Factor Analysis on Consumer Behavior Intention to Use Homecare Application for Veterinarian Using Structural Equation Model

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Abstract

Presence of veterinarian or animal health workers who are easily accessible at a relatively affordable cost is needed by community. The health of farm animals requires special attention so that there is no problem of spreading disease with the intermediary of livestock such as avian influenza, Q-fever, and MERS. Handling and prevention of diseases in farm animals and pets requires knowledge from experts, namely veterinarian or animal health workers. Currently, short- and long-term solutions are needed related to animal health problems in Indonesia. One solution that can be considered is to take advantage of the advantages offered by technology. However, there are very minimum technology companies in the field of Health have focus on providing health care services and home visit health workers. In order to develop a service as a solution related to animal health in Indonesia, an integrated system to

facilitate the needs of health workers and on-demand veterinarians will be created on Mobile App. The apps will work to streamline supply and demand relationships in Indonesia's animal health industry. To understand demand and supply, this research will find customer intension using Structural Equation Model (SEM) methodology which involves Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT-2), and Theory of Planned Behavior. The result will become a contribution for web designer when creating Pet-care applications. The application will be available on android websites and platforms to speed up the time-of-service fulfilment for users. The output of this research is expected to result in a petcare mobile application can be a one stop solution for animal homecare.

Keywords
Animal health, homecare on-demand, mobile application, animal health supply and demand, integrated system.

1. Introduction
Owning a pet is now part of the lifestyle (Foreman-Worsley, 2021) Animals that can coexist with humans can be classified into domestic animals. Domestic animals can be classified into livestock and pets. Example of livestock are chickens, cows, goats, ducks, and others. While pets examples are cats, dogs, birds, fish, and others. The number of domestic animals has increased over time (Teletchea, 2019). The data indicated that the production of meat produced from livestock has increased 4-fold from 1961 to 2018. In addition, this is supported by a survey of pet ownership data showing that about 50% of survey fillers spread across 22 countries own pets (GfK, 2016). More details the percentage of each pet owned by respondents are: dogs (33%), cats (23%), fish (12%), birds (6%), and others (6%). The same trend also occurs in Indonesia as seen from the number of beef cattle production which increased by 55% from 2000 to 2020 (Kementan, 2020). Then, related to pets 67% of households have pets where Figure 1 shows the results of a survey of owners have a pet composition: cats (37%), birds (19.3%), goldfish (15.6%), and dogs (15.5%), and the rest are other pets. Research on human-animal relationships shows that pets are capable of being social and emotional support that helps a person deal with difficult situations. Research from Allen et al. (2001) and Hodgson et al. (2015) reporting one of the positive effects of pet ownership is the presence of more stable blood pressure indications and increased motivation to exercise (Figure 1).
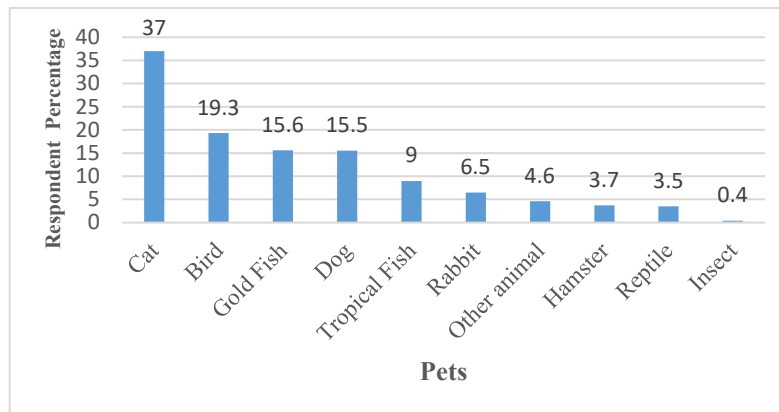

Figure 1: Survey of Pets in Indonesia 2018

Although it is reported to have many positive impacts, animal and human interactions also need to pay attention to factors that can have a negative impact. One important factor that needs to be considered for animal breeders and pet owners is maintaining animal health. The health of livestock is an important factor in maintaining price stability and availability of food supply chains. Food resilience derived from animals such as meat, eggs, and milk consumed by the community will be disrupted if there are problems in the health of livestock. The health of livestock requires special attention so it is not causing problems spreading disease with the intermediary of livestock such as avian influenza, Q-fever, and MERS. This also applies to pets who are susceptible to being an intermediary for infectious diseases such as rabies, herpes B, toxoplasma, lyme, and salmonellosis. However, the treatment and prevention of diseases in farm animals and pets often requires knowledge from experts, namely doctors or animal health workers. Therefore, the existence of doctors or animal health workers who are easily accessible at a relatively affordable cost is needed by the community.

Current conditions indicate community access and the fulfilment of needs related to veterinarians are inadequate. The veterinary profession until now can be said have not received enough attention from the public. Not a few people who consider the function of veterinarians only limited to healing sick animals. On the other hand, the growth of pet-related businesses such as pet stores, pet care salons, and pet food sales is growing. However, this development has not been accompanied by sufficient supply to meet the needs of veterinarians where it is reported that the number of veterinarians in Indonesia is currently insufficient (PDHI, 2011). The condition of the COVID-19 pandemic makes access to animal health workers increasingly limited. Animal owners are mostly concerned about their pet-related things such as food supplies, access to veterinarians and medicine, and new habit (Applebaum, 2020). Currently, short-term and long-term solutions related to animal health problems in Indonesia is needed. One solution that can be considered is to take advantage of the advantages offered by technology. The trend of smartphone usages and access to various services through online media has become a new standard in this Era of Industry 4.0. In addition, currently 5G communication network connectivity has entered Indonesia and will become a promising new communication standard. However, there are very minimum technology companies in the field of Health have focus on providing health care services and home visit health workers. In order to develop a service as a solution related to animal health in Indonesia, an integrated system to facilitate the needs of health workers and on-demand veterinarians will be created on Mobile App. The apps will work to streamline supply and demand relationships in Indonesia's animal health industry. To understand supply and demand, this research will find customer intension using Structural Equation Model of Technology (UTAUT-2) (Venkatesh, 2003) and Theory of Planned Behavior. (TPB) (Ajzen, 1985). TAM is one of the most frequently used models in studies that examine the factors that determine whether a (SEM). The SEM model is widely used to analyse factors related to consumer desire to use a technology including the Technology Acceptance Model (TAM) (Davish, 1989). Unified Theory of Acceptance and Use technology or system is accepted by consumers (Marangunić and Granić, 2015). Based on TAM, behavior that shows an intention to use a technology / Behavioral Intention to Use (BI) is theoretically influenced by the user's attitude towards technology / Attitude Toward Using (ATT) and the perceived benefits of the technology / Perceived Usefulness (PU). Where in more detail is described in Figure 2 that ATT and PU are influenced by the assumption of ease of use of technology / Perceived Ease of Use (PEU). This study combines two models, namely UTAUT-2 and TPB.

2. Methodology

This study develops a research framework based on a Structural Equation Modelling (SEM) approach to analyses public interest in using applications for homecare services in animal health, especially in big cities in Indonesia. This study pays attention to latent factors that are difficult to measure using simple quantitative methods. Factors to be considered includes the performance, system utilization, social environment, influence of price, to conditions that may be facilitated by discounts to attract public interest (Figure 2).
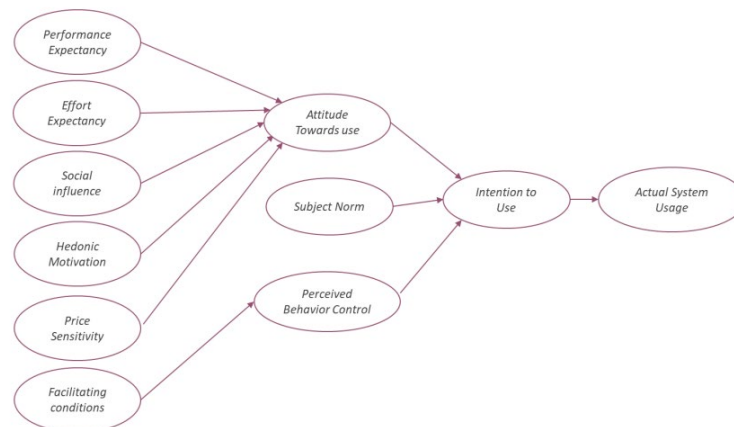

Figure 2. SEM Framework for analyses voice of customer on application

Performance Expectancy (PE) is a person believes that adopting the application will help them benefit from Telemedicine. In this study, performance expectancy related to the customer's belief that Telemedicine will be helpful in their daily life.

Effort Expectancy (EE) expresses the ease of system utilization (Venkates et al., 2003). Similar studies revealed that EE has a statistically significant relationship with costumer's purchase intention.

Social Influence (SI) is defined as how an individual perceives that other believe they should use the new system, in this case, the Telemedicine application. SI reported has a significant influence on the behavioural intention of adopting a system.
Hedonic Motivation (HM) is defined as the enjoyment or pleasure derived from using technology. According to studies, HM has been shown to play an essential role in determining technology acceptance and use.
Price Sensitivity (PS) construct expresses as a condition where end user is aware that costs must be incurred to attain a benefit from a system. This variable has a positive value when the user feels the benefits obtained are more significant than the costs incurred so that it has a good impact on the user intention.

The most common model utilized to verify consumer's adoption on using a technology innovation is the TPB theory. TPB's construct that behavioral intention is controlled by three main constructs: attitudes, subjective norms, and perceived behavioral control (Table 2). These three main constructs of TPB incorporate with facilitating conditions in the UTAUT2 theory were utilized to examine consumer's adoption of Telemedicine. The first determinant of user's intention to adopt Telemedicine is attitude, which refers to consumer's attitudinal convictions that cause favorable behavior for consumers to particular result was influenced towards the benefits of the results.

PBC refers to the perceived ease or difficulty of performing the behaviour, and the amount of control one has over attained the goals from said behaviour. Behavioural intention captures how hard people are willing to try to perform a behaviour. In the TPB, behavioural intention is the most influential predictor of behaviour. Attitude toward Use (ATU) expresses how an individual reacts towards an object or system that can be positive or negative.

Subjective norm (SN) is a condition where individuals' perception of the individuals considered important will affect their behaviour . Subjective norms represent the part of TPB that reflects social influences. Several researchers have argued that the subjective norm component of the TPB is inadequate and rarely predicts intention, and so have removed it from the analysis. Referring to the two previous statements (Table 1, Table 2), therefore, this subjective norm construct is excluded in this research model.

According to the conceptual framework, the hypotheses developed such as follow:
H1:　　Performance Expectancy (PE) has a significant positive relationship to attitude Toward use (ATU) to intention to use Telemedicine.
H2:　　Effort Expectancy (EE) has a significant positive relationship to attitude Toward use (ATU) to intention to use Telemedicine.
H3:　　Social Influence (SI) has a significant positive relationship to attitude Toward use (ATU) to intention to use Telemedicine.
H4:　　Hedonic Motivation (HM) has a significant positive relationship to attitude Toward use (ATU) to intention to use Telemedicine.
H5:　　Price Sensitivity (PS) has a significant positive relationship to attitude Toward use (ATU) to intention to use Telemedicine.
H6:　　Facilitating Condition (FC) has a significant positive relationship to Perceived Behavior Control (PBC) of intention to use Telemedicine.
H7:　　Attitude Toward Use (ATU) has a significant positive relationship to Intention to use Telemedicine.
H8: Subjective norms has a positive effect on influencing consumer's intention to use the Telemedicine.
H9: Perceived behavioral control has a positive effect on influencing consumer's intention to use the Telemedicine.
H10: Intention to use Telemedicine has a positive effect on influencing usefulness of the Actual System.

Table 1. Descriptive statistics of the respondents

Measure	Value
Gender	Male
	Female
Age	below 25 years old
	25-34 years old
	35-55 years old
	above 55 years old
	below IDR 4 million
	IDR 4-10 million
Income per month	IDR 10-20 million
	above IDR 20 million
	Never
	1 to 2 times
Telemedicine Usage Frequency per month	3-6 times
	7-12 times
	More than 12 times
	Daily
How much time do I usually spend	Less than 1 h
using telemedicine platform?	1 to 2 h
	3 to 4 h
	More than 4 h

Table 2. Theoretical Framework Theory of Planned Behavior for Online and Animal Health Transaction

Latent Factor	Code	Indicator	Source
	PE1	1. I find Telemedicine useful for the health of my pets.	
Performance Expectancy (PE)	PE2	2. Telemedicine allows me to easily access veterinarian or animal health workers.	modified from Aggarwal et al., 2019, Armitage et al., 2001, Choi, 2015.
	PE3	3. Telemedicine safe my time to look for veterinarian or animal health workers.	Oliveira, 2014
	PE4	4. Using telemedicine increase needs to achieve my demand about animals related	
Effort Expectancy (EE)	EE1	5. Telemedicine is easy to use	
	EE2	6. Learning how to use telemedicine is easy for me	modified from Yang, 2015
	EE3	7. My interaction with the platform is clear and understandable	
	EE4	8. It is easy for me to become skilful at using Telemedicine	
Social Influence (SI)	SI1	9. My peers who influence my behaviour think that I should use Telemedicine	
	SI2	10. My friends who are important to me think that I should use Telemedicine	(Aas, 2019)
	SI3	11. My instructors, whose opinion that I value, prefer that I use Telemedicine	
	SI4	12. Telemedicine is a status symbol in my environment	
Hedonic Motivation	HM1	13. Using Telemedicine is fun	modified from Indrawati, 2016.
	HM2	14. I enjoy using Telemedicine	

(HM)			
	HM3	15. Using the Telemedicine is very entertaining	
	HM4	16. The use of the Telemedicine platform amuses me	
Price Sensitivity (PS)	PS1	17. Price captured on Telemedicine is worth more than the time come to veterinarian	Abrahão, 2016.
	PS2	18. Telemedicine gives me the opportunity to decide about my demand	Konuk, 2015
	PS3	19. Telemedicine price suits my income for pets health	
	PS4	20. Price that suits my budget can be provided by the Telemedicine platform	
Facilitating Conditions (FC)	FC1	21. I have the resources to use Telemedicine	
	FC2	22. I have the knowledge to use Telemedicine	Alshehri, 2012
	FC3	23. A specific person (or group) is available to assist when difficult arise with using the Telemedicine platform.	
	FC4	24. There is compatibility between the platform that I use.	
Attitude Towards Use (AT)	AT 1	25. Using Telemedicine for animal health transaction is a good idea	modified from Acheampong,2019 and Park, 2007.
	AT 2	26. For me using Telemedicine for animal health transaction would be a wise idea	
	AT 3	27. I like to use Telemedicine for animal health online transaction	
Subject Norm (SN)	SN 1	28. People important to me would think that using Telemedicine for animal health online transaction would be a wise idea	Acheampong, 2019.
	SN 2	29. People who influence my behavior think I should use Telemedicine for animal health online transaction	
	SN 3	30. People whose opinions I value prefer that I use Telemedicine for animal health online transaction	
Perceived Behaviour Control (PBC)	PBC 1	31. I have the resources necessary to use Telemedicine for animal health online transaction	
	PBC 2	32. I have the knowledge necessary to use Telemedicine for animal health online transaction	
	PBC 3	33. I have the ability to use Telemedicine for animal health online transaction	
Intention to Use (IU)	IU 1	34. I will always try to use Telemedicine for animal health online transaction in my daily life	
	IU 2	35. I plan to continue to use Telemedicine for animal health online transaction frequently	
	IU 3	36. I intend to continue using Telemedicine for animal health online transaction frequently	
Actual System Usage (US)	US1	37. I use the Telemedicine platform frequently for my pets health.	
	US2	38. I use many functions of Telemedicine.	
	US3	39. I depend on the Telemedicine.	
	US4	40. I use the Telemedicine platform as a reference tool for my pets health.	

3. Results and Discussion

In Indonesia, high internet usages and society tend to use telemedicine application for health consultation especially during pandemic. The current telemedicine available is focus to people's health. However, we found none for animal health telemedicine.

Presence of veterinarian or animal health workers who are easily accessible at a relatively affordable cost is needed by community. One solution that can be considered is to take advantage offered by technology. In order to develop a service as a solution related to animal health in Indonesia, an integrated system to facilitate the needs of health workers and on-demand veterinarians will be created on Mobile Apps. The apps will work to streamline supply and demand relationships in Indonesia's animal health industry. This research is expected to result in a mobile

application can be a one stop solution for animal homecare. Two methodologies namely UTAUT and TPB is combined and some hypotheses developed according to conceptual framework, such as follow:

H1:   Performance Expectancy (PE) has a significant positive relationship to attitude Toward use (ATU) to intention to use Telemedicine.

H2:   Effort Expectancy (EE) has a significant positive relationship to attitude Toward use (ATU) to intention to use Telemedicine.

H3:   Social Influence (SI) has a significant positive relationship to attitude Toward use (ATU) to intention to use Telemedicine.

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H5:   Price Sensitivity (PS) has a significant positive relationship to attitude Toward use (ATU) to intention to use Telemedicine.

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H8: Subjective norms has a positive effect on influencing consumer's intention to use the Telemedicine.

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H10: Intention to use Telemedicine has a positive effect on influencing usefulness of the Actual System.

4. Conclusions

The research has developed framework, target respondence, analysis what will happen on launching telemedicine Mobile Apps for animal health. The conceptual model presented and examined in this research by integrating UTAUT and TPB. In order to test the hypothesis, questionnaire questions need to be shared to some respondent.

The result of the questionnaire will be elaborated as a recommendation to launch the Telemedicine application for animal health. In addition, the research need further study after the Telemedicine application has been launched to public. The proposed SEM methodology can be applied for more deep analysis on customer behavior.

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