Leveraging Social Media for the Fishing Industry: An Exploratory Study

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Abstract. One of the main challenges in the fishing industry today is the art of connecting buyers and sellers effectively so that information about products, price, quantity and location is synchronized. A lack of communication and technology skills has forced fishermen and fishing industry authorities to depend on intermediaries to market their products, leading to higher prices for consumers. This paper explores the potential use of social media to reduce intermediaries in the fishermen market supply chain. It also aims to understand the critical success factors in using social media as a platform to promote the market.

Keywords: Fishing industry · Fishermen · Social media · Social media marketing · Intermediaries · HCI · Business · Human wellbeing

1 Introduction

In Malaysia, the Fisheries Development Authority of Malaysia (FDAM) is an authorized body that is responsible for developing the fishing industry. FDAM continually strives to create a developed, independent and progressive fishermen community nationwide. Unfortunately, the marketing of marine produce in Malaysia still relies heavily on a large number of intermediaries. From traditional landing sites to vendors or consumers, there are auctioneers, agents, exporters, wholesalers and other agents who play specific roles in the marketing of fish. The price differences between what the fishermen receive at landing sites and what the consumers pay is due to the handling, transportation and marketing costs of intermediaries. This price spread may be largely due to the vagaries of supply and demand, or even due to profiteering. The existence of many intermediaries in the supply chain ultimately influences the higher price of fish to the consumer. In a study conducted by Haque [1], fishermen were found to be the poorest actors in the supply chain due to the failure to enhance their bargaining power and access to market information. This dilemma is also happening in the fish marketing channel in Malaysia.

To improve the wellbeing of fishermen, new fishermen markets have been developed by the government in certain seafood landing sites in Malaysia. This initiative hopes to reduce the number of intermediaries, thus reducing fish and seafood market prices.

However, to date, there is no coordinated mechanism to promote, create awareness, or educate consumers on these new markets in remote landing sites. As a result, people are currently not aware of the existence of fishermen markets. We believe there is a lack of information online to persuade people to visit these fishermen markets.

Thus, this study aims to explore the use of social media marketing in helping government initiatives to promote the new fishermen market program. It also aims to understand the critical success factors in using social media as a platform to promote the market. This study combines both qualitative and quantitative approaches to answer the research questions. For the purpose of this paper presentation, only findings from our quantitative study will be elaborated. This research hopes to contribute to the growing literature on social media marketing. Although many studies have been conducted on the usage of social media as marketing tools, there are hardly any that focus on the fisheries industry. Thus, this research hopes to fill this gap in the literature.

2   Literature Review

This section presents the proposed research framework and hypotheses constructed for the study. The four variables being studied are: perceived knowledge about fish, type of content sharing in social media, credibility of information, and purchasing decision in the fishermen market. Previous research and studies will also be discussed to provide better insights on the factors that influence consumers to purchase their fish supply at the fishermen market.

2.1   Perceived Knowledge About Fish

One of the crucial elements in the thinking process is the relationship between perceived knowledge about products and the consumers' motivation to make a purchasing decision. Many researchers that studied the fishing industry found a positive relationship between knowledge and need for cognition (NFC) [2, 3]. Need for cognition is the tendency of people to engage in and enjoy thinking by using the richness of information they gather from a variety of sources [4]. Therefore, using a rich medium of communication enhances the efficiency of the thinking process [5]. A similar study by Aurier asserts that the knowledge of consumers affects their personal search behaviour to acquire information regarding products [6]. According to the cue utilization theory [7], assessing the quality of products is carried out in terms of identifying and defining the information cues that consumers use as indicators. A recent study by Gaviglio et al. [8] classifies product information cues into two categories, which are intrinsic and extrinsic cues. Intrinsic cues are those inherent in the product, such as taste, smell or colour, while extrinsic cues include external features of the product, such as price, brand, or packaging. Both information cues are perceived as important knowledge about fish [8]. Hence, the following hypothesis is drawn:

H1: There is a positive relationship between the perceived knowledge about fish and purchasing decision in the fishermen market.

2.2   Type of Content of Social Media

Consumers are turning more frequently to various types of social media to conduct their information searches and to make their purchasing decisions [9]. The contents of information must be objective, trusted, and relevant to be shared on the social media platform. Richer media have significantly positive impacts on decision quality when consumers have sufficient knowledge about the products/services [10]. This argument confirms the study conducted by Verbeke et al. [11], which found that less confident consumers need to seek more knowledge about quality of fish before they purchase the right species. Therefore, they tend to search for trustworthy information to build their confidence before finalizing their purchasing decision. This is consistent with the media richness theory (MRT) introduced by Daft and Lengel [12] whereby the communication efficiency between people is affected by the fitness of the media and the characteristics of the communication task. When more information is communicated in the online medium, the richer the medium will be. It is important to determine whether the type of content shared in social media has a relationship with purchasing decisions at the fishermen market. Hence, the following hypothesis is drawn:

H2: There is a positive relationship between the type of content sharing in social media and purchasing decision in the fishermen market.

2.3   Credibility of Information in Social Media

Kautsar et al. [13] define credibility of information as how consumers view information as a source of knowledge which is trustworthy, objective, relevant, and free of biasness. In this research, the subject of credibility refers to the information sought with regard to apparel and not the trusts or beliefs about an individual or an organization. Consumers will be more willing to accept information when the information source has high credibility. As a result, consumers' attitudes become more positive [14]. A recent study by Neti [15] concluded that social media is probably the only marketing platform that encourages fool proof communication and accountability among sellers as well as consumers. Yoon [16] strongly agreed that credibility is closely linked to trust and satisfaction. When consumers feel the information can be trusted, they will secure that information as knowledge that intrigues their desire to purchase products. In a study conducted by Abraham [17], information was found to be a crucial element to manage fish supply chains from producers (fishermen) to consumers. The entire supply chain involves different roles of market players who need to make instant decisions on purchasing fish. This is because fish is a perishable item and fish quality drops with its price [17]. Thus, consumers' purchase decisions at the fishermen market may be influenced by whether or not they believe the information in social media to be credible. Hence, the following hypothesis is drawn:

H3: There is a positive relationship between the credibility of information in social media and purchasing decision in the fishermen market.

2.4 The Theoretical Framework of the Research

Figure 1 below depicts the theoretical framework proposed in this research. This theoretical framework is to introduce and describe the theories and hypotheses explained in the earlier section. Thus, it helps the researcher understand the underlying research objectives of this study. On the left of the diagram there are three (3) independent variables. These independent variables comprise perceived knowledge of fish, type of content sharing in social media, and credibility of information in social media.

The variable on the right of the diagram is the dependent variable. This variable represents the purchasing decision at the fishermen market, which is determined by the independent variables mentioned earlier. The relationships between the three (3) independent variables and the dependent variable are denoted as H1, H2 and H3 respectively. This theoretical framework was adapted from studies by [18, 19, 20].

The researcher is therefore compelled to explore how the perceived knowledge of fish, type of content sharing in social media, and credibility of information in social media influences consumers to buy fresh fish at the fishermen market.

3 Research Methodology

The previous section has deliberated and presented the conceptual model and hypotheses of the study based on prior research. This section will focus on the methods of research, including data collection methods, instrument design, sampling, and data analysis.

3.1 Quantitative Method

In this study, questionnaires were used as the data collection instrument. The designed questionnaire combined closed questions and interval questions, and was made up of
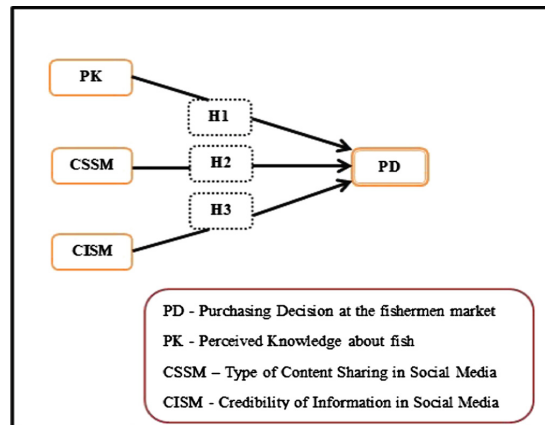

Fig. 1. Proposed theoretical framework

five (5) parts, namely Section A, B, C, D, and E. Section A covered the socio-demographic profile of the respondents. In Section B, respondents were asked about the existence of fishermen markets developed by FDAM. Section C posited five (5) close-ended questions and four (4) interval questions. It solicited data on fish consumption and consumers' perceived knowledge about fresh fish that may influence their purchasing decision in the fishermen market. To understand the usage of social media in promoting the fishermen market, Section D and Section E covered the type of content sharing in social media and credibility of information in social media, respectively, as variables that may influence consumers' purchasing decision in the fishermen market.

After the questionnaire was constructed, it was then pre-tested, checked and rectified to ensure that the items will help the researcher answer the research questions and achieve the research objectives.

3.2   Participants and Data Analysis

Questionnaires were distributed to 235 Malaysian consumers who are regular eaters of fish, live in urban areas and are social media users. The sample is relatively homogenous in terms of its demographics, and thus has high internal validity. This study undertakes convenience sampling, which is based on the availability of respondents for the study. A computer program for statistical analysis, Statistical Package for Social Sciences (SPSS) Version 20 was used to process data collected from the questionnaires. Using this software, descriptive analysis, reliability and validity testing, and Pearson Correlation analysis were conducted.

4   Findings

This section will present the results of the data analysis as well as discussions following those results.

4.1   Demographic Analysis

Of the 235 respondents, 131 (56.0 %) are female whereas 104 (44.0 %) are male. Most respondents, namely 133 (56.6 %), are in the range of 30–42 years old, while only 12 (5.1 %) were in the range of 18–23 years old. The remaining 90 respondents (38.3 %) were between 23–30 years of age. The respondent age range measured in this study was determined at a maximum of 42 years old under the assumption that this range has the highest purchasing power. Apart from that, the younger generation, between the ages of 18 and 23, is less motivated to participate in this survey. Thus, the response of this survey is primarily from those aged 24 and above. This is because most of them have their own families and have decision-making power in terms of purchasing food items. Most respondents (170, or 72.0 %) in this study are married, while there are 60 (26.0 %) single respondents and 5 (2.0 %) widowed respondents. In terms of occupation status, 191 (81.3 %) respondents are full time workers, whereas 26 (11.1 %) are students.

Self-employed respondents comprise 10 (4.3 %), followed by 7 (3.0 %) part-time workers and 1 (0.4 %) retiree. These numbers indicate that most of the participants in the survey are people who are currently working and have purchasing power.

4.2 Social Media: An Alternative to Communicate Information

The dominant Social Media communication devices used by the respondents to search for online information were identified. The data shows that a majority of 192 (81.7 %) respondents prefer to use their Smart Phones to gain online information, whereas only 17 (7.2 %) of respondents prefer to use their PC/Desktops. Meanwhile, other devices such as tablets are dominantly used by 12 (5.1 %) respondents, while Laptops are used by 9 (3.8 %) respondents and iPads are only dominantly used by 5 (2.1 %) respondents. The results indicate that respondents feel more at ease searching for online information through smart phones compared to other devices. This trend is an opportunity for marketers to disseminate information to target consumers on a 24–7 basis.

Additionally, the dominant Social Media networks used by the respondents were also investigated. The data shows that 113 (48.1 %) respondents use Facebook as a dominant social media network, while Google+ is a close second with 94 (40.0 %) respondents. Other social media networks show lesser value to consumers, as less than 10 respondents prefer to use these networks. For example, Email is preferred by 8 (3.4 %) respondents, followed by Instagram being preferred by 7 (3.0 %) respondents and YouTube being preferred by 6 (2.6 %) respondents only. The least preferred social media network is Twitter, which recorded only one (0.4 %) respondent who dominantly used the application. Thus, Facebook is at the top of the popularity list for respondents to seek online information. Therefore, FDAM should consider developing their digital marketing strategy by creating new FDAM Facebook pages. This Facebook page is to disseminate information to Malaysian consumers, especially information about the fishermen market.

Table 1 below shows five (5) statements that measure the type of content sharing in Social Media. All five (5) statements are viewed as important, as they have mean scores that are greater than 3.00. With a sample of 235, the highest mean score is 4.03, while the second highest is 3.48. Based on these scores, it can be surmised that most respondents agree that content on criteria to determine the freshness of fish should be shared in social networks. A recent study by [9] has classified product information cues into two categories, intrinsic or extrinsic. Intrinsic cues are those inherent in the product, such as taste, smell or colour, while extrinsic cues include any external features, such as price, brand or packaging. Both information cues are perceived as important knowledge about fish [9]. Thus, freshness is one example of an intrinsic cue to consumers. This cue is important because it helps the consumer choose fish that offer value for money. Usually, people learn this cue through experiences of consuming many different types of fish over the course of their lives.

Therefore, content sharing on how to measure freshness is important in this subject matter. Neti [15] and Golden [21] describe that content sharing includes media such as internet forums, message boards, weblogs, wikis, podcasts, pictures, and videos.

Table 1. Type of content sharing in social media

Statements	N	Mean	Std deviation
I need to look at the customer reviews, testimonials and recommendations to motivate me prior buying fresh fish at the fishermen market	235	3.43	0.982
I need to view at the pictures to see the ambience to motivate me prior buying fresh fish at the fishermen market	235	3.48	0.975
I need to acquire information on location, landing time and personal contact number to convince me prior to buying fresh fish at the fishermen market	235	3.41	1.019
Information on species and price is not important prior to buying fresh fish at the fishermen market	235	3.09	1.074
Criteria on determining the freshness of fish should be as part of content sharing	235	4.03	0.776
Valid N (listwise)	235		

Providing respondents with more input using these media channels, gives them an opportunity to review comments, seek testimonials and browse through recommendations before they buy fresh fish at the fishermen market.

This affirms the idea of Daft and Lengel [12] that when more information is communicated in the online community, the richer the medium used will be. Consequently, [10] concluded that the richness of media has significant positive impacts on decision quality when consumers have sufficient knowledge about the products/services.

Table 2 below illustrates the credibility of information in social media. All five (5) statements are viewed as important as they have mean scores that are greater than 3.00. The data shows that the highest mean score is 3.78, indicating that respondents will ensure the contents of information sought are reliable, trustworthy and correct before they make any purchasing decision at the fishermen market. This finding is similar to [9] recent study, which stated that consumers have a perception that social media is a more trustworthy source of information. Meanwhile, according to Yoon [16] credibility is closely linked to trust and satisfaction.

Table 3 below shows five (5) statements regarding purchasing decision at the fishermen market. All statements that are viewed as important have a mean score greater than 3.00. The data reports that the highest mean score is 4.13. This shows that most respondents agree that distance and time is the most influential factor for consumers in selecting where to buy fresh products. Therefore, points-of-differentiation (POD) or unique selling points (USP) are necessary as new motivating factors to make consumers feel the worth of buying fresh fish at the fishermen market despite its distance.

Meanwhile, the second highest mean score of 3.85 was recorded by two (2) statements. These statements suggest that consumers with knowledge and interest in browsing attractive online information regarding fish are those who might be interest in visiting fishermen markets. Further, this finding indicates that to be successful in social

Table 2. Credibility of information in social media

Statements	N	Mean	Std deviation
Video sharing about the landing site activities clarify my perception on fishermen market	235	3.64	0.812
I need to ensure that the information sought is relevant and related to my needs prior to buy fish at the fishermen market	235	3.73	0.806
I need to ensure that the contents of information sought are reliable, trustworthy and correct prior to buy fish at the fishermen market	235	3.78	0.802
I need to ensure that the information is unbiased and free from emotion prior to motivation to purchase fish at fishermen market	235	3.70	0.850
I believe that well-presented information reflects the believability of the information	235	3.66	0.813
Valid N (listwise)	235		

Table 3. Purchasing decision in fishermen market

Statements	N	Mean	Std deviation
Knowledgeable consumer on fish products is motivated to seek information on fishermen market	235	3.85	0.721
I feel that information in social media generating exposure to fishermen market and attract people to buy fish	235	3.85	0.767
Distance and time is the most influence factor to buy fresh and quality products	235	4.13	0.748
I do not feel confident that information search in social media will improve purchasing decision in fishermen market	235	3.16	1.105
I will recommend others to search for information on fishermen market to assist them in making purchasing decision	235	3.79	0.732
Valid N (listwise)	235		

media marketing, marketers must be able to handle two-way communication between consumers and their brand. Marketers must respond quickly to increase the credibility of their information, as that information will determine the consumers' decision to visit fishermen markets.

4.3   Testing the Pearson Correlation Between the Variables

To investigate whether the three independent (3) variables used in this study are correlated to the dependent variable, Pearson analysis was conducted to assess the relationship between perceived knowledge about fish, type of content sharing,

credibility of information and purchasing decision at the fishermen market. The hypotheses to be tested using the Pearson correlation analysis are as follows:

H1: There is a positive relationship between the perceived knowledge about fish and purchasing decision in the fishermen market.

H2: There is a positive relationship between the type of content sharing in social media and purchasing decision in the fishermen market.

H3: There is a positive relationship between the credibility of information in social media and purchasing decision in the fishermen market.

Figure 2 represents the results of the Pearson correlation analysis in detail. The analysis shows that for H1, the correlation coefficient $r = .084$, $N = 235$ and the significance level at 5 %, $p = .201$. Thus, there was a positive but weak correlation between perceived knowledge about fish and purchasing decision. However, the p-value = .201 is more than the acceptable value of .05. Therefore, H1 is statistically not significant. There is no significant relationship between perceived knowledge about fish and purchasing decision at the fishermen market and H2 is rejected.

Meanwhile, the data shows that the correlation between the type of content sharing in social media and purchasing decision at the fishermen market is significant at 0.000 ($p < .05$). There is a positive correlation between the two variables, as $r = .527$. Therefore, there is a strong positive relationship between the type of content sharing in social media and purchasing decision at the fishermen market. Thus, this analysis supports the H2, so it can be deduced that the type of content sharing in social media will influence the purchasing decision at the fishermen market.

There is also a strong positive correlation between the credibility of information in social media and purchasing decision at the fishermen market, where $r = .600$, $N = 235$ and p-value = .000. Since the p-value is less than .05, it can be concluded that there is a statistically significant correlation between those two variables. Hence, H3 is supported. As mentioned by [14] credibility of information is defined as how consumers view the information as a source of knowledge which is trustworthy, objective, and relevant to the consumers as intrinsic and extrinsic types of information. Based on this finding, this study suggests that consumers who believe that the information they seek

Variables	Coefficient, *r*	Scale of Effect Statistics Correlation Coefficient (Hopkins,2002)	Correlation Direction (Positive +ve or Negative _ve)	Significance level, p	
Perceived knowledge about fish (CPK)	0.084	Small	Positive (+ve)	Yes, CPK and EPD are positively correlated	Reject H1
Type of content sharing in social media (DSM)	.527**	Large	Positive (+ve)	Yes, DSM and EPD are positively correlated	Accept H2
Credibility of information in social media (DCI)	.600**	Large	Positive (+ve)	Yes, DCI and EPD are positively correlated	Accept H3

Fig. 2. Summary results of Pearson correlation analysis based on the relationship between independent and dependent variables.

is reliable, unbiased, and believable will be reaffirmed to make their purchasing decisions.

The results of this study also show that two independent variables, type of content sharing in social media and credibility of information, (DSM and DCI) have the strongest and most significant positive correlations with purchasing decisions of the respondents. This shows that the credibility of information and type of content sharing in social media are the most important elements that need to be paid particular attention to in influencing the consumers' purchasing decision at the fishermen markets.

However, the variable 'perceived knowledge about fish' was found to have a small and non-significant correlation to purchasing decision at the fishermen market. Thus, this variable is a weak predictor of purchasing decision on fresh fish at this market. In conclusion, the most significant variables with the highest correlations are as follows: credibility of information in social media (DCI) and type of content sharing in social media (DSM). Thus, the two hypotheses tested are accepted. However, the variable perceived knowledge about fish (CPK) is not statistically significant. Thus, the hypothesis is rejected.

5   Discussion

The results of this study are consistent with Stoke [20], who asserted that customer reviews, testimonials and recommendations posted in social media open a huge opportunity for marketers to create intention to buy. In the context of this study, consumers may share information about the fresh fish or fishermen markets if they are provided with social media platforms that are reliable and trustworthy. According to Golden, social media needs to be transparent and honest [21] to ensure that the messages and information are credible and reliable to the online community. Marketers need to monitor and respond to the reviews, testimonials, or recommendations of consumers as quickly as possible, perhaps using a 3-h rule of thumb as a good social media response rate. Hence, two-way communication will increase consumer awareness and promote the exchange of ideas and perceptions. When marketers, especially in the fishery industry, decide to use social media as a promotion tool, they need to stimulate consumers by enhancing their content strategy in marketing. A study by Drury [22] also supports this view of marketing as no longer one-dimensional; instead, it is now a two-way process engaging a brand and an audience. By implementing the usage of social media, businesses are not just limited to giving messages, but also benefit from receiving and exchanging perceptions and ideas [22]. This proves that consumers may rate the content of social media in evaluating the credibility of information to help them in the decision-making process.

6   Conclusion

The explosion of mobile Internet connectivity and social media has given the Malaysian fishing industry wider access to new marketing tools to reduce the dependency on intermediaries. Social media is a vital tool to promote, educate, and create

awareness among consumers about the new fishermen markets. This study posits that to make the initiative a successful one, FDAM must adhere to information credibility, frequency of information updates, and sharing of informative articles in their social media channel. A high level of product awareness may influence consumers' purchasing behaviour, and thus could lead them to the fishermen market -no matter how remote the location is.

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