The Development of a Training Model for Occupational Competency of Production Supervisor

Chaloemphon Meechai and Somyot Jedjaroenruk

Abstract—**The Occupational competency development of personnels in any organization was considered to be a vital factor for economic development especially in business and industry sectors. Supervisor played an important role in industrial development, therefore, the training of personnels to improve their occupational competency is very essential. These research main objectives aimed to investigate the components of work competency of the production supervisor in textile industry as well as to develop the training course for these personnels. The training course was then used to train target group to assess their training achievement. The assessment of their competencies obtained for the training was conducted by evaluating the productivity of work done by workers. The population of the study was production supervisors of textile industry situated in Ubonratchathani, THAILAND. The samples of 30 supervisors were selected from Vertex Apparel Co., Ltd which is a textile and garment company.**

The results of this study were as follows: 1) In order to develop work competency components, a total of two hundred production supervisors in textile and garment industry were selected as research samples. Accordingly, work competency components of these personnels comprised of six aspects, i.e. leadership, planning, monitoring and evaluation, process improvement, problem solving, communication skill. 2) The sample group was then trained for three months using to develop 5 Modules for training course. Data were collected at the end of training to assess their learning achievement by means of percentage. The productivity of work done was collected every 15 days for six months to compare with productivity obtained before the training. 3) The finding on learning achievement is 81.5 % which corresponded to the hypothesis. The result was an increase in productivity of about 10%, a 60% reduction in defects. The finding also corresponded to the hypothesis.

Index Terms—**Development, occupational competency, training model, production supervisor.**

I. INTRODUCTION

The economy of Thailand is a newly industrialized economy. It is a heavily export-dependent economy, with exports accounting for more than two thirds of gross domestic product (GDP). The economic Growth of Thailand expanding has been very rapidly. As in Fig. 1 the Gross Domestic Product (GDP) in Thailand expanded 1.1 percent in the third quarter of 2014 over the previous quarter. Competencies have been used for all types of organizations,

including private clubs [1]. Competencies were originally used in business and education sectors as a means to select employees or students [2]. One of the framework which could be utilized in management development is management competencies. Competency is strategically important element of an organization as it provides competitive advantages and inhibits the performance. Fast developments in technology, changes in customer expectations and globalization require the production to be active, more flexible [3].

Fig. 1. Thailand GDP growth rate.

II. STATEMENT OF THE PROBLEM

The management problem of this research was the improvement process for the development of production supervisors. A production supervisor is the Middle level of organization's management hierarchy and they are responsible for managing the work of the employees. It is essential that the characteristics of the supervisory job, defined by its competencies, be known. This is important in order to properly and adequately establish organizational supervisory positions, select personnel for those positions, and train personnel in those supervisory positions. It is also important from a human resources perspective to use the supervisors' competencies in developing job descriptions and performance reviews, because of anti-discrimination statutes and court decisions, and because it is good management practice. The need to research the competencies of a production supervisor has many marketplace origins as well as to develop the training course for these personnel.

III. PURPOSES OF THE STUDY

The research main purposes were to investigate the components of work competency of the production supervisor in textile industry as well as to develop the training course for these personnels. The training courses were then used to train target group to assess their training

achievement. The assessment of their competencies obtained for the training is conducted by evaluating the productivity of work done by their workers. As in Fig. 2 the conceptual framework.
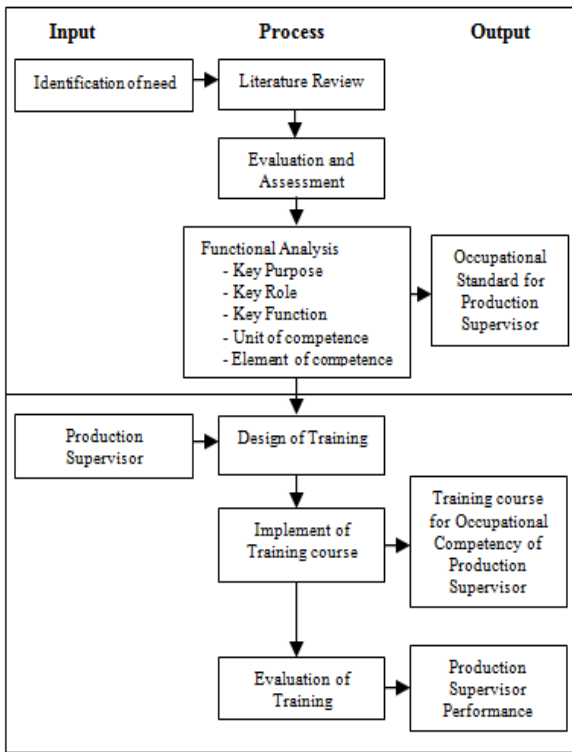

Fig. 2. The conceptual framework.

IV. SCOPE OF STUDY

The population of the study are production supervisors of textile industry situated in Ubonratchathani, Thailand. The samples of 30 supervisors were selected from Vertex Apparel Co., Ltd which is a textile and garment company.

V. METHODOLOGY

A. The First Phase

The development of occupational standard for production supervisor.

1) Analyze and synthesize former researches relevant to identification of need.
2) Literature review about occupational competency.
3) Design the evaluation and assessment form for functional analysis
4) Present the assessment to the advisors for consideration and revision.
5) The assessment were verified for content validity by a panel of 5 experts for focus group discussion and using content validity ratio (CVR) and validated for reliability using alpha coefficients. Six subjects of each sample group were used for try-out for each assessment. The Statistical Package for the Social Science for Window (SPSS/FW) was used for computing the reliability coefficient of the questionnaires. Chronbach's Alpha (α) was .93. Internal consistency reliabilities were established based on this study. Subscale ranges

were .932 for leadership, .932 for planning, .934 for monitoring and evaluation, .928 for process improvement, .895 for problem solving and .905 for communication skill.

B. The Second Phase

This phase was to design the training model.
1) Present the designed model to the 5 experts in the field of instructional design for review and evaluate the suitability.
2) The model was modified according to the experts' suggestions.
3) After modification, presenting the model in the form of diagram with report. As in Fig. 3 the training model
4) Analyze the results of evaluation of the model by mean($\bar{x}$) and standard deviation (S.D.) consisting of 6 criteria for evaluation according to the idea of Likert scale.

C. The Third Phase

This phase was to implementing the training course. The training course is then used to train target group to assess their training achievement.

D. The Fourth Phase

This phase was to evaluate the training course. Evaluating a program for its effectiveness determines how well the learners mastered the learning outcomes of the training course. The most important measure of program effectiveness is how well the knowledge, attitude, and skill delivered in the program were transferred into jobs and employment opportunities. Data were collected at the end of training to assess their learning achievement by means of percentage. The Productivity of work done was collected every 15 days for six months to compare with productivity obtained before the training.
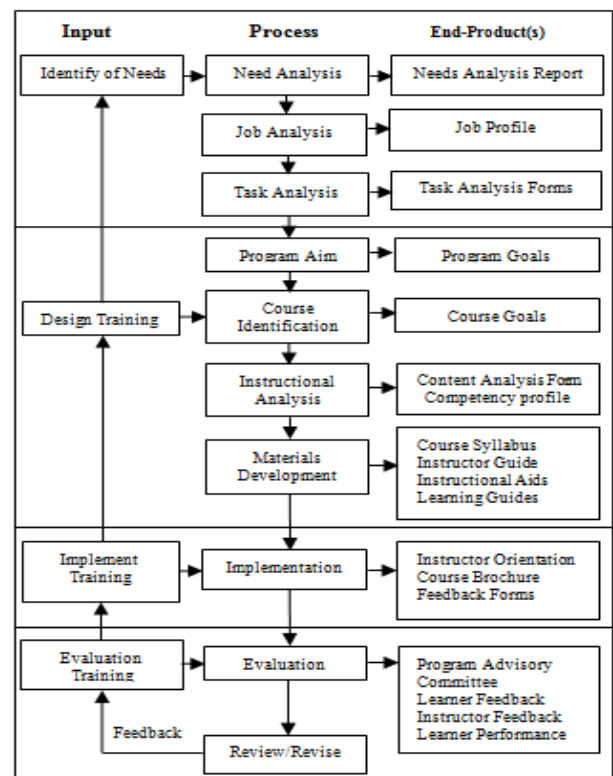

Fig. 3. The training model.

VI. RESULTS

The study identified six most important elements of competence in the value stream supervisor (VSS). Evaluation the result of achievements can be summarized below.

The results of evaluation of functional analysis by mean (x) and standard deviation (S.D.) consisting of 49 criteria for evaluation.

TABLE I: RESULTS OF COMPONENTS OF WORK COMPETENCY

No.	Components of work competency	Mean ($\overline{x}$)	standard deviation (S.D.)	Result
	Leadership			
1	Assign equipment to jobs	4.86	0.70	High level
2	Assigning workers to jobs	4.65	0.65	High level
3	Authorizing non-routine actions by workers	4.73	0.72	Very high level
4	Conduct team briefings	4.61	0.68	High level
5	Coordinating work of a team	4.73	0.66	Very high level
6	Manage multiple teams	4.29	0.65	High level
7	Motivate workers to change or improve their performance	4.19	0.64	High level
8	Manage work schedule	4.43	0.67	High level
	Planning			
9	Attending planning meetings	4.41	0.68	High level
10	Dealing with immediate customer/client concerns	4.23	0.67	High level
11	Manage work schedule	4.41	0.67	High level
12	Managing a budget	4.30	0.65	High level
13	Plan a budget	4.35	0.67	High level
	Monitoring& Evaluation			
14	Give verbal warnings	4.47	0.72	High level
15	Give written warnings	4.30	0.74	High level
16	Giving informal feedback on performance	4.35	0.70	High level
17	Hold formal performance reviews	4.26	0.69	High level
18	Maintain personnel records	4.28	0.60	High level
19	Provide praise when deserved	4.27	0.60	High level
20	Recommending promotions	4.25	0.62	High level
21	Scheduling workers to shifts and overtime	4.43	0.63	High level
22	Spot check production amounts	4.32	0.66	High level
23	Spot check production quality	4.82	0.73	Very high level
24	Do hourly pay roll	4.62	0.61	High level
25	Keeping track of vacation and personal time	4.75	0.64	High level
	Process Improvement			
26	Assist in worker training	4.38	0.69	High level
27	Assist workers with tasks	4.54	0.82	High level
28	Attending review meetings	4.43	0.72	High level
29	Controlling operations costs	4.56	0.76	High level
30	Enforce cleanliness standards	4.22	0.62	High level
31	Enforce work rules and policies	4.56	0.64	High level
32	Implement efficiency improvements	4.35	0.63	High level
33	Maintain computer files and information	4.78	0.71	Very high level

No.	Components of work competency	Mean ($\overline{x}$)	standard deviation (S.D.)	Result
34	Provide cover for staff to take breaks	4.34	0.65	High level
35	Provide on the job technical training	4.44	0.67	High level
36	Provide workers technical advice	4.53	0.73	High level
37	Attend safety meetings, audits, and training of people	4.82	0.72	Very high level
	Problem Solving			
38	Handle immediate materials issues	4.51	0.60	High level
39	Help implement changes in work practices	4.42	0.63	High level
40	Resolve conflicts among workers	4.21	0.64	High level
41	Resolve immediate equipment problems	4.45	0.72	High level
42	Resolve immediate problems with production space	4.72	0.71	Very high level
43	Resolve immediate staffing problems	4.61	0.73	High level
44	Resolve immediate work flow or process problems	4.33	0.68	High level
	Communication skill			
45	Keep management informed	4.49	0.75	High level
46	Keep workers and management informed	4.52	0.64	High level
47	Keep workers informed of goals and mission	4.30	0.61	High level
48	Meet with other supervisors	4.29	0.63	High level
49	Perform work tasks	4.43	0.65	High level
	SUM	**4.46**	**0.67**	**High level**

The results of evaluation of the model by mean ($\overline{x}$) and standard deviation (S.D.) consisting of 5 criteria for evaluation

TABLE II: RESULTS OF EVALUATION OF THE MODEL

No.	Training model	Mean ($\overline{x}$)	standard deviation (S.D.)	Result
1	Identify of Needs	4.80	0.57	High level
2	Design Training	4.86	0.70	Very high level
3	Implement Training	4.65	0.65	High level
4	Evaluation Training	4.73	0.72	Very high level
5	Review/Revise	4.61	0.68	High level
	SUM	**4.73**	**0.66**	**High level**

After training, the production supervisors who were trained, their learning achievement improved to 81.5 %.

TABLE III: THE LEARNING ACHIEVEMENT

No.	Position	Pre-test (40 points)	Post-test (40 points)
1	Senior Director	27	32
2	Director of Production	27	33
3	Asst. Director	28	33

TABLE III: THE LEARNING ACHIEVEMENT (CONT.)

No.	Position	Pre-test (40 points)	Post-test (40 points)
4	Manager 2	29	31
5	Manager 3	28	33
6	Manager 4	27	33
7	CI Manager	28	34
8	Asst. HR Manager	29	33
9	Asst. Security Manager	28	32
10	Asst. QA Manager	29	32
11	Accounting Manager	27	33
12	Asst. Accounting Manager	27	32
13	IE Supervisor	28	33
14	Knit Supervisor	27	34
15	Store Supervisor	26	33
16	Packing Supervisor	28	33
17	Improvement Supervisor	27	32
18	QC Supervisor	29	32
19	ACC Store Supervisor	26	32
20	Heat Supervisor	27	32
21	QA Supervisor	29	33
22	QA	27	33
23	QA	29	33
24	Planning	28	33
25	HRD	28	33
26	VSS	27	33
27	VSS	26	32
28	VSS	27	31
29	VSS	27	31
30	VSS	27	32
$\sum X$		855	978
$\overline{X}$		28.50	32.60
$\overline{X}\%$		71.25	81.50

From Table III, shown that the learning achievement improved to 81.50 % was appropriateness in highest level.

Evaluation of productivity was an increase in productivity of about 10%, a 60% reduction in defects.

From Table IV, shown that the score of management test for supervisor 83.32% and 88.83% was appropriateness in highest level.

TABLE V: THE EVALUATION OF PRODUCTIVITY

No.	Period of time	VSS 1 (300 units)	VSS 2 (300 units)
1	VSS-15	230	270
2	VSS-16	240	265
3	VSS-17	235	250
4	VSS-18	230	270
5	VSS-19	245	280
6	VSS-20	235	235
7	VSS-21	230	265
8	VSS-25	230	280
9	VSS-26	245	265
10	VSS-27	240	270
11	VSS-28	240	280
12	VSS-29	225	265
13	VSS-30	230	275
14	VSS-31	235	275
$\sum X$		3,290	3,745
$\overline{X}$		235	267.50
$\overline{X}\%$		78.33	89.16

From Table V, shown that the evaluation of productivity was an increase in productivity of about 10%. As in Fig. 4, the Value Stream productivity.
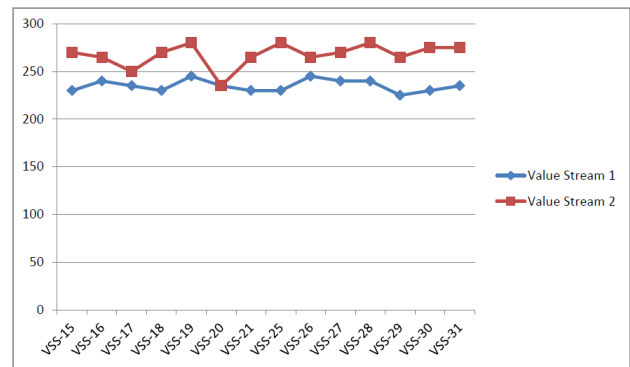

Fig. 4. The value stream productivity.

TABLE VI: THE REDUCTION IN DEFECTS

No.	Period of time	VSS 1 (pieces)	VSS 2 (pieces)
1	VSS-15	8	2
2	VSS-16	9	2
3	VSS-17	8	3
4	VSS-18	7	2
5	VSS-19	9	2
6	VSS-20	8	2
7	VSS-21	9	2
8	VSS-25	8	1
9	VSS-26	8	1
10	VSS-27	8	1
11	VSS-28	7	2
12	VSS-29	7	2
13	VSS-30	8	2
14	VSS-31	7	2
$\sum X$		111	26
$\overline{X}$		7.92	1.85
$\overline{X}\%$		79.2	18.5

From Table VI, shown that the evaluation of productivity was 60% reduction in defects.
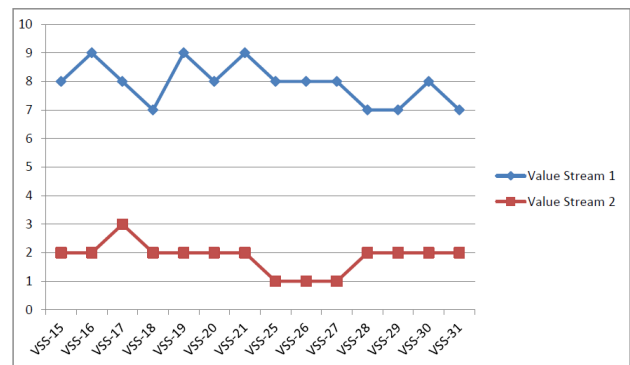
As in Fig. 5, the reduction in defects.

Fig. 5. The reduction in defects.

VII. CONCLUSIONS

The following conclusions based on the finding of this study. In order to develop work competency components, a

total of two hundred production supervisors in textile and garment industry were selected as research samples. Accordingly, work competency components of these personnel comprised six aspects, i.e. leadership, planning, monitoring and evaluation, process improvement, attitude, and communication skill. Therefore, administrators and instructors could develop and encourage the moral, group activity, and public activity.

VIII. DISCUSSION

The literature has established that preparation of today's production supervisors for success in tomorrow's world requires production supervisors to adjust from a traditional performance to the new innovations. Production supervisors are able to perform in leadership, planning, monitoring and evaluation, process improvement, attitude, and communication skill.

IX. RECOMMENDATIONS

As results of this study, the following recommendations have been formulated:

1) Additional quantitative and qualitative investigations occupational competency of production supervisor should be conducted to examine such factors as machinery improvement.
2) Ongoing development training programs for production supervisors performance should be related with leadership, planning, monitoring and evaluation, process improvement, attitude and communication skill all programs in English.

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REFERENCES

[1] D. Dubois and J. Rothwel, *Competency-Based Human Resource Management*, California: Davies-Black Publishing, 2004. ch. 2.
[2] D. Hellriegel, E. Susan, and W. John, *A Competency-Based*, 2001, pp. 90-104.
[3] D. C. McClelland, *Testing for Competence Rather Than for Intelligence*, New Jersey: American Psychologist, 1973.
[4] S. Genesh, *Competency Base HRM: A Strategic Resource for Competency Mapping, Assessment and Development center*, New Delhi Tata : McGraw-Hill Publishing Company Limited, 2004, pp. 47-56.
[5] M. L. Spencer and M. S. Spencer, *Competency at Work: Model for Superior Performance*, New York: John Wiley & Sons, 1993.
[6] E. Rick, "Effective use of the web for education design in principles and pedagogy," 1997.
[7] F. Lindsey, "A best-practices guide to developing, implementing, and evaluating an employee training and development program," Dissertation Abstract International, 2004.
[8] L. Pederson, "Tasks and responsibility of a fast-line supervisor in a job shop manufacturing environment in north west Wisconsin," Dissertation Abstract International, 2010.
[9] N. Ladany, M. L. Friedlander, and M. L. Nelson, *Critical Events in Psychotherapy Supervision: An Interpersonal Approach*, Washington, DC: APA Books, 2005.

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