

The role and position of the actor in the development of shallots in north Toraja

Yusuf Limbongan *

Department of Agrotechnology, Faculty of Agriculture, UKI Toraja, St. Nusantara No.12 Makale Tana Toraja, South Sulawesi, Indonesia.

Abstract

Shallots (*Allium cepa* L.) are one of the spice commodities or including cooking spices, which is one of the agricultural commodities included in the horticulture crop group, namely the vegetable group. Shallots have many benefits apart from being a kitchen spice as well as a medicine (herbal). The purpose of the study was to analyze the role and position of each actor directly involved in the development of shallots in North Toraja Regency. The research method carried out is a quantitative method, with a type of survey research. The study was conducted from August to September 2022, in North Toraja Regency. The types of data used in the study are primary data and secondary data. The primary data collection method is carried out by a survey method with a questionnaire tool that contains questions with a number of answer choices. Meanwhile, secondary data is obtained through desk study. The data analysis method used in this study is ISM (interpretive structural modeling) analysis. The results of the study obtained that the main actor in the development of shallots in North Toraja Regency is the Agriculture Office of North Toraja Regency. The position of each actor is different, and is divided into three groups, namely; Quadrant 2 (Ministry of Agriculture - A1), Quadrant 3, including; South Sulawesi Provincial Bappeda (A3), North Toraja Regency Bappeda (A5), Entrepreneurs/Private Companies (A6), Farmers (A7), and Universities (A8), and quadrant 4, namely; The Agriculture Office of South Sulawesi Province (A2) and the Agriculture Office of North Toraja Regency (A4).

Keywords: Center; Horticulture; Stakeholders; Main; North Toraja

1. Introduction

Shallots (*Allium cepa* L.) are one of the agricultural commodities included in the horticulture crop group, namely the vegetable group [1]. Shallots are commonly used as a seasoning in cooking (kitchen spices). It is stated [2] that the shallot commodity belongs to the group of non-substituted spices that function as food flavoring seasonings and traditional medicinal materials. Shallot (*Allium cepa* L), is a type of plant that is a spice in various cuisines in Southeast Asia and the world [3]. The plant is thought to be native to the regions of Central Asia and Southeast Asia. In Java Island it is known as brambang, in South Sulawesi, it is known as Lasuna, for the people of Makassar it is called Lasuna Eja, and bugis call it Lasuna Cella.

Shallots are also called lapis bulbous plants with a specific aroma that can stimulate the discharge of tears due to the content of the etheric oil alliin they contain. The stem is disc-shaped with growing shoots and root fibers. Onion flowers are hump-shaped at the ends of long peduncles with holes in them. Perfectly flowering shallots with a small dome-shaped fruit size with three chambers and fleshless [4]. Shallots (*Allium cepa* L.) belong to the type of annual plants, short-lived and clump-shaped. Plant height ranges from 15-25 cm, pseudo-stemmed, rooted short fibers that develop around the soil surface, and their shallow rooting, so that onions do not tolerate drought. The leaves are green round,

* Corresponding author: Yusuf Limbongan

Department of Agrotechnology, Faculty of Agriculture, UKI Toraja, St. Nusantara No.12 Makale Tana Toraja, South Sulawesi, Indonesia.

elongated like a pipe, and the tip is tapered [5]. For the morphology or part of the onion plant, namely; bulbs, roots, stems, leaves, flowers, fruits, and seeds [3].

The most utilized part of the onion is the bulbous part, although some culinary traditions also use its leaves and flower stalks as a seasoning for cooking [6]. The main use of shallots is as a cooking spice. Although it is not a basic necessity, shallots tend to always be needed as a complement to daily cooking spices. Other uses are as a traditional remedy (as a dehumidifying compress, diabetes, lowering blood sugar and cholesterol levels, and preventing thickening and hardening of blood vessels and ulcers) due to the content of allin and allicin compounds that are bactericidal. It is as mentioned [7] that shallots contain chemical compounds such as; allicin and alliin which function as antiseptics and pectin compounds that are able to control the growth of bacteria. Shallots also contain vitamin C, potassium, fiber, and folic acid, as well as calcium and iron. In addition, shallots also contain natural growth regulators in the form of auxin and gibberellin hormones.

The utilization of shallots in addition to being used as a flavoring, shallots can also be used as antibacterials. The content contained in shallots that are used as antibacterials is the content of flavonoids, saponins, and essential oils. The mechanism of action of saponins as antibacterials by lowering the surface tension so as to result in increased permeability or cell leakage and resulting in intracellular compounds will come out [8]. As an antioxidant Shallots contain quercetin, a powerful antioxidant that acts as an agent to inhibit cancer cells. Shallots also contain many flavonoids that have been known to deactivate many potential carcinogens and tumor triggers such as disrupting the growth of estrogen-sensitive cells in breast cancer [9]. Shallots also contain chemical compounds such as allicin and alliin which function as antiseptics and pectin compounds that are able to control the growth of bacteria [10].

The onion plant (*Allium ascalonicum* L.) is one of the lowland vegetable commodities, originating in Syria and having been cultivated since 5,000 years ago. Shallots are annuals that have layered bulbs, rooted in fibers, with hollow cylindrical leaves. Onion bulbs are formed from the base of the leaves that unite and form a stem that changes shape and function, enlarges, and forms a bulb [11]. Tubers are formed from enlarged and united layers of leaves. This plant can be grown in lowlands to highlands that are not more than 1200 meters above sea level [12]. In the highlands, the tubers are smaller than in the lowlands. Shallots love areas with a dry climate with rather hot temperatures and get more than 12 hours of sunlight. Shallots can grow both in lowlands and highlands (0-900 masl) with rainfall of 300-2500 mm/th and temperatures of 25 °C- 32 °C Such conditions are very suitable (in accordance with) the topographical conditions of North Toraja Regency. It is also characterized by the growth and development of shallot plants in North Toraja Regency and its surroundings, including in Enrekang Regency which is the center of shallots in South Sulawesi.

In order for North Toraja Regency to also become one of the shallot centers in South Sulawesi, various efforts (programs and activities) and various studies (research) are needed for its development. One of the things that is considered quite important and crucial in the development of shallots, especially in North Toraja Regency, is related to the role and position of related actors, such as; The Ministry of Agriculture, Provincial Government, Regency Government to the community as farmers and the private sector as agricultural commodity entrepreneurs.

2. Material and methods

2.1. Description of the study sites

The study was conducted in North Toraja Regency, South Sulawesi Province. The study was conducted from August to September 2022. North Toraja Regency was chosen as the research location considering that North Toraja Regency is one of the areas with prospects for development to become a shallot development center in South Sulawesi.

2.2. Method of the study

The research method used is a quantitative approach with a type of survey research. The survey research is considered appropriate and in accordance with the research, objectives to be achieved, namely analyzing the role and position of each actor in the development of shallots in North Toraja Regency. According to [13] that survey research is research conducted by giving a number of questions to respondents, both openly and behind closed doors.

2.3. Method of collecting data

The data collection methods carried out are the desk study method and the survey method. The desk study method is intended to collect data in the form of previous and related research results as well as policy formulations related to shallot development in Indonesia in general and South Sulawesi Province and North Toraja Regency in particular.

Meanwhile, the survey method is intended to obtain responses or answers to a number of questions that have been compiled in a closed questionnaire.

2.4. Method of data analysis

The data analysis method used in answering the research objectives is the ISM (Interpretive Structural Modeling) method. According to [14] that ISM is an expert-based strategic policy analysis tool, and is an effective methodology for dealing with complex problems. It is being argued [15] that ISM is used to identify and summarize relationships between certain variables, which define a problem or problem and this is an interactive learning process. According to [16] that ISM is concerned with the interpretation of a whole object or a representative of a system through the systematic and iterative application of graph theory. According to [17] that ISM is one of the modeling techniques developed for strategic policy planning. The ISM also analyzes the elements of the system and solves them in the form of graphs of the direct relationships between the elements and the level of the hierarchy. Further according to The use of the ISM method has also been widely used, especially to analyze the structure of elements based on their contextual relationships (14, 18, 19). In more detail, according to [14] that the ISM stage consists of 3 (three) stages, namely;

- The system identification stage,
- The analysis stage (run software)
- The output interpretation stage.

The ISM analysis in this study is intended to analyze the elements of actors (stakeholders) who are related and have an interest in shallot development in North Toraja Regency. The actors are detailed as follows:

Table 1 Actors and their authority in the development of shallots in North Toraja Regency

No	Actors (Stakeholders)	Authority
1	Ministry of Agriculture (Director General of Horticulture)	Establishing the policy direction and strategy of shallot development on a national scale
2	Agriculture Office of South Sulawesi Province	Carrying out programs and activities related to shallot development that have been determined by the Ministry within the scope of the South Sulawesi province
3	South Sulawesi Provincial Bappeda	Formulate and propose programs and activities related to shallot development by referring to the Governor's vision and mission, as well as the Strategic Plan and Renja of South Sulawesi Province
4	Agriculture Agency of North Toraja Regency	Carrying out programs and activities related to shallot development that have been determined by the Ministry and Provincial Office within the scope of the North Toraja Regency
5	North Toraja Regency Bappeda	Formulate and propose programs and activities related to shallot development by referring to the vision and mission of the Regent, as well as the Strategic Plan and Renja of North Toraja Regency
6	Entrepreneur/Private	Parties who have a role in the development of shallots as consumers as well as producers and as investors in agricultural businesses
7	Farmer	The party that is the main producer in the development of shallots in North Toraja Regency
8	College	Parties who have a role as researchers for the development of scientific and technological advances related to shallots

3. Results and discussion

The results of the identification of systems related to actors (stakeholders) who are directly related and influential on the development of shallots in North Toraja Regency obtained 8 (eight) actors which are detailed as follows:

Furthermore, the eight actors analyzed the influence and dependence on each actor with an ISM (interpretive structural modeling) approach. The results of the ISM analysis obtained the position of each actor mapped in 4 (four) quadrants,

and also obtained the main actors of shallot development in North Toraja Regency based on leveling. In detail the position of each actor based on his influence and dependence on other actors is presented as follows:

Table 2 Related actors in the development of shallots in North Toraja District

No	Actors (Stakeholders)	Symbol
1	Ministry of Agriculture (Director General of Horticulture)	A1
2	Agriculture Office of South Sulawesi Province	A2
3	South Sulawesi Provincial Bappeda	A3
4	Agriculture Office of North Toraja Regency	A4
5	North Toraja Regency Bappeda	A5
6	Entrepreneur/Private	A6
7	Farmer	A7
8	College	A8

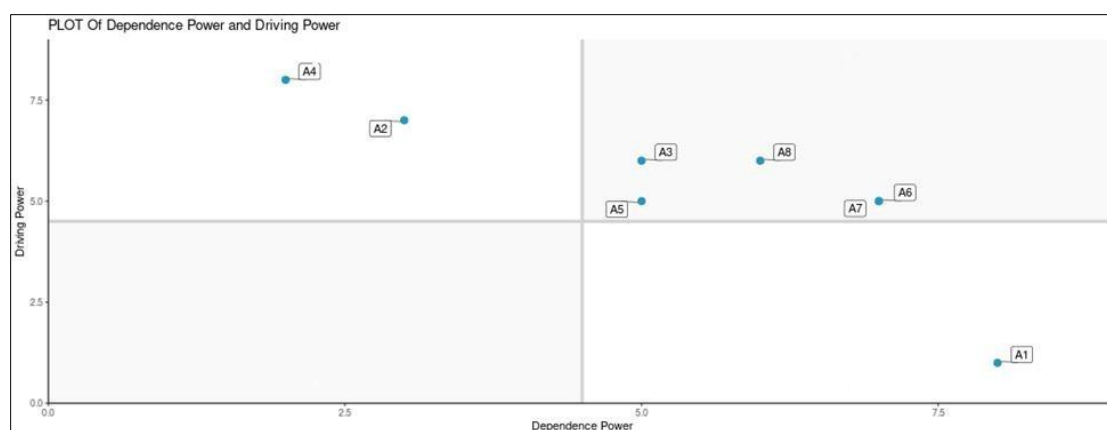


Figure 1 The role and position of actors (stakeholders) related to shallot development in North Toraja Regency

The results of the ISM analysis obtained that the eight actors were spread across 3 quadrants, namely; The Ministry of Agriculture (A1) is in quadrant 2, the South Sulawesi Provincial Bappeda (A3), the North Toraja Regency Bappeda (A5), Entrepreneurs/Private Companies (A6), Farmers (A7), and Universities (A8) are in quadrant 3, as well as the South Sulawesi Provincial Agricultural Office (A2) and the North Toraja Regency Agriculture Office (A4) are in quadrant 4. According to [20] that elements that are in quadrants are elements that have a high influence and a relatively low dependence. Meanwhile, according to [16] that the element in quadrant 2 is the opposite element of quadrant 4, which is a quadrant that describes an element that has low influence and relatively high dependence. Meanwhile, according to [21] that the element in quadrant 3 is the most sensitive element, namely having a relatively high influence and dependence.

The results show that there are 2 elements that have a high influence and on the other hand low dependence, namely; The Agriculture Office of South Sulawesi Province (A2) and the Agriculture Office of North Toraja Regency (A4). These two elements are elements that greatly influence the development of shallots in North Toraja Regency. The Agriculture Office is essentially a leading sector or technical service that has authority over the development of the agricultural sector including the development of horticulture crops of shallot commodities. This high influence can be seen from the leveling of the main actors of shallot plant development in North Toraja Regency, where the North Toraja Regency Agriculture Office (A4) and the South Sulawesi Provincial Agriculture Agency (A2) are the 2 main actors are the leads in the development of shallot crops in North Toraja Regency. The leveling of such main actors is presented graphically in the following figure

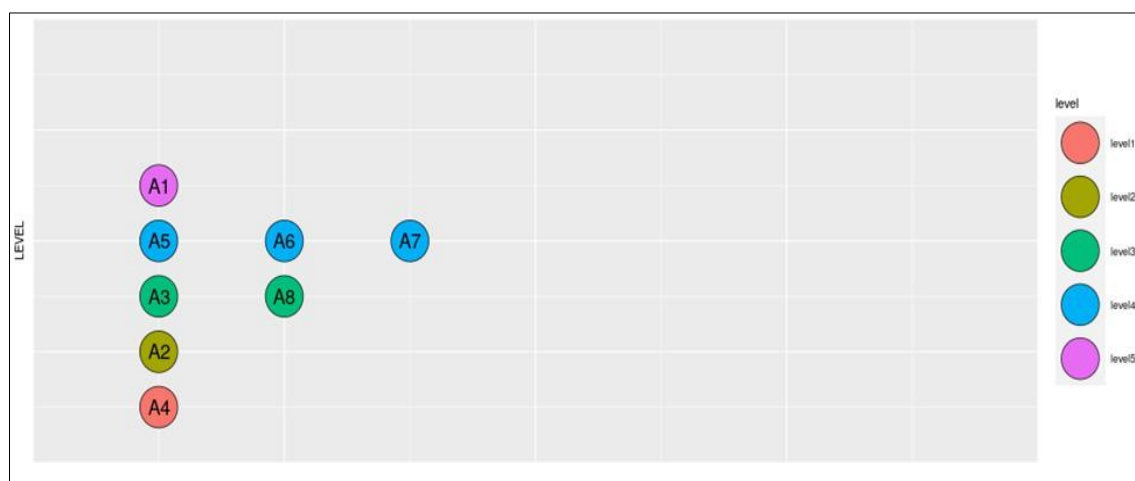


Figure 2 Leveling actors in red bottom development in North Toraja Regency

The results of leveling the main actors, as in the picture above show that the Agriculture Office of North Toraja Regency (A4) is the main actor in the development of shallot horticulture crops in North Toraja Regency. This can be understood considering that the Regency Agriculture Office is a technical and leading sector office that is directly in contact with the community (farmers) so that it can optimize its potential to make North Toraja Regency a shallot center in South Sulawesi after Enrekang Regency.

4. Conclusion

The results of the study obtained that the main actor in the development of shallots in North Toraja Regency is the Agriculture Office of North Toraja Regency, which is the actor who has the highest role (influence). The position of each actor is different and is divided into three groups, namely; Quadrant 2 (Ministry of Agriculture - A1), Quadrant 3, including; South Sulawesi Provincial Bappeda (A3), North Toraja Regency Bappeda (A5), Entrepreneurs/Private Companies (A6), Farmers (A7), and Universities (A8), and quadrant 4, namely; The Agriculture Office of South Sulawesi Province (A2) and the Agriculture Office of North Toraja Regency (A4).

Compliance with ethical standards

Acknowledgments

Thank you to the Head of the Department of Agrotechnology, Faculty of Agriculture, and all leaders at UKI Toraja, for their permission to carry out research, and thank you also to all staff of North Toraja Regency who helped carry out this research to the published.

References

- [1] Wibowo S. (2001). Onion Cultivation: Garlic, Red, and Bombay. Self-Help Spreader: Jakarta
- [2] Nawangsari. (2008). Utilization of Shallots (*Allium cepa* L.) as Co- Chemotherapy Agents. Student Papers, (Faculty of Pharmacy, Gadjah Mada University Yogyakarta), 1-36.
- [3] Rahayu E, Diamond, N.V.A. (1999). Shallot. Self-Help Spreader. Jakarta.
- [4] Son, W. S. (2015). Kitab Herbal Nusantara Collection of Recipes and Ingredients of Medicinal Plants for Various Health Disorders. Yogyakarta: Katahati
- [5] Ibriani. (2012). Antimicrobial Activity Test of Shallot Extract (*Allium cepa* L.) In KLT-Bioautography. Alauddin Makassar University.
- [6] Hatijah St, Husain, D. Rauf. (2014). Bioactivity of Astiri Oil Onion Coated Bulbs *Allium cepa* L. Local Origin Bima Against *Streptococcus mutans* Bacteria Causing Dental Caries. Hasanuddin University. 1-8.

- [7] Java, T. (2016). Antibacterial Inhibitory Power Test of Onion Bulb Extract (*Allium ascalonicum*. L) Against the Growth of Streptococcus mutans Dental Caries-Forming Bacteria. Sanata Dharma University Yogyakarta.
- [8] Nawangsari, Ana D., Setyarini, I. Ikawati, A.P. Nugroho. (2008). Utilization of Shallots (*Allium cepa* L.) as Co-Chemotherapy Agents. Gadjah Mada University Yogyakarta; 1-36.
- [9] Ambarwaty, W. (2014). Antibacterial Power Test of Shallot Juice (*Allium ascalonicum*. L) Against the Growth of Streptococcus mutans Bacteria ATCC 25175 In Vitro. Muhamadiyah University of Surakarta.
- [10] Simaremare, A. P. R. (2017). Differences in Antibacterial Activity of Onion and Garlic Medicinal Plant Extracts Against Staphylococcus Aureus Bacteria. Volume 1(1); 14–19.
- [11] Neneng, S. (2021). Effect of Long Soaking On Shallot Extract (*Allium ascalonicum* L) On The Growth Of Green Deli Honey Guava Shoots Cuttings (*Syzygium aquecum*). Sunghai Journal Vol. 10(2); 11-17.
- [12] Diana, K. M. (2016). Antibacterial Activity of Shallot Peel Extract (*Allium cepa* L.) Against Staphylococcus aureus Bacteria. Galenika Journal of Pharmacy, Volume 2(2).
- [13] Yusuf M, Daris L. (2018). Data Analysis of Research, Theory, and Application in the Field of Fisheries. Pt. IPB Press. Bogor. 212.
- [14] Yusuf M, Nurhamlin, Yuniato Setiawan, Eka Anto Supeni. (2020). Decision Support System In Era 4.0: Theory & Application of Tools Analysis. Publisher: IPB Press. Bogor, 197.
- [15] Eriyatno. (2003). Systems Science: Improving the Quality and Effectiveness of Management. Second printing. Bogor: IPB Press.
- [16] Singh, M.D. Kant, R. (2008). Knowledge Management Barriers: An Interpretive Structural Modeling Approach, International Journal of Management Sciences and Engineering Management, Vol. 3(2); 141-150.
- [17] Saxena, J. P., Sushil, Vrat, P. (1990). Fuzzy Interpretive Structural Modeling Applied To Energy Conservation.
- [18] Marimin. (2004). Techniques and Applications of Compound Criterion Decision Making. Grasindo. Jakarta.
- [19] Machfud. (2001). Engineering Group Decision Support Models With Fuzzy-Logic For Essential Oil Agroindustry Development Systems. Dissertation. Graduate Program. Bogor Agricultural Institute.
- [20] Marimin. (2008). Theory and application of Expert Systems in managerial technology. Bogor: IPB Press.
- [21] Sage, A. P. (1977). Interpretive structural modeling. In Methodology for Large Scale System, McGraw-Hill, New York. 91-164.