Inventory Management Factors that affect the Economic Order Quantity (EOQ) of Community Rice Mill Enterprises in Roi Kaen Sarn Provincial Cluster

Review of **Integrative Business & Economics** *Research*

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ABSTRACT

Community Enterprises Promotion Act 2548 BE promotes and supports the strength of community economic, the basic of sufficiency economic development. Economic and Social National Plan 11th (2555-2559 BE) focus to improve community economic stability by integrating production process on the balance of the strength and potential of community. Current, promoting and accessing to community are not thorough. Community enterprises meet many problems for example net sells are not stable, product are not well-known and lag of managerial skill.

Roi Kaen Sarn provincial cluster consists of Roied, Khonkaen and Mahasarakam province. It was registered 20 community rice mill enterprises. Their management are inefficient such as weak inventory management, relate to economic order quantity (EOQ), order point and cash gain by buying many quantities. The entrepreneurs lag of managerial skills to continually conduct their efficient community enterprises.

The aims of this research are to study the economic order quantity (EOQ) and the inventory management factors of community rice mill enterprises in Roi Kaen Sarn provincial cluster, improving and developing community rice mill enterprises management. The objectives are EOQ analysis, the relation of inventory management factors and EOQ analysis and implementing the analysis outputs to improve community rice mill enterprises inventory management. The conceptual framework of this research is "inventory management factors affect the Economic Order Quantity (EOQ) of community rice mill enterprises in Roi Kaen Sarn Provincial Cluster."

The data of this research are collected from all target, the total sample size is 100%. The type of questionnaire is semi structure interview. The representatives of community enterprises are interviewed. The data analysis of this research is analyzed by both qualitative and quantitative analysis technique. The qualitative analysis did by content analysis method. The quantitative analysis did by statistic method. The analysis outputs show the EOQs of 20 community rice mill enterprises and the value of inventory management factors. There are 4 variables of inventory management factors such as production capability, employees, experiences and location of community rice mill enterprises. The relation between these variables and the EOQ are positive on the whole. The relation between location variables and the EOQ is significant. It can predict the EOQ by the equation. In case of grating filter, EOQ is equal to 4.201 + (.092×distance from market). In case of grease, EOQ is equal to 3.297 + (.097×distance from market).

The comparison between the order quantities and the economic order quantities of the research are different. They showed that the entrepreneurs of the community rice mill enterprises were worthless by spending the order quantities of belts, scrubbing rubbers, grating filters and greases. They showed the failure of the enterprises in sufficiency and rationality criteria of Sufficiency Economy Philosophy. Those entrepreneurs have to improve and develop.

The EOQ analysis and the relation between the EOQ and the inventory management factors analysis including sufficiency and rationality in order quantities of 20 community rice mill enterprises in Roi Kaen Sarn provincial cluster were informed, advised and consulted to the committees and members of community rice mill enterprises and also the relevant person. These aimed to operate, improve and develop the efficiency and strength of the community rice mill enterprises sustainably.

Keyword: Inventory management factors, Rice mill enterprises, Roi Kaen Sarn Cluster

INTRODUCTION

The aims of this research are to know about the correct implementation in inventory management of community rice mill enterprises and the effects of the implementation in the management. And want to know the inventory management factors that affect the economic order quantity (EOQ) of community rice mill enterprises. Therefore, it can improve and solve the problems in inventory management and produce efficiently by using the outputs of this research.

In community business management sector, most of entrepreneurs are the persons who have experiences in agriculture work. They encounter many problems in management such as production process, planning, implementing, quality control and marketing. Therefore, the officials or the involved organizations should support and develop them about their knowledge and competence of management and production.

Government sector have promoted and supported enterprises in many ways. On the one is the enactment of Community Enterprises Promotion 2548 BE. It promotes and supports economic community enterprises, the basic development of sufficiency economic development. It strengthens the sufficiency economic and develops entrepreneurs to be capable managers. And the government agency regulates the act in the form of provincial enterprises promotion committee, for example, Provincial Agriculture Office and Provincial Community Development Office. They are secretary and assistant secretary of the committee.

On National Economic and Social Plan 11th (2555-2559 BE), the community economic has been emphasized on stabilizing community economic by integrating production process on the base of potential and strength balancing. It also emphasizes sufficiency consumer producing for community, including community enterprises incubation development together with developing new entrepreneurs by developing knowledge of management, marketing and identity local goods production.

However, the promotion and community access is not thorough. The management and implementation problems of community rice mill enterprises have not been helped and solved. These problems involve the techniques, technology and modern & appropriate methods of helpings & solving, for example, participation management, team working and applying of sufficiency economic in the way of integration.

The general problems of community enterprises are:

(http://mana.academiae.biz/MarketingPlan.asp)

    (1) Sold quantities are unstable and no systems of marketing.

    (2) Most of the goods are unknown.

    (3) Lack of skill of effective management of job & task

At present there are 69 community rice mill enterprises in the northeast, registered with the Secretary Office of Promotion Community Enterprises Committees. Roi Kaen Sarn Provincial Cluster (group 6.3) complements with Khon Kaen Province, Mahasarakarm Province and Roi Ed Province, there are 20 registered community rice mill enterprises. (This is the data from the Secretary Office of Promotion Community Enterprises Committees). They are 2 registered community rice mill enterprises in Khon Kaen, 3 registered in Mahasarskarm and 15 registered in Roi ED.

To achieve efficient rice mill operation business they have to manage on production, marketing and finance well, that is the general problems of community enterprises implementation. On correct financial management of community rice mills they have to do such as break-even point analysis, current assets management and accounts receivable management. One of the current assets which is importance and involvement in production management is inventory. Therefore rice mill entrepreneurs should understand about the economic order quantity (EOQ), order point and cash discount by volume buying.

The economic order quantity (EOQ) of rice mills business involve in cost and quantity of selling goods. Both cost and quantity of selling goods are the factors which involve production capacity, location of rice mill, manpower and experience of undertaking. Therefore the study or research of looking for the EOQ and the relation level of the EOQ and production capacity, location, manpower and experience are necessary for the information for applying in community rice mill enterprises promoting and developing, to be prospered.

The study or research of inventory management factors that affect the EOQ of community rice mill enterprises which is cited above is the activities to affect strength, moderateness, reasonableness and immutability of management and community economic system. They undertake in merit participation learning and make well-being to the people in society thoroughly. This accord to sufficient economic philosophy of the King Bhumibol Adulyadej (King Rama the IX) which is bestowed to Thai people since December 2540 BE.

OBJECTIVE

The objectives of this research are as follows.

1. To analyze the economic order quantity (EOQ) of community rice mill enterprises in integration provincial cluster 6.3 whereby the cluster includes Khon Kaen Province, Mahasarakarm Province and Roi Ed Province.
2. To analyze the inventory management factors that affect the economic order quantity of community rice mill enterprises in integration provincial cluster 6.3 whereby the cluster includes Khon Kaen Province, Mahasarakarm Province and Roi Ed Province.
3. To develop and improve inventory management of community rice mill enterprises in integration provincial cluster 6.3 whereby the cluster includes Khon Kaen Province, Mahasarakarm Province and Roi Ed Province.

According to the objectives, the conceptual framework of this research is "inventory management factors affect the Economic Order Quantity (EOQ) of community rice mill enterprises in Roi Kaen Sarn Provincial Cluster."

RESEARCH METHODOLOGY

Population and Representative Sample

1. Population of this Research
The population of this research is the community rice mill enterprises which registered with the Secretary Office of Promotion Community Enterprises Committees in Khon Kaen, Mahasarakarm and Roi Ed (The Integration Roi Kaen Sarn Provincial Cluster) At the present there are 69 registered community rice mills in the Northeast and 20 registered community rice mills in Roi Kaen Sarn Provincial Cluster. As shown in the table below.

Table 1 The community rice mill enterprises in Roi Kaen Sarn Provincial Cluster

Number	Community Enterprises	Location
1	Nong Pan community rice mill	Nong Pan, Manjakiri District, Khon Kaen
2	Tambon Dong Muang Ley Community Rice Mill	Muang Am, Koa Suan Kawang District, Khon Kaen.
3	Ban Ta Kala Community Rice Mill	68 Moo 12, Rad Padtana, Payak Poompisai District, Mahasarakarm
4	Nong Han Community Rice Mill	64 Moo 2, Wang Dong, Yang Sri Surat District, Mahasarakarm
5	Ban Hua Ser Community Rice Mill	22 Moo 8, Kham Rian, Yang Sri Surat District, Mahasarakarm
6	Porpan Community Rice Mill	108 Moo 6, Porpan, Muang District, Roi Ed
7	Ban Coke Tom Juvenile Group Community Rice Mill	47 Moo 6, Pa Sang, Jaturapak Piman District, Roi Ed
8	Ban Coke Morn Community Rice Mill	40 Moo 7, Pa Sang, Jaturapak Piman District, Roi Ed
9	Ban Nong Sano Community Rice Mill	75 Moo 9, Nong Pai, Tawat Buree District, Roi Ed
10	Community Rice Mill	12 Moo 3, Paisarn, Tawat Buree District, Roi Ed
11	Community Rice Mill	90 Moo 5, Nong Taptai, Panomprai District, Roi Ed

12	Ban Posai Community Rice Mill	23 Moo 6, koryai, Panomprai District, Roi Ed
13	Chalerm Prakeard Housewife Group Community Rice Mill	1 Moo 11, Na Ngam, Selapoom District, Roi Ed
14	Pattana Chonabot Ban Yanong Community Rice Mill	2 Moo 8, Jampakan, Suwannapoom District, Roi Ed
15	Ban Coke Hang Community Rice Mill	26 Moo 4, Jampakan, Suwannapoom District, Roi Ed
16	Ban Bua Ngeon Community Rice Mill	5 Moo 8, Gok Gung, Muangsuang District, Roi Ed
Number	Community Enterprises	Location
17	Ban Donjik Community Rice Mill	8 Moo 6, Yangkam, Pone Sai District, Roi Ed
18	Ban Yangkam Community Rice Mill	185 Moo 1, Yangkam, Pone Sai District, Roi Ed
19	Kongtoon Ban Tard Community Rice Mill	81 Moo 10, Pone Muang, Artsamart District, Roi Ed
20	Ban Koom Ngern Community Rice Mill	62 Moo 7, Nongbua, Artsamart District, Roi Ed

2. Representative Sample Group

Population of this research is the community rice mill enterprises, it consist of 20 enterprises. Therefore, the researcher decide to collect the data from the target group in 100% of population. So, it is not necessary to sample by statistical chance and table of random sampling including not necessary to find the deviation of sample for calculating the size of the sample under the rule of the deviation. By the characteristic of the representative samples are the male and female community rice mill entrepreneurs, upper compulsory education, not more than 65 years old, registered community rice mill enterprises in Khon Kaen, Mahasarakarm and Roi Ed province.

3. Place of Conduction/Data Collection

Collecting the data of inventory management, economic order quantity and the involve factors from the community rice mill enterprises in Khon Kaen, Mahasarakarm and Roi Ed province. The data collections are taken in the target community rice mill areas. Then, the data was collected and brought to analyze at the Faculty of Management Science, Mahasarakarm University for factors relation analyzing.

Research Tool

1. Type of Research Tool

The type of this research tool is in the form of questionnaire that is used to ask the facts (factual information), it has a list of questions for questioning and interview. This is used to collect the data from one man on one interview by in-depth interview.

2. Research Tool Design

The questionnaire of this research is the type of tool, it is used for interview. It is set the questions into 2 parts. First part is set the questions in advance the second part is set the questions accord to the situation. Therefore it is the mixed questionnaire or

semi structure interview questionnaire. By the list of questions consist of description, content, boundary, quantity and level of inventory control and inventory management factors. These are used for finding the economic order quantity and the inventory management factors of community rice mill enterprises. They are shown below.

2.1 The inventory control questions are units of purchase order per once (Q), fixed costs of goods storing per unit (C), fixed costs of purchase order per once (O) and quantity of using goods expectancy or sale in period of time (S).

2.2 The inventory management factors questions are size of production power of community rice mill (P), number of manpower of community rice mill (M), production experience of community rice mill (E) and location of community rice mill (L).

3   Quality Test of Research Tools

The interview questionnaire has been tested by interviewing, 1 staff of each community rice mills has been selected to interview. The total number of community rice mills enterprises which their staff are interviewed are 4 enterprises. The results of the testing show that the interviewees can answer the questions accord to the objectives. But there are some defectives such as misunderstand some words of the questions and some contents are difficult. Therefore the researcher has to interpret and explain. Then the researcher correct and improve the words and the contents to make the questionnaire even more valid and reliable. Because this research collects the data from the fact-based, they are not to value or rate the data. The test of validity and reliability of the questionnaire are done by the reflection method to consider them. They are not necessary to use rules or formulas to examine them.

4   Data Collection

The researcher interviews and collects the data questionnaires from the community rice mill enterprises of Roi Kansarn Provincial Cluster in 20 places. They are 2 places in Khon Kaen Province, 3 places in Mahasarakarm Province and 15 places in Roi Ed Province. And the researcher also interviews the representatives of committees or members of each community rice mill enterprises. The total numbers of these representatives are 100% of representative population.

Data Analysis

1. Quantitative Analysis

1.1 The formula of finding the economic order quantity (EOQ) are

EOQ point   is at $Q = \sqrt{2SO/C}$

By Q = units of purchase order per once

C = fixed costs of goods storing per unit

O = fixed costs of purchase order per once

S = quantity of using goods expectancy or sale in period of time

(This research, the objects that have to purchase and store are materials and tools for rice mill maintenance. The raw materials and products are paddy, rice, broken-milled rice, rice bran and rice husk. Therefore there are no purchase and store, because they are community service in which the number of users are not so much and daily service)

1.2 The correlation coefficient analysis can be determined by the data of inventory management factors, viz., size of production power of community rice mill (P), number of manpower of community rice mill (M), production experience of community rice mill (E) and location of community rice mill (L). Then analyze these data with the economic order quantities (EOQs) which calculate in 1.1 to find the correlation coefficient by Simple Regression Method by SPSS for Window Program according to conceptual framework.

2. Qualitative Analysis
Take the data which collect from factual information to make consideration by reflection method. By making in problem groups, causes, effects and behavior pattern that is apparent. Then summarize on the way of inventory management of community rice mills in the issues of the economic order quantity (EOQ), inventory management factors and involvements.

Research Procedure

The procedures of this research are as follow.
1. Data & information study and project planning.
2. Questionnaire design and data collection.
3. Data record and analysis
4. Conclusion and project reporting
5. Transfer research result to target group

Research Output

This research conducts data collection from community rice mill enterprises of integration provincial cluster 6.3 consist of Khon Kaen Province, Mahasarakarm Province and Roi Ed Province, there are 20 registered enterprises. The target populations which are collected are 100%. The outputs, viz., the economic order quantities (EOQs) and the inventory management factors are shown in table 2 and table 3 as follow.

Table 2 The economic order quantities (EOQs) of community rice mills.

No.	Community Enterprises	Economic Order Quantities (EOQs)			
		EOQ1 (mill belt case) (meter)	EOQ2 (scrub rubber case) (piece)	EOQ3 (grate case) (sheet)	EOQ4 (grease case) (can)
1	Nong Pan community rice mill, Khon Kaen	4.08	5.77	5.77	5.00
2	Tambon Dong Muang Ley Community Rice Mill, Khon Kaen	5.77	5.17	4.47	3.65
3	Ban Ta Kala Community Rice Mill, Mahasarakarm	5.47	4.47	3.16	4.47
4	Nong Han Community Rice Mill, Mahasarakarm	7.22	6.46	4.57	3.23
5	Ban Hua Ser Community Rice Mill,	5.16	5.16	5.16	5.16

	Mahasarakarm				
6	Porpan Community Rice Mill, Roi Ed	10.54	20.01	5.78	4.72
7	Ban Coke Tom Juvenile Group Community Rice Mill, Roi Ed	1.77	2.50	2.88	2.04
8	Ban Coke Morn Community Rice Mill, Roi Ed	6.90	14.64	4.88	4.88
9	Ban Nong Sano Community Rice Mill, Roi Ed	4.56	6.45	6.45	5.59
10	Community Rice Mill, Roi Ed	4.63	2.67	3.78	2.67
11	Community Rice Mill, Roi Ed	10.21	12.91	4.56	6.45
12	Ban Posai Community Rice Mill, Roi Ed	21.08	10.54	9.13	9.13
13	Chalerm Prakeard Housewife Group Community Rice Mill, Roi Ed	9.13	5.77	7.07	5.00

		Economic Order Quantities (EOQs)			
No.	Community Enterprises	EOQ1 (mill belt case) (meter)	EOQ2 (scrub rubber case) (piece)	EOQ3 (grate case) (sheet)	EOQ4 (grease case) (can)
14	Pattana Chonabot Ban Yanong Community Rice Mill, Roi Ed	15.81	12.91	9.13	6.46
15	Ban Coke Hang Community Rice Mill, Roi Ed	9.53	6.74	5.50	3.89
16	Ban Bua Ngeon Community Rice Mill, Roi Ed	6.09	3.85	4.71	3.33
17	Ban Donjik Community Rice Mill, Roi Ed	18.26	9.13	11.18	11.18
18	Ban Yangkam Community Rice Mill, Roi Ed	10.21	18.26	9.13	6.46
19	Kongtoon Ban Tard Community Rice Mill, Roi Ed	4.08	8.16	4.08	4.08
20	Ban Koom Ngern Community Rice Mill, Roi Ed	9.62	10.54	5.27	3.04
	Mean	8.506	8.606	5.833	5.022

Table 3 Inventory management factors of community rice mills**.**

		Inventory Management Factors			
No.	Community Enterprises	Production power (P) (kilogram/ hour)	No. of member (M) (person)	Producing time (E) (year)	Distance from market (L) (kilometer)
1	Nong Pan community rice mill, Khon Kaen	130	18	2	10
2	Tambon Dong Muang Ley Community Rice	170	16	5	50

	Mill, Khon Kaen				
3	Ban Ta Kala Community Rice Mill, Mahasarakarm	100	27	4	13
4	Nong Han Community Rice Mill, Mahasarakarm	150	70	4	13
5	Ban Hua Ser Community Rice Mill, Mahasarakarm	120	20	3	20
6	Porpan Community Rice Mill, Roi Ed	180	96	9	17
7	Ban Coke Tom Juvenile Group Community Rice Mill, Roi Ed	200	150	6	3
8	Ban Coke Morn Community Rice Mill, Roi Ed	100	32	6	20
9	Ban Nong Sano Community Rice Mill, Roi Ed	60	23	6	13
10	Community Rice Mill, Roi Ed	67	130	3	2

No.	Community Enterprises	Inventory Management Factors			
		Production power (P) (kilogram/ hour)	No. of member (M) (person)	Producing time (E) (year)	Distance from market (L) (kilometer)
11	Community Rice Mill, Roi Ed	150	109	15	23
12	Ban Posai Community Rice Mill, Roi Ed	210	94	13	27
13	Chalerm Prakeard Housewife Group Community Rice Mill, Roi Ed	90	40	2	25
14	Pattana Chonabot Ban Yanong Community Rice Mill, Roi Ed	180	15	8	19
15	Ban Coke Hang Community Rice Mill, Roi Ed	120	120	5	16
16	Ban Bua Ngeon Community Rice Mill, Roi Ed	150	94	4	12
17	Ban Donjik Community Rice Mill, Roi Ed	180	18	6	30
18	Ban Yangkam Community Rice Mill, Roi Ed	180	132	4	28
19	Kongtoon Ban Tard Community Rice Mill,	120	88	15	7

	Roi Ed				
20	Ban Koom Ngern Community Rice Mill, Roi Ed	360	54	4	8
	Mean	150.85	67.3	6.2	17.8

From the economic order quantities (EOQs) and the inventory management factors in 2 tables above. The data has been used to analyze for finding the correlation coefficient between the inventory management factors (independent variables) and the economic order quantities (EOQs) (dependent variables) by Simple Regression Method by SPSS for Windows as shown in table 4 below.

Table 4 The level of the relation of the community rice mill inventory management factors (independent variables) and the economic order quantities (EOQs) (dependent variables)

Inventory management factors	R (relation)				Significant values			
	In case of EOQ1	In case of EOQ2	In case of EOQ3	In case of EOQ4	In case of EOQ1	In case of EOQ2	In case of EOQ3	In case of EOQ4
Production power (P) (kilogram/ hour)	.386	.311	.205	.057	.093	.182	.385	.811
No. of member (M) (man)	.081	.091	.234	.291	.734	.704	.321	.214
Producing time (E) (year)	.350	.393	.073	.328	.130	.087	.761	.158
Distance from market (L) (kilometer	.438	.268	.454	.491	.053	.253	.044*	.028[*]

* This is the relation that can predict significantly.

The outputs of regression analysis show the relation between independent variables and dependent variables significantly in the form of prediction equations on 2 equations. They are as follow.

1. The distance between rice mill and market (L) (kilometer) in case of mill grate, the equation is as follow.

$$Y_1 = 4.201 + .092(L)$$

2. The distance between rice mill and market (L) (kilometer) in case of mill grease, the equation is as follow.

$$Y_2 = 3.297 + .097(L)$$

By Y = economic order quantity
L = distance between rice mill and market

The relation of the another community rice mill inventory management factors and the economic order management such as size of production power of community rice mill (P), number of members of community rice mill (M), production time experience of community rice mill (E) are not significant, but they are all positive relation with the EOQ as shown in table 4.

According to the outputs of this research, the researcher has been taken them (the economic order quantity and community rice mill inventory management factors) especially the location of community rice mill to explain to the committees and the members of rice mill enterprises also the involvements for their understanding and improving their rice mill enterprises. All of them have been explained and followed for once. The results show that they have improved the economic order quantities, interested the inventory management factors and selected the best way to purchase. They also have planned and developed the production power of their rice mills for more services to their customers.

SUMMARY AND DISCUSSION

Summary

1. The fixed costs of goods storing per unit (C) by mean = 363 Baht (in 6 months period)
2. The fixed costs of purchase order per once (O) by mean = 91.25 Baht (in 6 months period)
3. The economic order quantities (EOQ) of community rice mills consist of:

   3.1 The economic order quantity (EOQ) of mill belt by mean = 8.506 meters, adjust to 8.5 meters

   3.2 The economic order quantity (EOQ) of scrub rubber by mean = 8.606 pieces, adjust to 9 pieces.

   3.3 The economic order quantity (EOQ) of mill grate by mean = 5.833 sheets, adjust to 6 sheets.

   3.4 The economic order quantity (EOQ) of grease by mean = 5.022 cans, adjust to 5 cans.
4. The inventory management factors.

   4.1 The size of production power of community rice mill (P) by mean = 150.85 kilogram/hour, adjust to 151 kilogram/hour.

   4.2 The number of manpower of community rice mill (M) by mean = 67.3 persons, adjust to 67 persons.

    4.3 The production experience of community rice mill (E) by mean = 6.2 years, adjust to 6 years.
    4.4 The location of community rice mill (L) by mean = 17.8 kilometers, adjust to 18 kilometers.
5. The relation of the inventory management factors and the economic order quantities (EOQ)
    5.1 The significant relation which can be predicted in the form of prediction equations are as follow.
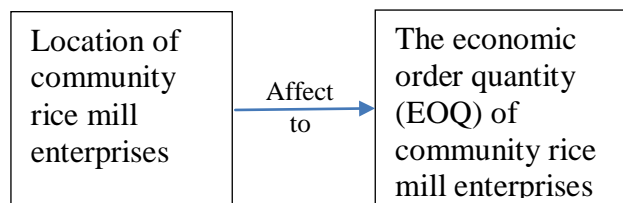   5.1.1 The distance between rice mill and market (L) and the EOQ in case of mill grate.
                $Y_1 = 4.201 + .092(L)$
        5.1.2 The distance between rice mill and market (L) and the EOQ in case of mill grease.
                $Y_2 = 3.297 + .097(L)$
        5.1.3 The conceptual framework of the relation between the inventory management factors and the economic order quantities (EOQ) that is significance, shown in the figure below.

    5.2 The relation which are not significant, as follow.
        5.2.1 The size of production power of community rice mill (P) and EOQ
        5.2.2 The number of members of community rice mill (M) and EOQ
        5.2.3 The production experience of community rice mill (E) and EOQ
        5.2.4 The location of community rice mill (L) and EOQ
        These relations cannot predict the economic order quantity in the form of prediction equation.

Discussion

Community rice mill enterprises conduct production services free of charge. But they gain the incomes from the broken-milled rice, the rice bran and the husk. They do not have to actuate inventory paddy, because the paddy is depleted by milling in one day. Also they do not have to actuate inventory rice, because the customers take them to their home in one day. And the rice bran and the broken-milled rice are sold out within one day, there are no these inventory. Therefore the objects that have to store as inventory are maintenance materials and tools, they cause money expenditures. These money expenditures are electricity charges for thieves preventing at night and purchasing orders such as mill belts, scrub rubbers, mill grates and mill greases which their expenditures are vehicle charges or fuel spending.

By comparing the economic order quantities which are the outputs from this research with the implementation purchasing order per once before this research, they show the difference between them. For example, the EOQ of mill belts of Nong Pan Community rice mill are 4.08 meters but the implementation purchasing order are 2 meters. Therefore it is not save and it has to change the purchasing order per once to the correctness.

Mill capability of rice mill depends on horse powers of electric motor. The horse power is the power of rice milling. So the power affects to the economic order quantity, for example, if the rice milling runs in long time or in heavy milling, the EOQ is increased and high. But this relation is not significant.

Likewise the number of community rice mill members and the rice milling experience of the entrepreneurs also affect to the EOQs in the same way of mill capability of rice mill does.

Besides, the increasing of the distance between rice mill and market affect the increasing of the economic order quantity clearly. Therefore the entrepreneurs should purchase on the quantity exactly. They can use the prediction equations that have been shown in the summary above.

Suggestion

1. Most of community rice mill are small mills, their maintenance and purchase order are not so much. Anyway, the entrepreneurs are on low incomes. They have to beware their expenditures. The maintenance expenditures of the community rice mill enterprises are the generally expend, so they have to find their economic order quantities correctly.
2. Because the travel expenditures for maintenance material purchasing affect the economic order quantity clearly. The entrepreneurs have to select the best way and the best vehicles in which they are safe and saving.
3. Besides, the community rice mill entrepreneurs have to find the economic order quantities correctly, they have to improve the production factors such as production power efficiency and their skills. These will decrease the losses and wearing out, so they will decrease the purchasing order in period of time.
4. When the community rice mill entrepreneurs extend mill production powers, they have to find the correct economic order quantities according to the extended production powers.
5. On the next time, the related research should research on the break-even point or the demand of the customers of the community rice mill enterprises.

APPENDIX

Definition

Sufficiency Economy Philosophy means that the King Bhumibol Adulyadej (King Rama the IX) concept confer on Thai people in all level such as family level, community level and state level. It use for their living and conduct oneself. It also use

for nation development and management in the mean way. And the mean way comprises the 3 loops and the main conditions. The first loop is moderateness. The second loop is reasonableness. The third loop is immunity. When applying this philosophy it should be in the 2 conditions, knowledge and merit.

Small and Micro Community Enterprise (SMCE) means that community activities produce service or operate goods and services in which they undertake by groups of people who are binding, conjoint in the way of life and integral in business. Whatever they are corporations or not corporations. They aim to make their revenue and self-reliance, community and inter-community.

Roi Kaen Sarn Integration Provincial Cluster means that the provinces in the cluster of public administration 6.3 which are in the same vision and strategy of mutual development**.** They consist of Khon Kaen, Mahasarakarm and Roi Ed province.

Inventory means that revolving assets consist of:

1. Raw material, it means the goods which are not take to produce in the form of products.
2. Work in process, it means the goods which are not the finished products but they are in process.
3. Finished goods, it means the goods which are the finished products and they can bring to sell immediately.

In the industrial business the supplies are include in the inventories because they are necessary to add to produce the products

Cost of inventory means that the costs or market prices of the goods which are bought from the sellers to keep in the business. It comprises the cost prices of goods and the expenditures of sending goods to the buyers such as transportation, package price, insurance cost, etc. Sometimes, these expenditures depend on the engagement, that is sellers or buyers have to pay.

Carrying cost means that the costs which consist of:
1. Cost of space, it means the expenditures of warehouse such as rent cost, depreciation, water and electricity charge of warehouse, cleaning cost, sentinel cost of warehouse and tax. Most of these expenditures are regular expenditures.
2. Service cost, it means the expenditures apart from the cost of space such as insurance premium, salaries of staff who work for warehouse such as accountant, examiner and receiving-supplying staff include the damage of goods such as evaporation of goods, fracture, stealing, etc.

Ordering cost means that the expenditure occurs with ordering goods such as ordering forms cost, stamps and salary of ordering staff**.**

Economic Order Quantity (EOQ) means that the size of ordering quantity of goods match the total cost of ordering and storing cost at the lowest price.

ACKNOWLEDGEMENTS

This research has been completed and reached the objectives because I have had the obligingness of various sides, especially Dean of Faculty of Management Science of RMU (Mr. Vutipol Chutjaraskul) along with another academicians who cannot mention in this paper. All of them enlighten me the knowledge and counsel me for correcting, writing and researching. They accomplish this research to finish completely. I am appreciative and grateful to every helper.

I also give thanks all the community rice mill enterprises for data and information to analyze the cases and problems according to the research objectives.

Finally, I would like to give the usefulness and values of this research to my parents, first teachers and every benefactor for their kindness adoration.

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