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The Awareness of Fish Welfare among Fish Farmers in Kelantan

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DECLARATION

I hereby declare that the work embodied in this report is the result of the original research and has not been submitted for a higher degree to any universities or institutions.

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Student
Name:
Date:

I certify that the report of this final year project entitled "The Awareness of Fish Welfare Among Fish Farmers in Kelantan" by Siti Nurainsyah Binti Mat Nasir, matric number F15A0215 has been examined and all the correction recommended by examiners have been done for the degree of Bachelor of Applied Science (Agriculture Technology) with Honours, Faculty of Agro-Based Industry, Universiti Malaysia Kelantan.

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Supervisor
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ABSTRACT

Nowadays, aquaculture industries have expanding widely as well as its consumption. In order to fulfil the requirement that has been stated in guidelines set of The Good Aquaculture Practice for Fish Farming (GAP-FF), some entrepreneurs has neglect the most important factor that needed to be alert which is fish welfare. However, some research has stated that fish welfare is impossible to execute due some challenges especially when it is involving financial factor. Thus, this study is conducted to identify the awareness of fish welfare among fish farmers in Kelantan and covers Theory of Planned Behaviour as independent variables which are behavioural attitude, subjective norms and perceived behavioural control. A total of 83 respondents have been selected for this study through simple random sampling. The data obtained is analysed using SPSS software. From the results, it has shown that behavioural attitude has the highest relationship to the awareness of fish welfare. Hence, it is proven that fish farmers in Kelantan do aware about the welfare of the fish based on significant relationship between behavioural attitude, subjective norms and perceived behavioural control . Thus, this study is recommended apply it on more larger population so that the precise results can be obtained

Keywords: fish welfare, Theory of Planned Behaviour, behavioural attitude, subjective norms, perceived behavioural control, fish farmers.

Kesedaran tentang kebajikan ikan di kalangan peternak ikan di Kelantan

ABSTRAK

Pada masa kini, industri akuakultur berkembang dengan pesat setara dengan jumlah penggunaannya. Disebabkan hanya kerana ingin memenuhi keperluan yang telah dinyatakan dalam garis panduan yang ditetapkan Amalan Akuakultur yang Baik untuk Perikanan Ikan (GAP-FF), sebahagian usahawan telah mengabaikan faktor yang paling penting yang perlu diberi perhatian yang merupakan kebajikan ikan. Walau bagaimanapun, beberapa kajian telah menyatakan bahawa kebajikan ikan adalah mustahil untuk dilaksanakan atas beberapa cabaran terutamanya apabila ia melibatkan faktor kewangan. Oleh itu, kajian ini dilakukan untuk mengenalpasti tahap kesedaran tentang kebajikan ikan di kalangan penternak ikan di Kelantan dan merangkumi Teori Perancangan Yang Dirancang sebagai pembolehubah bebas yang merupakan sikap tingkah laku, norma subjektif dan kawalan tingkah laku . Sejumlah 83 responden dipilih untuk kajian ini melalui persampelan rawak mudah. Data yang diperoleh telah dianalisis menggunakan perisian SPSS. Dari hasilnya, ia telah menunjukkan bahawa sikap tingkah laku mempunyai hubungan paling tertinggi dengan kesedaran kebajikan ikan. Kajian ini membuktikan bahawa penternak ikan di Kelantan mempunyai tahap kesedaran yang tinggi tentang kebajikan ikan berdasarkan hubungan signifikan tarhadap sikap tingkah laku, norma subjektif dan kawalan tingkah laku . Maka, kajian ini dicadangkankan untuk diteruskan kepada populasi yang lebih besar untuk mendapatkan hasil kajian yang lebih tepat.

Kata kunci: kebajikan ikan, teori perancangan yang dirancang, sikap tingkah laku, norma subjektif , kawalan tingkah laku, penternak ikan.

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LIST OF ABBREVIATION AND SYMBOL

TPB	Theory of Planned Behaviour
FAWC	Farm Animal Welfare Council
KMO	Kaiser-Meyer-Olkin
p	Significant value
r	Correlation
%	Percentage

CHAPTER 1

INTRODUCTION

1.1 Research background

Nowadays, the aquaculture industry has growing widely whereas the number of fish farmers also increase too. However, in this expanding industry, farmers only focus the based aspects that stated in guidelines set of The Good Aquaculture Practice for Fish Farming (GAP-FF) that emphasizes five important components which are farm structure and maintenance, farm management, farming and packaging practices, fish health management, farm environment and human health and safety at work (Agri-Food and Veterinary, 2014). Realize or not, the guidelines itself show components in fish welfare whereas it comprises the factor that consist in animal welfare component which includes the comfortability and health.

Plus, they are also concerning about the consumers demands and profit only and started neglecting the actual attention that farmer need to be alert in which is fish welfare. Since no distinct proves shows that fish need to be considered just like any other living organisms make this issue out from entrepreneurs concern. According to Huntingford,*et al.* (2006), there is no agreement on how to weight the concern of fish

welfare make it against the human interest involvement but only through ethical framework exist that suggest how this might be approached.

In Malaysia, the issues of animal welfare has been highlighted by authorities especially from Department of Veterinary Services that emphasize the livestock such as ruminant, poultry and swine (MS 2027:2006) but somehow no issues regarding of fish welfare is comprises whereas the fish also considered as reared animals that need to be ensure its welfare. Same principle also can be apply in "humane" slaughter to fish as an ethical practices in which it has been applied to poultry and mammals (FAWC report, 1996).

Many current opinions said that fish can potentially be suffered. Thus, fish welfare does mean something and it needs to be considered the kind of impacts that human activity have on fish welfare since they interact and these is matter (Huntingford *et al.* 2006). Usually human impact rather very general and unintentionally for example widespread anthropogenic environmental degradation seriously can compromise the welfare of many fish. In addition, the more specific and intentionally, the scientific research itself can compromise welfare in all three senses which is dealt by various national, international legislation and codes of good practices.

Above all, the human factors matters towards the welfare of fish cannot be stated statistically the way it works as it is beyond the researcher's knowledge. But from the research itself it can demonstrate relevant issues that considering aquaculture industry makes the public aware of the issue. In addition, this context show practically and ethical reasons on why fish welfare need to be an issues. Practically, aquaculture industry should be engage with fish welfare since farmers know well that good production and good fish usually comes from a good welfare whereas ethically, industry

should be engage with welfare of farmed fish since it involving the moral obligation to the exploited fish.

Measuring of physical condition is considered as major indicator towards fish welfare. The physical appearance like the presence of injuries or disease, nutritional status, metabolic status, hormonal status, brain biochemistry growth, normally-working immune and reproductive systems and up-regulation of particular genes (Ribas et al. 2004) can indicates the condition of fish. Even though no simple relationship towards stress and welfare, stress itself can give similar response to indicate the health of fish. Behavioural studies also can be a measurement of the fish comfortability likely stated in animal degree of freedom, that expressing as natural preferences as guidelines. The test will identify the circumstances that may promote or impair the welfare (Dawkins, 1998). For example, juvenile damselfish will learn to swim through simple maze for the opportunity to display aggressively to territorial neighbor damselfish (Rasa, 1971). Though test is not covers the welfare information fully, but it can give opportunity to exchange aggressive displays that reward in promoting welfare.

Current interest that evolved fish welfare is the potential of fish to get pain, suffer and stress when they interacted with human. However, Rose (2002) has questions the reliability of accusation that fish can feel pain and suffer. It is said that fish brains is not completely developed to feel pain like human. He insist of his argument that it is requires the presence of highly developed neocortex (the outermost, convulated part of the mammalian forebrain) and also the frontal lobe cortex that needed to undergoes the process. He also concludes that pain only exists in human and higher primates due to the highly developed neocortical structures. In addition, it is just a view that is supported by many people that involved in fish pain studies (Broom 1991, Bateson 1992, Gentle 1992, Molony et al. 2002).

1.2 Problem Statements

As consumers have become more concerns about their food supply daily, a counter-wave regarding their food source has become to interest as to the conditions how the food is produced. This also focused about fish welfare in farmed fish in which it has opened the public inspection and interest as the development of the industry. However, fish welfare still ongoing debates around the world since many issues have been encounters as problems that preventing its implementation in aquaculture industry worldwide (Huntingford *et al.* 2006).

The first problem related to awareness of farmed fish welfare is water quality (Craig, Ellis, North and Turnbull 2008). In farmed fish industry, the quality of water is regard as primary consideration since it has the potential to affect fish development. Generally, fish is encounter with water intimately through the surface of the gills and skin make the fish exposal to low quality of water could bring a high risk for a long time-impact or immediate death. This is due to the reason of the function of water as oxygen supplier the needed for life being to survive, helps to dilutes and removes unwanted toxic inside the body and also gives support against gravity. According to Craig *et al.* (2008), the low quality of water parameters can affect the physiology, growth rate and efficiency, changes in pathological and damage the organs or in serious cases it can lead to death of the fish. There are also some cases that linked to increase of disease susceptibility but still in ongoing debates due to lacking of scientific evidence to support the cause. However, RSCPA (2018) has stated that the temperature, pH, and oxygens level include in water parameter quality and have a big impact on fish welfare. The level of water parameter must be work well since too high or low the level could risk the fish lives. For example, increasing the temperature of water can enhance the growth of smaller fish, but growing too fast over the correct time will lead to spinal

deformities. Deformities of fish can lead to growth reducing (Miyashita et al. 2000), reduced feeding (Dykova et al. 1998) and feeding ability (Kurokawa et al. 2008), increased susceptibility to infection (Turnbull et al. 1996), lead to mortality (Cobcroft and Battaglene 2009) and also can affect the market value of the fish (Michie, 2001).

Next, second issue that can become a threat in welfare of fish is disease and treatment. According to Tony (2008), he stated that the presence of disease in fish population usually lead to high implication to welfare of the fish. The appearance of moribund fish at the surface of water is the clinical sign of disease occurrence. But, besides the number of death fish that threat the profit income, the farmers also need to worry about the condition of healthy fish that is still not affected by the disease. This is due to the death fish itself can create a new disease that can affect the healthy ones and violate the welfare. So, the indication of removing the death and dying fish has been taken to overcome the problem but due to constraints of financial and management make it impossible to do it constantly.

Moreover, the presence of wild species that invaded the farm also become a threat and hard to vanish and if they are infected by disease, it can create an ethical dilemma over the fish stock. In addition, the treatment indication is done usually by food withdrawal. It may help to lower the metabolism of slowing the rate of disease development. But, it normally brings negative impact rather than positive to welfare of fish. As well as medicine, there are medicine provided for a few diseases but with continuous implementation will result resistance to respond to the disease and simultaneously increases the dosage of use which by means the financial requirements also will increase and burden the farmers. Then, another problem is the effect on rate of production when they execute fish welfare requirements. This is due to behavioural and physiologic stress response in reduction of fish population in farm (Bianca, 2009). The

stress level can be dangerous than pathogenic invaders. Fish will start attacking the same species and flee to hide before exchanging into submissive postures and (physiological) stimuli the endocrine response to stressors and to the extent cannot be determine as there is lack of knowledge to indicate whether it is stress or sufferance (Bianca, 2009). Due to the issue, fish welfare can be a solution to increase the productivity in aquaculture industry as the monitoring stress and physiological level contribute to the signalling the risk occurs and steps of prevention will be taken to avoid severe consequences of distress (Bianca, 2009). Thus, stress level can be as indicator to assess the awareness of fish welfare.

1.3 Objectives

1.3.1 General Objectives

The main objective is to collect data on awareness of fish welfare among fish entrepreneurs in Kelantan that might be involving several areas.

1.3.2 Specific Objectives

To be more details, the objectives of this study are:

1. To identify the awareness of fish welfare among fish entrepreneurs in Kelantan.

2. To identify the behavioural attitude, subjective norms and perceived behavioural control relationship towards fish entrepreneurs in Kelantan.

3. To determine the most influencing factor towards the awareness of fish welfare among fish farmers.

1.3.3 Research Questions

1. Did the fish farmers in Kelantan aware about the fish welfare?

2. Do behavioural attitude, subjective norms, and perceived behavioural control can influence fish farmers in Kelantan?

3. What is the most influencing factor that makes farmers in Kelantan aware about the fish welfare?

1.4 Scope of Study

The scope of this study was to determine factors that influencing fish farmer's awareness to practice fish welfare. A survey studies would be carried to determine the factors that influence the awareness of fish welfare according to the Theory of Planned Behavior. The location of study will be done in Kelantan states that comprise three districts which was Jeli, Tanah Merah and Machang. The survey data would be analyzed for optimization study using descriptive study and simple random sampling. The relationship between the research variable would be investigated in order to determine the factor influencing the awareness of fish welfare among fish farmers.

1.5 Significance of study

The aim of this study is to identify the awareness of fish welfare among fish farmers in Kelantan throughout the distribution of questionnaires to respondent respectively. As for researcher, a clear scope of focus and understanding will be obtained as the findings progress run. In addition, the aim of this study is to know how deep the understanding of the farmers towards the implementation of fish welfare on their farm. Based on the information, it can gives knowledge to researcher about challenges and problem that limit the farmers to breed the fish that follow the exact

guidelines and rules that provided from Division of Fisheries and as well as legislation. Perhaps, the findings can give the chances to students of animal husbandry programme to be an extension agent in the future. They can help to figure out about how to develop implementation of fish welfare ethic in a proper way with affordable financial requirement.

1.6 Limitation of study

The purpose of this study is to examine the factor that related to awareness of fish welfare among fish entrepreneurs in Kelantan. However, the size of Kelantan state make the study impossible to covers the entire district due to several factor that such as time, manpower and transportation. Hence, only three districts in Kelantan that have mostly fish farmers are chosen which covers areas in Jeli, Tanah Merah and Machang. This selection will help researcher to obtain their survey easily since lacking of manpower make it impossible to diversify the population and samples.

CHAPTER 2

LITERATURE REVIEW

2.1 Animal welfare

According to Felicia and Sunil (2008), the welfare can be define that identifying animal are in good states and welfare which follows one of the three conditions applies; 1.The animal can adapt to its environment and is in good health, with all its biological system working appropriately; 2. The animal is able to lead a natural life, expressing the same kinds of behaviour as it would in the wild, and is able to meet what are often called its behavioural needs; 3. The animal is free of negative experiences such as pain, fear and hunger and has access to positive experiences, such as social companionship.

Animal welfare is a sense that is commonly observed concern of humans to situations where animal happens to be suffering (Alistair, 2008). There is a significance debate that relates to the animals' mental state or degree of sentient (Alistair, 2008) in which the possible views stated that animals may experience feelings similarly like humans make it worth to respect them and treat them as the way they deserved referring to the 'five freedoms' requirement (FAWC, 1996). Hence, by implementing animal welfare, it can encourage for a good management and health in farming activities as well as the increase of productions.

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Since the development of animal welfare has become popular nowadays, the first step of protection legislation is introduced to ensure that animal welfare practices are taken seriously by community. The legislation is focusing on animal cruelty and protecting the animals in broader aspects (Alistair, 2008) whereas the legislation has stress the importance of animal welfare due to the animals is also sentient just likely humans. Meanwhile, legislation in UK and Europe has stated an argument that stated only the vertebrates are sentient while invertebrates are not. However, this argument is promising the act covers in invertebrates to show that they also experience the same feeling just like others (Alistair, 2008).

2.2 Fish Welfare

Animal welfare issues has become public attention nowadays as they are considered to have feelings as well as they can shows animatedly distress and discomfort by making sound or unusually behaviour such as goat and cattle. There are some cases they can show stress from their body appearance such as bruising or weak body. However, all this traits do not appear in fish and other marine lives. Bianca (2009) stated that fish is not considered as sentient animals as it is not belong to hot-blooded animals make it less important to the community tradition as well as their inability to make sound evoking the assumption of heartless animal. Fish welfare is hard to achieve since their cognitive understanding linking between physical and mental cannot be distinguished. The absent of neocortex organ that exists in human as stimulus to cognitive response make the argument that fish do not feel any reflexes-like response to show pain and stress (Huntingford *et al.* 2006). Even though the fish brain are smaller, but it also functioning the same way as another organisms by all means fish

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also encounter pain and stress stimuli but only in different degrees make fish welfare also need to be taken care same level as another animals.

In addition, achieving the fish welfare can be done by fulfilling the 'five freedom' that covers all the animals' needy (Bianca, FAWC, 1996). The first freedom is applying freedom of hungry and starvation in which the diet must be given according its requirement for growth. The second freedom is applying freedom of comfortable whereas the water must be in a good parameter (dissolved oxygen, pH, and contaminant), good light intensity, and suitable temperatures. Third freedom is freedom of pain and injuries which applies in preventing infection from pathogen by good sanitation management. The fourth freedom is freedom of normal behavior that gives animal to express their selves comfortably. Lastly, degree of fear and stress that applies in a gentle and adequate handling procedures. On the other hand, since fish welfare are hard to achieve, veterinarian and biologist needs to play their roles in helping towards achieving it as it covers all the ideas from various field such as ethics, law, behavioural biology, neurophysiology and neuropharmacology, endocrinology, immunology, aquaculture research, water chemistry and veterinary medicine (Huntingford *et al.* 2006). The involvement of expertise will generate a better understanding regarding fish welfare.

2.3 Theory of Planned Behavior

There are many theories that can be applied in social study and research. Hence, out of available research of the model, Theory of Planned Behaviour is chosen to predict the awareness of fish welfare among fish entrepreneurs since this theory is related to attitude and behaviour in certain situations (Ajzen & Fishbein, 1980). The

purposes of this theory are to relate between the ideas and prediction of the outcome in attitude and behaviour perceptive (Marie, 2017).

According to the theory, it has stated that there are three variables need to be considered as guidance to indicate human behaviour. Thus, it is the believing the outcome of the behaviour and evaluations, believing the normative expectations of others and motivation to influence with the expectations and as well as influence of the behaviour and its perceived power of the factor. All three variables above covers aggregate of behavioural attitudes, subjective norms and perceived behavioural control respectively.

With the combination of the variables, it can give control to the formation of the questions of the research since the more favourable the attitudes and subjective norms as well the greater perceived behavioural control will lead to the greater person's intention to perform. Thus, it will give enough indication of degree of actual control over the behaviour and can be predict to carry out the intentions when the chance is given. From that, it can be an indication since the intentions itself is assumed to be the behaviour's characteristic. However, due to difficulties that pose in behaviours determination may affect the volitional control, the consideration of using perceived behavioural control is added to intention due its capability that serve as actual control and contribute to the prediction of the behaviour questions.

Behaviour attitudes can be defined a relatively enduring organization of beliefs, feelings, and behavioural tendencies towards socially significant objects, groups, events or symbols" (Hogg, & Vaughan 2005, p. 150) or in other words it is the intention of individuals that that reflects its attitude and actions as well as their believing. Deriving from the definition, behavioural attitudes are largely reflects the intention and perception of that can predict an action of individuals as well as its perceived and

cognitive beliefs. Ajzen (1991) believes that behaviour of the individuals can be a link to behaviour and the outcome that expected in a research since the behavioural beliefs can influence directly on the attitudes towards the research. It is expected to have a positive outcome towards the behaviour if the outcome is favourable by individuals that can also influence the likelihood of the performance. Generally, the behavioural determination is likely depends on favourable or unfavourable individuals perception and beliefs.

TPB also stated about the subjective norms in which what the individuals is exposed to can influences the intentions. Ajzen (1991) said that generally, by nature, a social creature which is recognition of man being will give positive impact to the intentions. It is due to whatever the decision is made by the society, is accepted and no doubt will exist. Furthermore, the more favourability of society towards an act, the greater individuals opinion in believing the behaviour with help of society in shaping by the extent of approval (and disapproval) by family, friends, co-workers, the important person in life as well as consumers. Theoretically, determining the actions and behaviour can be easy as pie if it is solely done by individuals. However, due to the existence of internal and external factor at the play which makes the subjective norms determination is needed to determine the intention towards the behaviour.

Ajzen (1991) also stated that the intentions towards behaviours can be influence by perceived behavioural control or in other words what individuals think and beliefs actually have ability to determine the intentions. From TPB theory research literature, it has identified two factors that contribute to the decision towards individuals. Firstly, the internal control. This factor focuses on how the individual sees themselves as the control on their own intention and behaviour and it is requires their own knowledge skills and abilities and discipline that already inside themselves to wield the

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performance of the behaviour. Next, the external factor is most likely the subjective norms variable. It involving the persons who is important to the individuals to help him decide the performance of the intentions since no doubt will appear no matter what the beliefs shows its outcome. For example, the acceptance and approval from family, friends, peers, consumers or somebody he trusts can influence a person to have a positive or negative impact to the intention towards behaviour. Apart from that, not exactly human can be external factor. It is also stated that time can be one of the factor that can influence a person decision towards behaviour.

2.4 Previous Studies on Independent variables

2.4.1 Behavioural attitude

The awareness of fish welfare can become a reflection to the attitude behaviours among the farmers. Since attitude is a link towards the awareness, it has become an evaluation in order to determine the performance of a particular behaviour that can express attitude object (Blackwell et al., 2006). According to Read (2008), the farmers are aware of the welfare of the fish since when it has be questions about theirs's perspective, mostly concluded as welfare of the fish is a central to the success and as indication for survival ability of the fish. In other words, farmers acknowledge that welfare is the most important part in their business. They also acknowledge that it is hard to keep attention on welfare factor since it is often ill-informed and unrealistic that irritates the farmers, but they can fully adapted and accepted the way it works because if its vitality to the farm.

The ongoing debates have given farmers wider perspective regarding the welfare of fish that fish are able to feel pain and suffer. Due to the issue, fish farmers reflect the way they handling the farm and there is no such thing that farmers would reduce the

welfare of fish for greater result of financial. Hence, the accusation is wrong since the farmers acknowledge that a fit and healthy fish are result from a good and enjoyable welfare. This attitude is derived from ethical, emotion and financial interest (Read, 2008).

2.4.2 Subjective Norms

Subjective norms are external factors that come from people who are important to the subject in order to perform behaviour (Ajzen, 1991). It is including family, friends, peers as well as consumers. In fish business case, the main priority is to maintain the welfare of the fish so that it will give a higher production to the business. Moreover, the ones who will determine performing of behaviour are mostly consumers since they reared fish to supply the consumers. Hence, the consumer's perceptive and consumption will be the greater subjective norms to farmer's intention in performing the behaviour of implementing fish welfare. Recent studies of consumer's perception of farmed fish and willingness to pay from fish welfare by Solgaard and Yang (2011), has found that 48% of the consumers willing to pay an extra of 25% from usual price so that the farmers can perform fish welfare and resulting a good condition, eco-friendly production and fresh fish for the consumers. Plus, Wijkstorm and Larsson (1992) also stated that in practising farmers need the approval of family members before constructing any plan about fishery activities such as pond built. The Fisheries Department also need to be informed first before deciding to do any activities regarding fish farming. However, the author do not describe on how the approval really influence the decision making.

2.4.3 Perceived Behavioural Control

Individual's belief and control about the both internal and external factors to influence an intention to performing the behaviour can determine perceived behavioural control variable. Read (2008) stated that the farmers is required to held responsibility by government to maintain the welfare of the fish. The government expect that farmers have no contribution to the development of welfare. However, the farmers see things differently from government expectation. They are likely think a lot about welfare of their fishes.

The water quality, stocking density, facilities improvement, biosecurity, how to control disease and the uses of medicine are the factors that is plays in farmers minds if they want to make a good catch from the business and farm. According to Read (2008), the current issue on fish welfare has reflected the farmers the list of evil that exist in fish farming business. From the issue, farmers are convinced that they can focus an excellent track in improvement of fish welfare as well as developing a better understanding acknowledgement towards welfare of the fish.

CHAPTER 3

METHODOLOGY

3.1 Research Design

The aim of this study is to identify the awareness of fish welfare among fish entrepreneurs in Kelantan. This study will employed quantitative research design. The dependent variables will be the awareness of fish welfare among fish entrepreneurs in Kelantan while the independent variables are behavioural attitude, subjective norms and perceived behavioural control. Then, after survey has been conducted, data that obtained will be analyze using SPSS to determine the demographic profile, dependent variable as well as independent variables with individuals as unit of analysis.

3.2 Research framework

The aim of this study is to identify the awareness of fish welfare among fish entrepreneurs in Kelantan as well as applying the Theory of Planned Behavior to this study

Independent variables (IV)   Dependent Variables (DV)

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┌─────────────────────┐
│     Behavioural     │
│   Attitude (ATT)    │──────┐
└─────────────────────┘      │
                             │
┌─────────────────────┐      ▼  ┌─────────────────────────────┐
│   Subjective Norm   │─────────▶│ The Awareness of Fish Welfare│
│       (SN)          │         │  among Fish Entrepreneurs in │
└─────────────────────┘         │          Kelantan            │
                             ▲  └─────────────────────────────┘
┌─────────────────────┐      │
│     Perceived       │──────┘
│ Behavioural Control │
│       (PBC)         │
└─────────────────────┘
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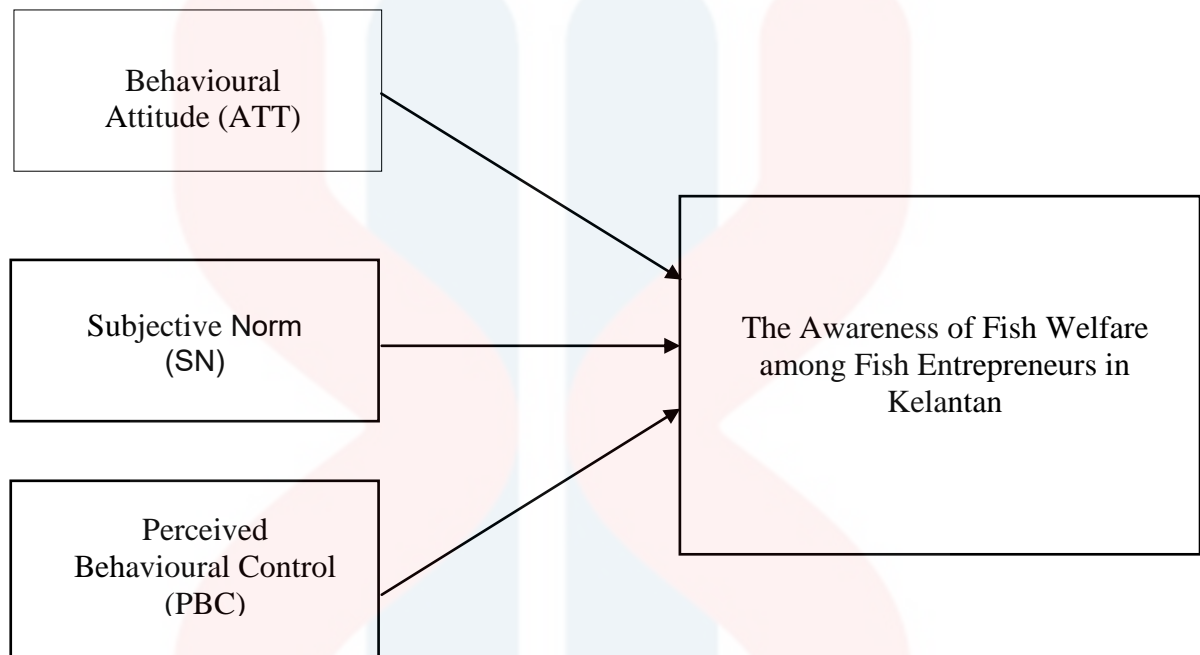
3.3 Research Hypotheses

There are several hypotheses on this study, it includes:

H1: Behavioural attitudes positively influence the awareness of fish welfare among fish entrepreneurs in Kelantan.

H2: Subjective norms positively influence the awareness of fish welfare among fish entrepreneurs in Kelantan.

H3: Perceived behavioural control positively influence the awareness of fish welfare among fish entrepreneurs in Kelantan.

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3.4 Instrumentation

The questionnaires will be consisting of five parts namely Part A, Part B, Part C, Part D and Part E. The respondents were asked by using a five points Likert-type scale with range from 1 (Strongly disagree), 2 (Disagree), 3 (Average), 4 (Agree) and 5 (Strongly agree). Part A section will be covers demographic information of the respondents while Part B will be consist questionnaires regarding dependent variable which is the awareness of fish welfare. On the other hand, independent variables that covers attitude, social norms and perceived behavioural control will be asked in the rest of the section which is part C, D and E respectively. The adaptation of the questions is based on the previous studies of Linan and Chen (2009) that covers the employment of Theory of Planned Behaviour by Ajzen (1991). The instrument is modified based on recent studies because to ensure it is reliable to the scope of this study. Thus, the data will be collected and will be analysed using SPSS.

Part A: Demographic Profile

This part will consist of eight questions regarding of respondent personal information in order to identify respondents background. The questions are structured in optional answer and state answer that consist of gender, race, age, level of education, business experience, total of current fish and total of income per month.

Part B: The Awareness of Fish Welfare among Fish Farmers in Kelantan

The awareness of fish welfare is dependent variables in this study and it is measured among fish farmers in Kelantan state. In this part, it has comprises six questions that need to be answer by all respondents by using a five points Likert-type scale with range from 1 (Strongly disagree), 2 (Disagree), 3 (Average), 4 (Agree) and 5

(Strongly agree). All these questions has been modified, adapted and reconstructed from Linan and Chen (2009) previous studies and it reliability has been tested to ensure the content of questions relevant to this study's scope.

Part C: Behavioural Attitude

Behavioural attitude is dependent variables in this study. In this part, it has comprises eight questions that need to be answer by all respondents by using a five points Likert-type scale with range from 1 (Strongly disagree), 2 (Disagree), 3 (Average), 4 (Agree) and 5 (Strongly agree). All these questions has been modified, adapted and reconstructed from Linan and Chen (2009) previous studies and it reliability has been tested to ensure the content of questions relevant to this study's scope. This item is used to determine the relationship between behavioural attitudes towards awareness of fish welfare among fish farmers.

Part D: Subjective Norms

In this part, it has comprises five questions that need to be answer by all respondents by using a five points Likert-type scale with range from 1 (Strongly disagree), 2 (Disagree), 3 (Average), 4 (Agree) and 5 (Strongly agree). All these questions has been modified, adapted and reconstructed from Linan and Chen (2009) previous studies and it reliability has been tested to ensure the content of questions relevant to this study's scope. Subjective norms is measured to determine its relationship toward awareness of fish welfare among fish farmers since the items itself employed by external factor such as families, friends and consumer and how it influence the decision making towards the farmers.

Part E: Perceived Behavioural Control

In this part, it has comprises five questions that need to be answer by all respondents by using a five points Likert-type scale with range from 1 (Strongly disagree), 2 (Disagree), 3 (Average), 4 (Agree) and 5 (Strongly agree). All these questions has been modified, adapted and reconstructed from Linan and Chen (2009) previous studies and it reliability has been tested to ensure the content of questions relevant to this study's scope. Perceived behavioural control is measured to examine on how respondents reacted towards the issues since they have past experiences and internal as well as external factor as their guidelines to make a decision to performing behaviour.

3.5 Population and Sample

This research will be conducted in Kelantan states among fish farmers to answer the questionnaires survey that will be given by the researcher. The total number of fish entrepreneurs as has recorded by Division of Fisheries of Kelantan States is 135 in 2018. According to Krejcie and Morgan (1970), 100 questionnaires will be enough to be filled out by the respondents based on the total number of fish farmers in 2018.

Table 3.1: Determining Sample Size of a known population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	1000000	384

Note: N is Population Size; S is Sample Size   *Source: Krejcie & Morgan, 1970*

3.5.1 Sampling size and procedure

The data collection will be collected through questionnaires that will be prepared and distribute personally by researcher to respondents. The time of survey will according to researcher preferable since the respondents are consists from fish farmers that may take up times on collecting the samples as well as the barrier of long distance of samples respondents. Researcher also will aid the farmers in case they cannot respond to the survey by themselves due to difficulty in read and writing skill as the location might involving the rural areas.

The sampling size is the process to select a sufficient amount of elements from the population and the data sample collected will represent the characteristic of the entire population (Sekaran, 2003). It is important to determine the sample size as the

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collection of the data from each element is quite difficult due to each population consist of hundreds to thousands elements respectively. Although to collect the data in the whole population still can be conceived, but the researcher will have to consume a lot of time, expenses and human resources. The Rules of Thumb by Roscoe (1975) had stated, in order to determine the sample size, it must be larger than 30 samples and less than 500 that is appropriate to be applied in most research. However, minimum sample size according to Sekaran (2003) should be 30 samples for each category. In this research, simple random sampling is used by researchers as a selection to pick a respondent from the population overall. In other words, no respondents can be select more than one times and it give an easy option to respondents on who needs to be approach first. Those who have taken parts in pilot test in which that allocates of ten percent of the population will exclude from actual collection data.

100 questionnaires were distributed to the farmers in Kelantan state that has been focused on three districts only which is Jeli, Tanah Merah and Machang. The reason why only these three districts are chosen is because of the time availability of researchers and limitation in money and transportation while doing the survey. The source of respondent's list name was obtained from Division of Fisheries of Kelantan. Since the sampling type was simple random sampling, researcher use Microsoft Excel software to obtain the random number from the list names of fish farmers so that every farmers has chance to be selected for questionnaires distributions.

The collection data was obtained through survey method. Hair *et al.* (2006) stated that survey method is the easiest method to represent large samples since it is not complicated and low cost. Besides, the questions that distributed as well with the interview from the researcher. In other words, the farmers have the option on answering the question their selves or with the researcher's guidance and as well extracting

information from the farmers that can be used as researcher's knowledge. The collected data were analysed using SPSS in order to determine the descriptive analysis and bivariate correlation of dependent as well as dependent variables (Wellman, 1998).

3.6 Data preparation

3.6.1 Pilot study

A pilot test that will be conducted to 15 fish farmerss that is near to researcher's location in order to determine the reliability of the study instrument. According to Hertzog (2008), it has stated that samples ranging from 10-40 are evaluated for the adequacy in estimate precise enough to meet variety of possible aims. Reliability test and the Cronbach's alpha will be used to measure the successful data obtained from the test questionnaires. The respondents who had taken part in this pilot test are not allowed to take part in the actual data collection.

3.6.2 Reliability of Instrument

To ensure the internal consistency of the items in each part of the questionnaire, the reliability test will be conducted and the Cronbach's alpha value will be calculated. Cronbach's alpha value must have a minimum alpha 0.6 for preliminary study (Nunally, 1978). The reliability is an indication of the consistency with the instruments measures the concept and helps to access the "goodness" of measure (Sekaran and Bougie, 2010).

Table 3.2: Reliability coefficients of the research instruments

Construct	Number of item	Alpha (n=15)
Awareness	6	0.853
Behavioural attitude	8	0.786
Subjective norms	5	0.922
Perceived behavioural control	5	0.910

The result of the reliability test is shown above in Table 3.1. Cronbach's Alpha value shows that for dependent and independent variable which is awareness, behavioural control, subjective norms and perceived behavioural control is 0.853, 0.786, 0.922 and 0.910 respectively. Based on the value above is the result of the reliability questions that have been restructured by researcher from the first questionnaires development. The reason why reliability is need to be conducted is due to make the questionnaires adapted from Linan and Chen (2009) is reliable and can be applied in actual data collection as well as for the future studies.

3.7 Data analysis

The collected data will be analysed by using SPSS. The descriptive and correlation analysis will be employed to answer all the objectives of the research.

3.7.1 Descriptive analysis

The elements in descriptive statistics namely frequency percentage, mean and standard deviation will be adapted to clarify the demographic respondents. Besides, descriptive also will be used to measure the level of each variable respectively.

3.7.2 Normality Analysis

Normality analysis is a test that is statistical used to determine the distribution of the data whether it is normally distributed or not normally distributed. For normally data distribution, it can follow the parametric test by comparing value of data to a distribution which has a symmetrical shape and evaluated through the value of parameters such as z-value. While for the data that not normally distributed, non-parametric tests are used to determine the ranking of the data.

3.7.3 Factor Analysis

Factor Analysis is part of general linear model (GLM) and it is used to assume several assumptions if there is a linear relationship, it includes relevant variables in the analysis and there is true correlation between variables and factor. Kaiser-Meyer-Olkin measure of sampling adequacy is a statistics that indicates the proportion of variance in your variable that might be caused by underlying factors. High values close to 1.0 indicate the factor analysis may be useful for data. Meanwhile, Bartlett's test of sphericity tests the hypothesis of correlation matrix is an identity matrix which could indicate that variables are unrelated and therefore unsuitable for structures detection. Small value less than 0.05 of the significance level indicate that a factor analysis may be useful for data.

3.7.4 Correlation analysis

The correlation analysis is used by researcher to determine the relationship between dependent and independent variables. There are two types of correlation which is Pearson's correlation or Spearman's correlation. This analysis is to examine the magnitude and relationship of the variables (Ho, 2006). Two variables with positive r

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data will indicate that relationship between the variables is positive and vice versa. Rule of Thumb by Guilford (1973) will be used in this study to measure the strength of relationship.

Table 3.3: The strength of correlation

Spearman's coefficient (r)	Strength of Relationship
<0.00	Very weak
0.2-0.39	Weak
0.4-0.59	Moderate
0.6-0.79	Strong
>0.8	Very strong

Source : Statstutor (2017)

Based on Table 3.3, the strength of relationship based on r value. When the value of r is less than 0.00, the strength of relationship is assumed negligible. Besides, if the value of r increase, the strength of relationship also increases. When the r value is 0.2 to 0.39, 0.4 to 0.59,0.6 to 0.79 and more than 0.8, the strength of relationships can be measured as weak, moderate, strong and very strong respectively.

3.7.5 Multiple Regression Analysis

This analysis is to measure the relationship between several independent or predictor variables and dependent or criterion variables. From this analysis, it can identify the most influencing predictor towards dependent variables.

CHAPTER 4

RESULTS AND DISCUSSION

4.0 Introduction

In this chapter, the results obtained from questionnaires survey were analysed and explained. This research was covering a quantitative research whereas the information source was obtained from the questionnaires instruments that were used to gain information from respondents. This instrument was containing Likert-scale ranging from 1-5 with self-administrative or with researcher's guide to complete this research.

This study was conducted to identify the awareness of fish welfare among fish farmers in Kelantan state. The data obtained were analysed in descriptive test to explain the respondent's general information and demographic profile. Data set also tested by reliability test to ensure the result's validity and the factor that can influence the awareness of fish welfare among fish farmers.

Data was collected in three districts of Kelantan which was Jeli, Tanah Merah and Machang. Overall targeted respondent were 100, hence the only successfully filled by respondents were only 83 questionnaires with the response rate of 83%. Respondents were allocated about 5-20 minutes maximum to complete their questionnaires either answer it by themselves or from the researcher's guide since the farmer's age was consists from older people and have difficulties to read. Total 17 questionnaires that were excluded from the data collected due to unavailability of farmers in which they

cannot be detected or already deceased. This research output then was analysed by using SPSS version 20.

4.1 Validity of Questionnaires

Nunally (1978) has claimed that Cronbach's Alpha value must have a minimum alpha 0.6 for preliminary study. Cronbach's Alpha value was a test to test the reliability of the questionnaires constructed by researcher. The reliability was necessary since it is an indication of a consistency with the instruments measure the concept and helps to access the goodness of measure (Sekaran and Bougie, 2010)

Table 4.1 : The Reliability Test results from SPSS

Construct	Number of item	Alpha (n=15)
Awareness	6	0.899
Behavioural attitude	8	0.924
Subjective norms	5	0.988
Perceived behavioural control	5	0.913

Based on the table 4.1 above, it has shown that subjective norms variable that was constructed have the highest value of Cronbach's Alpha reading and it indicated that this variable have more consistency and reliability than others variables. Followed by behavioural attitude as the second high level and perceived behavioural as the third level that obtained of 0.924 and 0.913 respectively while awareness variable sat on the lowest reading at 0.899. The overall results of Cronbach's Alpha value has found to be good and reliable for all three variables dependent and independent since all the values were high than 0.6 which was considered good for preliminary studies.

4.2 Demographic Profile of Respondents

Table 4.2 : Demographic Profile

	Item	Frequency (n=83)	Percentage (%)	Mean
Gender				
	Male	79	95.2	
	Female	4	4	
Race				
	Malay	82	98.8	1.01
	Chinese	1	1.2	
	Indian			
	Others			
Age Category				
	23-32	10	12.0	3.08
	33-34	23	27.7	
	43-52	14	16.9	
	53-62	23	27.7	
	63-72	12	14.5	
	73-82	1	1.2	
Education				
	Primary	13	15.7	3.02
	PMR	10	12.0	
	SPM	34	41.0	
	STPM	19	22.9	
	Degree	2	2.4	
	Others	5	6.0	
Experience				
	1-10	74	89.2	1.18
	11-20	4	4.8	
	21-30	4	4.8	
	31-40	1	1.2	
Current Stock				
	1-10 000	68	75.9	1.51
	10001-20000	8	9.6	
	20001-30000	7	8.4	
	30001-40000	2	2.4	
	40001-50000	2	2.4	
	50001-60000			
	60001-70000	1	1.2	

Income			
≤500	46	55.4	1.90
501-1000	21	25.3	
1001-1500	5	6.0	
1501-2000			
≥2000	11	13.3	

From Table 4.2 the demographic profile of the respondents were expressed into descriptive analysis that consist of frequency, percentage, mean and standard deviation. The gender percentage of respondents was shown as from the 83 respondents that were targeted in this research, 95.2% of them were male that comprise of 79 persons while the other 4.8% were female with frequency of four persons. The results obtained indicate that among fish farmers, the male were likely have a higher population than female population. Mbozi (1991) stated that according from his studies it has shown that in fish farming activity, the involvement of women were limited since the farming activities were regarded as male activities and it is first introduced by men and joined in many men too. Plus, labour works were not suitable to women and as well as consuming time factor strengthen the claimed that women involvement in fish farming activities directly were not suitable whereas women also were more obligated to the household activities and chores rather than men.

In addition, the race groups also shown that with 98.8% fish farming activities were dominated by Malay race in Kelantan state which was 82 persons out of respondents followed by 1.2% from Chinese race with frequency of one. Recent studies from Juita Zain (2018), the author has emphasize that fish farming activities already develop in in Kelantan since precolonial times. She stated that in Kelantan were consists of Malay race that live in rural areas meanwhile a small number of Chinese population were lives in urban areas at that time. Due to a big group of Malays population, they were also lives in residents near to rivers and seas and the location has triggered them to

execute fish farming to serve their life as well as become their income but just in a small business that not involved in big trading activities in that time.

As for the age category, out of 83 total respondents, it have shown that 10 (12%), 23 (27.7%), 14 (16.9%), 23(27.7%), 12(14.5%) and 1(1.2%) were ranging from category (23-32), (33-42), (43-52), (53-62) (63-72) and (73-82) respectively. According to Alam (2001) age was a decision maker in fish farming activities can influence an important change. Most of the farmers from the data were fall into active-age category. Therefore, people from the age have a quite significant relationship with the research since the training, extension activities and transfer of knowledge can be effective for them.

Plus, education level also plays the important role to determine the relationship with the study since it can help respondents to have a better understanding towards the issues (Burchi, and Muro 2007). From the tables above, there were likely respondents that having education background from primary schools with 13(15.7%) respondents, from PMR stage with 10(12.0%) respondents, from SPM stage with 19(22.9%) respondents, from STPM stage with 19(22.9%) respondents, from degree holder with 2(2.4%) respondents and lastly from other's choice of option with 5(6.0) respondents. The highest option that has been chosen was SPM stage. This level of education can be an indication towards behaviour of the farmers.

Next is the experience was supported by Yeasmin *et al*. (2013) that claimed that farmers that were from middle-age were more experienced develop relationship with the Fisheries Department. From the relationship, they can gain knowledge and training to help them in order identify the needs that required by them to imply a good practice of fish farming that follow the guidelines provided. From the data, it has shown that mostly of respondent have farming experience range from (1-10) years with frequency

of 74(89.2%), followed by the equal frequency of 4(4.8%) for both range (11-20)years and (21-30)years as well as only 1(1.2%) represented range of (31-40) years.

The current stock of the farmers also plays a significant role in this study. Results that were obtained from respondents showed that mostly 68(75.9%) respondents have about (1-10000) fish in their business. Other stated that about 8(9.6%) have range of (10001-20000) fish, 7(8.4%) have range of (20001-30000) fish, have 2(2.4%) at both range of (30001-40000) and (40001-50000) respectively and lastly 1(1.2%) have range of (60001-70000) fish stocks. The current stocks also indicate the farmer's income since the higher the number of stocks, the number of income also will increase. Alawode (2016) has claimed that the higher amount of feed and cost, the higher the amount of fish sold since a good quality resulted a good yield of production plus increase the income of farmers in which it can be used to spend it on welfare properties. As stated in Table 4.2, the income per months of farmers are ranging from below RM500 were 46(55.4%), ranging from RM5001-RM1000 were 21(25.3%), ranging from RM1001-1500 were 5(6.0%) and lastly ranging above RM2000 were 11(13.3%).

4.3 Normality Test

From Normality test, it has shown that a bell-shaped curve of a normality test were negatively skewed distribution. This distribution happen due to the mean is less than the median that resulting low scores and shifts the mean to the left. From the identified distribution, it has indicated that this variables was not a normal distribution or in other words it is called as non-parametric statistics since most of the farmers were relatively chosen agree to rate this dependent variables.

4.3.1 Skewness and Kurtosis

Table 4.3 : Skewness and Kurtosis Analysis Test

	Statistics	Std. Error
Skewness	-1.444	0.264
Kurtosis	1.812	0.523

Based on the Table 4.3, the value of skewness and kurtosis according to Shamshuritawati (2017) were between the ranges of -3 to +3 and showed of skewness value and kurtosis in dependent data was -1.444 and 1.812 respectively. The value that were obtained was not exceeding the accepted predict value, hence this data were normally distributed.

4.3.2 Shapiro-Wilk Test

Table 4.4: Shapiro-Wilk Test

Saphiro-Wilk	Statistics	df	Sig
Mean of Farmer's Awareness	0.744	83	0.000

Shapiro-Wilk data has shown the value statistics of 0.744. Shapiro-Wilk test value was used to indicate the correlation between data and normal values (Peat and Barton, 2005). Ashqar and Salleh (2012) also recommended that researcher can test the data availability whether it is fit the normal distribution from this test. Then, from the results of normality test, researcher can determine whether which correlation analysis was suitable to analyse the correlation significance value. Shamshuritawati (2017) also

indicate that significance value greater than 0.05 is considered as normal as and lower than 0.05 considered not normal. Hence, the data obtained from Table 4.3 were below 0.05 which was 0.000 and this data is not considered normal distributed.

4.3.3 Spearman's Correlation Test

Normality test that has been conducted above has showed that the data was not normally distributed as it is also considered as non-parametric statistics. This kind of distribution does not need to fit normal distribution since it does not rely in numbers but more likely ranking order. Thus, Jan and Thomasz (2011) the correlation test based on ranking value and used it to measure the strength between two variables make it is suitable to test data correlation in this study since it is not used to measure the linear relationship between two variables but more to evaluate the monotone relationship between two ordinal variables.

4.4 Level of Variables

Table 4.5: Kaiser-Meyer-Olkin and Bartlett's Test for Awareness of fish welfare

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.764
Bartlett's Test of Sphericity	Approx. Chi-Square	405.302
	df	6
	Sig.	.000

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Table 4.6: Percentage Distribution of Respondents by item for Awareness of Fish Welfare

	Items	Factor Loading	Scale (Percentage Distribution %)(n=83)				
			1	2	3	4	5
1	Fish welfare is important.	0.877	0	0	4.8 (4)	67.5 (56)	27.7 (23)
2	I know about knowledge of fish welfare and fish handling etiques ***	0.728	0	0	1.2 (10	62.7 (52)	36.1 (30)
3	I have enough time to get know about farmed fish welfare. ***	0.694	0	0	1.2 (1)	21.7 (18)	77.1 (64)
4	Fish welfare knowledge is important in fish farming.	0.845	0	0	7.2 (6)	67.5 (56)	25.3 (21)
5	I assume that fish welfare is necessary in handling fish farming.	0.871	0	0	2.4 (2)	21.7 (18)	75.9 (63)
6	I know that fish welfare practice can give profit to my business.	0.775	0	0	1.2 (1)	20.5 (17)	78.3 (65)

***Item is deleted due to low value of factor loading ≤0.6
Notes: Item in parenthesis ( ) is number of respondents.

Table 4.7: Level of Awareness among Fish Farmers

Level	Frequency	Percent (%)	Mean	Cronbach's Alpha (after item deleted)
Low (1-2.33)			4.66	0.899
Moderate (2.34-3.66)	1	1.2		
High (3.67-5)	82	98.9		

Based on the table 4.6, the Likert scale of five points, it has shown that 67.5% of respondents agreed that fish welfare is important. In addition, they also agreed that they know about knowledge of fish welfare and fish handling etiques and basically they can

perform it without intensive education from anyone. However, 77.1% from the respondents were strongly agreed that they have enough time to get know about farmed fish welfare since they have attended many courses that organized by Fisheries Department. About 67.5% agreed that fish welfare knowledge and implementation are important in fish farming activities. Besides, 75.9% were strongly agreed that fish welfare implementation were really necessary for their fish farming handling. Lastly, 78.3% respondents were strongly agreed to believe that if they practising fish welfare in their farming, it can help the farmers to gain profit to the business.

From the item, it also showed the factor loading value of every each question. Factor loading is a relationship between the variable and the factor analysis and the correlation of each factor loading and variable can determine the association relationship in research fields (Rahn, 2018). The lowest recorded of factor loading in this variable were from question the knowledge of fish welfare and have enough time to know about farmed fish welfare which was 0.728 and 0.694 respectively. Hence, the item was deleted from factor analysis correlation relationship since the questions do not have significant relationship to the dependent variable due to value close to 0.6. The reliability was tested again and showed Cronbach's Alpha Value of 0.899 at Table 4.7. On the other hand, the factor loading showed a high value on question fish welfare is important, fish welfare knowledge is important in fish farming and assumption of fish welfare is necessary in fish farming with value of 0.877, 0.845 and 0.871 respectively. Since KMO and Bartlett's test shows 0.76 and 0.00 respectively, it generally indicates that factor analysis is useful with the data.

The high value of factor loading indicates a strong association with the variable in which was the awareness of fish welfare. The data also showed that the mean scores for the variables were 4.66 where it fit to the value of a high ranged. Thus, the high

value of the mean scores indicates that the level of awareness of fish welfare among fish farmers were higher. The level of awareness also related to the importance of fish welfare knowledge and necessity in a fish farming activities. This was supported by Bernice & Franck (2012) stated the guarantee of fish welfare was not only by awareness and know about it, but also need to know how to measure it. Since, the availability of knowledge to measure the fish welfare has a significant relationship to the awareness of fish welfare among fish farmers.

Table 4.8: Kaiser-Meyer-Olkin and Bartlett's Test for behavioural attitude.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.858
Bartlett's Test of Sphericity	Approx. Chi-Square	579.828
	df	28
	Sig.	.000

Table 4.9: Percentage Distribution of Respondents by item for Behavioural Attitude

	Items	Factor Loading	Scale (Percentage Distribution %)(n=83)				
			1	2	3	4	5
1	I am ready to practice fish welfare in my company.	0.820	0	0	4.8 (4)	63.9(53)	31.3 (26)
2	I believe by practising fish welfare, I can gain profit and guarantee a high performance	0.900	0	0	3.6(3)	60.2(50)	36.1(30)
3	I believe by practising fish welfare would bring more advantages than disadvantages to me.	0.856	0	0	1.2(1)	57.8(48)	41.0(38)
4	I am comfortable practising my company according to my own preferences.	0.747	0	0	4.8(4)	42.2(35)	53.0(44)
5	Fish welfare practising cost are worth.	0.540	0	1.2 (1)	44.6(37)	41.0(34)	13.3(11)
6	I feel good when decide to practice fish welfare in my company.	0.934	0	0	4.8(4)	59.0(49)	36.1(30)
7	I am intending to be a good farmer starting from practising fish welfare in my company.	0.897	0	0	2.4(2)	53.0(44)	44.6(37)
8	I am confident I can try to practice fish welfare if I get the chance.	0.866	0	0	2.4(2)	53.0(44)	44.6(37)

Notes: Item in parenthesis ( ) is number of respondents.

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Table 4.10: Level of Behavioural Attitude

Level	Frequency	Percent (%)	Mean	Cronbach's Alpha (after item deleted)
Low (1-2.33)			4.29	0.924
Moderate (2.34-3.66)	4	4.8		
High (3.67-5)	79	95.2		

Based from Table 4.9 above, 63.9% respondents agreed that they are ready to practice fish welfare in their business. At the same, the farmers mostly agreed that they believe fish welfare practice can bring high profit to their business as well as brings more benefits rather than disadvantages with percentage of 60.2% and 57.8% respectively. 53% of respondents strongly agreed that they were more comfortable to manage their business according to their own preferences. However, when the farmers were being asked about the cost, mostly of them have a moderate answer chosen (44.6%).

Lastly, mostly farmers agreed that 59.0% they do feeling good if they decide to practice fish welfare, whereas for 53.0% of farmers both agreed that when they were taking decision to practice welfare they intent to increase their stage of farmer's life to another extent as well as can tried to practice fish welfare if were given opportunity and chances. From the item, it also showed the factor loading value of every each question. Factor loading is a relationship between the variable and the factor analysis and the correlation of each factor loading and variable can determine the association relationship in research fields (Rahn, 2018). The lowest recorded of factor loading in this variable were from question the costing to practice fish welfare is worth and farmers were comfortable to dealing their business according to their own preferences which was 0.540 and 0.747 respectively. However, there was no item was deleted from factor analysis correlation relationship even the questions do not have a

significant relationship to the dependent variable due to value close to 0.6 due to the showed results in one factor type. The reliability was tested and showed Cronbach's Alpha Value of 0.924 at Table 4.10. On the other hand, the factor loading showed a high value on question believe that by practising fish welfare, it can give profit and guarantee high performance toward business and farmers feel good when they decided to practice fish welfare with value of 0.900 and 0.934 respectively. Since KMO and Bartlett's test shows 0.85 and 0.00 respectively, it generally indicates that factor analysis is useful with the data.

The high value of factor loading indicates a strong association with the variable in which was the awareness of fish welfare. The data also showed that the mean scores for the variables were 4.29 where it fit to the value of a high ranged. Thus, the high value of the mean scores indicates that the level of awareness of fish welfare among fish farmers were higher.

The level of behaviour attitude also related to farmer's perception when they were asked to practice fish welfare and they mostly agreed that they feel good since fish welfare practising can help in gain profit and give high performance to the business. Read (2018) has claimed that fish farmers do listen about the necessity on fish welfare requirements to fish due to fish pain and sufferings. The attitude was a combination in derived from emotion, ethics and financial interest. Moreover, farmers believe that if the fish enjoying a good welfare, it will grow fit and healthy that resulted a good financial source to the business. Thus, feeling goods towards fish welfare and its ability to generate more profit and performance has a significant relationship to the behaviour attitude of fish farmers towards fish welfare.

Table 4.11: Kaiser-Meyer-Olkin and Bartlett's Test for subjective norms.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.819
Bartlett's Test of Sphericity	Approx. Chi-Square	907.260
	df	10
	Sig.	.000

Table 4.12: Percentage Distribution of Respondents by item for Subjective Norms

	Items	Factor Loading	Scale (Percentage Distribution %)(n=83)				
			1	2	3	4	5
1	My friends would approve of my decision to practice fish welfare.	0.979	0	0	1.2(1)	47.0(39)	51.8(43)
2	My families would approve of my decision to practice fish welfare.	0.983	0	0	0	48.2(40)	51.8(43)
3	My friends encourage me to practice fish welfare.	0.973	0	0	2.4(2)	47.0(39)	50.6(42)
4	Most people who are important to me think I should practice fish welfare to increase my company performance.	0.982	0	0	0	50.6(42)	49.4(41)
5	Most people who are important to me approve my decision to increase my company performance.	0.969	0	0	0	51.8(43)	48.2(40)

Notes: Item in parenthesis ( ) is number of respondents.

Table 4.13: Level of Subjective Norms

Level	Frequency	Percent (%)	Mean	Cronbach's Alpha (after item deleted)
Low (1-2.33)	-	-		
Moderate (2.34-3.66)	1	1.2	4.49	0.998
High (3.67-5)	82	98.8		

Table 4.12 showed the subjective norms section of questionnaires. Subjective norms are external factors that come from people who are important to the subject in order to perform behaviour (Ajzen, 1991). From questions family and friends, they rated strongly agree to approved farmers decision to practice welfare with the value of 51.8%. Besides, 50.2% of farmer's friends strongly agree to encourage the farmers to practising fish welfare while another 50.2% people who are important to the farmers agreed that farmers need to improve their company performance and 51.8% do agreed that they approved the farmer's decision to increase the company performance.

From the item, it also showed the factor loading value of every each question. Factor loading is a relationship between the variable and the factor analysis and the correlation of each factor loading and variable can determine the association relationship in research fields (Rahn, 2018). However, there was no item was deleted from factor analysis correlation relationship since the questions do have a significant relationship to the independent variable due to value above to 0.6 and showed results in one factor type. The reliability was tested and showed Cronbach's Alpha Value of 0.988 at Table 4.13. Since KMO and Bartlett's test shows 0.81 and 0.00 respectively, it generally indicates that factor analysis is useful with the data.

On the other hand, the factor loading showed a high value on question people who were importance to farmers agreed that they need to improve their business performance with value of 0.969. The high value of factor loading indicates a strong

association with the variable in which was the subjective norms. The data also showed

that the mean scores for the variables were 4.49 where it fit to the value of a high

ranged. Thus, the high value of the mean scores indicates that the level of subjective

norms among fish farmers were higher. The level of subjective norms also related to

farmer's external factor that can influence their decision on performing towards the

awareness.

Ofuoku (2008) stated that the relationship between group of farmers can

influence the decision making since the experience shared can increase social

participation among themselves. Thus, feeling goods towards fish welfare and its ability

to generate more profit and performance has a significant relationship to the subjective

norms of fish farmers towards fish welfare. Plus, Wijkstorm and Larsson (1992) also

stated that in practising farmers need the approval of family members before

constructing any plan about fishery activities. However, the author do not describe on

how the approval really influence the decision making.

Table 4.14: Kaiser-Meyer-Olkin and Bartlett's Test for perceived behavioural control.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.693
Bartlett's Test of Sphericity	Approx. Chi-Square	417.144
	df	10
	Sig.	.000

Table 4.15: Percentage Distribution of Respondents by item for Perceived Behavioural Control

	Items	Factor Loading	Scale (Percentage Distribution %)(n=83)				
			1	2	3	4	5
1	I believe my business performance will increase if I determine to practice fish welfare.	0.804	0	1.2(1)	3.6(3)	65.1(54)	30.1(25)
2	I am well aware towards the behavioural changes in my fish farming.	0.900	0	2.4(2)	1.2(1)	28.9(24)	67.5(56)
3	I can inspire those I work with to share my business vision if I take the chance to practice fish welfare.	0.746	0	2.4(2)	4.8(4)	72.3(60)	20.5(17)
4	I eager to be success in order to achieve the target that I set for myself and the company.	0.904	0	0	2.4(2)	32.5(27)	65.1(54)
5	I can identify the best solution if any problem occurs in my company.	0.951	0	2.4(2)	1.2(1)	28.9(24)	67.5(56)

Notes: Item in parenthesis ( ) is number of respondents.

Table 4.16: Level of Perceived Behavioural Control

Level	Frequency	Percent (%)	Mean	Cronbach's Alpha (after item deleted)
			4.44	
Low (1-2.33)				0.913
Moderate (2.34-3.66)	3	43.6		
High (3.67-5)	80	96.4		

On five point of Likert scale, majority of respondents strongly agreed that (65.1%) farmers believed that by determinant to practise fish welfare increase the business performance. Besides, 67.5% of farmers strongly agreed that they were well

aware the condition of fish changes in their fish farming activities. 72.3% of respondents agreed that they can inspire others if they were interested in farming business if they had practice fish welfare as well as the eagerness to achieve success that were set by farmers and the business were rated as strong agreed (65.1%). Last but not least, 67.5% farmers strongly agreed that they can identify the best solution in order to overcome any problem occurs in their business.

Factor loading for each item construct were showed in Table 4.15. Factor loading is a relationship between the variable and the factor analysis and the correlation of each factor loading and variable can determine the association relationship in research fields (Rahn, 2018). However, there was no item was deleted from factor analysis correlation relationship since the questions do have a significant relationship to the independent variable due to value above to 0.6 and showed results in one factor type. The reliability was tested and showed Cronbach's Alpha Value of 0.913 at Table 4.16. Since KMO and Bartlett's test shows 0.69 and 0.00 respectively, it generally indicates that factor analysis is useful with the data.

On the other hand, the factor loading showed a high value on question farmers can identify the best solution if any problem in the business with value of 0.951. The high value of factor loading indicates a strong association with the variable in which was the perceived behavioural control. The data also showed that the mean scores for the variables were 4.44 where it fit to the value of a high ranged. Thus, the high value of the mean scores indicates that the level of perceived behavioural control among fish farmers were higher. The level of perceived behavioural control also related to farmer's external and internal factor that can influence their decision on performing towards the awareness. For further record, ongoing debates about the sentient of fish that have been

politely evaluated by the farmers and the list of evils that exist in farming activities were reflected and relate to the exact reality. Fish farmer's was convinced that if they focus on excellent track record in welfare improvement and try to practice it, they can develop more understanding and real knowledge regarding of fish welfare (Read, 2008). Thus, feeling goods towards fish welfare and its ability to generate more profit and performance has a significant relationship to the perceived behavioural control of fish farmers towards fish welfare.

4.4 Factor that the most influencing towards the awareness of Fish Welfare among fish farmers

Table 4.17: Spearman's Correlation Relationship between the factors and awareness of fish.

Construct	r	p	N
Behavioural Attitude	1.000	**0.000**	
Subjective Norms	0.665**	**0.000**	**83**
Perceived Behavioural Control	0.758**	**0.000**	

Notes : ***significant at 0.01 level (2 tailed)

The test that was used to determine the strength of correlations between the factors and awareness of fish welfare among fish farmers was Spearman's correlation. Since, the stronger the correlation relationship can indicate the stronger fish farmer's awareness towards fish welfare.

Based on the Table 4.17, it has been summarize the value of correlations as well as the significant level on every factor. It has shown that the strongest and high correlation between factor and awareness towards fish welfare among fish farmers was the behavioural attitude with r-value of 1.000. Read (2008) claimed that farmers reflects on fish welfare issue and the derivation of emotion, ethics and financial interest has

strengthen the attitude can be a significant relationship towards behaviour which makes the rejection of hypothesis one if failed and it is accepted in this study.

Next, as the r-value of 0.758 between awareness of fish welfare among fish farmers and perceived behavioural control factor showed that there was a positive relationship correlation. According to Read (2008), farmers have confidence that if they can focus about welfare improvement, deeper knowledge and understanding will be developed and practice by them. From the statement, it is proven that perceived behavioural control has a positive effect towards awareness of fish welfare among fish farmers. Thus, hypothesis three is accepted.

However, r-value for subjective norms factor is 0.665 which can be considered moderate between the awareness of fish welfare among fish farmers. The subjective norms moderate value has indicated that it has a moderate relationship towards the awareness of fish welfare among fish farmers. In fish business, the ones who were prior to the factor are the consumers since it can give a great impact to the business. Solgaard et al. (2011), has found that 48% of the consumers willing to pay an extra of 25% from usual price so that the farmers can perform fish welfare and resulting a good condition, eco-friendly production and fresh fish for the consumers as well as practising farmers need the approval of family members before constructing any plan about fishery activities (Wijkstorm and Larsson,1992) However, the statement was only served as brief knowledge in this study since there was no statistics to prove the extent of the statements can give direct conclusion in subjective norms factor since determining the actions and behaviour cannot be done easily due to involvement in many factors (Ajzen, 1991).

Hence, from the entire factors, behavioural attitude was the strongest and highest correlation impact to influence the awareness of fish welfare among fish farmers. The

greatest correlation result the greatest awareness to practice fish welfare. Ajzen and Fishbein (1991) believes that behaviour of the individuals can be a link to behaviour and the outcome that expected in a research since the behavioural beliefs can influence directly on the attitudes towards the research . Well, by practising fish welfare, it will built up farmers confidence in improving the business performance since the more fish enjoyed their lives, the more income will be generated from the business future (Read, 2008) whereas it is proven that since there is a significant correlation between awareness of fish welfare among fish farmers. Hence, the hypothesis two is accepted.

Table 4.18:Multiple regression relationship between dependent and independent variables.

Model	Unstandardized Coefficients	Standardized Coefficient	Sig.
	B	Beta	
Constant	1.730		0.000
Behavioural Attitude	0.376	0.416	0.001
Subjective Norms	0.000	0.000	0.997
Perceived Behavioural Control	0.296	0.364	0.002

Dependent variable: Awareness
Note: *** significance level to >0.05

Table 4.19: R-value

R	R^2	Adjusted R^2
.718[a]	.516	.497

From the Table 4.18 above, it has shown the value of coefficients of regression. The B coefficients give information the number of units of awareness increases for a single unit increase in predictor. Like so, one point increase on the behavioural attitude

corresponds to 0.38 points increase on the awareness. Given only the scores on above predictors, the awareness can be predicted by computing

$$AW = 1.73 + 0.38ATT + 0.3PBC$$

From the data, it can be concluded that with the higher behavioural attitudes and perceived behavioural control is associated with higher awareness. The reading of subjective norms showed 0.00 indicates that it do not have any value to predict the awareness in this study. Due to that, subjective norms predictor is excluded from the computing formula plus it also do not significant to this study since the significant value showed 0.997. As for behavioural attitudes and perceived behavioural control is statistically significant since its p-value is smaller than 0.05 according to Rule of Thumb which is 0.001 and 0.002 respectively. Therefore, behavioural attitudes have the high reading for b coefficients than perceived behavioural control and subjective norms, it indicates that behavioural attitudes is the most influencing factor towards the awareness of fish welfare.

R values denote the correlations between predicted and observed awareness. From the table, it has shown that R= 0.71 which is considered as high correlation. R square value which is 0.51 indicates the proportion of variance in awareness can be explained by the three predictors. Based from the value, it indicates that this model can precisely predict the awareness of fish welfare based on the independent variables of behavioural attitudes, subjective norms and perceived behavioural control.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

As for the conclusion, all the hypotheses in this study were well supported. The awareness of fish welfare among fish farmers has a strong relationship towards the independent variables. From the results obtained, it has proved that behavioural attitude has the highest correlation towards the awareness compared to perceived behavioural control and subjective norms. Moreover, independent variables which are behavioural control, subjective norms and perceived behavioural control in this study has proven to have a relationship towards dependent variable which is the awareness of fish welfare among fish farmers. The high units of b coefficients in regression analysis has indicated that behavioural attitudes as the most influencing factors that can influence the awareness of fish welfare among fish farmers.

5.2 Recommendation

Based from the conducted surveys done, it has found that mostly of the farmers have difficulties in maintaining a good handling in their farm. This is due to the background of farmers from lower education with low income even though they aware about welfare of fish. So, the government need to observe and try to adapt this problem so that the challenges can be overcome for a better future. Plus, financial and

management aid also can be consider good enough to help the farmers since they have problem with feed price as so on. Keep adding the activities of transferring knowledge by extension agent so that the awareness can be develop more by the farmers and practice a good handling in fish business.

Research and Development also can take part to continue research through feed substitution so that the cost in buying the pellet can be reduce since it is very costly and expensive as well as become the main factor that prevents a good handling of farmed fish.

Moreover, a future study also needs to be done to prolong this research. Since this study was actually limited and not cover all the distribution in Kelantan due to limitation factor. Future studies should be more diversify distribution throughout a big population as the whole Malaysia country in order to obtain more rigid and valid values that can measure the level of fish welfare among fish farmers. Hence, the level of awareness of fish welfare will be increased and can be measure to the extent of a worldwide stage.

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APPENDIX A

THE AWARENESS OF FISH WELFARE AMONG FISH FARMERS IN KELANTAN.
KESEDARAN TENTANG KEBAJIKAN IKAN DI KALANGAN PENTERNAK IKAN DI KELANTAN.

Dear respondents:
1) This research is to:
   i. To identify the level of awareness of fish welfare among fish farmers in Kelantan
   ii. To examine the attitude, subjective norms and perceived behavioural control among fish farmers towards awareness of fish welfare
   iii. To analyses the relationship between attitude, subjective norms and perceived behavioural control among fish farmers towards awareness of fish welfare
2) The information given is considered confidential.
3) Please answer all questions.
4) Thank you for your cooperation and information given.

Kepada responden:
1) *Kajian ini adalah untuk:*
   i. *menentukan tahap kesedaran terhadap kebajikan ikan di kalangan peternak ikan di Kelantan*
   ii. *memeriksa sikap, norma subjektif dan kawalan tingkah laku yang dilihat di kalangan peternak ikan terhadap kesedaran kebajikan ikan.*
   iii. *Menganalisis hubungan di antara sikap, norma subjektif dan kawalan tingkah laku yang dilihat di kalangan peternak ikan terhadap kesedaran kebajikan ikan.*
2) *Maklumat diberi adalah dianggap sulit.*
3) *Sila jawab semua soalan.*
4) *Terima kasih di atas kerjasama dan maklumat yang berikan.*

Researcher / *Penyelidik***:**
1) Siti Nurainsyah Mat Nasir – 014-7530415
2) Cik Nurul Azwa Mohamed Khadri - 017-5748205

Fakulti Industri Asas Tani,
Universiti Malaysia Kelantan.

1.	**Gender** / *Jantina*:	( ) i. Male / Lelaki ( ) ii. Female / Perempuan

2.	**Race** / *Bangsa*:	( ) i. Malay / Melayu
		( ) ii. Chinese / Cina
		( ) iii. Indian / India
		( ) iv. Others / Lain-lain ,
		      nyatakan :
		      _____

3.	**Age** / *Umur* Please state/ *Nyatakan*:	_____ years/ *tahun*

4.	**Level of education /** *Tahap pendidikan*	( ) i. Primary School /
		( ) Sekolah Rendah
		( ) ii. SRP / PMR
		( ) iii. MCE / SPM
		( ) iv. STPM / Diploma
		( ) v. Ijazah / Degree
		      Others, please state /
		      Nyatakan
		      _____
		      _____

6.	**Business Experience** / *Pengalaman perniagaan*:	
7.	**Total of current fish /** *Jumlah bilangan ikan semasa*	
8.	**Total income per month /** *Jumlah pendapatan sebulan*	

SECTION A /*SEKSYEN A:* DEMOGRAPHIC / *DEMOFRAFI*

Please answer all questions and (√) the appropriate answer. *Sila jawab semua soalan dan (√) pada jawapan yang sesuai.*

For the questions on **PART B, C, D, and E** please read each item and **give your answer by circling the answer option that is appropriate** to the scale of 1 (strongly disagree) to 5 scale (strongly agree).

*Untuk soalan-soalan **BAHAGIAN B, C, D, dan E,** sila baca setiap item dan **beri jawapan anda dengan membulatkan pada pilihan jawapan yang bersesuaian** dengan mengikut skala 1 (sangat tidak bersetuju) hungga skala 5 (sangat setuju).*

Strongly disagree / Sangat tidak setuju	Disagree / Tidak setuju	Average / Sederhana	Agree / Setuju	Strongly agree / Sangat setuju
1	2	3	4	5

SECTION B / BAHAGIAN B: THE AWARENESS OF FISH WELFARE/
Kesedaran tentang kebajikan ikan.
Each statement below represents the awareness of fish welfare.
Setiap pernyataan di bawah mewakili kesedaran tentang kebajikan ikan. .

	In my opinion /Saya berpendapat :					
1.	**Fish welfare is important.** *Kebajikan ikan adalah penting.*	1	2	3	4	5
2.	**I know about knowledge of fish welfare and fish handling etiques.** *Saya mengetahui tentang ilmu kebajikan ikan dan etika pengendalian ikan.*	1	2	3	4	5
3.	**I have enough time to get know about farmed fish welfarel.** *Saya mempunyai waktu yang cukup untuk mengambil tahu tentang kebajikan ikan ternakan.*	1	2	3	4	5
4.	**Fish welfare knowledge is important in fish farming.** *Ilmu kebajikan adalah amat penting bagi peternakan ikan.*	1	2	3	4	5
5.	**I assume that fish welfare is not necessary in handling fish farming.** *Saya beranggapan bahawa kebajikan ikan tidak diperlukan dalam pengendalian peternakan ikan.*	1	2	3	4	5
6.	**I know that fish welfare practice can give profit to my company.** *Saya mengetahui bahawa dengan pengamalan kebajikan ikan, ia mampu meningkatkan keuntungan perusahaan saya.*	1	2	3	4	5

SECTION C/ *SEKSYEN C*: ATTITUDE / *SIKAP*

Each statement below represents your attitude and how they can affect and influence you to develop intention to start a business.

Setiap pernyataan di bawah mewakili tingkah laku diri sendiri serta macam mana ia akan mempengaruhi niat seseorang untuk memulakan perniagaan.

	In my opinion/ *Saya berpendapat* :					
1.	**I am ready to practice fish welfare in my company.** *Saya bersedia untuk mengamalkan kebajikan ikan di perusahaan saya..*	1	2	3	4	5
2.	**I believe by practising fish welfare, I can gain profit and guarantee a high performance.** *Saya percaya dengan mengamalkan kebajikan ikan, saya mampu mendapat keuntungan dan menjamin prestasi yang tinggi.*	1	2	3	4	5
3.	**I believe by practising fish welfare would bring more advantages than disadvantages to me.** *Saya percaya bahawa jka saya mengamalkan kebajikan ikan akan membawa lebih banyak kelebihan daripada keburukan kepada saya.*	1	2	3	4	5
4.	**I am comfortable practising my company according to my own preferences.** *Saya lebih selesa mengamalkan perusahaan saya mengikut cara saya yang tersendiri.*	1	2	3	4	5
5.	**Fish welfare practising requires a high cost.** *Pengamalan kebajikan ikan menggunakan kos yang tinggi.*	1	2	3	4	5
6.	**I feel good when decide to practice fish welfare in my company.** *Saya berasa baik apabila membuat keputusan untuk mengamalkan kebajikan ikan di perusahaan saya .*	1	2	3	4	5
7.	**I am intending to be a good farmer starting from practising fish welfare in my company.** *Saya berniat untuk menjadi peternak yang baik bermula daripada mengamalkan kebajikan ikan di dalam perusahaan saya.*	1	2	3	4	5
8.	**I am confident I can try to practice fish welfare if I get the chance.** *Saya yakin saya mampu untuk mencuba mengamalkan kebajikan ikan jika diberi peluang.*	1	2	3	4	5

SECTION D/ SEKSYEN D: SUBJECTIVE NORM/ NORMA SUBJEKTIF

Each statement below represents the subjective norm on what important people would think if you become an entrepreneur.

Setiap pernyataan di bawah mewakili norma subjektif mengenai apa yang orang fikir sekiranya anda menjadi seorang usahawan. .

In my opinion/ *Saya berpendapat* :						
1.	**My friends would approve of my decision to practice fish welfare.** *Kawan-kawan saya akan meluluskan keputusan saya untuk melaksanakan pengendalian kebajikan ikan.*	1	2	3	4	5
2.	**My families would approve of my decision to practice fish welfare.** *Keluarga saya akan meluluskan keputusan saya untuk melakukan pengendalian kebajikan ikan .*	1	2	3	4	5
3.	**My friends encourage me to practice fish welfare.** *Rakan - rakan juga akan memberi galakan terhadap saya untuk melakukan pengendalian kebajikan ikan .*	1	2	3	4	5
4.	**Most people who are important to me think i should practice fish welfare to increase my company performance.** *Kebanyakan orang yang penting kepada saya berfikir bahawa saya perlu melaksanakan kebajikan ikan untuk meningkatkan prestasi perusahaan saya.*	1	2	3	4	5
5.	**People who are important to me support my effort and intention to practice fish welfare for the benefit of my company.** *Orang yang penting kepada saya memberi sokongan terhadap usaha dan niat saya untuk melaksanakan pengendalian ikan atas kepentingan perusahaan saya .*	1	2	3	4	5

SECTION E/ SEKSYEN E: PERCEIVED BEHAVIOURAL CONTROL/ TANGGAPAN KAWALAN TINGKAH LAKU

Each statement below represents perceived behavioural controls that show the statements regarding to the entrepreneurial abilities that can influence you to develop intention to start a business.

Setiap pernyataan di bawah mewakili tanggapan kawalan tingkah laku yang menunjukkan pernyataan mengenai keupayaan keusahawanan yang boleh mempengaruhi anda untuk mengembangkan niat untuk memulakan perniagaan.

In my opinion/ *Saya berpendapat* :						
1.	**I believe my company performance will increase if I determine to practice fish welfare.** *Saya percaya bahawa prestasi perusahaan saya akan bertambah jika saya nekad untuk mengamalkan kebajikan ikan.*	1	2	3	4	5
2.	**I am well aware towards the behavioural changes in my fish farming.** *Saya amat peka dengan perubahan kelakuan ternakan ikan saya.*	1	2	3	4	5
3.	**I can inspire those I work with to share my business vision if I take the chance to practice fish welfare.** *Saya mampu memberi inspirasi kepada mana-mana orang yang saya berkerjasama untuk berkongsi wawasan perniagaan saya sekiranya saya mengambil peluang untuk melaksanakan kebajikan ikan.*	1	2	3	4	5
4.	**I eager to be success in order to achieve the target that I set for myself and the company.** *Saya ingin berjaya untuk mencapai sasaran yang saya tetapkan bagi diri sendiri dan perusahaan.*	1	2	3	4	5
5.	**I can identify the best solution if any problem occurs in my company.** *Saya boleh mengenalpasti cara penyelesaian yang terbaik jika terdapat sebarang masalah yang berlaku di perusahaan saya.*	1	2	3	4	5

APPENDIX B

1.0 Demographic Profile

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	79	95.2	95.2	95.2
	Female	4	4.8	4.8	100.0
	Total	83	100.0	100.0	

Race

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Malay	82	98.8	98.8	98.8
	Chinese	1	1.2	1.2	100.0
	Total	83	100.0	100.0	

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary School	13	15.7	15.7	15.7
	PMR	10	12.0	12.0	27.7
	SPM	34	41.0	41.0	68.7
	STPM	19	22.9	22.9	91.6
	Degree	2	2.4	2.4	94.0
	Others	5	6.0	6.0	100.0
	Total	83	100.0	100.0	

Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<500	46	55.4	55.4	55.4
	501-1000	21	25.3	25.3	80.7
	1001-1500	5	6.0	6.0	86.7
	>2000	11	13.3	13.3	100.0
	Total	83	100.0	100.0	

Age Category

		Frequency	Percent	Valid Percent	Cumulative Percent
	1	10	12.0	12.0	12.0
	2	23	27.7	27.7	39.8
	3	14	16.9	16.9	56.6
Valid	4	23	27.7	27.7	84.3
	5	12	14.5	14.5	98.8
	6	1	1.2	1.2	100.0
	Total	83	100.0	100.0	

Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
	1	74	89.2	89.2	89.2
	2	4	4.8	4.8	94.0
Valid	3	4	4.8	4.8	98.8
	4	1	1.2	1.2	100.0
	Total	83	100.0	100.0	

Current_stock

		Frequency	Percent	Valid Percent	Cumulative Percent
	1	63	75.9	75.9	75.9
	2	8	9.6	9.6	85.5
	3	7	8.4	8.4	94.0
Valid	4	2	2.4	2.4	96.4
	5	2	2.4	2.4	98.8
	7	1	1.2	1.2	100.0
	Total	83	100.0	100.0	

2.0 Realibility Test

Case Processing Summary

		N	%
	Valid	83	100.0
Cases	Excluded[a]	0	.0
	Total	83	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.885	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Importance of fish welfare	22.27	4.026	.774	.854
Aware of fish welfare	22.80	3.994	.661	.872
Enough time to get know	22.84	4.012	.619	.879
Fish welfare important in fish farming	22.29	4.013	.704	.864
Fish welfare is needed in fish farming	22.25	4.094	.746	.858
Fish welfare practice can give profit	22.67	3.978	.708	.863

Case Processing Summary

		N	%
Cases	Valid	83	100.0
	Excluded[a]	0	.0
	Total	83	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.924	8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Ready to practice fish welfare	30.02	10.731	.758	.912
Believe if practice fish welfare can gain profit and high performance	29.96	10.450	.847	.906
Believe by practice fish welfare bring more advantages than disadvantages	29.89	10.781	.788	.911
Comfortable practice	29.81	10.792	.663	.920

according to own preferences				
Cost of fish welfare implementation is affordable	30.63	10.993	.462	.942
Feel good when decide ti implement fish welfare	29.98	10.170	.903	.901
Intend to become a good farmer by practice fish welfare	29.87	10.433	.852	.905
Confident to try practice fish welfare if given chance	29.87	10.604	.796	.910

Case Processing Summary

		N	%
	Valid	83	100.0
Cases	Excluded[a]	0	.0
	Total	83	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.988	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Friends would approve decision to practice fish welfare	17.98	4.048	.967	.984
Families would approve decision to practice fish welfare	17.96	4.133	.973	.983
Friends encourage to practice fish welfare	18.00	3.976	.958	.986
People who are important to me think that practice fish welfare can imcrease busines performance	17.99	4.134	.972	.984
People who are	18.00	4.171	.950	.987

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important to me support my effort and intention to practice fish welfare				

Case Processing Summary

		N	%
Cases	Valid	83	100.0
	Excluded[a]	0	.0
	Total	83	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.913	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Believe that my business performance will increase if determine to practice fish welfare	17.96	4.523	.714	.906
Well aware the behavioural changes in fish farming	17.59	4.074	.819	.885
Can inspire to anyone and share business vision if the chance to practice fish welfare is taken	18.10	4.649	.640	.921
Eager to succes in order to achieve the set target	17.58	4.442	.833	.885
Can identify the best solution if problem occurs in business	17.59	3.903	.905	.866

Descriptives

			Statistic	Std. Error
AWARENESS	Mean		4.65	.046
	95% Confidence Interval for Mean	Lower Bound	4.56	
		Upper Bound	4.74	
	5% Trimmed Mean		4.69	
	Median		4.75	
	Variance		.175	
	Std. Deviation		.418	
	Minimum		3	
	Maximum		5	
	Range		2	
	Interquartile Range		1	
	Skewness		-1.444	.264
	Kurtosis		1.812	.523

3.0 Normality Test

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
AWARENESS	.338	83	.000	.744	83	.000

69
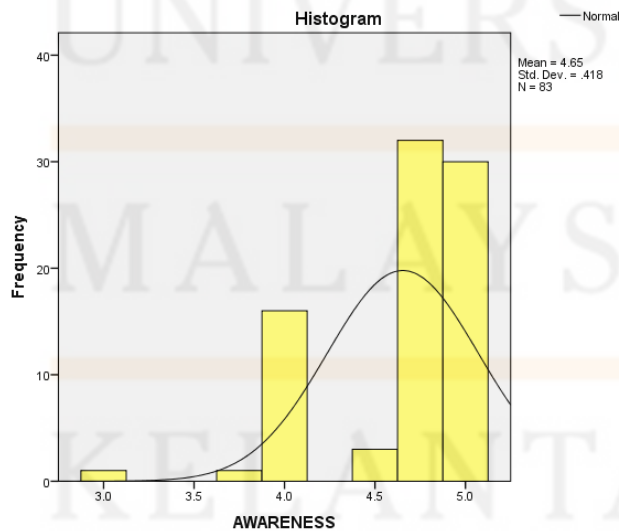
Statistics

		AWARENESS	ATTITUDE	SUBJECTIVENORMS	PERCEIVEDCONTROL
N	Valid	83	83	83	83
	Missing	0	0	0	0
Mean		4.65	4.29	4.50	4.44
Std. Deviation		.418	.463	.505	.514

4.0 Level of Awareness of Fish Welfare

AWARENESS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	1.2	1.2	1.2
	4	1	1.2	1.2	2.4
	4	16	19.3	19.3	21.7
	5	3	3.6	3.6	25.3
	5	32	38.6	38.6	63.9
	5	30	36.1	36.1	100.0
	Total	83	100.0	100.0	

5.0 Level of Attitude
ATTITUDE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	1.2	1.2	1.2
	3	1	1.2	1.2	2.4
	4	2	2.4	2.4	4.8
	4	1	1.2	1.2	6.0
	4	15	18.1	18.1	24.1
	4	15	18.1	18.1	42.2
	4	10	12.0	12.0	54.2
	4	5	6.0	6.0	60.2
	4	1	1.2	1.2	61.4
	5	5	6.0	6.0	67.5
	5	5	6.0	6.0	73.5
	5	4	4.8	4.8	78.3
	5	8	9.6	9.6	88.0
	5	10	12.0	12.0	100.0
	Total	83	100.0	100.0	

6.0 Level of Subjective Norms

SUBJECTIVENORMS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	1	1.2	1.2	1.2
	4	1	1.2	1.2	2.4
	4	38	45.8	45.8	48.2
	4	1	1.2	1.2	49.4
	5	1	1.2	1.2	50.6
	5	1	1.2	1.2	51.8
	5	40	48.2	48.2	100.0
	Total	83	100.0	100.0	

7.0 Level of Perceived Behavioural Control

PERCEIVEDCONTROL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	1.2	1.2	1.2
	3	1	1.2	1.2	2.4
	3	1	1.2	1.2	3.6
	4	1	1.2	1.2	4.8
	4	22	26.5	26.5	31.3
	4	1	1.2	1.2	32.5
	4	4	4.8	4.8	37.3
	5	27	32.5	32.5	69.9
	5	10	12.0	12.0	81.9
	5	15	18.1	18.1	100.0
	Total	83	100.0	100.0	

8.0 Spearman's Correlation

Correlations

			ATTITUDE	SUBJECTIVENORMS	PERCEIVEDCONTROL
Spearman's rho	ATTITUDE	Correlation Coefficient	1.000	.665**	.758**
		Sig. (2-tailed)	.	.000	.000
		N	83	83	83
	SUBJECTIVENORMS	Correlation Coefficient	.665**	1.000	.651**
		Sig. (2-tailed)	.000	.	.000
		N	83	83	83
	PERCEIVEDCONTROL	Correlation Coefficient	.758**	.651**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	83	83	83

**. Correlation is significant at the 0.01 level (2-tailed).

9.0 Multiple Regression

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta		
1	(Constant)	1.730	.337			.000
	ATTITUDE	.376	.113	.416		.001
	SUBJECTIVENORMS	.000	.090	.000		.997
	PERCEIVEDCONTROL	.296	.090	.364		.002

a. Dependent Variable: AWARENESS