

# Developing Good Management System to Enhance Efficiency Production of Institute of Food Research and Product Development, Kasetsart University

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## ABSTRACT

The purpose of this research was to develop participating process of production and selling of Institute of Food Research and Product Development, Kasetsart University, Thailand to improve their management. Action research was used by applying the PDCA model (Plan, Do, Check, Act) of Deming. Target group was 45 personnel from production and selling lines. They worked together to analyze situations of selling during 2003 - 2005 to be informed for improving plan and operate according to the plan. Checking and feedback were used to adjust new operating plan. Techniques used for data collection were brainstorming, observation, and group discussion. Content analysis was utilized to analyze data.

Results revealed that personnel from production and selling lines had worked separately. They never had joint analysis and conclusion of the performance, resulting in low selling. Working environment, however, was so warm from taking a good care of each other and from their leaders.

Information from the total selling and profits in 2003 - 2005 helped the personnel to see direction of operation. They selected priority highest selling and profits of products including deleted difficult produces from process. Therefore, producing amount were enhanced to be 18,060,161.60 baht in 2006 and 19,751,890.66 baht in 2007. In the meantime, the income was 14,917,286 in 2003, 17,883,217 in 2004 and 15,872,148 in 2005.

**Key words:** good management, production efficiency

## บทคัดย่อ

การวิจัยในครั้งนี้มีวัตถุประสงค์เพื่อพัฒนากระบวนการมีส่วนร่วมของบุคลากรฝ่ายผลิตและฝ่ายจำหน่ายผลิตภัณฑ์ สถาบันค้นคว้าและพัฒนาผลิตภัณฑ์อาหาร มหาวิทยาลัยเกษตรศาสตร์ ประเทศไทย เพื่อ改善หากาคความร่วมมือกันในการปรับปรุงระบบการบริหารจัดการให้เกิดประสิทธิภาพ

สูงสุด วิธีการศึกษาใช้กระบวนการของการวิจัยเชิงปฏิบัติการ ภายใต้วงจร PDCA เพื่อปรับปรุงกระบวนการทำงาน กลุ่มเป้าหมายคือบุคลากรจากฝ่ายผลิตและฝ่ายจำหน่าย จำนวน 45 คน ร่วมกันวิเคราะห์สภาพการณ์ดำเนินงานย้อนหลัง 3 ปี (ปี พ.ศ.2546-2548) เพื่อเป็นข้อมูลพื้นฐานในการวิเคราะห์ผล ซึ่งนำไปสู่การวางแผนปรับปรุงงาน และดำเนินการตามแผน โดยมีการตรวจสอบและ

ปรับปรุงผล รวมทั้งปรับแผนการดำเนินงานในรอบใหม่ เครื่องมือที่ใช้ในการศึกษาได้แก่ การระดมความคิดเห็น การสังเกตการณ์ เวทีประชุม และการวิเคราะห์ด้วยวิธีการวิเคราะห์เนื้อหา

ผลการศึกษาพบว่า ฝ่ายผลิตและฝ่ายอำนวย มีลักษณะการทำงานแยกส่วน ไม่เคยมีการสรุปผล การดำเนินงานร่วมกัน บุคลากรส่วนใหญ่ปฏิบัติงานตามหน้าที่โดยไม่มีความร่วมมือในการทำงานเท่าที่ควร รวมทั้งขาดการประสานงานที่ระหว่าฝ่ายอีกฝ่าย แต่บรรยายกาศในการทำงานมีความอนุรุ่ง ช่วยเหลือซึ่งกันและกัน และผู้บังคับบัญชาคุ้มครองเอาใจใส่ผู้ใต้บังคับบัญชา

ภายหลังการศึกษาด้วยการอำนวยการฝ่ายผลิตกันทั้งสองฝ่าย ได้ร่วมกันคัดเลือกผลิตภัณฑ์ที่มียอดการจำหน่ายสูงและมีผลกำไรดีเป็นลำดับแรกในการผลิต และคัดผลิตภัณฑ์บางชนิดที่มีกระบวนการผลิตยุ่งยากออก สำหรับผลิตภัณฑ์ที่ผลิตกำไรน้อยแต่เป็นผลิตภัณฑ์ที่สร้างชื่อเสียงให้กับสถาบันฯ สามารถยังคงเลือกอาไวเพื่อประชาสัมพันธ์องค์กร การจัดทำแผนปรับปรุงกระบวนการผลิตและจำหน่ายดำเนินการด้วยการร่วมคิดของสมาชิกทั้งสองฝ่าย และทดลองปรับปรุงสายการผลิต โดยมีการตรวจสอบผลเป็นระยะ ๆ ผลจากการปฏิบัติพบว่า บุคลากรสามารถกระบวนการผลิตเพิ่มขึ้นเป็น 18,060,161.60 บาท ในปี 2549 และสูงต่อเนื่องเป็น 19,751,890.66 บาท ในปี 2550 ขณะที่รอบปี 2546 มีรายรับ 14,917,286 บาท ปี 2547 มีรายรับ 17,883,217 บาท และปี 2548 มีรายรับ 15,872,148 บาท

**คำสำคัญ:** การบริหารจัดการที่ดี ประสิทธิภาพในการผลิตและจำหน่ายผลิตภัณฑ์

## INTRODUCTION

Institute of Food Research and Product Development (IFRPD), Kasetsart University, Thailand,

is a research institute which has its duties to perform research on quality food science and nutrition from raw materials in agricultural products both in family level and factory level. Including, preserved food, converted food, and reserved food products in order to maintain high quality for a long time. IFRPD, Kasetsart University was established in 1968, the institute has main duties to do the research and developing food science technology. The research leads to assist food industries as well as its role in providing food information to society, academic offices, industries and communities including the laboratories for students studying in Food Science of Kasetsart University and other universities. Moreover, results from the research led to producing food in two experimental factories and selling the products at the institute's shop, express shops and selling through private shop's representatives.

Even though IFRPD is a bureaucratic and large organization, its administration and management are not as efficient as the private organization. Staff divided their work on their own. Producing and selling departments never discussed about how to improve their work. In the meantime, the producing situation is quite slow because of many lines of productions since it is the laboratory for the educational institutes. The problems have been accumulated for a long period of time. Since the economic crisis, all public universities have to be prepared for supporting themselves financially. It is essential for the institute to improve and adjust its organization in order to be "*A Leader of Food Innovation, Academic Supporter and the Pointer to the Best Food Industries of the Country*". In order to make provocative movement, the institute has to be ready for change. One way to create a change is fostering participation among two groups of personnel in order to have good management which will bring the efficiency of production and distribution of the institute. This study covered the 45 persons from the production and selling departments. The objectives of the research were 1) to develop the participation of production and selling staffs in order to find the

cooperation in developing for good management in the organization and 2) to increase the efficiency of production and distribution of the organization.

## RESEARCH FRAMEWORK

Participatory Action Research-PAR is a form of practical research that focuses on the effects of the researcher's direct actions of practices within a participatory organization with the goal of improving the quality of the organization or an area of concern (Dick, 2002). Action research involves utilizing a systematic cyclical method of planning, taking action, observing, evaluating (including self-evaluation) and critical reflecting prior to plan the next cycle (McNiff, 2002). The actions have a set goal of addressing an identified problem in the workplace. It is a collaborative method to test new ideas and implement action for change. It involves direct participation in a dynamic research process, while monitoring and evaluating the effects of the researcher's actions with the aim of improving practice (Checkland and Holwell, 1998). At its core, action research is a way to increase understanding of how change in one's actions or practices can mutually benefit a community of practitioners.

PAR proceeds through repeated cycles, in which researchers and the community start with the identification of main issues, concerns and problems, initiate research, originate action, learn about this action and proceed to a new research and action

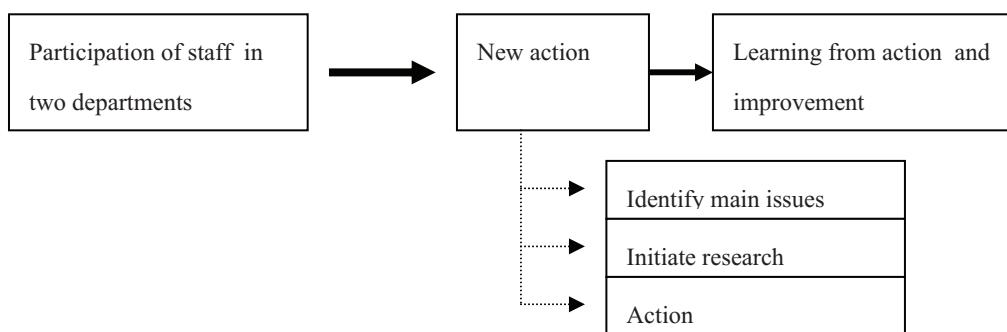
cycle. This process is a continuous one (McNiff, 2002). Participants in action research projects continuously reflect on their learning from the actions and proceed to initiate new actions on the spot. Outcomes are very difficult to predict from the outset. Challenges are sizeable and achievements depend largely on researcher's commitment, creativity and imagination.

## RESEARCH METHODS

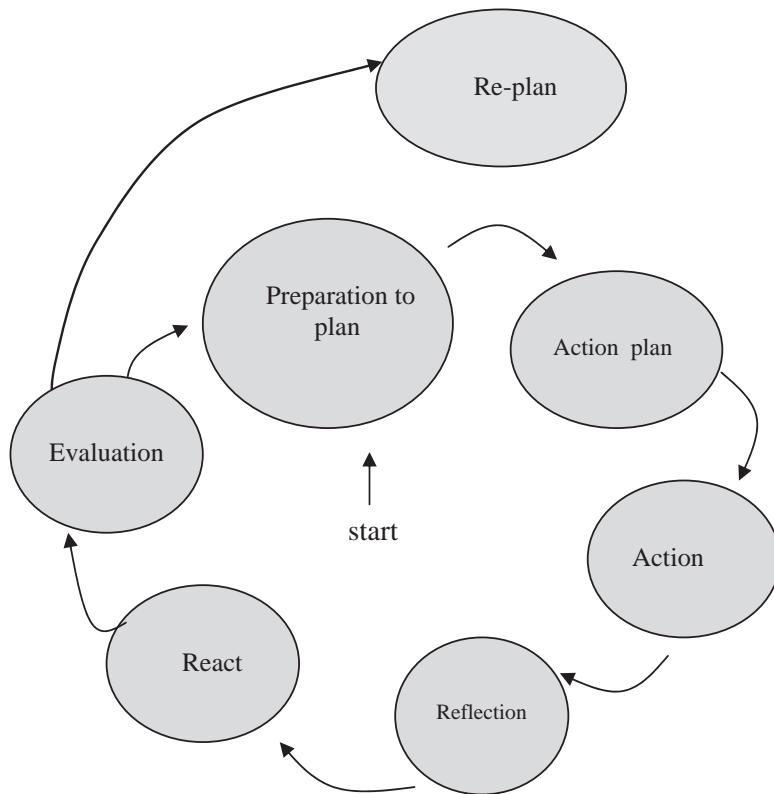
This study is an action research. There were 45 participants from two pilot plants (the pilot plant 1 and 2) and selling department. Research procedures were run under loop of preplanning - plan- act - reflection-evaluation, adapted from Deming's model (1994) as follows:

For the preparation, brainstorming was used among participants to consider the potentials and problems of production and distribution. However, the product and distribution departments were studied separately. The researchers started with an analysis of the total quantity of selling for last 3 years (during 2003 - 2005). Then the information in producing and selling of the institution were analyzed. The statistics used were frequency and percentage. The results of the study in the first part were used as a reflection and materials for the participants to discuss and find the tendency to solve the problems together.

After conducting the work plan, the participants



**Figure 1** Research framework



**Figure 2** Loop of preparation - action plan- action - reflection - react and evaluation, adapted from Deming's model (1994)

used the plans for 6 months per round, checking the results of the plan every month and then evaluated the plans every 6 months. Techniques used for data collection in this study were brainstorming, observation and group discussion. Frequency, percentage and priority were used to analyze quantitative data. Content analysis was utilized to analyze qualitative data.

## RESULTS

1. When considering the real working situation in the pilot plants, the general environment among participants were friendly. The head of factories in the past and present were sympathy and understood the workers. But the limitation was the lack of delegation of responsibility. Moreover, most staff were old and had low income. For coordination, the

problem was the delay of order from the selling department. In consequence, the preparation was too slow and could not meet the need of the customers.

2. The results of the situation analysis revealed that 24 categories of products during 2003 - 2005 produced the income from selling to be 14,917,286 baht, 17,883,217 baht and 15,872,148 baht respectively. (Table 1)

From the total selling amount of 4,224,870.16 baht, the members together considered that the main products were textured vegetable protein and fruit dipping sauce. For the products that had high tendency to sell were breakfast cereal, herbal drink, chili paste and dipping sauce. On the other hand, the producing that has decreased amount of selling were pickle. Moreover, when considering the order of products which had high amount of selling and profits in 2005, for the top two products were

**Table 1** Selling situation during 2003 - 2005

Number	Product categories	Year 2003	Year 2004	Year 2005
		Selling total amount (baht)	Selling total amount (baht)	Selling total amount (baht)
1	Supplementary food for infant and young children	435,180.00	482,173.00	344,410.00
2	Textured vegetable protein	12,821,952.00	14,536,377.00	13,258,228.00
3	Instant cereal beverage powders	49,223.00	41,712.00	35,354.00
4	Snack food	29,690.00	80,569.00	26,092.00
5	Breakfast cereal	26,080.00	49,719.50	54,780.00
6	Cookies	178,126.00	578,630.00	439,079.00
7	Soy milk	109,825.00	107,076.00	102,621.00
8	Beverage	51,264.00	126,561.00	108,759.00
9	Concentrated juice	124,897.00	189,597.00	175,468.00
10	Flavored syrup	37,768.00	33,749.00	40,092.00
11	Herbal drink	18,646.00	41,357.00	51,536.00
12	Dressing	35,965.00	46,484.00	18,182.00
13	Fruit dipping sauce	469,148.00	622,315.00	576,189.00
14	Chili paste	168,094.00	200,799.00	239,806.00
15	Dipping sauce	9,925.00	20,200.00	29,306.00
16	Thai curry	31,066.00	193,975.00	168,329.00
17	Fine textured vegetable protein with chili paste	37,464.00	63,640.00	50,236.00
18	Pickle	122,99.00	102,871.00	26,394.00
19	Jam	47,008.00	50,674.00	35,424.00
20	Kaset noodle	24,318.00	71,423.00	61,346.00
21	Soy product	7,012.00	8,134.00	6,486.00
22	Vine	0.00	167,700.00	26,000.00
23	Meangkam sauce	22,396.00	39,386.00	26,261.00
24	Starter culture of fruit Vinegar drink	67,882.00	28,095.00	35,090.00
	Total	14,917,286.00	17,883,217.00	15,872,148.00

textured vegetable protein and cookies. (Table 2)

Results of the study on the amount of selling in 2003 - 2005 showed the direction and trend of selling products. They were helpful to analyze the total distribution, cost and profit of the production to make plans for increasing the benefits and quantity of production.

Members made production plan together based on the reviewed production data. They selected the potential production that could create the high income such as low cost of production, easy

production process, well response or products that were outstanding of the institute and set the priority of the products properly, by setting the priority of the producing which caused better management. At the end of the experiment, the researchers found that the managers of the plants could upgrade the amount of production with no time excuse.

After the action as planned, it was found that the total amount of selling increased to 18,060,161.60 baht in 2006 and 19,751,890.66 baht in 2007. (Table 3)

**Table 2** Order of good selling products and profits in 2005

Number	Product categories	Profit (baht)	Order of profit
1	Textured vegetable protein	3,544,747.37	1
2	Fruit dipping sauce	93,536.78	3
3	Cookies	111,985.95	2
4	Supplementary food for infant and young children	36,484.80	9
5	Chili paste	42,828.90	7
6	Concentrated juice	73,832.02	4
7	Thai curry	57,810.12	5
8	Beverage	53,129.87	6
9	Soy milk	36,232.77	10
10	Kaset noodle	13,323.58	12
11	Breakfast cereal	12,244.46	13
12	Herbal drink	9,219.76	17
13	Fine textured vegetable protein with chili paste	36,778.72	8
14	Flavored syrup	8,947.20	19
15	Jam	9,204.60	18
16	Instant cereal beverage powders	4,423.95	21
17	Starter culture of fruit Vinegar drink	35,090.00	11
18	Dipping sauce	10,100.82	15
19	Pickle	9,750.60	16
20	Snack food	5,381.65	20
21	Vine	11,877.50	14
22	Meangkam sauce	2,113.75	23
23	Dressing	3,934.90	22
24	Soy product	1,890.09	24
Total		4,224,870.16	

## DISCUSSION

1. This research empowered the low income and low educational attainment staff by encouraging their self esteem as the ones who were significant member to the institute. This finding is in accordance with the study of Sutthinarakorn *et al.* (2002) that the staffs of Sport Office and Kasetsart University can get more effective working after an empowerment with participation process.

**Figure 3** Reflection of action after operating as planned

**Table 3** Total amount of selling during 2006-2007

Product categories	Total amount in 2006 (baht)	Total amount in 2007 (baht)
1. Supplementary food for infant and young children	256,995.00	299,353.75
2. Textured vegetable protein	14,372,515.08	15,165,485.00
3. Instant cereal beverage powders	21,421.30	33,908.40
4. Snack food	49,995.55	52,791.65
5. Breakfast cereal	29,716.10	25,680.50
6. Cookies	565,412.55	760,091.55
7. Soy milk	75,203.25	109,543.80
8. Beverage	232,579.95	343,342.50
9. Concentrated juice	270,920.95	316,992.75
10. Flavored syrup	49,205.25	64,485.00
11. Herbal drink	104,747.05	125,848.00
12. Dressing	39,326.50	34,896.25
13. Fruit dipping sauce	726,678.68	734,891.02
14. Chili paste	259,478.49	330,775.59
15. Dipping sauce	27,280.10	22,557.30
16. Thai curry	171,252.85	169,126.40
17. Fine textured vegetable protein with chili paste	88,261.00	142,732.70
18. Pickle	69,159.00	124,156.00
19. Jam	10,879.30	-
20. Kaset noodle	60,360.25	74,167.00
21. Soy product	0.00	875.00
22. Vine	277,412.50	202,675.00
23. Meangkam sauce	40,557.55	31,696.00
24. Starter culture of fruit vinegar drink	0.00	151,104.00
25. Fruit vinegar drink	336,592.20	319,309.55
26. Gifts production	95,482.00	118,406.00
Total	18,060,161.60	19,751,890.66

2. Staff who worked in the plants had never been informed about selling. On the other hand, the staff who worked in the selling never knew the information about how difficult to produce the product. By sharing information and feeling could lead to better understanding and sympathy among two groups. As the result, the two groups worked happily and were more willing to work more than their responsibilities.

## RECOMMENDATIONS

For the policy development of the Institute of Food Research and Product Development, the recommendation are as follows:

1. When staff could increase more production and sales, the organization should consider providing motivation for the staff in terms of increasing income and rewarding in a similar manner to private agencies.

2. The institute should support activities to exchange learning experiences in order to increase the positive thinking which can create high quality of working in every sector of organization.

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