

# A Study on Fundamental Problems for Small and Medium Agricultural Machinery Industries in Central Region Area

P. Thepnarintra, S. Nikorn

**Abstract**—Agricultural machinery industry plays an important role in the industrial development especially the production industry of the country. There has been continuing development responding to the higher demand of the production. However, the problem in agricultural machinery production still exists. Thus, the purpose of this research is to investigate problems on fundamental factors of industry based on the entrepreneurs' point of view. The focus was on the small and medium size industry receiving factory license type number 0660 from the Department of Industrial Works. The investigation was on the comparison between the management of the small and medium size agricultural industry in 3 provinces in the central region of Thailand. Population in this study consisted of 189 company managers or managing directors, of which 101 were from the small size and 88 were from the medium size industry. The data were analyzed to find percentage, arithmetic mean, and standard deviation with independent sample T-test at the statistical significance .05. The results showed that the small and medium size agricultural machinery manufacturers in the central region of Thailand reported high problems in every aspect. When compared the problems on basic factors in running the business, it was found that there was no statistically difference at .05 in managing of the small and medium size agricultural machinery manufacturers. However, there was a statistically significant difference between the small and medium size agricultural machinery manufacturers on the aspect of policy and services of the government. The problems reported by the small and medium size agricultural machinery manufacturers were the services on public tap water and the problem on politic and stability of the country.

**Keyword**—Agricultural machinery, manufacturers, problems, on running the business.

## I. INTRODUCTION

THE main strategy of the Department of Industrial Promotion during 2010-2014 consists of 1) the strategy on the development of SME potential 2) the strategy on the development of the community enterprise potential 3) the strategy on the enterprise promotion and 4) the strategy on creating factors and system supporting the industrial business [8]. The main policy of the government is to drive the economy of the country by developing the SME. As a result, over 90% of the economic development fund was put on the

development of SME [8]. With the high competition in business world, Thailand has to change its industrial structure in order to increase the potential on products and services [7]. This study focused on the problem of small and medium size agricultural machinery manufacturers in the central region of Thailand to suggest some guidelines for the solution. Some problems can be defined as follows:

- 1) the lack of cash flow in producing machinery part or the whole product during waiting for selling season or distributors
- 2) agricultural machinery is seasonal
- 3) lack of suitable machinery design
- 4) lack of production standard, e.g. the spare part needs adjustment before replacing
- 5) lack of staff morale, i.e. the entrepreneurs do not pay the importance on their staffs
- 6) lack of production information, e.g. most factories do not realize their production cost [13].

With the problems and the condition of agricultural SME in Thailand mentioned above, the researcher had an idea to investigate on in-depth problems to find guidelines for the solution on running the business [5]-[7], [13], [14], and [18]-[21].

## II. METHODOLOGY

### A. Purpose of the Research

1. The purpose of this research is to investigate problems on fundamental factors of industry based on the entrepreneurs' point of view. The focus was on the small and medium size industry receiving factory license type number 0660 from the Department of Industrial Works.
2. The investigation was on the comparison between the management of the small and medium size agricultural industry in 3 provinces in the central region of Thailand.

### B. Hypothesis of the Research

There was no difference in basic problems and running the business regardless of the size of the agricultural machinery manufacturers.

### C. Study Variables

1. Independent variables included the size of the agricultural machinery manufacturers.

P. Thepnarintra is with Faculty of Industrial Education RMUTSB Nonthaburi Centre THA 11000 (phone: 66824899629, 6686699355; e-mail: thepnarintrap@gmail.com).

S. Nikorn is with Faculty of Industrial Education RMUTSB Nonthaburi Centre THA 11000 (phone: 66896798707; e-mail:Nik04@gmail.com).

2. Dependent variables included basic problems and running the business such as raw materials, production, and the services and policy of the government.

#### D. Population/Sample

Population in this study included owners and managers of small and medium size of the agricultural machinery manufacturers in the central region of Thailand. The population consisted of 189 company managers or managing directors, of which 101 were from the small size and 88 were from the medium size industry in the small and medium size industry receiving factory license type number 0660 from the Department of Industrial Works [9].

#### E. Instruments and Data Analysis

Questionnaire was used to collect data in this study. It was analyzed to find the reliability by Cronbach's alpha coefficient with the R value = 0.9009 [2], [3].

#### F. Data Collection

The researcher asked the official permission letter from the Faculty of Industrial Education, Rajamangala University of Technology, Suvarnabhumi Nonthaburi Centre to send to the respondents together with the questionnaires. It took 60 days for the returned questionnaires at 82.00% or 155 questionnaires.

#### G. Data Analysis

After checking the completion of the questionnaires, the data were transferred into code number before processing in the computer program for analysis. The 1<sup>st</sup> part dealt with general conditions of the factories which were in the form of checklists. The calculation was done to find frequency and percentage.

On the problems of running the business, the questions were in the form of rating scales. Data were analyzed to find mean and standard deviation with the interpretation based on [4].

The comparison between the small and the medium size industry focused on general conditions, size of the business, types of the business, and duration in running the business.

Data were analyzed to find the difference by using independent sample T-test.

Suggestions were in the form of open-ended questions analyzed by content analysis in the form of frequency distribution.

### III. RESULTS

According to the general information of the small and medium size agricultural machinery manufacturers, it was found that most of them were small size industry operated by male entrepreneurs with the age between 40-50 years old and bachelor degree education or over. Most of their products included wheel ploughing machines and mini tractors. They had produced the products for about 3-6 years to market in the country. The business tendency in 2-3 years was declining. Most business running depended on loaning. Other problems in running the business were presented in Fig. 1.

It could be seen from Table I that the overall problems were in high level (4.13). When considered in details, the highest problem was on raw materials (4.16), followed by production management (4.14) and then policy and services of the government (4.09)

TABLE I  
PROBLEMS IN RUNNING THE BUSINESS

Problems	Mean	S.D	Level of problems
1. Raw materials	4.16	0.79	High
2. Production management	4.14	0.78	High
3. Policy and services of the government	4.09	0.89	High
Total	4.13	0.82	High

Table II shows the level problem in the agricultural machinery industry as a whole, and the size of enterprises. Figs. 1-7 show parts of agricultural machinery industry and equipment all sorts of benefits in the rice [14].

TABLE II  
THE LEVEL PROBLEM IN THE AGRICULTURAL MACHINERY INDUSTRY AS A WHOLE, AND THE SIZE OF ENTERPRISES

The level problem in the business agricultural machinery industry	small size		medium size		t	p
	$\mu$	$\sigma$	$\mu$	$\sigma$		
1. Raw materials	4.00	0.89	4.31	0.68	11.639	0.000*
2. Production management	4.01	0.87	4.26	0.68	10.887	0.000*
3. Policy and services of the government	3.96	0.99	4.22	0.79	9.826	0.000*
<b>Total</b>	<b>3.99</b>	<b>0.92</b>	<b>4.26</b>	<b>0.72</b>	<b>11.156</b>	<b>0.000*</b>

\*A statistical level .05

The casting was prepared to do parts of pumps and hydraulic as shown in Fig. 1. According to Fig. 1, the problem is not enough for the skin with the machine as shown in Fig. 2. The casting was prepared to do parts of pumps and hydraulic (Fig. 3). According to Fig. 3, the problem is not enough for the skin with the machine (Fig. 4) [14].

Fig. 5 shows a versatile tool of peasant harvesters in Thailand. In Fig. 6, the help of the rice paddies in Thailand is given. Fig. 7 shows hook served with rice padding seeds from the crops [14].



Fig. 1 The casting [14]



Fig. 2 The skin [14]

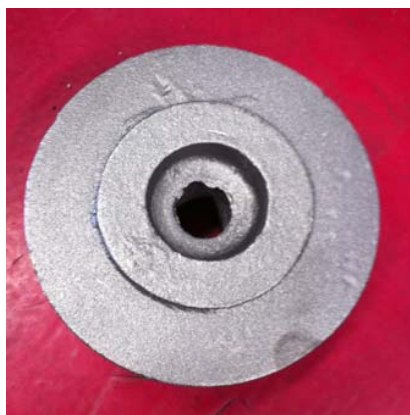


Fig. 3 Prepared casting [14]



Fig. 4 Prepared casting with the skin [14]



Fig. 5 Versatile tool of peasant harvesters [14]



Fig. 6 Rice paddies [14]



Fig. 7 Hook served with rice padding seeds from the crops [14]

When compared, the problems on basic factors in running the business in Table II, it was found that there was no statistically difference at .05 in managing of the small and medium size agricultural machinery manufacturers. However, there was a statistically significant difference between the small and medium size agricultural machinery manufacturers on the aspect of policy and services of the government. The problems reported by the small and medium size agricultural machinery manufacturers were the services on public tap water and the problem on politic and stability of the country [5], [15]-[32].

## IV. DISCUSSION

## A. Raw Materials

The finding was on raw material quality inspection which supported the report by the Journal of Economic Industry [11]. Reference [11] mentioned the production standard or good manufacturing practice (GMP) including decision process and assessment on product hazards starting from raw materials, production process, transportation till reaching the consumers as well as the production process to reduce or get rid of the cause of consumer hazards such as sanitation of factory location and production plant:

- 1) production machine
- 2) production process control
- 3) sanitation
- 4) maintenance and cleanliness
- 5) staffs [9], [19]-[21], [32].

## B. Production

Problems were on the development of the workers' skills, lack of experience workers, workers' turnover, efficiency of the machine, production steps, product quality control, machine maintenance, and cost of the machine. The findings were congruent with [1], [8], [10], [23]-[26].

## C. Government's Involvement

The problems were on the promotion and financial support from the government, public water, and information provided by the government sector. They were congruent with the report on the bull economic challenge, market opportunity. Trend of Economy and Industry [6] mentioned that Thai SME faced several problems especially good governance, lack of business knowledge including management, marketing, product development, and vision. To support SME, the government should firstly focus on the country's strategy to increase the total competitive potential. In addition, the government should help by reducing work redundancy with the continuing follow-up evaluation [10], [12], [13], [15], [19], [20].

## V. CONCLUSION

1. The government should support the small and medium size agricultural machinery manufacturers by providing more information about the industry to create competitiveness by improving the product quality to compete in the global market.
2. The government should provide low interest loan with longer term of payment and more easy and flexible loan conditions. This can help liquidity of the agricultural SME in particular investment such as machine, raw materials, and production plants.

## ACKNOWLEDGMENT

The researcher would like to express sincere thanks to the Office of Higher Education for the grant. The copyright belongs to the Faculty of Industrial Education, RMUTSB. Nonthauri Centre THA.

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**Thepnarintra Praphanphat** is born on the 1<sup>st</sup> of December 1961 in Bangkok, THA. Mr. Thepnarintra Praphanphat is currently a Doctor of Philosophy (Ph.D.) Curriculum and Instruction (Supervision) in Silpakorn University at THA and holds a Master's Degree in Technical Ed in Vocational and Technical Ed Management(Ms.Tech.Ed.) from KMITNB in Bangkok, THA. He got the Bachelor degree in Industrial Engineering from Institute of Technology and Vocational Ed. Division of Industrial Engineering, Faculty of Engineering Technology, Thewet Campus in Bangkok, THA.

He is currently in Division of Industrial Engineering, Faculty of Industrial Education in RMUTSB Nonthaburi Centre, Nonthaburi THA. He worked in the Industrial Engineering for thirty years and the researchers specialty (unlike qualification) including Industrial Management Engineering / Metal Engineering / Materials Science /Education /Research and development / curriculum and instruction / curriculum and supervision / research in Humanities and Social Sciences /Business Administration, industry and human resource development, and so on.