CHAPTER 5

Conclusion and Suggestions

The aim of this research is to study criteria and indicators used for evaluating OTOP wood handicraft products in order to develop a recommendation system for entrepreneurs who want to develop their products to meet the selection criteria before submitting their products to the OTOP project. In this chapter, the researcher will discuss the results of the study, then the researcher will provide conclusion and suggestions as follows;

Conclusion

The results of this study can be discussed according to the objectives of the study as follows;

Objective 1: To study criteria and indicators for evaluating wood handicraft products

The researcher found that criteria and indicators used for evaluating OTOP wood handicraft products can be classified into 3 aspects, including the product and strength of the community, marketing and background of the product, and product quality. The researcher found that there are 22 indicators, two to them cannot be used directly for numerical analysis since they were qualitative indicators consisting of
indicators about meticulousness in production and quality of materials. Therefore, in this study, the researcher decided to use the Analytic Hierarchy Process (AHP) technique for assigning weights of each indicator in order to be used for further analysis.

1) For meticulousness in production, there were 5 criteria and 16 indicators with the corresponding weights as follows;

1.1) General characteristics of the product have the weight of 0.26. Indicators in this criteria have the following corresponding weights.

- Mold forming on the surface with the weight of 0.026
- Insect damages with the weight of 0.026
- Splinter with the weight of 0.34
- Dust/stain with the weight of 0.09
- Crack/fracture with the weight of 0.109

1.2) Components and assembling of the product has the weight of 0.40. Indicators in this criteria have the following corresponding weights.

- Seamless with the weight of 0.096
- Durability with the weight of 0.128
- Damage from tools with the weight of 0.176

1.3) Pattern and design of the product has the weight of 0.17. Indicators in these criteria have the following corresponding weights.

- Cleanness with the weight of 0.075
- Unevenness with the weight of 0.060
- Pattern is distinct and clear with the weight of 0.036
1.4) Color of the product has the weight of 0.10. Indicators in these criteria have following corresponding weights.

- Homogeneity with the weight of 0.020
- Peeling and cracking with the weight of 0.036
- Stain with the weight of 0.044

1.5) Waxing/Glue has the weight of 0.07. Indicators in these criteria have the following corresponding weights.

- Cracking with the weight of 0.049
- Homogeneity with the weight of 0.021

2) For quality of materials, there are 4 criteria with the corresponding weights as follows;

- Undergoing drying processing with the weight of 0.08
- Damages from insects with the weight of 0.20
- Crack/fracture with the weight of 0.044
- Distorted/bent with the weight of 0.28

The researcher developed the questionnaire (Appendix G) from criteria and indicators from this step, and determined the IOC of the questions made by the experts. These questions were then developed into the recommendation system for evaluating OTOP wood handicraft products.

Objective 2: To develop a recommendation system for entrepreneurs who want to develop their products according to the selection criteria before submitting their products to the OTOP Product Champion project.
After the questionnaire was examined for their correlation by using the IOC analysis, the researcher used the questionnaire to collect information from 163 entrepreneurs. The results from the questionnaire were then calculated for their similarity by using the k-Nearest Neighbor Algorithm based on the Euclidean distance. The analysis was also validated by using the k-Fold Cross Validation. Equations obtained from this step were then used for the development of the recommendation system. The Euclidean distance can be used for predicting expected values based on similarity of k-nearest neighbor = 3. The researcher found that the models had accuracy of 88.34%, recall of 88.30%, and precision of 83.4%.

The recommendation system was developed based on the case-based reasoning according to the following steps;

1. Retrieve Case. Similarity of the values in the database and the case study was calculated by using the k-Nearest Neighbor based on Euclidean distance analysis.

2. Reuse Case. Validation can be made by considering the lowest values of Euclidean distance with k-nearest neighbor = 3. The low value of Euclidean distance indicated highest similarity between two datasets.

3. Revise Case. If the case study is not similar to values in the database, the thresholds of k-nearest neighbor more than 3 can be used for finding the lowest values of Euclidean distance. The case study is then evaluated according to criteria and indicators. The database is updated based on the results of evaluation.

4. Retain Case. Case studies are indexed and stored into the database for further use as knowledge for solving problems.

The recommendation system for OTOP wood handicraft products developed from the previous step was evaluated by 5 experts who were members of the OTOP
selection committee and 32 entrepreneurs. The results of satisfaction can be summarized as follows;

1. Satisfaction towards the recommendation system made by the experts
   1.1 Functionality: Experts had an excellence level of satisfaction (60%-100%).
   1.2 Efficiency: Experts had an excellence level of satisfaction (80%-100%).
   1.3 Usability: Experts had an excellence level of satisfaction (80%-100%).
   1.4 Design: Experts had an excellence level of satisfaction (60%-100%).
   1.5 Benefits: Experts had an excellence level of satisfaction (100%).

Overall satisfaction towards the recommendation system in Functionality, Efficiency, Usability, Design and Benefits had an excellence level of satisfaction (60%-100%).

2. Satisfaction towards the recommendation system made by entrepreneurs
   2.1 Functionality: Entrepreneurs had an excellence level of satisfaction (71.9%-96.9%).
   2.2 Efficiency: Entrepreneurs had an excellence level of satisfaction (78.1%-93.8%).
   2.3 Usability: Entrepreneurs had an excellence level of satisfaction (75%-96.9%).
   2.4 Design: Entrepreneurs had an excellence level of satisfaction (71.9%-90.6%).
   2.5 Benefits: Entrepreneurs had an excellence level of satisfaction (84.4%-93.8%).
Overall satisfaction of the entrepreneurs towards the recommendation system in Functionality, Efficiency, Usability, Design and Benefits had an excellence level of satisfaction (71.9%-95.9%).

Suggestions

1. Applications of the results of this study

1.1 Suggestions for OTOP entrepreneurs

In order to help developing products to meet the standards of OTOP project for standard rating (1-5 stars), OTOP entrepreneurs should recognize readiness of their products for the evaluation made by the OTOP selection committee. OTOP entrepreneurs should use the recommendation system developed in this study to evaluate their products. The recommendation system has great benefits on entrepreneurs and person who are interested in developing OTOP products because the system can be used without constraints from travel, location, time, and expense on human experts.

1.2 Suggestions for members of the OTOP product selection committee

The committee can use the recommendation system developed in this study to assist them in evaluating OTOP wood handicraft products in order to reduce bias, improve decision making, and save time.

1.3 Suggestions for associate organizations

Associate organization, such as the Department of Community Development can use the recommendation system developed in this study to prepare entrepreneurs for the selection process. The results of evaluation can suggest entrepreneurs for their improvement
2. Suggestions for further studies

2.1 To transform qualitative indicators into quantitative indicators, the researcher had to perform pair comparison by using the AHP technique. In the case that indicators have to be added or modified, calculation of weights has to be performed again.

2.2 The recommendation system for OTOP wood handicraft products should have information about qualified case studies in the database in order to improve predictability of the system. The more case studies stored in the database, the higher predictability of the system.

2.3 OTOP products in other categories should develop the recommendation system for evaluating and improving products. Improvement helps to build opportunity both within country and abroad.