III. RESEARCH METHODOLOGY

A. Concept of Research Study

The target of the research is SSTA in order to improve capability and performance producing better Aci through quality assurance activities. Therefore, strategy development aims to strengthen SSTA through improvement on quality assurance of Aci in the processing cycle of cassava. It also aims at by making significant evolution in rural area and small scale industry sectors through the local government policy supports and conducive programs for future.

To develop a strategy of quality assurance, the necessary steps are taken into place starting from SSTA’s subjects, for example, identifying the current conditions and issues, carrying out the strategy development study, identifying the components and factors for development of the conducive policies and programs for the advanced SSTA for future.

Figure 9  Concept of research study

B. Process of Problems and Issues

The processes and steps are implemented according to research site condition and availability of the target product. The approach of the research is initiated by identification of the conditions in terms of qualitative factors and quantitative components or parameter necessary for research analysis.

1. Trace problems and issues, and compile all data and information regarding material, processing, and marketing.

2. Upon the results of tracing, the all data and information are aligned and classified into the group wise or factor wise in accordance with problems, issues, and processing steps of the reason.
3. Develop alternatives for solution against the problems and issues based on the factor or group.
4. Identify the optimal strategy development to settle the problems and issues, and also to evolve SSTS more for future.

At first, a reconnaissance survey is carried out at the site in Bogor in order to grasp the total view of cassava producer and SSTA. At the same time, core data and information are also collected to review on the study process and methodology prepared, hypothesis proposed, and time schedule of implementation.

1. Reconnaissance survey in the target site and other related industries
2. Data and information collection by interview and questionnaire
3. Compilation and factor wise alignment of data and information collected
4. Identification the necessary factors to be analyzed
5. Analysis done by QFD, SWOT, and FGD
6. Implication of the results of QFD and the results of SWOT

Secondary, the identification of subject matters is taken into place to specify the problems and issues, method and application going on, collateral conditions, and barriers to quality assurance and the related subjects necessary for quality assurance and its improvement. The followings are a subject matter in this research study.

1. Identification of the problems and issues in the target area and target product of Aci
2. Specification of the processing methods including marketing taking account of quality assurance
3. Quality of Aci and tapioca specifying item-wise, and also physical and biochemical characteristics (properties)
4. Attributes of raw material (cassava) requirement and technical importance in processing by SSTA
5. Confirmation of the alternatives to be proposed regarding quality assurance
6. Development of the alternatives regarding system or mechanism quality assurance and supporting institution
C. Data Collection

Besides collection of the necessary basic data and information regarding the subject matters, the site data will be basically important to collect by way of 1) observation, 2) interview, 3) questionnaire, and 4) discussion with the people concerned including records and documents available.

The respondent and the target people concerned are 1) cassava produce, 2) SSTA, 3) tapioca producer, 4) market, 5) cooperative, and 6) local government and institutions. In order to determine the appropriate alternatives of quality...
assurance components, system and/or mechanism, certain tools are applied for data analysis according to the target. After clearing up the suitable factors, the necessary tools will be settled for use.

D. Identification of Factors

To identify the necessary factors for analysis, the followings are a basic matter to be applied for the study.

- QFD: Identification of the attributes and the factors in the processing cassava aiming at quality assurance improvement
- FGD: Discussion and identification of specified factors necessary for strategy development
- Respondent: People belonging to local government and institution, SSTA, and cassava producer.

The factors are assumed from view points how quality is assured in raw material, processing, management, and marketing. There are six items, namely 1) raw material of cassava, 2) products (crude tapioca and tapioca flour), 3) process and waste handling, 4) management, 5) marketing, and 6) management.

Regarding the parameter, the quality standard (SNI) of tapioca flour is available to use directly, but there is none for other items. Nevertheless, characteristics, properties, and guidelines are still useful to measure the factors.
Table 12  Factor and parameter

<table>
<thead>
<tr>
<th>No.</th>
<th>Item Factor</th>
<th>Parameter</th>
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<tbody>
<tr>
<td>1.</td>
<td>Raw material (cassava)</td>
<td>Physical properties such as weight, appearance, impurity, post harvest time, and etc.</td>
</tr>
<tr>
<td>2.</td>
<td>Product (Aci)</td>
<td>Physical and chemical properties such as moisture, color, impurity, smell, sun drying time, and etc.</td>
</tr>
<tr>
<td>3.</td>
<td>Product (tapioca)</td>
<td>Physical and chemical properties such as moisture, color, HCN, metal, mineral, contaminant, and etc.</td>
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<tr>
<td>4.</td>
<td>Process and waste handling</td>
<td>Productivity, recovery, machinery, equipment, operation performance, safety, and etc.</td>
</tr>
<tr>
<td>5.</td>
<td>Marketing</td>
<td>Packing, shipment, delivery time, marketing access, and etc.</td>
</tr>
<tr>
<td>6.</td>
<td>Management</td>
<td>Planning, operation, evaluation and feedback, staff training, and etc.</td>
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The weight and rating of the factor should be determined basing upon the evaluation results from FGD, and also some standards or equivalents which has been using in flour manufacturing enterprises.

E. Analysis Method of SWOT

The development strategy in this study is analyzed by SWOT analysis, and the alternatives of strategy to be developed in SWOT matrix are identified at each quadrant of I to IV. The necessary steps for SWOT analysis are taken place with the following manners (Marimin, 2004).

1. Regarding quality assurance in SSTA, all factors identified are listed up and compiled.
2. These factors are divided into the internal factor (opportunity and threat) and the external factor (weakness and strength) according to the fact and character of factor.
3. For each factor, weighting is assumed with the range from 0 to 1 in accordance with the importance of each factor.
4. Following the weighting, a rating is given with the range from 1 to 5 in accordance with relative comparison and its characteristics of each factor.
5. Upon the weighting and the rating given, the score of each factor is assumed basing upon the results of expert evaluation.

6. The position of the target SSTA is identified in the matrix assuming the score of X-axle (score of strength – score of weakness) and Y-axle (score of opportunity – score of threat).

Thus, SWOT analysis can identify the position by the related factors in the matrix, and can provide the necessary strategies to be taken place. There are four quadrants in the matrix along with the external factors and the internal factor indicating the basic elucidation and/or directive policy of strategy development, namely, aggressive, diversifying, turn-around, and defensive for quadrant-I (SO: strength and opportunity), quadrant-II (ST: strength and threat), quadrant-III (WO: weakness and opportunity), and quadrant-IV (WT: weakness and threat) respectively.

As mentioned in item of SWOT analysis in bibliographic review, each quadrant indicates own strategies and directive policies as follows.

1. Strategy (SO): to be formulated as the aggressive strategy maximizing the current strengths towards the available opportunities in harmony whenever the position is in quadrant-I.

2. Strategy (ST): to be formulated as the diversifying strategy maximizing strengths towards the given threats and to overcome or contend these threats whenever the position is in quadrant-II.

3. Strategy (WO): to be formulated as the turn-around strategy minimizing weaknesses so as to utilize these given opportunities whenever the position is in quadrant-III.

4. Strategy (WT): to be formulated as the defensive strategy minimizing weaknesses so as to avoid or to keep away from the given threats whenever the position is in quadrant-IV.

F. Focus Group Discussion (FGD)

1. Objectives of FGD

The objectives of FGD are to identify the components, the factors, and the parameters necessary for identifying the importance of cassava attributes from
aspect of raw material of Aci processing and also to identify the technical importance of the processing cassava in HOQ.

In SWOT analysis, FGD objective is to identify the factors and to carry out evaluation according to the identified factors to develop the strategy of quality assurance in SSTA. The core subjects are focused to the following items for discussion.

1) Terminology (definition) of quality assurance in tapioca production
2) The current conditions of cassava producer, Aci producer, and tapioca producer
3) The factors to be identified necessary for quality assurance
4) QFD (Quality Function Deployment) application
5) SWOT (Strong, Weakness, Opportunity and Threat) application
6) Expert judgment of the internal and external factors by questionnaire finalized in the meeting
7) Further guidance and instruction

2. FGD Member

The FGD for this research study is consisted of nine members from the local government (the two departments concerned), BBIA, and advisory committee which are engaging tapioca production, government political and administrative support, and conducting technical service in quality testing of agro-products.

1) Department of Agriculture and Forestry, Local Government of Bogor Regency (Dinas Pertanian dan Kehutanan, Kabupaten Bogor)
2) Department of Industry and Commerce, Local Government of Bogor Regency (Dinas Perindustrian dan Perdagangan, Kabupaten Bogor)
3) The Center of Agro-Based Industry, Bogor (BBIA: Balai Besar Industri Agro)
4) Advisory committee members
According to the objectives of FGD, FGD pays the role of discussion, instruction, and decision as an expert of cassava / tapioca production. The subject matters are terminology (definition) of quality assurance, characteristics of
producers (cassava, Aci, tapioca), the factors to be identified, QFD and SWOT application, and judgment of the internal and external factors. FGD process is described as shown in Figure 11.