# Test of Heterotrigona Propolis Production Around Mahagony Threes and Marketing through Information System

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**Abstract.** Cultivation in trees area of Heterotrigona bees influences the number of propolis production. The Heterotrigona bees will visit the trees that contain partial large number of resin as the raw material to produce of propolis. This research aimed to study of the number of Heterotrigona propolis production in Rumah Kompos UIN Jakarta, influence of trees type. As research result was the number of propolis production ranging indicated increasing harvest time to time. Model of marketing through information system and analysis method used in this research was multiple linear regression to get the result that significantly base on variables who influenced propolis production in Rumah Kompos UIN Jakarta.

Keywords: *Propolis, Heterotrigona, Marketing, Information System;*

## 1 Introduction

Heterotrigona bees produce excellent property, i.e. propolis, a natural product from resin-producing plants. Propolis contains various chemical compounds [1] depends on the location, environment, and the type of plants [1]. Since long time ago, propolis has been one of biological compounds contained in traditional medicines [2]. Propolis produced by stingless bees contains 55% resin and essential oil, 30% beeswax, 10% ester oil, and 5% pollen [3]. Heterotrigona bees are more potential in producing propolis as the main resistance, compared to other bees [4]. The research of propolis utilization in health world has been often conducted to study antimicrobial, antivirus, and anticancer activities that can be potentially used as natural antibiotic for ruminant animals [5]. According to Artdiyasa et al. (2010), market demand of propolis is increasing and reaching 2% per year for its good benefit for human health. In Trubus magazine no. 482 edition January 2010/XLI, the selling price of a 6 ml propolis package was IDR 550.000, determined by some propolis producers and product distributors, i.e PT. Ratu Nusantara, CV Cahya Sejahtera, PT Melia Nature Indonesia, and PT High Dessert Indonesia [6].

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Information technology has a major role to improve business practices and support marketing, such as B2B firms [13].

Student that have investigasi different facet of e-Marketing and e-Business penetration [12] described that ICT can be defined as the convergence from computer technologies telecommunication. *Information System* (IS) is a term for convergence in this technology which is generally used in describing several technologies and applications that are not the same by Bouwmann, Hoof, Wijngaert, & Dijk (2005).

In order to achieve the purpose of research and study questions below, the research questions has been set the direction as follows:

RQ1 Is the system that has been run in the distribution process?

RQ2 Is the production volume can optimal with this system?

RQ3 Is the management system optimal accordance with the marketing through Information System?

This research aimed to study: 1) the number of *Heterotrigona* propolis production in Rumah Kompos UIN Jakarta, 2) the influence of the type of trees, log size, temperature, and pests on propolis production, 3) the variables that mostly influence the propolis production, 4) the percentage of influence of the tree-type variables on propolis production, 5) the marketing model of propolis through system information.

## 2 Theoritical Framework

In the agricultural sector, recently, businesses developed related to their products and physical place. While marketing transactions are carried out by customers and adjusted based on special needs. Marketing is the process of managerial that includes individual and groups to achieve their needs, offering, and exchanging valuable products with other parties [11].

Urbach and Müller (2012) concluded that most information system (IS) studies are only focused on the measurement and assessment of the selected parts of the model, only few scholars who use the entire model. It is reasonable why the studies did not present a holistic approach to measuring IS success.

Companies are making large investments in e-commerce applications but are hard-pressed to evaluate the success of their e-commerce systems. IS researchers have turned their attention to developing, testing, and applying e-commerce success measures [9].

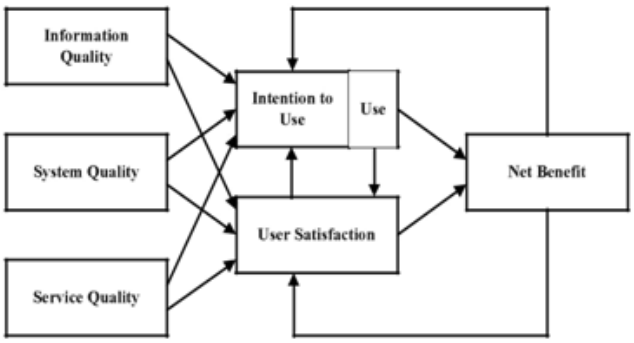


**Fig. 1.** McLean IS success model

IS model is a multidimensional and interdependent construct and that it is necessary to study the interrelationships among control for those dimensions.

## 3 Research Method

Data used in this research were primary and secondary data, obtained through the observation in Rumah Kompos UIN Syarif Hidayatullah Jakarta. Secondary data obtained from the Agriculture Service *(Dinas Pertanian)*, the Indonesian Meteorological, Climatological and Geophysical Agency *(BMKG)*, various literatures from books, papers, journals, and online articles.

Research was located at Rumah Kompos *(House Compost)*, State Islamic University (UIN) Hidayatullah Jakarta [hereinafter mentioned as Rumah Kompos UIN Syarif Hidayatullah Jakarta, Cempaka Putih, Ciputat Timur, Tangerang Selatan, Banten. This location was selected to observe the production of *Heterotrigona* bees in the city because this species is originally the forest commodity.

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The author collected data and information through:

1. Observation by conducting direct observation of the objects studied in this research. In this case, direct observation at Rumah Kompos UIN Syarif Hidayatullah Jakarta.
2. Literature Study by collecting data and information through various relevant literatures related to the subject in this research, obtained from books, *Dinas Pertanian, BMKG,* Central Statistic Agency *(BPS)*, related departments, online sources, and others.

## 3 Research Findings And Discussions

Regression analysis is one of statistical analyses that often used to analyze the influence of variables on the other variables. [7] stated that regression analysis is the analysis method that can be used to analyze data and significantly conclude the influence or dependent relationship of variables on the other variables. The relationship is commonly illustrated by math equation, which determines the relationship of independent variables and dependent variables in general formula of multiple linear regression, described statistically as follows:

$$Y = a + b1\ X_1 + b2\ X_2 + b3\ X_3 + b4\ X_4 + e$$

Where:

$Y$ = Propolis Production (gram)

$X_1$ = Type of Trees (trunk)

$X_2$ = LOG size (cm)

$X_3$ = Temperature ($^{O}C$)

$X_4$ = Pest (number)
E = error

The results of the calculation using SPSS version 23, were obtained to calculate linear regression of the factors that influence propolis production in Rumah Kompos UIN Syarif Hidayatullah Jakarta, illustrated in the following table:

**Table. I**
Coefficient Value Of Multiple Linear Regression On The Influencing Variables

| No | Influencing Variables | Coefficient Regression |
|---|---|---|
| *1* | Intercept | 146,406 |
| *2* | The Type of Trees | 0,041 |
| *3* | Log Size | 0,021 |
| *4* | Temperature | 0,254 |
| *5* | Pest | 0,060 |
| | | |

Research yielded multiple linear regression, i.e $Y = 146,406 + 0,041\ X_1 + 0,021\ X_2 + 0,254\ X_3 - 0,060\ X_4$, which can be explained as follows:

1. The intercept value (a) is 146,406, which describes that all dependent variables (the type of trees, log size, temperature, and pest) is nil. Hence, the independent variable (propolis production) value is 146,406 gr.
2. Coefficient value of the type of trees (X1) is positive, i.e 0,041, explains if the type of trees is increasing by 1 trunk, the production of *Heterotrigona* propolis of Rumah Kompos UIN Syarif Hidayatullah Jakarta will increase by 0,041 gr.
3. Coefficient value of the log size (X2) is positive, i.e 0,021, explains if the log size is increasing by 1 m, the production of *Heterotrigona* propolis of Rumah Kompos UIN syarif Hidayatullah Jakarta will increase by 0,021 gr.
4. Coefficient value of temperature (X3) is positive, i.e 0,254, explains if temperature is increasing by $1^0$ C, the production of *Heterotrigona* propolis of Rumah Kompos UIN Syarif Hidayatullah Jakarta will increase by 0,254 gr.
5. Coefficient value of pest (X4) is negative, i.e -0,060, explains if pest number is increasing by 1, the production of *Heterotrigona* bee of Rumah Kompos UIN Syarif Hidayatullah Jakarta will decrease by 0,060 gr.

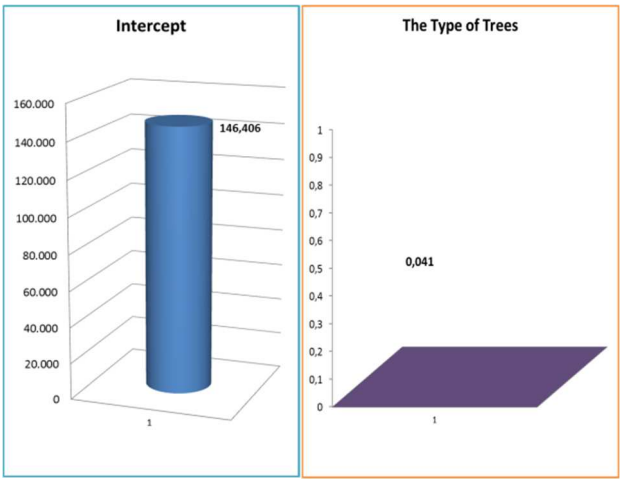


**Fig. 2.** Influencing Variables

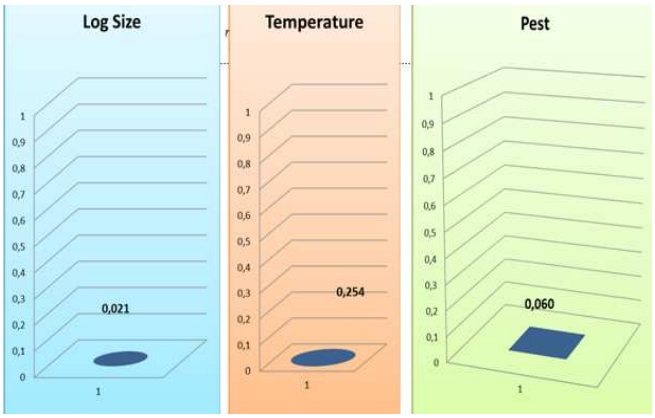


Fig. 3. Influencing Variables

Based on result indicates that the traditional relationship marketing practice characterized by Interaction Marketing still plays an important role for a large proportion of firms and challenges the view that e-Marketing is replacing Interaction Marketing as a relationship management tool.

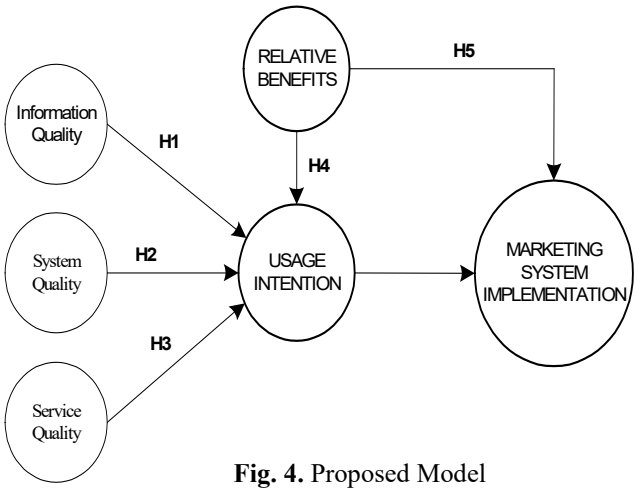


**Fig. 4.** Proposed Model

This study hypothesizes that:

H1: Information Quality positively affects the Usage Intention toward Marketing System Implementation.
H2: System Quality positively affects the Usage Intention toward Marketing System Implementation.
H3: Service Quality positively affects the Usage Intention toward Marketing System Implementation.
H4: Relative Benefits positively affects the Usage Intention toward Marketing System Implementation.
H5: Relative Benefits positively affects the Marketing System Implementation.

## 4 Conclusions

Based on the factors that influence propolis production in Rumah Kompos UIN Syarif Hidayatullah Jakarta, it can be concluded that:

1. Multiple linear regression reveals the variables of: i) the type of the trees, ii) log size, and iii) pest significantly influence the propolis production. Meanwhile, the variable of temperature insignificantly influences the production due to the moderate temperature (non-extreme) in Rumah Kompos UIN Syarif Hidayatullah Jakarta. Thus, the average temperature is the same all year round.
2. Research reveals that the variable percentage of the type of trees (25,5%), log size (22,4%), and pest (31,2%) significantly influences the production of *Heterotrigona* propolis of Rumah Kompos UIN Syarif Hidayatullah Jakarta.
3. Marketing pattern needed in term of developing business and Information system model as method to measure in reaching success model.

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