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Mobile Floriculture Operators in Southern Sri Lanka: Challenges and Solutions

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Authors' contributions

This work was carried out in collaboration among all authors. Authors DLCKF and HIGKA designed the study, carried out the survey and wrote the first draft of the manuscript. Author WWUIW performed the statistical analysis of the study. All authors read and approved the final manuscript.

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ABSTRACT

Floriculture is a flourishing industry in Sri Lanka with a great potential in both domestic and export market. Street and mobile flower vending is a micro enterprise which is not a negligible portion of floriculture sector in the country. Present study was conducted to investigate the constraints faced by street and mobile flower vendors and to understand their willingness to adopt those challenges. Randomly selected 40 flower vendors from Galle, Matara and Hambantota districts were interviewed using a semi structured questionnaire by visiting them at their marketing sites such as streets, week fairs and "Kaprukawaruna" exhibitions conducted by Coconut Cultivation Board, Matara. According to the findings, majority of the respondents engage in the business as a full time employment and 43.3% of the vendors sell plants grown in their own nurseries. Apart from the flowering and ornamental plants, they sell fertilizers, coir dust and coconut husk pieces and product diversification has a significant impact (p=0.016) on their monthly income. Average nursery size was found to be 500ft^2 where average income was noted as 200 USD. Among the vendors 70% use their own money to refinance the business. Majority of the respondents (60%) were members

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of different flower grower societies. Vendors (87.5%) sell their products targeting week fairs and (62.5%) sell their products beside the streets in temporary fixed huts. Not having an authorized place to market their goods was identified as the major problem by 85% of the respondents. Majority of the vendors (62.5%) were willing to expand the business while 42.5% identified this as a profitable venture to invest. According to the binary logistic regression results, age (p=0.000), education level (p=0.001), economic status (p=0.057), nursery size (p=0.004) and credit accessibility (p=0.024) were positively related with their willingness to adopt for the challenges they face. It is concluded that following key actions must be taken to strengthen the street and mobile flower vendors for their further empowerment: Provision of proper authorized sites of operation, improve the market credit and other infrastructure facilities and more training opportunities.

Keywords: Southern; street and mobile; flower vendors; challenges; willingness to adopt.

1. INTRODUCTION

Floriculture has been emerged as an industry and plays a major role in many cultures around the world. This sector is considered as a high income generating agribusiness which provides high income per unit area than other agricultural crops. Sri Lanka held the 9th place of the world rank in 1990s. But in 2015 we have dropped down to 47th place [1]. Sri Lanka has achieved 12.94 USD million export earnings by August 2019 while contributing 0.16% share of total merchandise exports from the country. Floriculture sector not only generate high foreign income to the country but also generate employment opportunities [1]. The sector provides direct employment opportunities to around 4,000 people in urban and semi urban areas in the country. In Sri Lanka, this business is handled by three sectors as large commercial ventures, middle level growers and village level producers. Large scale commercial growers mainly focus on ornamental and cut foliage plants together with foreign partners targeting export market. Middle level growers and village level growers produce flowers for the local market. Most of them do not have advanced technologies, but follow traditional approaches. Today Sri Lanka is highly recognized as one of the best quality floriculture producers in the world [2]. Currently wide range of floricultural products are produced by Sri Lankan growers like foliage plants, flowering plants, cut flowers, climbers and grasses [3]. Majority of small scale growers market their floriculture products either at home in their own nurseries or by street vending or by mobilizing into different places such as week fairs exhibitions or any occasion where they can find customers. Most of the times the market of the street flower vendors is the pedestrians. They try to develop their customer relationship by doing business in one place for a long time. Street flower vending is a micro enterprise which significantly contribute to the development of the floriculture sector. Therefore, there is a need to identify their challengers and find proper solutions for empowering them. The present study was conducted to investigate the constraints and challengers faced by street flower vendors in Sothern province of Sri Lanka.

2. METHODOLOGY

This study was carried out as a field survey in Galle district (Hiniduma,Thawalama, Imaduwa and Pitigala divisional secretariat divisions) Matara district (Matara town, Akuressa, Kamburpitiya, Thihagoda divisional secretariat divisions) and Hambantota district (Beliatta, Tangalle and Walasmulla divisional secretariat divisions) which belong to Southern province Sri Lanka by visiting the flower vendors at their marketing sites, streets, week fairs and "Kaprukawaruna" exhibition conducted by Coconut Cultivation Board, Matara. A pre tested semi structured questionnaire was used for the interviews. The data collection was started in July, 2019 and completed in September, 2019. The data were collected from 40 flower vendors of these three districts and samples were selected randomly from a list of mobile vendors registered at Southern Provincial Council, Sri Lanka. Socio personal data gathered as age, occupation and education level of the respondents. Socio economic data such as method of selling products: In a stall, hut or in a vehicle, their monthly income, nursery size, main cultivated varieties, main selling products, source of the materials sold, transportation methods, family involvement on the business and interactions with financial institutions were gathered. Some of the communication variables such as any membership in flower grower societies, support given by the government institutes were gathered. Psychological variables such as their willingness to expand the business

and their perspective of worthiness of the business to invest were tested. Apart from those variables, marketing and production issues, other barriers/ challengers they face and their suggestions and current needs were collected from the questionnaire. Secondary data were collected from the books, research articles, institutional publications and internet. Data were tabulated and analyzed using Excel, 2013 software. A binary logistic regression was used to regress the dependent variable, y, where the growers' willingness to adopt for the challenges they face using R 3.5.3 statistical software.

The binary linear regression model of the factors affecting for the willingness to adopt the challenges of street and mobile flower vendors was specified as below:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \mu$$

Where:

Y = Willingness to adopt (dependent Variable; Yes=1/No=0)
α = Constant (intercept)
X_1 = Gender
X_2 = Age of the flower vendor (years)
X_3 = Education level
X_4 = Economic status (Level of income:Rs)
X_5 = Product diversification
X_6 = Selling outlet (hut, in vehicle, street)
X_7 = Nursery size (ft^2)
X_8= Experience of the flower vendors (years)
X_9 = Credit accessibility (1 for access to credit; 0 other wise)
μ = Random error term

Willingness for the adaptation is expected to change by a certain factor, β (coefficient) if any of the above variables increases by one unit.

3. RESULTS AND DISCUSSION

3.1 Socio-personal Information of the Respondents

According to Table 1, majority (70%) of the respondents were males. The growers ranged in age from 38 to above 65 years old with a higher distribution of age between 26-50 years (60%). Majority (52.5%) of the respondents were engaged in the business as a full time employment while there were graduates and diploma holders among the respondents who engage in government jobs.

3.2 Socio-economic Information of the Respondents

Monthly income of the respondents vary from 80 USD to 430 USD. Majority of the respondents (50%) falls under the medium socio economic status where their average income falls between Rs.20000 to Rs.50000. The average income was noted as 200 USD. Majority (70%) of the flower vendors engage in the business for around 1 to 5 years. Only 5% of the respondents were experienced more than 15 years in the sector. Most of the vendors sell plants grown in their own nurseries (43.3%) while 25% of the vendors sell plants purchased from other growers in different parts of the country and 31.7% of the sellers have their own nurseries and buy products from other growers as well.

Apart from the plants given in the Table 2, some vendors sell fertilizers (82.5%) such as osmocot, *nilketa and dam keta*, pots (15%), coir dust (25%) and coconut husk pieces (25%). According to the results of chi square test carried out to find the impact of product diversification on total income, it was found out that product

Table 1. Background information of the respondents

Variable	Categories	Frequency	Valid %
sex	Male	28	70
	Female	12	30
Age (years)	Young (up to 25)	4	10
	Middle (26 to 50)	24	60
	Old (above 50)	12	30
Occupation	Self employed	21	52.5
	Farming	13	32.5
	Government job	6	15
Dependents	Only the grower	3	7.5
	With spouse	3	7.5
	With spouse & children	34	85

Table 2. Types of plants sold by the vendors

Flowering plants	Ornamental foliage	Landscaping plants	Other
Rose, baby rose, deliah, anthurium, orchid, boganvillae, golden bell, oleander, gerbera, vinca	Bigonia, aglaonema, colias,	Pichcha, araliya, benjamina, Christina, palms, celosia, atteria, buttercup, cyprus app.	Fruit crops, vegetable seedlings, pepper

diversification has a significant impact (p=0.016) on their total income rather than selling only plants. The nursery size of the respondents vary between 500 ft^2 to 1500 ft^2 with a higher distribution of 500 ft^2 size nurseries (57.5%). And 22.5% of the respondents did not have proper separated nurseries. Most of the vendors (65%) did have a net house in their nurseries. Majority of the respondents (83%) do their business in more than one selling outlet. while they are travelling from place to place during the week, their family members sell plants at home. Most of the vendors (87.5%) sell their products targeting week fairs. Some of them (5%) only stay in one place during the week days and in the weekends sell in a fair in their living area. Some vendors only sell products in the exhibitions (15%) except to their home. Few of the respondents mentioned that they target the carnivals except to the week fairs. Respondents who engage in the business as a full time occupation spend at least 5 to 6 days/ week selling their products on the selected areas. The part time vendors only sell their products in Sundays at a selected week fair. Almost all the sellers spend average 10 to 12 hours/day selling their products. The travelling distance of the respondents ranged from 2 km to 30 km. The cost of transportation is critical for most of the vendors. Majority of the vendors (75%) transport their floriculture products by hired vehicles while few of them (25%) had their owned vehicles. Transportation cost/ day also ranged from Rs.250 to Rs.3000. Majority of the respondents (62.5%) sell their products besides the street in a temporary fixed hut. Even in the week fairs, they do not have a proper established stalls to arrange their goods. Some of them (20%) sell their plants inside their own vehicle. Few of the street vendors (17.5%) do not have either a hut or a vehicle but they arrange their goods besides the road. It was observed that arranging the plants besides the road sometimes hinder the way of pedestrians. Target customer group of almost all these vendors are pedestrians who are cash and carry customers.

Most of the growers (65%) use their own money to refinance the business while rest (30%) had borrowed money through bank loans. According to a study done in Purba Medinipur district in India, the women flower vendors refinance their business by their own savings [4]. Some had obtained the loan given after the flood disaster in 2017 and some others (5%) use money from the loans they obtained for other purposes like house building. Most of these vendors (85%) have not finished paying the bank loans yet. Few of the respondents (5%) mentioned that they find money for the business by pawning their jewelries.

Majority of the respondents use family labor for the business. Almost all the vendors mentioned that their family members actively support for the business by maintaining nurseries, helping in repotting, budding practices, watering, weeding, transporting, loading and unloading goods etc. According to a study conducted in Colombo district in Sri Lanka to investigate the drivers and barriers faced by women entrepreneurs, family has encouraged almost all the entrepreneurs when they start their business [5].

An economic analysis of small scale flower farming industry done in Nuwara Eliya district in Sri Lanka [6] carried out in 2019 revealing several similar problems of small scale flower growers and sellers like lack of preservation facilities between harvesting to marketing, higher transportation cost, lack of modern cultivation technologies and lack of quality planting materials

3.3 Communication Variables of the Mobile and Street Flower Vendors

Majority of the respondents (60%) were members of different flower grower societies. Rest of the sellers did not have a positive response on the grower societies and they mentioned that spending time on the programs conducted by them is a waste of time and some societies are inactive. Most of the growers had received technical training on flower growing through these societies and 50% discount to build poly tunnels, opportunities to participate for the exhibitions, lectures and discussions on their

other issues were some of other benefits they mentioned. Government institutions also had supported them in many ways by linking them with the flower grower societies through Divisional Secretarial offices, supporting them with loans and by organizing exhibitions. Majority (65%) of the respondents were not satisfied with the trainings and other support they received from the above mentioned organizations while rest of the respondents were satisfied with the services and benefits they receive. Increasing the number of extension programs and regular visits to floriculturists should be organized in regular intervals to increase the self-employment opportunities and to promote entrepreneurship of small scale flower growers as a potential tool for the poverty alleviation [7]. According to Padmini [3], the national policy related to the sector in Sri Lanka supports small scale florists to link up with large scale growers and other related institutes. Government and non-government organizations support the growers with training programs and infrastructure facilities.

3.4 Psychological Variables of the Street and Mobile Flower Vendors

Most of the respondents (62.5%) showed their willingness to expand the business further. Also 42.5% of the respondents mentioned that their business is worthy to invest. Meanwhile almost all the respondents were satisfied with what they do. A well-organized marketing efforts and a market structure is suggested to strengthen the flower markets in Kannada district in India [5]. Also the same author has stated that wide diversity of floricultural products with a good quality will ensure a good profit and income for the flower sellers.

3.5 Challenges Faced by the Mobile and Street Flower Vendors

Not having an authorized place to market their goods was identified as the main problem by majority (85.2%) of the respondents. Bad effects from adverse weather conditions such as rain and heavy sunlight mentioned along with this. Most of the vendors sell plants in temporary fixed huts, some arrange their goods on tables and racks and some hang their plants on walls and trees. This cause the plants to get sun burnt and fungal attacks are very common. It is difficult for the vendors to sell plant under heavy sunlight and rain without having a proper shade. When there is a heavy rain, they have to stop selling products. Since, most of the respondents use hired vehicles, cost for the transport and payment for drivers are very high. According to Padmini [3], many growers start their cultivations in home gardens and when they find the market to sell their products they try to expand the business. But in that case, the main constraints the face are financial and transport problems.

According to the current survey unavailability of a proper market, taxes laid by the government for the temporary huts, not having net houses and proper established nurseries and not having a financial support are other mentioned challenges faced by the respondents. Support and incentives given by the government has enhanced the income of the growers. New technologies such as poly tunnels and net houses are being used by the growers to increase their production [3].

3.6 Results of the Binary Logistic Regression Model

The binary logistic model regressed the willingness of the flower vendors to adopt for the challengers they face. Result of the binary logistic regression model is given by Table 3. This model was significant (χ^2=23.06, p= 0.011) predicting more than 50% of the observations.

Given the above results, the function of the factors affecting the willingness to adopt for the challenges is as shown below:

$$Y' = -34.4 - 0.64\ X_1 + 9.50\ X_2 + 5.21\ X_3 + 2.53\ X_4 + 0.661\ X_5 + 2.16\ X_6 + 4.59\ X_7 + 0.443\ X_8 + 5.13\ X_9$$

3.7 Significant Factors Affect Willingness to Adopt for the Challenges

The regression model explains 57.4% of the extent to which the selected factors affect the willingness of the street and mobile flower vendors to adopt for the challenges they face in Southern province Sri Lanka (Table 3). According to the results, age (p=0.000), education level (p=0.001), economic status (p= 0.050), nursery size (p=0.004) and access to credit (p=0.024) are identified as the significant terms which affect for the respondents' willingness to adopt for their challenges. The odds ratios of all the predictors are >1 and this increases the predictor value while increasing the willingness of the respondents to adopt for their challenges. In this result, the goodness-of- fit test are all greater than the level of significance (0.05) indicating that there is no enough evidence to conclude that the model does not fit the data.

Table 3. Results of the binary logistic regression model

Variable		β	Significance (P-value≤ 0.05)
Constant	A	-34.4	0.000*
Gender of the flower vendor	X_1	-0.64	0.759
Age (years)	X_2	9.50	0.000*
Education level	X_3	5.21	0.001*
Economic status (income: Rs)	X_4	2.53	0.050*
Product diversification	X_5	0.661	0.490
Selling outlet (hut, in vehicle, street)	X_6	2.16	0.093
Nursery size (ft^2)	X_7	4.59	0.004*
Experience of the flower vendors (years)	X_8	0.443	0.673
Credit accessibility	X_9	5.13	0.024*

*Dependent Variable: Willingness to adopt (Y R^2 = 57.4%,*significant at 5%)*

Age of the respondents was found to be positively related to willingness to adopt. Results indicated that for every year's aging of the respondents cause to increase the willingness by 9.50. As the flower vendors get older they armed with experiences and strategies to earn more from their micro enterprise and become experts in risk taking. Thus they will adopt to face for their challenges. Education level of the respondents also found to be positively related with their willingness to adopt for the challenges. When the education level is increased, they tend to gather more marketing strategies and new technologies are easy to catch up. Also, they can easily access to the credits when they are educated. According to Chakreshwari [5] demand for flowers in Kannada district in India is increasing with the new extension services and with the rise of the income level of people in that area, indicating that education is necessary to respond well to extension services. A well-organized marketing efforts and a market structure is suggested to strengthen the flower markets in Kannada district in India. Also wide diversity of floricultural products with a good quality will ensure a good profit and income for the flower sellers. Economic status of the respondents also positively related for their willingness to adopt for the challenges. This implies that, when they have more earnings, they can invest more and allocate a considerable amount of money for the expansion of their business. Thus, any barrier they face is not accepted as a challenge when their economic status is good. The nursery size of the respondents also was positively related with the willingness for their adoption. When the nursery size is increased their production also get increased. Because of that they earn more from the business and secure their income. Thus, they tend to take challenges and see the business is worthy to invest further. Credit accessibility positively relate for their willingness to adopt for the challenges. When they are provided with loans at low interest rates, they can easily develop their business by investing on infrastructure or on any aspect of the business. This would increase their production and thus income [8]. Finally, they will be armed with enough resources to face any challenge they face in their business. Product diversification was positively related to the willingness of adoption to challenges though not significant at 5%. A unit increase in the diversified products leads to a 0.661 increase in willingness to adopt. This is because increase in product diversification leads to increase in the overall income earned from the enterprise. Experience of the flower vendors also positively related to the willingness to adopt for any challenge though it is not significant at 5%. This is because that experience helps the sellers to take correct decisions at each and every critical point of their business. Also, when they are experienced, they have more connections with the customers and they have already developed a set of regular customers. Consequently, they can assure a continuous income from the business leading them to adopt for any challenge they face. Gender of the flower vendors do not show a willingness to adopt for any challenge they face.

4. CONCLUSION

Flower vending is a source of income, an informal employment and a source of empowerment for the people who engage in the sector in this area. It is observed that these street and mobile flower vendors put a huge production inputs and effort on their business to earn a considerable income from the business.

5. RECOMMENDATIONS TO UPLIFT MOBILE FLORICULTURE OPERATORS

Suggestions raised by the respondents were varied. Those are as follows.

1. A permanent place to do business
2. financial support such as a loan at a low interest rate
3. Increase the chances to attend for the exhibitions
4. Proper training and provision of materials
5. Support to establish nurseries and net houses
6. Support from the export oriented flower growing firms to do contract farming.
7. More market opportunities and well organized marketing strategy

Good quality flower production is important even though the growers target local market or the international market. Due to the selling conditions of street and mobile flower vendors, the quality of the plants can't be assured sometimes. If they are provided proper authorized sites of operation with proper infrastructure, this problem can be addressed and they can expect to develop a proper market as well. It is a need to conduct more research and development activities, developing a close relationship between the growers and the supporting institutes are also required. It is a need to organize more local exhibitions, fairs and markets for growers, input suppliers and for buyers in floriculture sector. Growers associations should be encouraged to organize this type of promoting programmes to benefit all types of players in the sector. Especially the growers, input suppliers and buyers in rural areas should be benefited with these types of awareness programmes. According to the developed model factors such as credit accessibility, nursery size, economic status and education level significantly affect for the respondents to adopt for the challenges they face. So, it can be concluded that if there are mechanisms/programmes to accelerate those predictors, they will manage to face the challenges they face to develop their business. they come upon with several suggestions to improve the sector combining both private and government sector. According to a study conducted in Bangladesh with similar scope has identified these similar suggestions to uplift their floriculture industry; providing trainings for farmers and as well as traders, providing production assistance, storage facilities & to build countrywide permanent trading infrastructure, introduce credit policies and packages were among the suggestions [9]. Street flower vending should not be seen as temporary task which may make the authorities not see to help the vendors to develop their business.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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