Behavior of Shallot Farmer in the Use of Pesticides with the Approach of Prediposition, Enabling and Reinforching Factors

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A B S T R A C T

The focusess of this research are on the factors that influence the behavior of shallot farmers in the use of pesticides using the approach of Prediposition, Enabling and Reiforching factors.. This research was conducted using a quantitative descriptive approach method in Lembah Gumanti, Alahan Panjang Subdistrict, Solok Regency, West Sumatra. The selection of Solok Regency was carried out purposively because Solok is the largest shallot production area in West Sumatra. Data were Analyzed used Partial Least Square structural equation modeling. The results showed that (1) the predisposition factor has no significant effect on behavior (2) the enabling factor has a significant effect on behavior (3) the reinforcing factor has a significant effect on the behavior (4) the predisposition factor has a significant effect on intention (5) intention has a significant effect on behavior

INTRODUCTION

Shallot plant is horticultural plant that require fertilizers and pesticides to grow and develop. Pesticide is the main choice for controlling pests, diseases and weeds, because its capability to kill the corpses directly. The activity of controlling the corpses needs a lot of times, efforts and costs. Pesticide efficacy is reliable, easy to use, high success rate, sufficient availability and easy to obtain and relatively low cost. The benefits of pesticides are indeed proven to be large, so that affecting the behavior of farmers in conducting farming. Farmers become dependent on pesticides because pesticides are a determining factor for high production yields and product quality, as reflected in every package of programs or agricultural activities that always include pesticides as part of production inputs (Wahyuni, 2010).

The based on the results of the National Socio-Economic Survey (SUSENAS) in 2006-2014, the consumption of shallots for household were fluctuated up and down with average value of 2.51 kg/capita/year. The national need of the Indonesian people for shallots in 2014 was 627.2 thousand tons/year.

Alahan Panjang is the center of shallots production in Solok Regency that give contribution to producing shallots up to 95% of the West Sumatra total production with a land area and production, respectively, 6,611 Ha and 71,4562 Ton (BPS Solok 2018).

The use Intensively of pesticides causes health problems such as poisoning. Farmers' awareness to protect themselves from the dangers of using pesticides is still lacking (Fikri, Setiani, Nurjani, 2012). Pesticides have negative impacts on consumers and the environment. The Law No. 12 of 1992 about Plant Cultivation Systems, article 20 paragraph 1, that the use of pesticides as a pest control system is a last alternative.

There are many factors to consider during using pesticides because of their negative effects. The behavior theory used in this research was a combination of Lawrance Green's theory 1980) and Ajzen's theory (1988) about behavior intention. Behavioral factors aim to encourage behavior change in each individual (Green at al. 1980). Gielen in Glanz, Riemer, Lewis (2002) divides behavior factors into 3 main factors, namely predisposition factor (triggering factors/ antecedents of behavioral factors that provide reasons or motivation for the behavior), enabling factor (behavior factors that allow motivation to occur) and reinforcing factor.

LITERATURE REVIEW
Farmer Behavior
Human behavior is influenced by certain motives so that humans behave (Ircham, 2005). In this case the behavior of horticultural farmers, especially shallot farmers will affect the development of farming. This study uses a model developed by Ajzen (1991), namely Theory of Planned Behavior.

Theory of Planned Behavior (TPB) that the intention to behave is influenced by three variables, namely attitudes, subjective norms and prepared behavior control (Ajzen, 1991). Meanwhile, intention is a direct determinant of behavior, such as the theory of reasoned action. Ajzen (1991) also believes that intention has a high correlation with behavior, therefore it can be used to predict behavior.

Factors Affecting Behavior
Lawrance Green et al., (1980) that human behavior is influenced by two main factors, namely behavioral factors and factors outside of behavior. Behavior is determined from 3 factors including (1) Prediposition Factors, namely factors that facilitate a person's behavior such as knowledge, attitudes, beliefs, traditional values, perceptions related to motivation to act, (2) Factors Enabling, namely the skills and resources needed to perform the behavior. Resources needed include the availability of resources such as training, affordability of costs, distance and availability of transportation (3) Reinforcing Factors, namely factors that determine whether the action is supported or not in accordance with the objectives and type of program.

Reinforcing factors, namely factors obtained from the closest person and the existence of social support provided to the individual, such as family or friends, which can strengthen that behavior. With the support of closest people, it is hoped that it can encourage behavior change (Green et al, 1980 in Glanz, Rimer, Lewis 2002). These factors also include laws, regulations, supervision and so on (Notoatmodjo, 2003).

Knowledge is the result of knowing what happens after people sense certain objects. Sensing occurs through human senses, namely the senses of sight, hearing, smell, taste and touch. Most of human knowledge is obtained through the eyes and ears (Notoatmodjo, 2003). Attitudes are determinants of behavior, because they are related to perception,

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personality, and motivation. An attitude is a state of mental attitude, which is studied and organized according to experience, and which causes a special effect on a person's reaction to the people, objects, and situations with which he is related (Winardi, 2004). According to Mowen and Minor in Donni Juni (2017) that trust is all knowledge possessed by consumers and all conclusions made by consumers about objects, their attributes and benefits. According to Rousseau et al in Donni Juni (2017) Trust is a psychological area which is a concern to accept what it is based on expectations of good behavior from others. The term motivation contains at least three essential elements, namely motivating factors, goals and strategies to achieve goals. Strength, drive, need, pressure and psychological mechanisms in motivation are the accumulation of internal factors that come from within the individual itself and externally originating from outside the individual (Sudarwan, 2004).

Farmer group is a group of people consisting of adult farmers, men and women who are tied informally in a group area on the basis of harmony and mutual needs. Farmer groups are farmer institutions that directly organize farmers in developing their farms. The incorporation of farmers into a farmer group forum is part of farmer empowerment. The farmer group is a place for learning through a growth process from the interaction of a number of people who are intensively involved in the process of communication, leadership and participation to carry out a task or strive for the achievement of common goals. It is hoped that the role of farmer groups towards their members will have an impact on the development of people's agriculture, so that the members will seriously develop the plants they cultivate (Kalu, 2008).

Use of Pesticides

Pesticides are chemicals or a mixture of chemicals with other ingredients (such as plant extracts, microorganisms, etc.) that are used to control pests / weeds (Palar, 2008). According to Government Regulation No. 6 of 1995 concerning Plant Protection, pesticides are chemical substances or compounds, growth regulators and growth stimulants, other substances, as well as microorganisms or viruses used to protect plants.

According to Wudianto (2010), pesticides can poison humans or livestock through mouth, skin and respiration. The use of pesticides can directly contaminate the famer, resulting in poisoning. Poisoning is divided into three, namely acute, chronic, and subchronic poisoning. Acute poisoning is poisoning that occurs after exposure to a single dose of a pesticide, or administration of multiple doses in approximately 24 hours. Acute poisoning is illness or death from exposure to a single dose of an insecticide. For subchronic tests in the laboratory with animals, the exposure period is set for 3 months (Untung, 2013).

Based on the theoretical and empirical literature, the authors consider that the Intention behavior factor of Ajzen and Fishben's theory can be combined with the Predisposition factor of Green's theory. Intention is used as a mediating variable to see how it affects farmer behavior towards pesticide use. The framework for the article is shown in the diagram below:
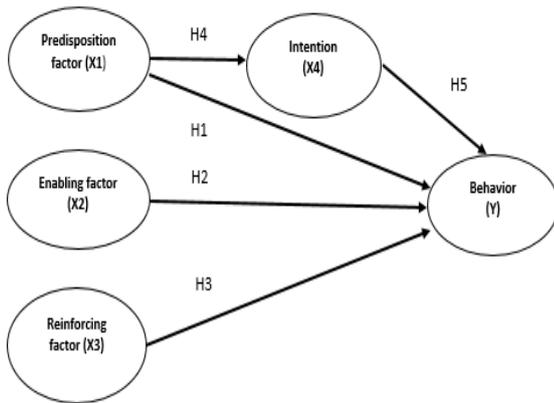
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Fig 1. Conceptual Framework

Based on the conceptual framework, a hypothesis can be found which is a temporary answer to the problem that will be discussed through this research:

H_1. Disposition Factor has a significant effect on the behavior of shallot farmers in using pesticides.

H_2. Enabling Factor has a significant effect on the behavior of shallot farmers in using pesticides

H_3. Reinforcing factor has a significant effect on the behavior of shallot farmers in using pesticides

H_4. Disposing factor has a significant effect

H_5. Intention has a significant effect on the behavior of shallot farmers in the use of pesticides.

H_6. Predisposition has a significant effect on the behavior of shallot farmers in the use of pesticides with the intention as mediation.

METHOD

This research was classified as descriptive and associative research. Descriptive research aimed to describe or explain. Associative research aimed to see the relationship between independent variables. This research was an expo facto that is research that is to find out what causes something to happen and sort back so that the factors known to cause.

The population of this research were shallot farmers in Lembah Gumanti Alahan Panjang Subdistrict in Solok Regency, West Sumatra Province, which consists of four Nagari, Nagari Alahan Panjang, Sungai Nanam, Salimpat and Air Dingin. Purposive sampling was carried out with following requirements: (1) shallot farmers (farmers who have the land to cultivate shallot) as members of the farming group; (2) farmers who do not join the farming group.

Data were analyzed the based the farmers perceptions result of four variables, predeposition factor, enabling factor, reinforcing factor and intention. Data were analyzed used the PLS Structural Equation Model (SEM) analysis tool. The steps for processing data using the PLS method (Wong, 2013):

1. Creating a structural model (inner model).
   According to Laten (2013) in Sari (2015), the structural model measures the relationship between latent variables or variables that are difficult to measure (endogenous and exogenous variables).

2. Creating a measurement model (outer model)
   Widarjono (2015) explains that the measurement model shows how indicator variables represent latent variables. There are two models of latent variable measurement in PLS-SEM, namely the reflective model and the formative model. So, there are two types of evaluation of the outer model, namely the evaluation of the reflective and the formative models.

3. Determine the indicator measurement scale
   The measurement scale is used to determine whether each indicator connected to the

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latent variable is a formative or reflective indicator.

According to Wong (2013), formative indicators are indicators that cause latent variables, define latent variables, and cannot be exchanged between one another. The arrow direction of the formative indicator points towards the latent variable. Meanwhile, reflective indicators are indicators that are mutually correlated and can be exchanged. Reflective indicators are caused by latent variables. The latent variable is the outcome, translated into or observed from the reflective indicator. The direction of this indicator arrow is towards the indicator of the latent variable or the opposite of the direction of the formative indicator arrow. In this study, all indicators used are reflective indicators.

4. Path Model Construction (Path Diagram)

The path model is a model that represents the structural model (inner model) and measurement model (outer model) that has been previously constructed and the direction of the arrows that have been determined. The path model in this study is a combination of special models to analyze factors that affect marketing efficiency in achieving performance marketing (Sari, 2015).

5. Assess or check the PLS output (result)

There are two stages of the PLS model evaluation, namely evaluation of the outer model and evaluation of the inner model. In assessing the PLS output, it is necessary to first consider whether the indicator is a formative or reflective indicator. This is because the process of assessing the PLS output is different for each type of indicator. Furthermore, the evaluation stage of the PLS model and the output begins with testing the validity and reliability.

The validity test in this study used confirmatory analysis techniques (confirmatory factor analysis). Confirmatory analysis aims to test whether the indicators forming a construct are valid indicators as a latent construct measurement. The indicator can be said to be valid if first, the indicator is statistically significant. Second, the convergent validity or loading factor value of each indicator is 0.5 which is considered to have good validity for a study, but the loading factor of 0.5 - 0.6 is still acceptable for early stage research (Ghozali 2015).

Before testing the hypothesis. it is necessary to test the feasibility of the data by measuring the validity and reliability of the observed variables. PLS SEM model in research uses formative indicators. In contrast to testing the outer model (measurement model) on models with reflective indicators, testing the outer model on formative indicators is carried out by different tests. There are two tests on formative indicators in measuring the SEM outer model, namely the significance of weights and multicollinearity (Widarjono, 2015).

The weight value of the formative indicator with its construct must be significant where the T statistical value must be greater than the T table at $\alpha = 5\%$ (1.96). The multicollinearity test was carried out to determine the relationship between indicators. to find out whether the formative indicators experience multicollinearity by looking at the VIF value. A VIF value of less than 10 can be said that the indicator has no multicollinearity or correlation between indicators (Widarjono, 2015).

The coefficient of determination can measure how much variation in the dependent latent variable is explained by the independent latent variable (Widarjono, 2015). The R-

square value is the result (in the form of a percentage) of the representation of the independent variable on the dependent variable. A good R2 value is above 0.2 (equivalent to 20%).

Table 1. Research Variables

| Variable Laten	Variabel manifest/indicators	Symbol
Predisposition Factors	Knowledge	X1a
	Attitude	X1b
	Trust	X1c
	Values	X1d
	Motivation	X1e
Enabling Factors	Environmental Facilities Training	X2a
	Work Safety / Personal Protective Equipment (PPE)	X2b
		X2c
	Affordability (price, distance and transportation)	X2d
Reinforcing Factors	Social Support	X3a
	Constitution	X3b
	Supervision	X3c
Behaviour Intentions	Attitude	X4a
	Subjective Norms	X4b
	Behavior	X4c
Behaviours	Cognitive	Y1
	Affective	Y2
	Psychomotor	Y3
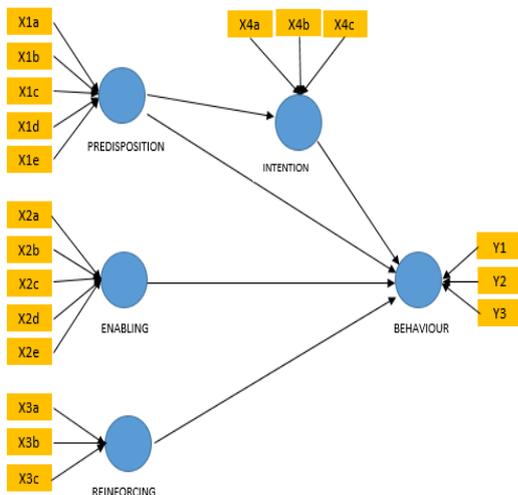
Fig 2. Path Diagram

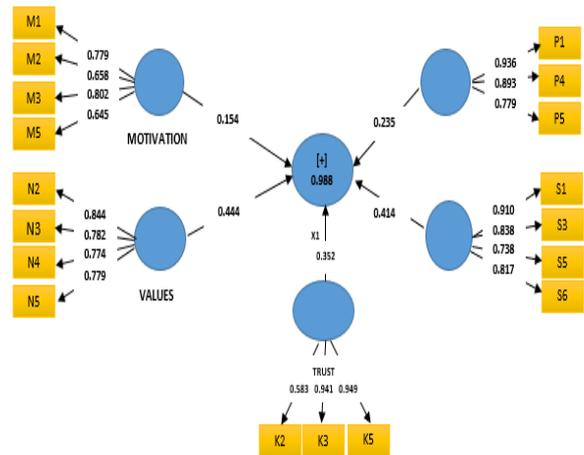## RESULTS AND DISCUSSION
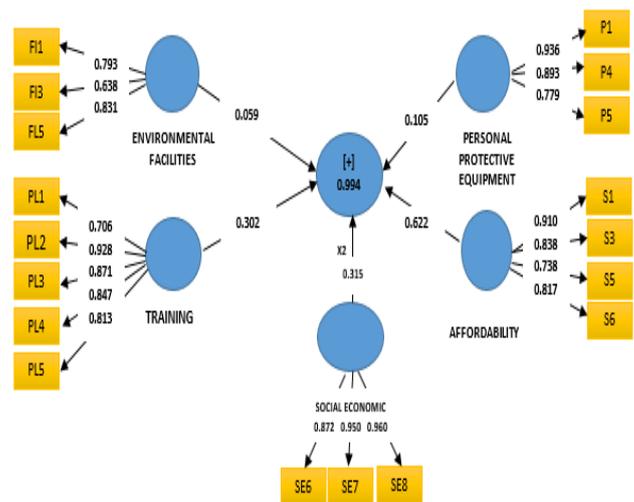## Analisis Factor Confirmatory

Fig 3 . CFA Variabel Predisposition

Fig 4. CFA Variabel Enabling

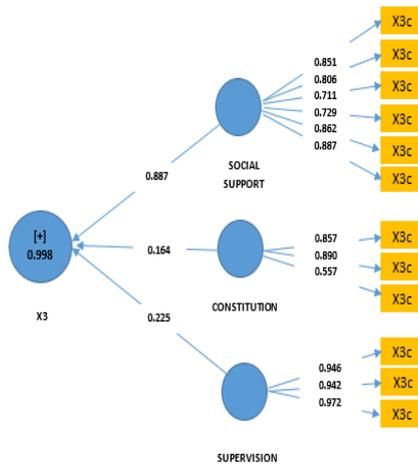Program Studi Manajemen Fakultas Ekonomi dan Bisnis Universitas Tamansiswa Padang
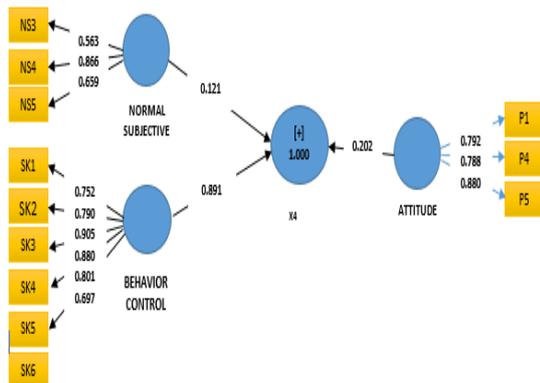
Fig 5. CFA Variabel Reinforcing

Fig 6. CFA Variabel Niat

Based on the results of the confirmatory factor analysis of the predisposition variable in Figures 3, 4, 5 and 6, that the indicators of predisposition, enabling, reinforcing and intention have met the criteria for convergent validity (loading factor value > 0.5).

Figure 3 also confirms that the Predisposition variable is proven to be formed by five dimensions, namely the dimensions of knowledge, attitudes, beliefs, values and motivation. Figure 4 also confirms that the Enabling variable is proven to be formed by five dimensions, namely environmental facilities, training, PPE, affordability, and

socio-economy. Figure 5 also confirms that the Reinforcing variable is proven to be formed by three dimensions, namely social support, legislation and supervision. Figure 6 also confirms that the intention variable is proven to be formed by three dimensions, namely subjective norms, behavioral control and attitudes.

Outer analysis of Formative PLS SEM model

The weight value of the formative indicator with its construct must be significant where the T statistical value must be greater than the T table at $\alpha = 10\%$ (1.96). The results of the significance of weights test are presented in table 2.

Path	T Statistics (|O/STDEV|)	P Values
X1a -> PREDISPOSITION	3,198	0,043
X1b -> PREDISPOSITION	71,648	0,000
X1c -> PREDISPOSITION	5,857	0,014
X1e -> PREDISPOSITION	58,967	0,000
X2a -> ENABLING	2,262	0,076
X2b -> ENABLING	11,672	0,004
X2c -> ENABLING	2,467	0,066
X2d -> ENABLING	9,505	0,005
X2e -> ENABLING	7,842	0,008
X3b -> REINFORCING	176,763	0,000
X3c -> REINFORCING	2,476	0,066
X4b -> INTENTION	7,301	0,009
X4c -> INTENTION	772,905	0,000
Y1 -> BEHAVIOR	15,013	0,002
Y2 -> BEHAVIOR	8,066	0,008
Y3 -> BEHAVIOR	3,076	0,046

The statistical T value presented in table 2 is in the range of values from 2.476 to 772.905, meaning that all indicators have a t statistical value greater than 1.96 or a significance value smaller than 0.05. These results indicate that all indicators have met the

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criteria for significance of weights. Based on table 3, it is obtained that the VIF value of all indicators in the measurement model is smaller than 10. So there is no correlation between the research indicators. So that the formative SEM model is analyzed further.

Table 3. VIF RESULT

Indicators	VIF
X1a	1,061
X1b	1,062
X1c	1,019
X1e	1,038
X2a	1,077
X2b	1,614
X2c	1,609
X2d	2,090
X2e	2,287
X3b	1,008
X3c	1,008
X4b	1,056
X4c	1,056
Y1	2,054
Y2	2,002
Y3	1,076

Inner Model Analysis

The R-square value is the result (in the form of a percentage) of the representation of the independent variable on the dependent variable. The best of R^2 value is above 0.2 (equivalent to 20%). The intention variable can be explained by the predisposing variable of 39.4%, the remaining 60.6% is explained by other variables which are not researched or included in this research model. The behavioral variable can be explained by the predisposing, enabling, reinforcing and intention variables by 63%, the remaining 37% is explained by other variables which were not studied or included in this research model.

Table 4. Hypothesis Test Results Direct Effect

	Original Sample (O)	Sample Mean	Standar Deviasi on	T Statistic (O)	P Values
ENABLING -> BEHAVIOR	0.362	0.357	0.023	15.934	0.002
INTENTION -> BEHAVIOR	0.333	0.382	0.016	20.913	0.001
PREDISPOSITION -> INTENTION	0.628	0.603	0.009	67.503	0.000
PREDISPOSITION -> BEHAVIOR	0.084	0.059	0.099	0.848	0.243
REINFORCING -> BEHAVIOR	0.222	0.271	0.017	13.371	0.003

Table 6. Hypothesis Test Results Indirect Effect

	Original Sample (O)	Sample Mean	Standart Deviasion	T Statistics (O)	P Values
PREDISPOSITION -> INTENTION -> BEHAVIOR	0.209	0.231	0.013	15.883	0.002

Based on table 4, obtained a significance value of 0.243> 0.10, a statistical T value of 0.848 <T table 1.96 so that it can be concluded that the first hypothesis is rejected or it can be said that the predisposition factor has no significant effect on the behavior of shallot farmers in using pesticides. .

Based on table 4, obtained that the significance value is 0.002 <0.10, the T statistical value is 15.934> T table 1.96 so that it can be concluded that the second hypothesis is accepted or it can be said that the enabling factors have a significant effect on the behavior of shallot farmers in the use of pesticides.

Based on table 4, obtained a significant value of 0.003 <0.10, the value of T statistic is 13.371> T table 1.96. It was concluded that the third hypothesis was accepted or it could be said that the reinforcing factor had a significant effect on the behavior of shallot farmers in using pesticides

Based on table 4, obtained a significant value of 0.000 <0.10, the T statistic value is 67.503> T table 1.96 so that it can be concluded that the fourth hypothesis is accepted or it can be said that the predisposition factor has a significant effect on the intention of shallot farmers in using pesticides.

Based on table 4, obtained a significant value of 0.001 <0.10, the value of T statistic is 20.913> T table 1.96 so that it can be concluded that the fifth hypothesis is accepted or it can be said that intention has a significant effect on the behavior of shallot farmers in the use of pesticides.

Based on table 5, obtained a significant value of 0.002 <0.10, a statistical T value of 15.883> T table 1.96 so that it can be concluded that the sixth hypothesis is accepted or it can be said that predisposition has a significant effect on the behavior of shallot farmers, behavior in using pesticides with intention as mediation.

CONCLUSION

From the results of testing the hypothesis that has been carried out it can be concluded as follows:

1. Disposioning factors do not have a significant effect on the behavior of shallot farmers in using pesticides.
2. Enabling factors have a significant effect on the behavior of shallot farmers in using pesticides
3. Reinforcing factors have a significant effect on the behavior of shallot farmers in using pesticides.
4. Disposing factors have a significant effect on the intention of angry onion farmers in using pesticides.
5. Intention has a significant effect on the behavior of shallot farmers in using pesticides.

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