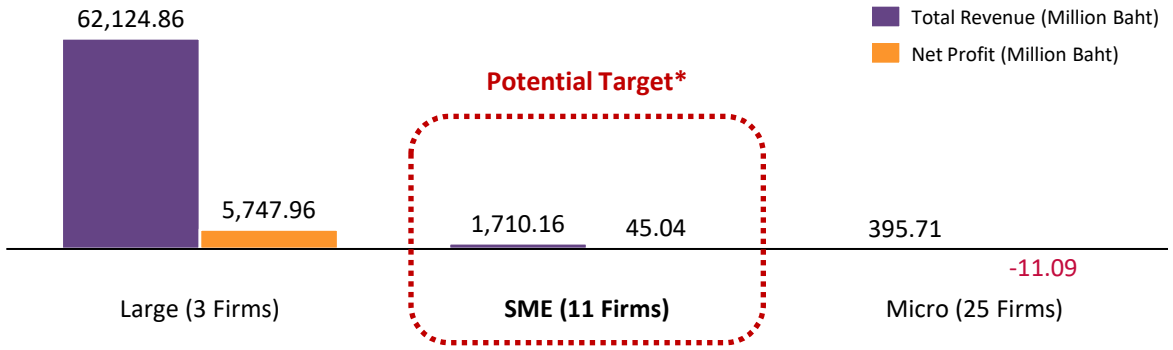


Source: LH Bank Research Analysis based on BOL Database (Data as of 2022) Note: Only firms that submit financial statement in 2022

Modern Agriculture Business : Market Overview

28211 : Manufacture of tractors for agriculture and forestry

Market Value = 64,230.73 Mn THB
Total Players = 49 Firms



28219 : Manufacture of other agricultural and forestry machinery

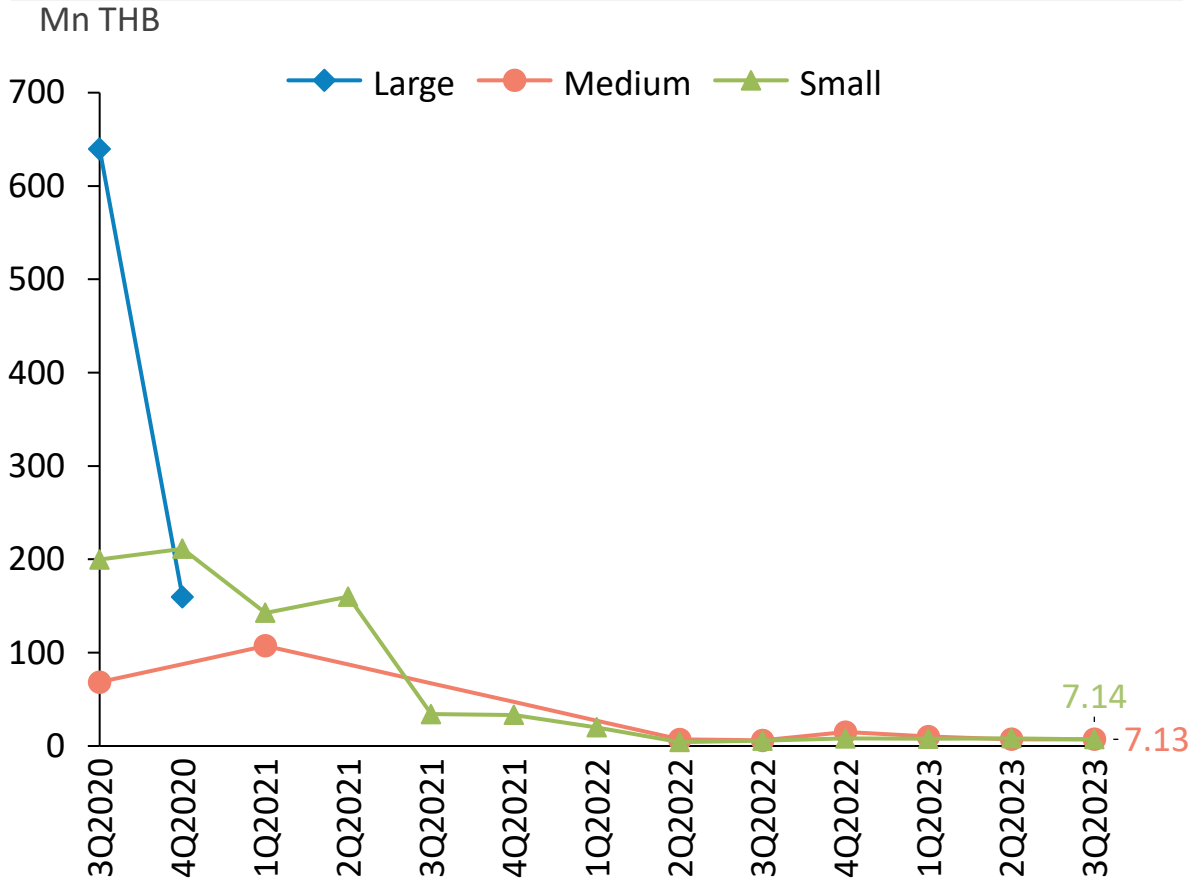
Market Value = 14,508.35 Mn THB
Total Players = 346 Firms

Source: LH Bank Research Analysis based on BOL Database (Data as of 2022) Note: Only firms that submit financial statement in 2022

Thailand's Modern Agriculture Business : Loan Outstanding

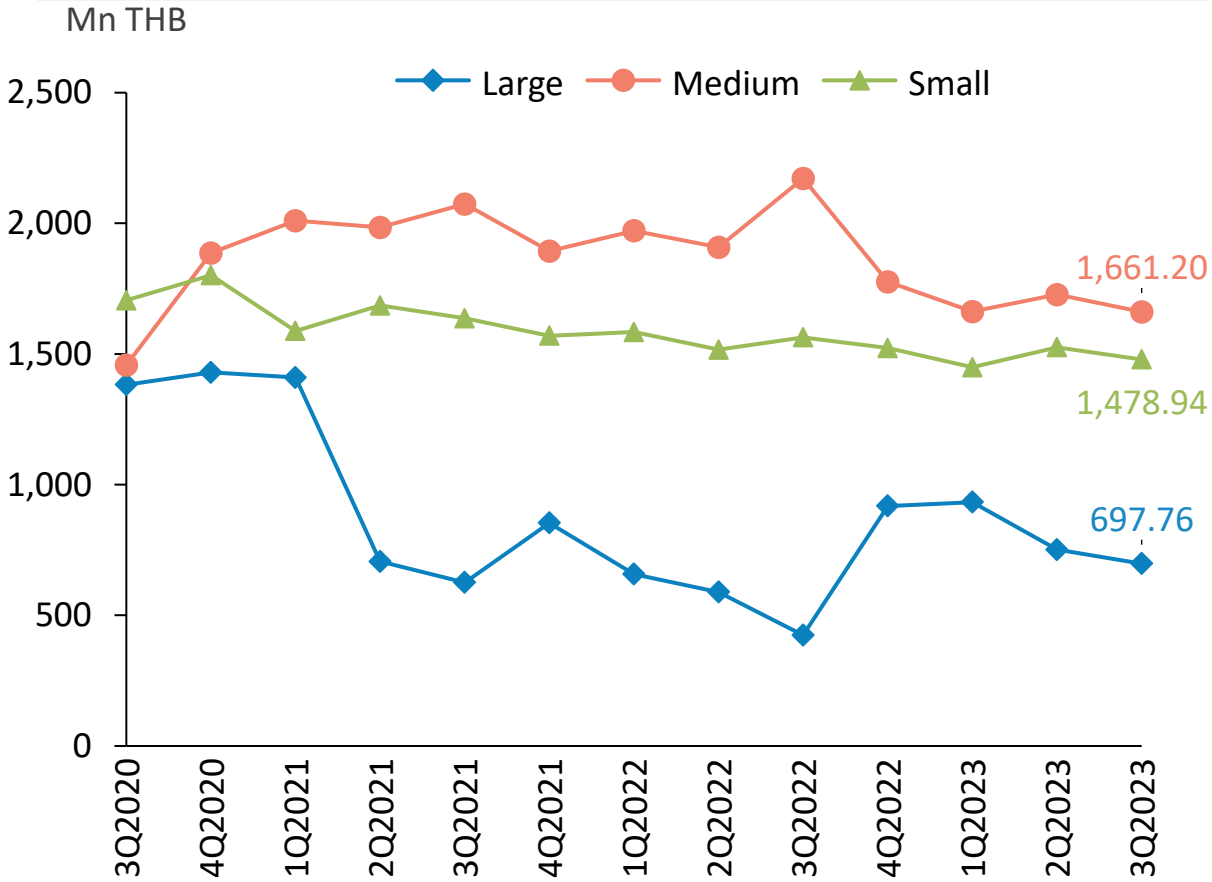
28211 : Manufacture of tractors for agriculture and forestry

Loan Size* = 14.27 Mn THB



28219 : Manufacture of other agricultural and forestry machinery

Loan Size* = 3,837.91 Mn THB



* Data as of 3Q2023

End of Presentation

Disclaimer

ข้อมูล บทวิเคราะห์ และการแสดงความคิดเห็นต่างๆที่ปรากฏอยู่ในรายงานฉบับนี้ ได้จัดทำขึ้นบนพื้นฐานของแหล่งข้อมูลที่ได้รับมาจากแหล่งข้อมูลที่เชื่อถือได้ เพื่อใช้ประกอบการวิเคราะห์ภาวะเศรษฐกิจและอุตสาหกรรมซึ่งเป็นเอกสารภายในของธนาคารแลนด์ แอนด์ เฮ้าส์ จำกัด (มหาชน) เท่านั้น ทั้งนี้ธนาคารฯ จะไม่รับผิดชอบความเสียหายใดๆทั้งปวงที่เกิดขึ้นจากการนำข้อมูล บทวิเคราะห์ การคาดหมาย และความคิดเห็นต่างๆ ที่ปรากฏในรายงานฉบับนี้ไปใช้ โดยผู้ที่ประสงค์จะนำไปใช้ต้องยอมรับความเสี่ยง และความเสียหายที่อาจเกิดขึ้นเองโดยลำพัง

LH BANK BUSINESS RESEARCH

Thanapol Srithanpong, Ph.D.
Head of Business Research

Nantapong Pantaweesak
Senior Industrial Specialist

Cheawchan Srichaiya
Senior Industrial Specialist

Watcharapan Niyom
Senior Industrial Specialist

Sri-Ampai Ingkhakitti
Senior Industrial Specialist

Taratnon Sritongterm
Senior Economist

Wilanda Disorntetiwat
Senior Economist

Nawatch Hansuvech
Senior Thematic Specialist

LH Bank Business Research

ACTIVE INCLUSIVE DECISIVE

Scan Here
For More Articles
https://www.lhbank.co.th/economic-analysis/