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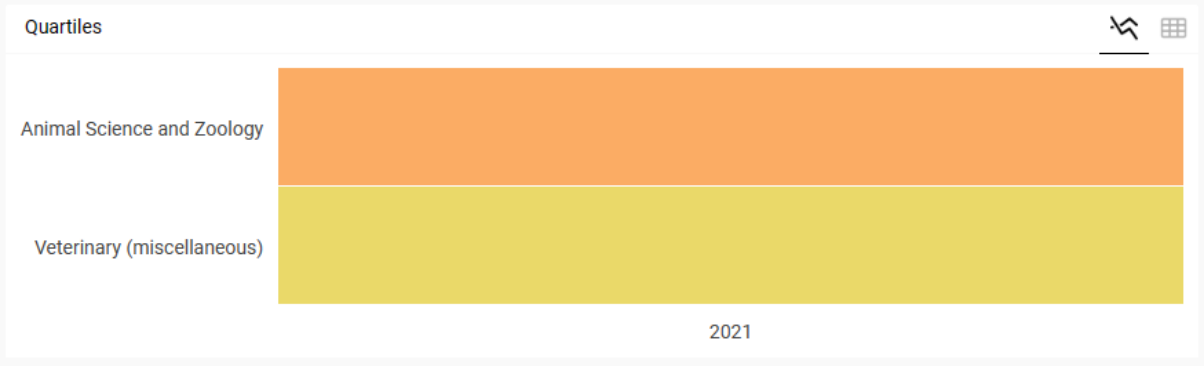

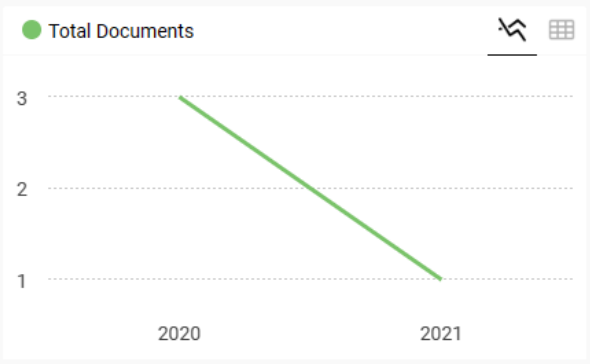

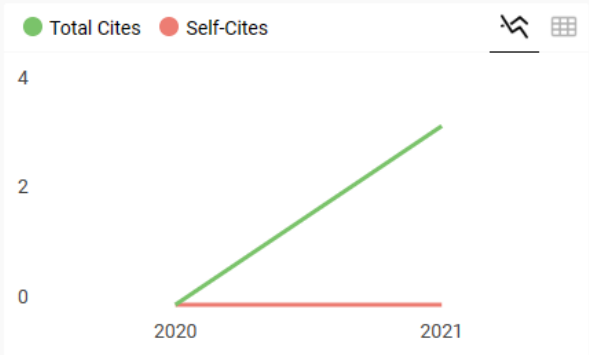

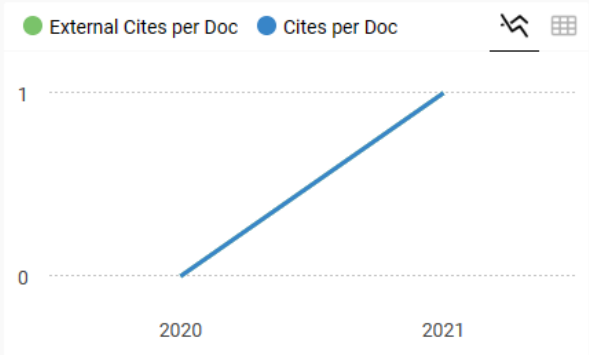

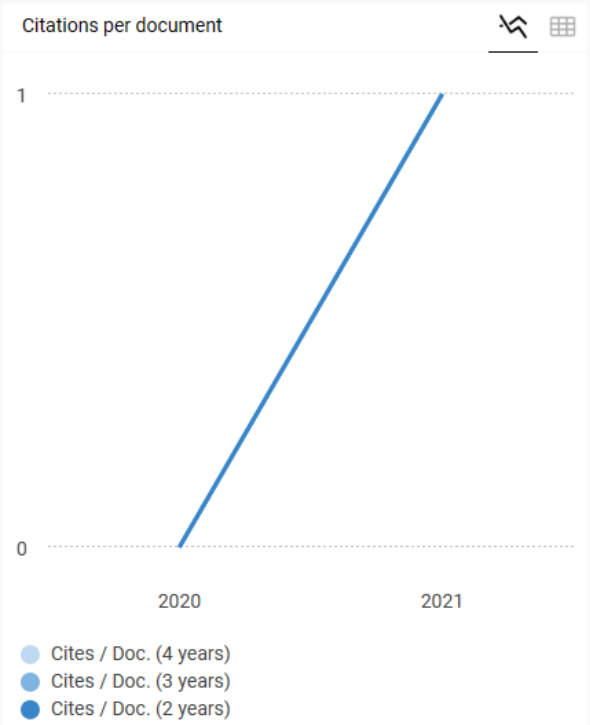

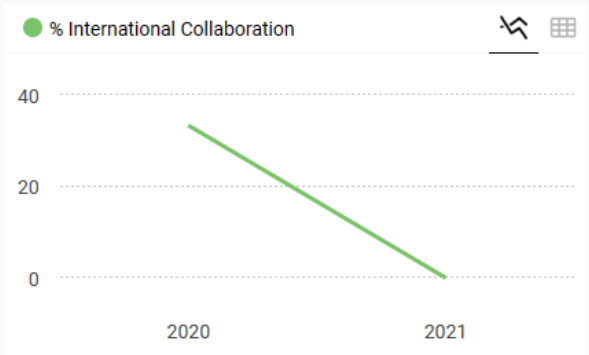

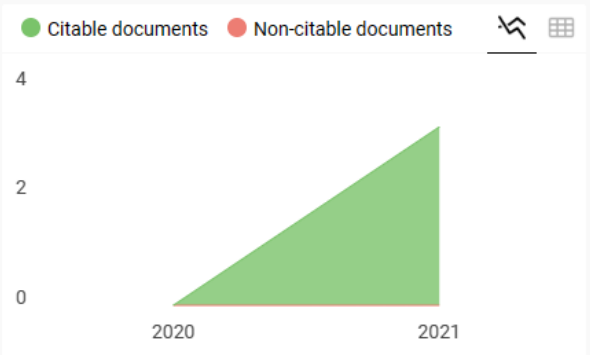

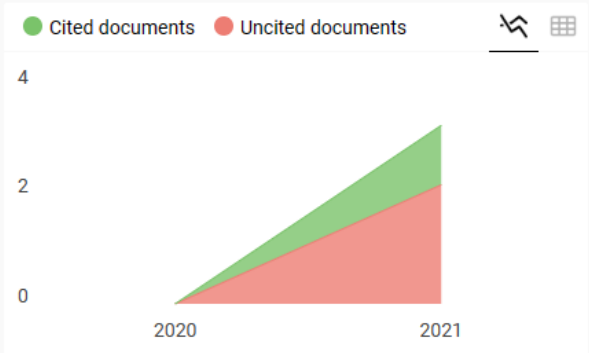

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Farmers' Perceptions and Behavior which Affecting the Adoption Rate of KUB Chickens

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ABSTRAK

Syarifah I, Sirajuddin SN, Baba S, Najib M. 2023. Persepsi dan Perilaku Peternak Yang Mempengaruhi Tingkat Adopsi Ayam KUB. JITV 28(1): ??-??. DOI: http//dx.doi.org/10.14334/jitv.v28.i1.3200.

Ayam KUB sebagai bibit unggul yang dihasilkan Badan Standardisasi Instrumen Pertanian (BSIP) menjadi salah satu solusi dalam upaya peningkatan kebutuhan protein hewani. Bibit ayam KUB telah berhasil didiseminasikan ke seluruh provinsi di Indonesia. Dengan demikian tingkat adopsi dan perilaku peternak dalam mempertahankan keberlanjutan pemeliharaan ayam KUB perlu dianalisis karena bibit yang didiseminasikan belum tentu berhasil dikembangkan di suatu wilayah. Tujuan dari penelitian ini adalah menganalisis faktor persepsi dan perilaku peternak yang mempengaruhi tingkat adopsi teknologi ayam KUB di Provinsi Jawa Tengah, Indonesia. Penelitian ini akan mengkolaborasikan antara teori "*Theory of Planned Behavior*"(TPB) dan "*Technology Acceptance Model*"(TAM). Teknik sampling ditentukan dengan *multistage sampling* yaitu *purposive sampling* dan *accidental sampling.* Sebanyak 104 sampel diwawancara dan dianalisis dengan analisis jalur (path) dan regresi pada teknik *Structural Equation Modeling* (SEM). Berdasarkan hasil penelitian dapat disimpulkan bahwa variabel persepsi manfaat (25.3%), kemudahan memelihara ayam KUB (23.9%), sikap (21.2%), norma subjektif (16.7%) dan persepsi atas kontrol perilaku (17.3%) berpengaruh positif pada minat mengadopsi Ayam KUB. Selain itu persepsi manfaat (45.8%) dan persepsi kemudahan memelihara ayam KUB (50.1%) sangat berpengaruh positif terhadap variabel sikap peternak. Orang-orang penting termasuk anggota keluarga memiliki peran penting dalam mendukung pemeliharaan ayam KUB, sedangkan penyuluh belum banyak berkontribusi dalam mendukung peternak untuk mengadopsi ayam KUB. Kolaborasi dari kedua teori memiliki hubungan yang saling mempengaruhi khususnya terhadap sikap dan minat mengadopsi ayam KUB yang berefek positif terhadap tingkat adopsi. Tingkat adopsi Ayam KUB adalah 3.32 (66.40%), menunjukkan bahwa tingkat adopsi peternak di daerah Jawa Tengah, Indonesia diklasifikasikan sebagai adopsi tinggi.

Kata Kunci: Ayam KUB, Perilaku Peternak, Tingkat Adopsi, TAM, TPB

ABSTRACT

Syarifah I, Sirajuddin SN, Baba S, Najib M. 2023. Farmers' Perceptions and Behavior which Affecting the Adoption Rate of KUB Chickens. JITV 28(1): ??-??. DOI: http//dx.doi.org/10.14334/jitv.v28.i1.3200.

KUB chicken as a superior breed produced by Indonesian Agency for Agricultural Instrument Standardization (IAAIS) becomes one of the solutions in an effort to increase the need for animal protein. KUB chicken breeds have been successfully disseminated to all provinces in Indonesia. Thus the rate of adoption and behavior of breeders in maintaining the sustainability of KUB chicken rearing needs to be analyzed because the breeds that are disseminated may not be successfully developed in a certain area. This research will collaborate between the two theories; "Theory of Planned Behavior" (TPB) and "Technology Acceptance Model" (TAM). It was conducted in June 2022 in the City of Salatiga, Semarang and Magelang, Central Java Province. The determination of the research location was based on the consideration that there was a KUB chicken breeders group that already had a KUB chicken breeder association called AnaKUB (KUB Chicken Breeders Association) and a breeding population that met the sampling requirements. The purpose of this research was to analyze the perception factors and breeders behavior that affect the adoption rate of KUB Chicken Technology in Central Java Province, Indonesia.). The combined results of path analysis (path) and regression analysis on the Structural Equation Modeling (SEM) technique, it can be concluded that perceived benefits (25.3%), ease of raising KUB chickens (23.9%), attitudes (21.2%), subjective norms (16.7%) and perceptions of control behavior (17.3%) have a positive effect on the intention to adopt KUB chickens. The perceived benefits (45.8%) and the perceived ease of raising KUB chickens (50.1%) have a very positive effect on the attitude variable of the farmer. Important people including family members have an important role in supporting the maintenance of KUB chickens, while extension workers have not contributed much in supporting breeders to adopt KUB chickens. Collaboration of two theories has a mutually influencing relationship, especially towards attitudes and intentions to adopt KUB chickens which have a positive effect on the adoption rate. The adoption rate of KUB chicken is 3.32 (66.40%), this shows that the adoption rate of breeders in the Central Java region, is classified as high adoption.

Key Words: Adoption Rate, Breeder Behaviour, KUB Chicken, TAM, TPB

INTRODUCTION

The adoption of an innovation is a mental process or behavior change in the form of knowledge (cognitive), attitude (affective), and skills (psycomotor) in a person since he knows the innovation (Rogers, E.M.;Shoemaker 1971; Gebiso 2015). The process of adopting an innovation is an internal process that occurs in farmers when they encounter an innovation, in which there is a process of implementing a new idea since it is known or heard until the innovation is implemented (Sirajuddin et al. 2017). Adoption is knowledge, persuasion, decision, implementation, and confirmation. So the speed of the adoption process will depend on the dynamic nature of the target.

The rate of adoption is a relative speed of the adoption of innovation conducted by members of a social system which is generally measured as the number of individuals who adopt the new idea in a certain period (Alomar, Mohamad 2017). The rate of adoption is a numerical indicator of the steepness of the adoption curve for an innovation (Emerson, 1995 in Rogers, 2003). The study of agricultural technology adoption is very important in understanding the factors related to the application of technology (new plants, high superior quality, or new production technologies (E Sudrajat 2020). In the history of agriculture, the adoption of agricultural technology is an important component for the progress of agricultural development (Ghimire et al. 2015; Houeninvo et al. 2020). However, if the conditions of innovation are difficult to be implemented by the breeders, and makes the innovation hard to be adopted and there are various problems faced by breeders in managing their livestock business which are quite complex so that it can hinder an optimal process of adopting technological innovations (Indraini sikombong 2014; Dwi et al. 2016; Baba et al. 2020).

The process of adopting KUB Chicken business innovations can take place quickly depending on the pattern and method of delivering technological innovations as well as regional situations and conditions. In addition, a very important determining factor is the characteristics of innovation in the KUB Chicken business which consists of KUB Chicken breeds or commonly called DOC (day old chicks), feed, cages, medicines and equipment (Aminawar 2014; Dwi et al. 2016; Astarina 2019).

KUB chicken is a superior breed produced by Indonesian Agency for Agricultural Instrument Standardization (IAAIS) is one of the solutions in an effort to increase the need for animal protein (Hayanti 2014; Winarti 2018). KUB chicken breeds have been successfully disseminated in all provinces in Indonesia. Most of the disseminated breed is based on cooperation agreements with stakeholders or leaders policies. Thus it is necessary to know the rate of adoption and behavior of breeders in maintaining the sustainability of KUB chicken maintenance (Cahyono et al. 2020). It needs to be analyzed because the breeds that are disseminated may not be successfully developed in an area.

This research collaborate between Theory of Planned Behavior (TPB) and Technology Acceptance Model (TAM) theory (Borges et al. 2014; Johnson; 2014; Ghimire et al. 2015; Borges et al. 2016; Lalani et al. 2016; Nugroho et al. 2018). In several studies on the factors that influence technology adoption that are related with perception and behavior refer to the theory of Planned Behavior (TPB) and the theory of Technology Acceptance Model (TAM). At TPB, researchers linked the adoption with attitudes toward behavior, subjective norms and perceptions of behavior control (Ajzen 2005; Ghifarini 2018; Nugroho et al. 2018; Rodi et al. 2019; Ramadhan et al. 2020). Many researchers have developed TAM theory, including to determine the effect of the ease of the usage, utility, satisfaction, perceived suitability, and attitudes towards the use (Nah et al 2004; Ambodo et al. 2017).

In researches on the adoption of KUB chickens, only a few that discusses the factors that influence the adoption of KUB chickens (Nugroho et al. 2018; Ramadhan et al. 2020; Syarifah et al. 2021). Several studies have explained the adoption of KUB chicken from the cognitive, attitude, and psychomotor aspects of individuals after receiving innovation (Gebiso 2015; Altandjung 2019). Electronic media can be used as a variable in analyzing the adoption rate of KUB chickens (Wahyuningrum & Gunawan 2016).

Meanwhile, a research on the analysis of factors influencing breederes to adopt KUB chickens in Central Java by collaborating the TAM and TPB theories has never been carried out (Tambunan Tulus 2001; Rauniar et al. 2014). As Lalani et al. 2016, and Iskandar 2018 suggested that collaboration on the behavior aspects which includes the perception of benefits and ease of raising KUB chickens by considering attitudes towards behavior, subjective norms, and perceptions of behavior control nedd to be assessed.

The purpose of this research was to analyze the factors of perception and behavior of breeders that affect the rate of adoption of KUB chicken technology in Central Java Province, Indonesia.

METHODS

This research was conducted in June 2022 in the City of Salatiga (34), Semarang (30) and Magelang (40), Central Java Province, Indonesia with a total sampling of 104 respondents. Research location was chosen due to the presence of KUB chicken group associated with KUB chicken breeders named AnaKUB (KUB Chicken Breeders Association). The breeding population was also met the sampling requirements. The research was

conducted by collecting primary data and filling out questionnaires and interviewing KUB chicken breeders. In this study, the adoption rate of KUB chicken by breeders was examined using descriptive research and a quantitative approach. Data analysis techniques were utilized to examine breeders' perceptions and behavior in relation to the study's factors/variables. The variables in this research were the existence of KUB chicken groups in Central Java by analyzing the perception of the benefits of raising KUB chickens and the perception of the ease of raising KUB chickens through the TAM theory by considering the variables: attitude towards behavior, subjective norms and perceptions of behavior control through the TPB theory to determine breeder adoption intentions (Ajzen 2006; Borges et al. 2014).

Data collection techniques

The researchers narrow down the population by calculating the sample number which is done using the Slovin formula as follow:

$$n = \frac{\mathrm{N}}{1+ (\mathrm{N}.e2)}$$

where n is number of samples, N is number of population and e is prediction error (10%).

The research sample was determined by multistage sampling; namely sampling using two or more methods. The method used is purposive sampling and accidental sampling. Purposive sampling is a sampling technique with certain considerations. The sample was selected based on the characteristics adapted to the research objectives, namely KUB chicken breeders who are members of AnaKUB. Accidental sampling is a sampling technique based on chances or without planning in advance. Any KUB chicken breeders who meet researchers by chance can be used as samples if the breeders are suitable as data sources.

Data analysis technique

The data was collected for tabulation, analyzed and concluded to answer the research objectives. Data analysis techniques were carried out in 3 stages, namely: (1) Questionnaire Feasibility Test, and (2) Descriptive Analysis to answer the research objective, namely analyzing the rate of adoption of KUB chicken technology in the study area in form of (a) group approach and (b) individual approach; (3) SEM (Structural Equation Modeling) to answer the research objective, which is to analyze the factors of perception and behavior of breeders that affect the adoption rate of KUB Chicken technology in Semarang, Salatiga and surrounding districts in the form of (a) Making a Path (b) Evaluation of the measurement model is done in three stages, namely convergent validity test, discriminant validity test and reliability test. (c) Structural evaluation of the model is carried out by looking at the value of the coefficient of determination (R2) as well as the value of the path coefficient and the structural model equation, (d) Hypothesis Test

Feasibilty test of the questionnaire

Validity Test is an index that shows the extent to which a measuring instrument actually measures what needs to be measured. The validity of a measuring instrument depends on whether or not the measuring instrument is able to achieve the desired measurement objectives precisely (Azwar 2003). One of the approaches used to test the validity of items (statements) is to use the Product Moment correlation equation, as follows:

$$rXY = \frac{\mathrm{N}(\sum \mathrm{XiYi}) - (\sum \mathrm{Xi} \sum \mathrm{Yi})}{\mathrm{N}(\sum \mathrm{XiYi}) - (\sum \mathrm{Xi} \sum \mathrm{Yi})}$$

where rXY is Product Moment correlation coefficient, X is item score, Y is total item score and N is number of respondents.

Result could be concluded If the rXY count >r table (N-2; 5%), the measurement results are valid or if the rXY count >0.3 then the item is declared quite valid (Azwar 2003).

Descriptive Analysis

Descriptive analysis is a method to answer the research objective, which is to analyze the adoption rate of KUB chickens and breeders perceptions. The adoption rate describes the circumstances in which an individual or member of a group applies a new technology or recommended technology. This adoption rate measurement uses a weighted value expressed in a percentage. The calculation approach is differentiated according to the target, namely groups and individuals.

Group Approach

The rate of adoption of the group approach is measured by means of a scoring technique based on the value of the score and the percentage of each applied technology component (Santoso 2005):

$$\text{Score value} = \frac{\mathrm{P} \times \mathrm{VS}}{\sum \mathrm{VS}}$$

where P is Percentage of farmers who apply technology components (%), VS is Value Score and ∑VS is Total Value Score.

Table 1. Variable naming, indicator and indicator description

No	Variable	Indicator	Indicator Description
1	Attitude	X1-X6	X1 = better egg production
			X2 = interested in seeing successful KUB chicken breeders
			X3 = KUB chicken adoption is very profitable
			X4 = Raising KUB chickens will increase income
			X5 = raising KUB chickens will increase the food supply for the family
			X6 = provide employment for individuals / family members / wife
2	Subjective norms	X7-X13	X7=important people support
			X8=some breeders agree that KUB chickens are good
			X9=based on the recommendation of a successful breeder
			X10=institution can influence
			X11=the extension worker inspired me to become a KUB chicken breeder
			X12=anaKUB encouraged me to become a KUB chicken breeder
			X13=family members support raising KUB chickens
3	Perceptions of behavioral control	X14-X23	X14 = sure to adopt KUB Chicken
			X15=self control
			X16=has resources
			X17= has knowledge and ability
			X18 = has enough experience to raise KUB chickens
			X19 = if there is a failure in the KUB chicken, I can handle it
			X20 = has enough time to raise KUB chickens
			X21 = KUB chicken feed is easy to get
			X22 = KUB chicken DOC is easy to get
			X23 = KUB chicken vaccines and medicines are easy to get
4	Interest in adopting KUB chickens	X24-X29	X24= planning to adopt KUB Chicken
			X25 = committed to adopt KUB Chicken
			X26 = plans to choose to adopt KUB chickens over other chicken breeds to help the financial needs
			X27 = making KUB chicken raising as the main livelihood
			X28 = adopt as recommended by AnaKUB or extension workers
			X29 = all capital is invested in raising KUB chickens
5	Perceived benefits of KUB Chicken	X30-X34	X30 = increase of income
			X31 = produce superior breeds production
			X32 = produce a lot of eggs
			X33 = family consumption
			X34 = disease resistant
6	Perceived ease of raising KUB chickens	X35-X39	X35 = easy maintenance
			X36= easy sales
			X37 = easy to produce a lot of eggs
			X38 = easy to get the breeds
			X39 = easy to get the feed

Individual Approach

Analysis of the rate of adoption for individuals can be done directly by identifying aspects of the technology applied. The formula used is as follows (Hendayana 2014):

$$AR = \frac{FV}{T}\ x\ 100\%$$

where AR is Adoption Rate (%), FV is Factor value from observation of adoption in the field (adoption unit), T is Total recommended technology components (units).

There are 5 classes of adoption level classification used, namely: (a) 0.00%–20.00% means very low adoption classification; (b) 20.01%–40.00% means low adoption classification; (c) 40.01%–60.00% means moderate adoption classification; (d) 60.01%–80.00% means high adoption classification; and (e) 80.01%–100.00% means very high adoption classification.

Structural Equation Modeling (SEM)

Structural Equation Modeling (SEM) is a technique with a combination of path analysis and regression analysis that allows researchers to examine simultaneously a series of interrelated relationships between measured variables and latent constructs (Latan 2015). SEM analysis is a complex multivariate analysis, because it involves a number of independent variables and dependent variables that are interconnected to form a model. In SEM it cannot be said that there are independent variables and dependent variables, because an independent variable can be a dependent variable in another relationship.

Creating path diagrams

In this study there were 6 latent variables, namely 1) Attitude, 2) Subjective norms, 3) Perceptions of behavioral control, 4) the benefits of raising KUB chickens, 5) Perceived ease of raising KUB chickens, and 6) Interest in adopting KUB chickens. Each variable has an indicator as a measuring tool to analyze descriptively and hypothetically as listed in Table 1. In addition, there is 1 adoption rate variable, which has an indicator as a measuring tool to analyze descriptively and hypothetically as listed in the Table 2.

Creating this path diagram is in accordance with the hypothesis and research model, latent variables are divided into 2 types, namely endogenous and exogenous variables. Endogenous variables are variables that the values are influenced by other variables, while exogenous variables are variables which the values are not influenced by other variables. Therefore, exogenous variables are also called independent variables.

Endogenous variables are Attitude Productivity, Interest in Adopting KUB Chicken, and KUB Chicken Adoption Rate. While the exogenous variables are subjective norms, perception of behavior control, the perception of the benefits of KUB chickens and the perception of the ease of raising KUB chickens. The structural model equation can be seen in Table 3, so that a Path Diagram can be formed as shown in Figure 1

Table 2. Adoption Rate Variable

Adoption Rate Variable	Measuring instrument
T1 = type of Livestock	1= Breeding; 2=. Hatching; 3= Raising; 4= Breeding and Hatching; 5=Breeding to Raising
T2 = DOC source	1=self production without clear marriage; 2=other products with unknown origin; 3=production between breeders; 4=production of AnaKUB; 5=BPTP/license of ministry of agriculture
T3 = feed	1= finished/commercial; 2= family waste; 3= from agricultural waste; 4 = mixture of commercial and waste; 5 = AnaKUB feed
T4 = local wisdom	1= not; 2 = if someone offers; 3= sometimes; 4= partially used; 5= used
T5= Utilization type	1= bran; 2=corn/oilcake/bran; 3= bran and corn/oilcake; 4= bran, corn, oilcake; 5= various kinds, not only bran, corn and oilcake.
T6 = number of deaths	1=more than 50; 2=26-50; 3= 20-25; 4= 11-20; 5= 1-10
T7 = treatment	1 = left alone; 2 = self-medication; 3 = using traditional medicine; 4 = paid medical veterinary/vet treatment; 5=assistance from the local health post/livestock service;
T8 = vaccine	1 = no; 2 = Vaccines are only given early; 3 = if there is assistance from the department only; 4 = vaccines but not periodically; 5 = periodic vaccines independently
T9 = livestock manure	1 = not managed; 2 = Manure is placed in the space provided; 3 = Manure treated; 4 = Manure is used in own garden; 5 = sold

T10=land ownership	1 = no owner; 2 = workers; 3 = profit sharing, 4 =rents; 5= private property

Table 3. The structural model equation

Endogenous variables	Equation
Adoption Rate	γ 1.1 adoption interest+ ζ_1
Adoption Interest	γ 2.1 Attitude + γ 2.2 Subjctive norm+ γ 2.3 behavior control + γ 2.4 benefit + γ 2.5 ease+ ζ_2
Attitude	γ 3.1 Benefit + γ 3.2 ease + ζ_3

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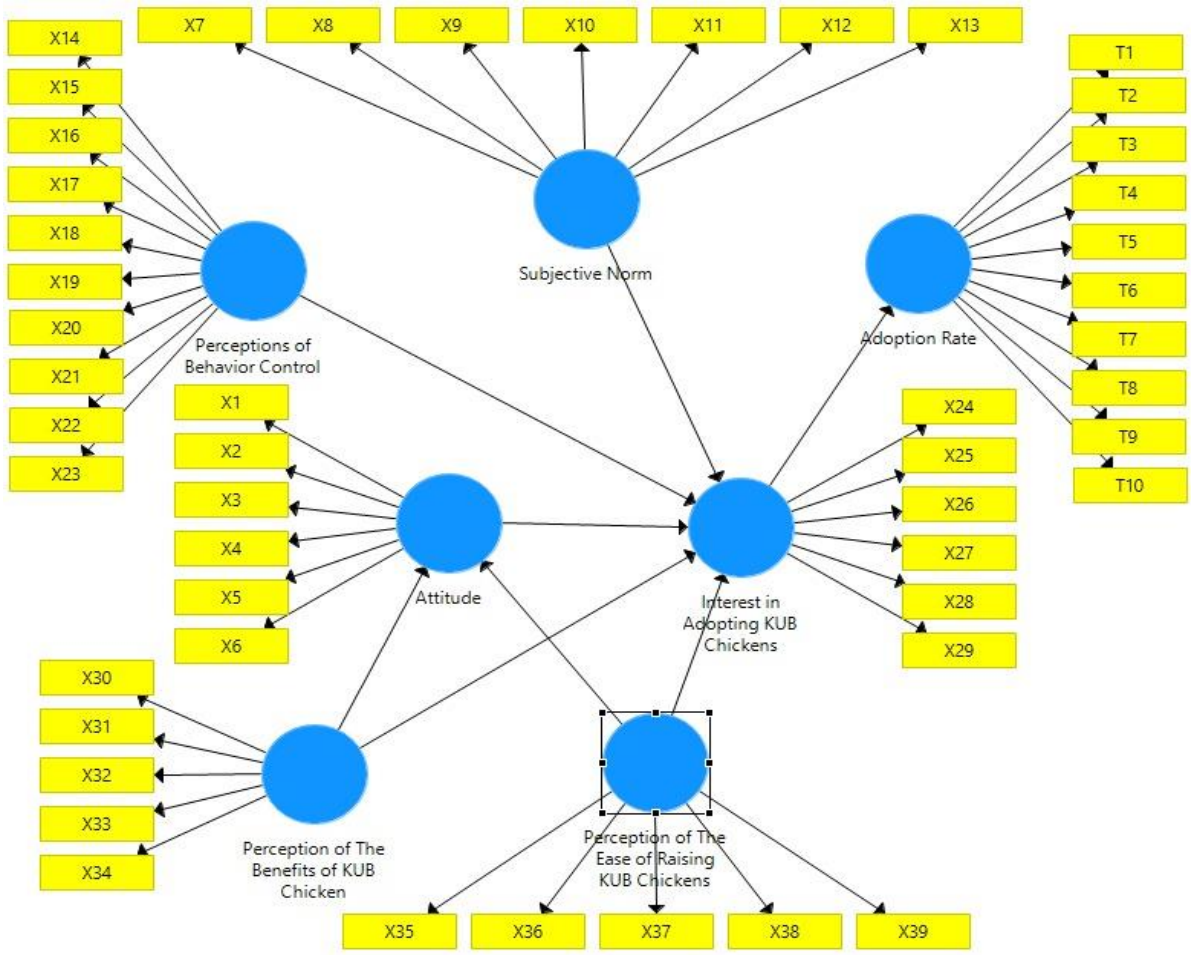

Figure 1. Research path diagram

RESULTS AND DISCUSSION

Descriptive analysis results

The results of interviews of 104 respondents on the research variables, an empirical description of the data used in the research in a statistical descriptive manner using the minimum value, maximum value, average value, and Deviation Standard of each indicator of every variable. Through this description, it will be known to what extent the respondents' perceptions of the indicators of each variable in the study. The description of the questionnaire answers to the variables is as follows.

Table 4 shows that the variable with the largest average successively is 1) Perception of the Ease of Raising KUB Chickens (4.11); 2) Attitude (4.10); 3) Perception of the benefits of KUB chickens (4.09); 4) Perception of behavior control (4.05); 5) Interest in adopting KUB Chicken (4.01); and 6) Subjective Norms (3.97) (Borges et al. 2016). So the highest average variable is the ease of raising KUB chickens and the lowest variable is the subjective norm variable. Meanwhile, the indicator with the highest average is that breeders are interested in seeing successful KUB chicken breeders on the attitude variable, while the lowest average is the extension workers inspired me to become a KUB chicken breeder on the subjective norm variable.

The Attitude Variable has an average of 4.10. The indicator that has the highest average is X2 with an average of 4.28, means that "Breeders are interested in seeing successful KUB chicken breeders". While the X1 indicator means that " Breeders like to adopt KUB chickens because their egg production is better" is the indicator with the lowest average, is 3.99 (Borges et al. 2014; Ambodo et al. 2017). On average, breeders also show that "Raising KUB chickens can increase the food supply for families and family income" with an average value of 4.12. It can be assessed that most breeders adopt KUB chickens because they see successful KUB chicken breeders and believe that raising KUB chickens can function as a food provider and can increase family income. But for breeders, KUB chicken egg production cannot guarantee that it is better than other eggs.

The average of the statements in the Subjective Norm Variable is 3.97. The indicator that has the highest average is X7 with an average of 4.17, means that "Important people support adopting KUB Chickens". The X13 indicator has a significant average value of 4.11 means that "Family members support the maintenance of KUB chickens". Meanwhile, the X11 indicator means that "Extensioners inspire to become KUB chicken breeders" is the indicator with the lowest average, is 3.64. It suggested that family members have an important role in supporting the maintenance of KUB chickens, while extension workers have not contributed much in supporting breeders to adopt KUB chickens (Iskandar 2018).

The Perception Variable of Behavior Control has an average of 4.05 (Makkonen et al. 2016; Rodi et al. 2019). The indicator that has the highest average is X22 with an average of 4.11, means that "KUB chicken DOC is easy to get". While indicators X18, X19, and X23 of 4.02 means that "having experience in raising KUB chickens, being able to handle KUB chickens when there is a failure and ease of getting vaccines and medicines", respectively. Thus, in terms of perceptions of behavior control, most breeders stated that DOC breeds were easy to obtain, but not many had experience in raising KUB chickens, including handling if there was a failure in raising KUB chickens. Apart from that, the problem for breeders is very difficult to get vaccines and medicine programs, so that the maintenance of KUB chickens is raised naturally without the help of complete vaccines.

The KUB Chicken Adoption Interest Variable has an average of 4.01. The indicator that has the highest average is X26 with an average of 4.08, which stated that "Plans to choose to adopt KUB chickens over other chickens to help financial needs". While the X29 indicator which stated that "I will invest all my capital to raise KUB chickens" is an indicator with the lowest average, which is 3.90. Another average that has a significant value of 4.07 is "Committed to adopt KUB chickens and will adopt KUB chickens as recommended by AnaKUB". This means that most breeders will choose KUB chickens over other chickens to help family needs according to AnaKUB's recommendations, but mostly not all capital will be invested by breeders to raise KUB chickens.

The average of the statements in the Variable Perceived Benefits of KUB Chicken is 4.09. The indicator that has the highest average is X33 with an average of 4.14, which states that "Raising KUB chickens is beneficial for family consumption". Another average that has a significant value is 4.09 which stated that "The benefits of KUB chickens are increasing income and producing lots of eggs." Meanwhile, the X34 indicator stated that “Raising KUB chickens is disease-resistant” was the indicator with the lowest average, which was 4.05. Thus the perception of the benefits of KUB chicken for most breeders in Central Java is that it is beneficial for family consumption, increasing income and producing lots of eggs.

The Perceived Variable of Ease of Raising KUB Chickens is 4.11. The indicator that has the highest average is X39 with an average of 4.17, means that "KUB chickens are easy to get the feed". Another average value of 4.16 means is "Easy to get KUB chicken seeds". Meanwhile, the X37 indicator, which stated that "Raising KUB chickens produces a lot of quality eggs" is the indicator with the lowest average, which is 4.04. Thus the perception of the ease of raising KUB chickens is easy to get the feed and the breeds.

Table 4. Variable descriptive analysis

Indicator Code	Min	Max	Average	Deviation Standard
X1	3	5	3.99	0.45
X2	3	5	4.28	0.51
X3	3	5	4.07	0.32
X4	3	5	4.05	0.40
X5	4	5	4.12	0.32
X6	3	5	4.12	0.40
Att	3.33	5	4.10	0.31
X7	3	5	4.17	0.43
X8	3	5	4.03	0.33
X9	2	5	4.05	0.40
X10	2	5	3.92	0.46
X11	2	5	3.64	0.65
X12	2	5	3.89	0.54
X13	3	5	4.11	0.48
SN	2.43	5	3.97	0.36
X14	4	5	4.10	0.30
X15	3	5	4.04	0.31
X16	3	5	4.06	0.31
X17	3	5	4.05	0.26
X18	3	5	4.02	0.34
X19	3	5	4.02	0.31
X20	3	5	4.09	0.40
X21	3	5	4.06	0.31
X22	4	5	4.11	0.31
X23	3	5	4.02	0.31
PBC	3.50	5	4.05	0.26
X24	3	5	4.01	0.45
X25	3	5	4.07	0.35
X26	3	5	4.08	0.39
X27	3	5	3,93	0.63
X28	3	5	4.07	0.29
X29	3	5	3.90	0.66
IAKC	3.33	5	4.01	0.36
X30	3	5	4.09	0.37
X31	3	5	4.08	0.33
X32	3	5	4,09	0.37
X33	3	5	4.14	0.40
X34	3	5	4.05	0.40

Indicator Code	Min	Max	Average	Deviation Standard
PBKC	3.00	5	4.09	0,32
X35	3	5	4.05	0.32
X36	3	5	4.12	0.47
X37	3	5	4.04	0.46
X38	3	5	4.16	0.40
X39	3	5	4.17	0.45
PERKC	3.40	5	4.11	0.33

Att = Attitude, SN= Subjective Norms, PBC= Perception of Behavior Control , IAKC=Interest in Adopting KUB Chickens, BKC=Perception of the Benefits of KUB Chickens, PERKC=Perception of the Ease of Raising KUB Chickens

Table 5. Variable descriptive analysis of KUB chicken adoption rate

Indicator Code	Min	Maks	Average	Deviation Standard
T1	2	5	3.58	0.97
T2	3	5	4.15	0.68
T3	2	5	3.73	1.14
T4	2	5	3.64	1.08
T5	3	5	4.24	0.94
T6	3	5	4.40	0.76
T7	1	4	2.74	0.85
T8	1	4	1.79	1.18
T9	1	4	2.13	1.44
T10	2	3	2.76	0.43
KUB Chicken Adoption Rate	2.10	4.5	3.32	0.73

Table 5 shows that the average in the KUB Chicken Adoption Rate Variable is 3.32 means that the adoption rate of breeders in the Central Java region reveal the high adoption classification (66.40%). The indicator that has the highest average is T6 (4.40), which is about the average number of livestock deaths reaching only 11-20 heads. Meanwhile, the T8 indicator, which is about the vaccination program carried out by breeders in controlling diseases, which was only carried out at the initial purchase of DOC that had been vaccinated by the seller, was an indicator with the lowest average (1.79). As a general description, most of the types of livestock developed are raising by taking DOC sources from the AnaKUB livestock association. The feed is mostly agricultural waste and commercial feed mixtures. In terms of utilization of local wisdom, some still use it occasionally, the feed used is bran, corn and oilcake. In terms of treatment for KUB chickens, if they get sick, they usually use traditional medicine. Most of the manure is not managed properly, it is only placed in the manure storage area. In terms of land ownership, most farmers use private land or sharecropping.

Evaluation of the measurement model

Evaluation of the measurement model is carried out in three stages, namely (1) convergent validity test, (2) discriminant validity test and (3) reliability test.

Convergent validity evaluation

Convergent validity is related to the principle that the manifest variables of a construct that should be highly correlated (Kartika et al. 2022), convergent validity is assessed based on the loading factor and the Average Variance Extracted (AVE) value. The rule of thumb used in the convergent validity test is that the loading factor value is greater than 0.7 and the AVE value is greater than 0.5 (Deborah Smith 2003; Latan 2015; Sons 2016; Ma et al. 2020).

This shows that all indicators in the research model have a loading factor that meets the criteria. So the next step is to evaluate the AVE value for each latent variable. The AVE value for each latent variable as seen in Table 7.

Table 6. Loading Factor Analysis

Indicator Code	AR	Att	SN	PBC	IAKC	PBKC	PERKC
T1	0.797	0.407	0.238	0.296	0.400	0.438	0.391
T2	0.761	0.285	0.199	0.229	0.293	0.337	0.358
T3	0.739	0.209	0.148	0.143	0.278	0.292	0.248
T4	0.775	0.257	0.109	0.160	0.262	0.297	0.314
T5	0.780	0.309	0.134	0.216	0.283	0.318	0.319
T6	0.741	0.320	0.270	0.205	0.345	0.356	0.331
T7	0.791	0.264	0.187	0.208	0.277	0.293	0.301
T8	0.821	0.456	0.332	0.350	0.435	0.425	0.525
T9	0.738	0.217	0.092	0.153	0.216	0.241	0.308
T10	0.735	0.193	0.142	0.087	0.221	0.254	0.177
X1	0.346	0.719	0.495	0.584	0.602	0.636	0.653
X2	0.550	0.714	0.570	0.465	0.642	0.659	0.658
X3	0.177	0.815	0.580	0.766	0.742	0.630	0.671
X4	0.142	0.753	0.566	0.703	0.675	0.568	0.546
X5	0.292	0.848	0.672	0.688	0.768	0.726	0.760
X6	0.373	0.831	0.586	0.578	0.728	0.691	0.666
X7	0.301	0.735	0.776	0.549	0.668	0.611	0.611
X8	0.199	0.614	0.773	0.714	0.607	0.536	0.529
X9	0.202	0.592	0.819	0.581	0.602	0.479	0.482
X10	0.173	0.518	0.817	0.476	0.501	0.415	0.386
X11	-0.014	0.346	0.705	0.412	0.442	0.279	0.324
X12	0.113	0.437	0.711	0.456	0.482	0.293	0.346
X13	0.326	0.649	0.780	0.513	0.654	0.583	0.550
X14	0.306	0.647	0.588	0.801	0.702	0.562	0.657
X15	0.254	0.666	0.545	0.872	0.727	0.648	0.596
X16	0.216	0.658	0.567	0.893	0.709	0.558	0.618
X17	0.248	0.689	0.617	0.884	0.716	0.651	0.642
X18	0.195	0.591	0.530	0.793	0.604	0.534	0.629
X19	0.134	0.663	0.518	0.795	0.621	0.621	0.653
X20	0.270	0.687	0.713	0.708	0.654	0.563	0.557
X21	0.178	0.619	0.545	0.813	0.624	0.555	0.579
X22	0.285	0.784	0.605	0.811	0.761	0.672	0.695
X23	0.221	0.590	0.462	0.819	0.621	0.621	0.561
X24	0.477	0.608	0.524	0.614	0.761	0.657	0.595
X25	0.422	0.669	0.514	0.705	0.786	0.747	0.620
X26	0.216	0.798	0.645	0.652	0.791	0.662	0.681

Indicator Code	AR	Att	SN	PBC	IAKC	PBKC	PERKC
X27	0.254	0.622	0.570	0.515	0.715	0.511	0.625
X28	0.249	0.737	0.621	0.769	0.790	0.711	0.692
X29	0.250	0.660	0.578	0.519	0.761	0.547	0.678
X30	0.312	0.780	0.533	0.695	0.766	0.862	0.671
X31	0.361	0.646	0.494	0.682	0.697	0.854	0.554
X32	0.372	0.752	0.576	0.623	0.761	0.886	0.685
X33	0.425	0.745	0.577	0.549	0.717	0.827	0.681
X34	0.384	0.542	0.358	0.499	0.543	0.757	0.550
X35	0.250	0.609	0.525	0.718	0.692	0.625	0.777
X36	0.354	0.686	0.461	0.526	0.656	0.530	0.776
X37	0.413	0.687	0.483	0.612	0.671	0.707	0.724
X38	0.348	0.695	0.571	0.582	0.669	0.570	0.817
X39	0.377	0.639	0.371	0.525	0.614	0.521	0.831

AR = Adoption Rate, At = Attitude, SN = Subjective Norms;PBC= Perception of Behavior Control; IAKC=Interest in Adopting KUB Chickens, PBKC= Perception of the Benefits of KUB Chickens, PERKC=Perception of the Ease of Raising KUB Chickens

Table 7. AVE Value Research Model

Variable	AVE
Interest in Adopting KUB Chickens	0.590
Subjective Norm	0.593
Perceptions of Behavior Control	0.673
Perception of Ease of Raising KUB Chickens	0.618
Perception of Benefits of KUB Chicken	0.703
Attitude	0.611
Adoption Rate	0.590

AVE= Average Variance Extracted

Table 8. Cronbach's Alpha Value and composite reliability research model

Variable	CA	CR
Interest in Adopting KUB Chickens	0.861	0.896
Subjective Norm	0.886	0.910
Perceptions of Behavioral Control	0.946	0.954
Perception of Ease of Raising KUB Chickens	0.844	0.890
Perception of Benefits of KUB Chicken	0.894	0.922
Attitude	0.871	0.904
Adoption Rate	0.923	0.935

CA= Cronbach's Alpha, CR= Composite Realiability

Table 7 shows that all latent variables in the research model already have an AVE value >0.5. the variable that has the smallest AVE value is the Interest in Adopting KUB Chicken and the Adoption Rate (0.590), while the variable that has the highest AVE value is Perception of Benefits of KUB Chicken (0.703).

Reliability evaluation

Reliability evaluation was carried out using Cronbach's alpha and composite reliability values. According to (Ghozali 2012), a latent variable must have a Cronbach's alpha value greater than 0.7 or composite reliability greater than 0.7. Cronbach's alpha (CA) value and composite reliability (CR) research model can be seen in Table 8.

Table 8 shows that all latent variables in the research model already have Cronbach's alpha values and composite reliability greater than 0.7. The variable that has the lowest value is Perceived Ease of Raising KUB Chickens with a Cronbach's alpha value of 0.844 and a composite reliability of 0.890. While the variable that has the greatest value is Perception of Behavior Control with a Cronbach's alpha value of 0.946 and a composite reliability of 0.954. It means the variables in the questionnaire are reliable.

Discriminant validity evaluation

The discriminant validity test is related to the principle that different constructs measurments (manifest variables) should not be highly correlated. Correlation testing between latent variables was carried out using the Fornel Lacker Criterion. A construct is said to be valid by comparing the root value of the AVE (diagonal Fornell-Larcker Criterion) with the correlation value between latent variables. The AVE root value must be greater than the correlation between latent variables. Following are the results of the Fornel Lacker Criterion for the discriminant validity test of the research modelFollowing are the results of the Fornel Lacker Criterion for the discriminant validity test of the research model.

The Forner-Lacker Criterion is shown in Table 9. The test results show that all the roots of the AVE (Fornell-Larcker Criterion) for each construct are greater than their correlation with other variables. Discriminant validity can also be assessed based on cross loading. The rule of thumb used in the discriminant validity test with a cross loading value greater than 0.7 (Latan 2015). Furthermore, the Cross Loading value for the research model shows that each indicator with its latent variables is greater than indicator with other latent variables. So it is concluded that Discriminant Validity had met the requirements.

Table 9. Research Model Forner-Lacker test results

Evaluation of structural models

Evaluation of the structural model is carried out by looking at the values of the coefficient of determination (R2) as well as the value of the path coefficient and the structural model equation .

Coefficient of determination

The results of calculating R2 for each endogenous latent variable are in Table 10. According to (Sarstedt 2014), the range of R2 values is from 0 – 1 , with a higher rate indicating a better level of predictive accuracy. The value of R2 is considered weak, moderate and strong if it shows a value of 0.19, 0.33 and 0.67 (Chin 1998).

Table 10 shows that the Adoption Rate Variable is weak because it is below 0.19, while the Interest in Adopting KUB Chicken and Attitude variables are classified as strong because it is above 0.67. The meaning of this value is that the exogenous variable that affects the Interest in Adopting KUB Chicken in the tested model, represents 0.870 probability of the interest in adopting KUB chicken, the exogenous variable that influences Attitude in the tested model, represents 0.806 probability of attitude. Meanwhile, at the Adoption Rate, it seems that there are many other variables that can influence it, because the R2 is only 0.168.

Path Coefficient (β) and Structural Model Equations

The path coefficient value (path coefficient) shows how strong the influence of a variable is on other variables (Wong 2013). The higher the path coefficient value, the stronger the effect is. The path coefficient value (β) is standardized in the range of values -1 to +1. Coefficient closer to +1 indicates a strong and positive relationship. While the coefficient is close to -1, it shows a strong negative relationship (Sarstedt 2014).

The results of calculating the path coefficient in the research model in Table 11 show that all latent variables have positive coefficient values. Based on the results of calculating the path coefficient value, the structural model equation is as in Table 12.

ζ_1, ζ_2, and ζ_3 Variables represent variables that are not included in the study. Not only to know which variables influence the dependent variable, the difference in the path coefficient can also be used to sequence variables based on their strongest influence. From the values in Table 12, it can be seen that the variable that has the most influence on Adoption Interest is Perceived Benefits of KUB Chicken. While the variable that has the most influence on attitude is the perceived ease of raising KUB chickens (Ammar 2016; Tan 2016; Putri et al. 2021).

	IAKC	SN	PBC	PERKC	PBKC	Att	AR
IAKC	0.768						
SN	0.748	0.770					
PBC	0.826	0.696	0.821				
PERKC	0.843	0.616	0.756	0.786			
PBKC	0.839	0.614	0.731	0.754	0.838		
Att	0.889	0.742	0.807	0.846	0.835	0.782	
AR	0.410	0.259	0.284	0.445	0.439	0.400	0.768

AR= Adoption Rate, At= Attitude , SN= Subjective Norms, PBC= Perception of Behavior Control , IAKC=Interest in Adopting KUB Chickens, PBKC=Perception of the Benefits of KUB Chickens PERKC=Perception of the Ease of Raising KUB Chickens

Table 10. R2 value of research model

Endogenous Variables	R-Square
Adoption Rate	0.168
Interest in Adopting KUB Chickens	0.870
Attitude	0.806

Table 11. Path coefficient value

Path	β
Benefits -> Attitude	0.458
Ease -> Attitude	0.501
Attitude -> Adoption Interest	0.212
Subjective Norm -> Adoption Interest	0.167
Behavior Control -> Adoption Interest	0.173
Benefits -> Adoption Interest	0.253
Ease -> Interest in Adoption	0.239
Adoption Interest -> Adoption Rate	0.410

Table 12. Structural Model Equation

Endogenous Variables	Equation
Adoption rate	0.410*Adoption interest +ζ_1
Adoption interest	0.212*Attitude + 0.167*Subjective Norm + 0.173*Behavior Control+ + Ease+ζ_2,
Behavior control	0.458*Benefit + 0.501*Ease+ζ_3

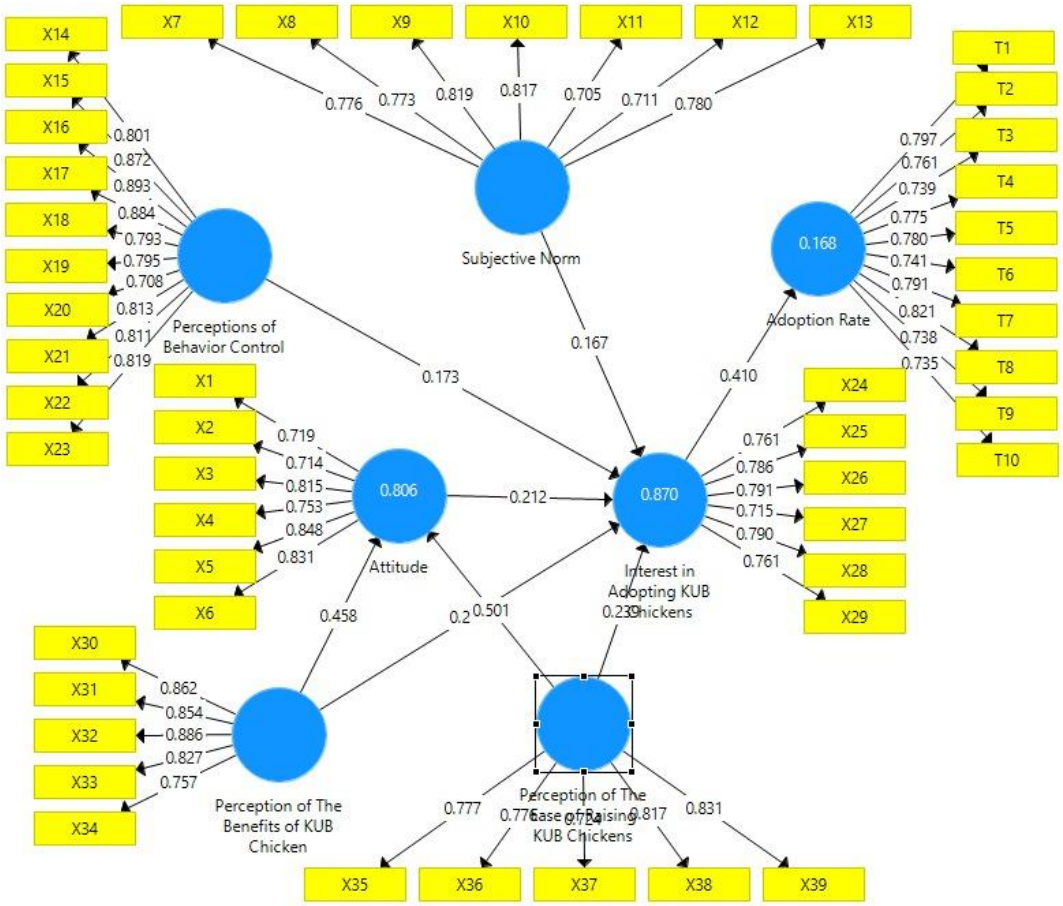

Figure 2. Results of the PLS Algorithm on the Path Model

Hypothesis test

This stage was carried out after the structural model evaluation stage was established and purposed to find out whether the research hypothesis proposed in this research model is accepted or rejected. The hypothesis is accepted if the t-statistics are above 1.96 and the path coefficient is above 0.1 (Ghozali 2012). The results of the hypothesis test can be seen in Table 13.

The estimated standard coefficients presented in Table 13. shows the direct effect of each variable attitude, subjective norm, perceptions of behavioral control, perceived benefits of KUB chickens, perceived ease of raising KUB chickens, interest in adopting KUB chickens and adoption rate of KUB chickens (Yazdanpanah et al. 2015). It is proved that the variable perception of the benefits of KUB chicken has a positive and significant effect on farmer attitudes (β =0.458, P-Value<0.000). Thus the H1 hypothesis in this study which states that an increase in the perception of the benefits of KUB Chicken can increase the farmer's attitude by 45.8% (Burhansyah 2013; Afolami et al. 2015). The perceived ease of raising KUB chickens has a positive and significant effect on farmer attitudes (β =0.501, P-Value <0.000). Thus the H2 hypothesis in this study which states the increase in perceived ease of raising KUB chickens can increase attitudes by 50.1%. The farmer's attitude variable has a positive and significant effect on the interest in adopting KUB chickens (β= 0.212, P-Value <0.049). Hypothesis H3 in this study shows that an increase in attitude can increase the interest in adopting KUB chickens by 21.2%. The subjective norm has a positive and significant effect on the interest in adopting KUB chickens (β= 0.167, P-Value <0.011). So the H4 hypothesis in this study which states that an increase in subjective norms can increase the interest in adopting KUB chickens by 16.7%/

Further results show that the variable perception of behavioral control has a positive and significant effect on the intention to adopt KUB chickens (β= 0.173, P-Value <0.013) (Nugroho et al. 2018; Mahardika et al. 2020). Hypothesis H5 in this study shows that an increase in perceptions of behavior control can increase the interest in adopting KUB chickens by 17.3%. Perceived benefits of KUB chicken have a positive and significant effect on the intention to adopt KUB chicken (β= 0.253, P-Value <0.013). Thus the H6 hypothesis in this study states that the perception of the benefits of KUB chicken has a positive and significant effect on

Table 13. Hypothesis test

Hipotesis	Path	β	T-statistics	P-value	Remark
H1	Benefits -> Attitude	0.458	3.643	0.000	Significant
H2	Ease -> Attitude	0.501	3.917	0.000	Significant
H3	Attitude -> Adoption Interest	0.212	1.973	0.049	Significant
H4	Subjective Norm -> Adoption Interest	0.167	2.557	0.011	Significant
H5	Behavior Control -> Adoption Interest	0.173	2.504	0.013	Significant
H6	Benefits -> Adoption Interest	0.253	2.502	0.013	Significant
H7	Ease -> Adoption Interest	0.239	3.607	0.000	Significant
H8	Adoption Interest -> Adoption Rate	0.410	5.203	0.000	Significant

β= path coefficient

the interest in adopting KUB chicken being accepted. So that the perception of the benefits of KUB chickens can increase the interest in adopting KUB chickens by 25.3%. The perceived ease of raising KUB chickens has a positive and significant effect on the interest in adopting KUB chickens (β= 0.239, P-Value <0.000)..

Thus the H7 hypothesis in this study states that the perceived ease of raising KUB chickens has a positive and significant effect on the interest in adopting KUB chickens being accepted. So that an increase in the perceived ease of raising KUB chickens can increase the interest in adopting KUB chickens by 23.9%. In the coefficient variable, interest in adopting KUB chicken has a positive and significant effect on the adoption rate of KUB chicken (β= 0.410, P-Value <0.000). Thus the H8 hypothesis in this study states that an increase in interest in adopting KUB chickens can increase the adoption rate of KUB chickens by 41.0% (Sirajuddin et al. 2017; Astarina 2019).

CONCLUSION

The adoption rate of breeders in the Central Java region, Indonesia is high adoption classification. This is influenced by the intention and attitude of adopting KUB chickens. Based on the results of this descriptive study, the variable with the greatest mean is the perceived ease of keeping the variable indicating the ease of raising KUB chickens and the lowest variable is the subjective norm variable. The combined results of path analysis (path) and regression analysis on the Structural Equation Modeling (SEM) technique, suggested that the TAM and TPB theories both have variables of a positive effect on the interest in adopting KUB chickens. In addition, the perceived benefits and the perceived ease of raising KUB chickens on the TAM theory have a very positive effect on the attitude variable on the TPB theory. Important people including family members have an important role in supporting the maintenance of KUB chickens, while extension workers have not contributed much in supporting breeders to adopt KUB chickens.

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