Determinants of the willingness to use a mobile application for market participation by fishers: A case study in Western province Sri Lanka

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1. Introduction

Fishing has been the oldest yet the most important livelihood among the coastal community in Sri Lanka since ancient times (Dayalatha, 2020). Fisheries as an Industry contributed 1.3% to the Gross Domestic Product (GDP) in 2019, of which 1.1% is from marine fishing (MFAR, 2020). Despite the importance, the growth of the sector is hampered by the poor connection between the value-chain actors (Gestsson et al, 2010), which has ultimately led to information asymmetry between value-chain actors and lower efficiency. One of the ways to strengthen the connection between value-chain actors is the use of mobile-based tools for market participation. In addition to enhancing the connection between value-chain actors, the use of mobile-based tools enables to increase the efficiency of the market participants and provide greater access to new markets. Against that backdrop, the present study was conducted to assess the willingness of fishers to use mobile applications for market participation and determinants of their willingness. The results of this study aid mobile-based tool providers to assess their market and targeting the customers.

2. Materials and Methods

A primary survey was conducted among fishers those who unload fish in four harbours, Negombo, Dikkowita, Beruwala and Panadura, in the Western Province. Multistage cluster sampling was used as the sampling technique. Beruwala, Dikkowita and Negombo Fisheries Harbours, were selected for the study. Lists of fishers contact details were gained through respective fisheries harbour offices. Then, convenience sampling was used to select fishers for the sample. The sample included 27 fishers from Beruwala harbour and 25 respondents each from the other two harbours. Data were collected using a pretested questionnaire administered through telephone interviews.

The study used Firth logistic regression model to identify the determinants of willingness to use a mobile application to participate in the market by fishers.

The decision to participate in the market using mobile based tools depends on the socio-economic characteristics of the farmer, resource endowment and institutional factors (Moono, 2015: Nwafor, 2020). Thus, the following independent variables were chosen for the analysis. Experience in fisheries (D1), availability of additional income (D2) and scale of operation proxied by the type of fish boat (Dayboat or Multiday boat-D3) were used as socio-economic determinants. Being a member of Community Based Organization-CBO (S1) was used to indicate the influence of institutional factors. The influence of technology was measured by ICT literacy (T1) and awareness on online business (T2).

The specified logit model was as follows,

$$y_{ki} = \beta_{k0}D1 + \beta_{k1}D2 + \beta_{k2}D3 + \beta_{k3}S1 + \beta_{k4}T1 + \beta_{k5}T2 + \varepsilon_t$$

$$y \begin{cases} 1, \text{ if respondents intend to participate market through mobile applications} \\ 0, \text{ if respondents do not intend to participate market using mobile applications} \end{cases}$$

3. Results and Discussion

Descriptive data showed that the highest percentage (34%) of respondents of the marine fisheries community in the study sample belongs to the age group 50-60 years. Income diversification was observed among 4% of the respondents. The other income sources they engaged in included the import of fishing baits, restaurants ownership, retail shops, agriculture – growing cinnamon and acting as middlemen.

Fishers have formed community-based organizations that some of which are state-aided while others are not. The objective of the establishment of these CBOs is to improve the welfare of the fishing community and engage in social security-related activities (Amarasinghe, 2006). All the respondents had at least one ICT device including a mobile phone. Fifty-seven percent of the respondents had high ICT tool usage. Further, 51% of the respondents were having high ICT literacy.

As per the results obtained, 83% of the respondents had high awareness of the existence of online businesses (the buying and selling that happens through a digital platform). The majority (68%) of the respondents were willing to use a mobile application to access and participate in the market while the rest were having the opposite response.

The results of the logit analysis (Table 01) indicated that fishers who have diversified their income, members of CBOs and have awareness of online businesses have a higher willingness to use mobile-based tools for market participation.

Table 01. The result summary of binary firth logit regression

Independent variables	Coefficient
Years of experience in fisheries (D1)	-0.020 (0.038)
Availability of other income sources (D2)	2.731** (1.000)
Type of fish boat (D3)	-0.515 (0.870)
Membership in CBO (S1)	3.241** (1.031)
Online business awareness (T1)	4.121** (1.215)
ICT literacy (T2)	1.464 (0.892)
Constant	-9.978**
Number of observations	77
Wald chi2(6)	15.41 (0.0173)

Standard errors are stated within parenthesis. ** Indicates significance at 5%

As shown in Table 01, the Wald chi-square is 15.41 and the probability value is 0.0173 with 5% significance that implies model fit is good. According to the coefficients of the analysis, the willingness to use a mobile application for market participation is high among the respondents with another income source as compared to the fishermen who rely on fisheries to gain an income. The awareness of online businesses (T1) has a positive coefficient, indicating the ones with an awareness of online businesses are more willing to use a mobile application

for market participation compared to those without awareness of online businesses. Members of Community Based Organization (CBO) were also found to be more willing to use mobile-based applications for market participation than non-members.

The effect of ICT literacy (T2), years of experience in fisheries (D1) and type of fish boat (D3) on willingness to use mobile-based tools for market participation is insignificant. The major constraints faced by fishers are the unavailability of a mechanism to access daily market prices, high fluctuations of fish price and receiving a lower share of the retail price.

4. Conclusions

The study reveals that a great majority of fishers (68%) are willing to use mobile applications for market Participation. The results suggest that there is a greater potential to introduce or promote mobile-based ICT tools among fishers. Furthermore, to promote ICT tools, fishers' awareness of the online business and their ICT literacy need to be scale-up. This can be done through CBOs. The study also shed light on the target market for mobile-based tools.

Furthermore, the marketers can use this result to introduce and promote mobile applications among fishers addressing the aforementioned constraints while facilitating their market participation.

5. References

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