

Entrepreneurship Through Marigold Cultivation: Evidence from Laxmibill Area of Tripura

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Abstract

The objectives of the study are to assess the different motivating factors for marigold cultivation and to report the problems the respondents are exposed to. A schedule comprising 50 questions with personal interview is used to collect data from a sample size of 130 respondents chosen using different non-probability sampling techniques. Different statistical tests like Factor analysis, Maan-Whitney U test, and Chi-square test have been performed to assess support for the hypotheses. The findings document that to improve the financial status, to become self-employed, good profit margin, and availability of inputs are the prime motivating factors for cultivation. Further, paucity of capital, frequent change in weather, insufficient government support, and shortage of skilled labourers are the constraints for cultivation. The sample size is considerably low as well as sample has been selected using different non-probability sampling techniques which themselves are not flawless. The results obtained from the study have practical implications not only for existing entrepreneurs, but also for potential entrepreneurs about the motivational forces and the problems they could encounter if they commence the cultivation; and accordingly can formulate their strategies for sustainability.

Keyword: Marigold, Survey, Factor Analysis, Chi-square Test, Maan-Whitney U Test

Introduction

The word 'entrepreneur' comes from the French verb *entreprendre*, which means to undertake (Landström 2005). Broadly defined, entrepreneurship involves efforts to bring about new economic, social, institutional, or cultural environments (Rindova, Barry, & Ketchen, 2009). Since Schumpeter's (1911, 1942) pioneering work, entrepreneurship has become widely acknowledged as the key driver of the market economy. We adopt the definition of entrepreneurship as 'new entry': the efforts toward the creation of viable business resulting from an individual's occupational choice to work for his/her own account (e.g., Gartner, 1989; Hébert & Link, 1982). Commercial entrepreneurs rely on market exchange and have the objective to maximise profits, while social entrepreneurs supply needs that are not addressed by for-profit ventures (McMullen, 2011). Ajzen's (1991) theory of 'planned behaviour' proposes that three antecedents (personal attraction, subjective norm, and perceived behavioural control) shape individual behavioural intentions. This theory has often been applied in studies examining entrepreneurial intentions (Díaz-García & Jiménez-Moreno, 2010; Liñan, 2008; Liñan & Chen, 2009; Liñan et al., 2011; Moriano, Gorgievski, Laguna, Stephan, & Zarafshani, 2011). The prime objective of the present study is set on the findings of the above studies to report the motivational factors (intentions) of the respondents about the marigold cultivation.

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Marigold (*Tagetes erecta* L.) is an ornamental plant belonging to the composite family. It is grown in certain parts of India as well as in different parts of the world. Marigold is widely grown as a border plant in gardens. Different varieties and flowers are available in various shades of yellow, red, orange, dark orange, and orange brown. The two common species of marigold, both annuals, are distinguished as African Aztec (*T. erecta*) and French marigold (*T. patula*) and are native to Mexico and Guatemala. The African Aztec has large yellow or orange flower heads. The French marigold has smaller single or double heads, usually with two tons of yellow or orange and red (Sowbhagya, Sampathu & Krishnamurthy, 2004). The main colouring component of the flower is lutein (C₄₀H₅₆O₂), a carotenoid pigment. Lutein naturally occurs in the acylated form. The lutein ester concentration in fresh marigold flowers varies from 4mg/g in greenish yellow flowers to 800mg/g in orange brown flowers (Gregory, Chen & Philip, 1986). The marigolds, one can see that they are silent accompaniments to a plethora of sounds, traveling across the cityscape-interiors, public spaces, and areas of celebration and mourning alike (Sinha, 2009). The flower of marigold is rich in carotenoids which are attracting growing attention for their health benefiting properties (Bartlett & Eperjesi, 2003; Alves-Rodrigues & Shao, 2004). The major carotenoid present in marigold is lutein, which is a dihydroxylated compound, accounting for over 90 percent of the total carotenoids in the flower (Quackenbush, 1973). Olmedilla et al., 2001 suggest that lutein supplementation may improve visual function in age-related macular degeneration patients.

It is commercially grown for cut flowers and has exclusive use in religious and ceremonial functions. It is also grown as annual in pots and beds, and blooms for many months in a year. So as far as commercial cultivation of marigold is concerned, the climatic factors are beyond the control of human beings but growth, flowering, and production of marigold can be improved to a large extent by the judicious use of fertilizers, appropriate planting distance, cultural operations, and pinching etc. The economic yield is largely affected when plants are not planted at appropriate planting distance. Beside this, pinching also plays an important role in plant growth and flowering production. Therefore, on farm trials were undertaken to assess, refine and standardise spacing for optimum flower yield with better flower quality in marigold. Major growing states are Karnataka, Tamil Nadu, West Bengal, Andhra Pradesh, Maharashtra, and Tripura. Marigold

requires mild climate for luxuriant growth and flowering. Mild climate during growing period (14.5°-28.6°C) greatly improves flowering while higher temperature (26.2°-36.4°C) adversely affects flower production. Marigold is adaptable to different types of soil conditions and thus can grow successfully in a wide variety of soils. However, a deep, fertile, friable soil having good water holding capacity, well drained and near to neutral in reaction (pH 7.0 – 7.5) is most desirable. An ideal soil for marigold cultivation is fertile and sandy loam. Nursery beds are thoroughly prepared by digging and incorporating well rotten FYM. Before sowing the seeds, Marathon dust should be dusted on outer side of nursery beds to avoid ants. Mid July, mid-October, and February-March are suitable time for transplanting. At the time of transplanting they should of 7 to 10 cm height and bear 3-4 true leaves. The removal of shoot apices 40 days after transplanting enhances the flower yield.

Underpinning Literature

We conducted a systematic literature review following the process suggested by Tranfield, Denyer and Smart (2003), Denyer and Tranfield (2008), and Macpherson and Jones (2010) and applied in designing this review of literature section. This section is divided in two parts viz. studies on entrepreneurship and the other on marigold cultivation. The relevant literature on these sections is enumerated in the following lines.

Studies on Entrepreneurship

There are two main paths of academic research approaches to entrepreneurship. The first path tries to explain why a person decides to be an entrepreneur. Such studies attempt to explain entrepreneurship as a function of the nature of people engaged in entrepreneurial activity (Khilstrom & Laffont, 1979); this is referred to as the *micro approach* to entrepreneurship research. The second path explains regional variation in firm formation at an aggregate level by looking at normative, structural and institutional variations in geographical areas (Aldrich & Zimmer, 1986) such as local entrepreneurial environment, local culture and economic environment. This is referred to as the *macro approach* to entrepreneurship research (Ardichvili, Cardozo & Ray, 2003; Eckhardt & Shane, 2003; Shane & Venkataraman, 2000; Venkataraman, 1997). The present study is focused on the micro approach to unearth the

reasons for involve in the marigold cultivation by the sample respondents. Baumol (1968) notes that replicative entrepreneurs tend to create more new businesses like those they see around them, while truly innovative entrepreneurs create new products and services, & change the very nature of the market. Haltiwanger, Jarmin, & Miranda (2010) discuss the contribution of these innovative entrepreneurs to the dynamism and growth of the economy, but conclude that research on such firms is hampered by the lack of datasets large enough to capture these rare and currently unpredictable, but important start-ups. To provide an equivocal definition of entrepreneurship would ignore the versatility of the emerging field, but broadly speaking, entrepreneurship examines activities involved in the conception (various modes of opportunity recognition), launch, development, and operation of new ventures (resource formation process) (Shane, 2003). At its very root, Schumpeterian entrepreneurship, where fresh insights and bold creativity may be required, is at odds with Kirznerian entrepreneurship, where stability, consistency, and alert planning may be essential to regular improvement (Volberda, 1998). However, more recently many scholars have asserted that the Schumpeterian & Kirznerian entrepreneurships need not be contradictory, but act more as complementary modes over time or simultaneous modes with the same firm (Raisch, Birkinshaw, Probst & Tushman, 2009; Volberda & Cheah, 1993). According to research, entrepreneurship is an intentional and planned behaviour that can increase economic efficiency, bring innovation to markets, create new jobs, and raise employment levels (Shane & Venkataraman, 2000). It has found that entrepreneurship, viewed as the establishment of new business, has generally had a positive influence on employment (Labrianidis, 2006) and welfare in rural areas (Chun & Watanabe, 2012). Moreover, several opportunities have emerged in rural areas, including an increased demand for recreational and rural amenities and the quality of rural products and services, such as tourism (Stathopoulou, Psaltopoulos & Skuras, 2004). Entrepreneurship is not only socially bound, but also happens in spatial, or geographical, contexts (Johannisson, Ramirez-Pasillas, & Karlsson, 2002, p. 298). Society also influences entrepreneurship, which emphasises the “double sociality of entrepreneurship” (Steyaert & Hjorth, 2006 p. 1). Barriers to entrepreneurship can include difficulties in obtaining institutional support for aspiring entrepreneurs, receiving family support, securing financing from

lenders, building a relationship with suppliers, and/or a solid customer base. The second objective of the present research is partly based on the findings of Lüthje & Franke (2003), which indicate that the perceived availability of support such as access to “qualified consultants and service support for new ventures” (p. 147) has a positive impact on entrepreneurial intentions.

Studies on Marigold Cultivation

A good number of studies on the growth and financial performance of marigold cultivation has been carried out during the past, in the developed and developing countries. Brief reviews of the following research works reveal the wealth of contributions towards the performance evaluation of marigold cultivation.

Pal (1991) says many farmers around Pune and Nasik have two main centres in Maharashtra for the cultivation of roses for this trade and it is more profitable to convert their grape and sugarcane holdings into rose farms. Further, he points out those roses are being exported from Pune to Middle East countries though in very limited quantities. During post-economic reforms era the Government of India, Agricultural and Processed Food Products Export Development Authority (APEDA), State Trading Corporation of India have given encouragement and support to floriculture export trade. Armitrage (1992) concludes that specialty flowers are economical in field but not in the greenhouse. Any business person has ability to make profit. It depends upon keeping cost of production down and factors that affect cost included location, size, and managerial skill, and market channel, time of year and space utilisation. Bose (1999) discusses on prospect of floriculture in India. He mentions commercial floriculture is an activity, which has assumed same importance only in the recent times. In most parts of country, flower growing has been carried out on small holdings, only as a part of the regular farming system. He also observes that more than two-third of present floriculture are as under cultivation of traditional flowers like marigold, jasmine aster, rose, chrysanthemum, crossandra etc. The modern day cut flowers with stem e.g. rose, carnation, gladiolus, tuberose, orchid, etc. are growing. Singh (2002) discusses the concept of horticulture and states that, floriculture is the science of flower production. Apart from fruits and vegetables, floriculture industry in India comprising of florist trade, nursery plants, potted plants seed and

bulb product has being observed as sunrise industry. There has been soaring business of flowers in almost all metro cities in India. He observes that developed flower market has been set-up in various states in India. In Maharashtra, Mumbai, Pune, Nasik, and Nagpur are the major flower market cities. Bhattacharjee & De (2003) has given information related to traditional and modern floriculture in India. Indian Government gives incentives to floriculture industry as a part of foreign trade policy. According to this policy Pune, Bangalore, Nasik, Palanpur, Trivandrum, Ooty, Shimla, and other cities in India have geared-up the floriculture business. They mention many problems had been facing flower industry e.g. lack of basic infrastructure, non-availability of pesticides, high cost of production, tax burden, import duty, high rate of loyalty, poor facilities for post-harvest handling, poor market information, delay in claiming subsidies, etc. They suggest, for improvement of the situation of loose flowers those are to arrange supply of better quality planting materials and seed, equip the farmers with better growing technology of flowers, provide financial help to flower growers, provide cheap transport facilities, etc. Gajanan & Sudha (2003) discuss the matter of traditional flower production in India. The area and production of floriculture crops appear to have increased in recent decades. They conclude that, there has been tremendous increase in area under all the major flowers. They have classified the flowers in seasonal and perennial flower. Prasad & Kumar (2005) have stated that each crop has its own science and technology and floriculture is one of the branches of horticulture. Ornamental horticulture more appropriately covers the complete industry of flowers. They point out that, floriculture has a wide and includes a great variety and diversify of job opportunities. Sudha (2006) observes that hi-tech floriculture in India is synonymous with the protected cultivation of rose for export though hardly around one percent of total area under rose is under protected cultivation. She notes that initiated with a very high investment of over INR 2500 million this export oriented production was based mainly in the four major metro cities. Sale & Ganvir (2006) document marketing aspect of cut flowers. They focus on export-oriented approach of government and recommend that the floriculture industry needs modernisation. Government of India can help in creating more facilities in the form of various infrastructural facilities. Manohar & Kathinathare (2007) have observed that the cost and returns of protected agriculture vary greatly, depending

on the system used in the location and the crop grown. They suggest, the green house system economy could be improved, where labour can be more efficiently utilised, low cost capital will be available, some management and marketing skills will be available. Somani (2009) reports that floriculture products have been rising all over world and traditional consumption markets in United Kingdom, Japan and Europe are becoming more critical.

Research Methodology

Research methodology refers to the overall approach to a problem which could be put into practice in a research process, from the theoretical underpinnings to the collection and analysis of data (Collis & Hussey, 2003). This section is framed in the following sub-heads.

Rationality & Scope of the Study

Opportunities are critical to the survival, profitability and growth of ventures (e.g. Verbeke, James, & Wenlong, 2007; Halme, Sara, & Paula, 2012; Webb, Geoffrey, Duane Ireland, & David, 2010). An opportunity is a set of environmental conditions that leads to the introduction of a new product/service in the market (Dutta & Mary, 2005, 426). Opportunity identification or recognition has been defined as the ability to identify a good idea and transform it into a business concept (or the considerable improvement of an existing venture) that adds value to the customer or society and generates revenues for the entrepreneur (Lumpkin & Lichtenstein, 2005). Opportunity identification has long been accepted as a key step in the entrepreneurial process (Ozgen & Baron, 2007). In fact, without business opportunity identification, there is no entrepreneurship (Short, Ketchen, Shook, & Ireland, 2010). With regard to rural areas, which encompass territories with specific physical, social and economic characteristics (Stathopoulou *et al.*, 2004), there is increasing demand and interest in proposing entrepreneurship as a new form of business and therefore as a key element in the process of rural development, especially in areas where development is sluggish (Lafuente, Vaillant, & Rialp, 2007). The aim of the study is to find out the motivational factors that encourage the entrepreneurs to cultivate marigold in Laxmibill area of Bishalgarh, Tripura, India and to assess the problems they are exposed to. Marigold is use in many

occasions from daily pujas in temples and households, for decoration, to prepare garland, in wedding and religious ceremonies to even funeral processions. Large number of entrepreneurs is showing interest in this brisk business and the volume of businesses is increasing at a faster rate. This research makes good contributions. Firstly, although there is a proliferation of research about opportunities in small- and medium-sized enterprises (Sanz-Velasco, 2006; Williams & Williams, 2012), there are fewer studies that have focused on the concept of opportunity in small and medium established businesses (Zahra, 1996; Kellermanns & Kimberly, 2006; Ghauri, Amjad, & Jan, 2005), especially at the bottom of pyramid (BoP) (Prahalad, 2010). Secondly, the findings of this research bridge this gap and shed light on how entrepreneurs can successfully enter the BoP market, which can present a new avenue for their future growth (Prahalad, 2010; London & Hart, 2004).

The study is carried out in a small area of Tripura where there is a concentration of marigold cultivation and based on such entrepreneurship the rural economy is gradually vibrating. The prospect of this brisk business although has a role in value addition to the rural economy but pose a threat due to a number of constraints. Hardly, there has been any empirical research is conducted in Tripura on marigold cultivation and its associated dimensions. Here lies the shortfall in the literature and this present study is an attempt to bridge the gap in the domain of literature on marigold cultivation.

Objectives

The objectives of the study include:

- To assess the different motivating factors for marigold cultivation in Laxmibill area.
- To report the problems in marigold cultivation.

Period of Study

The study is carried out between January-April, 2015.

Research Design

The survey is carried out in three stages. Firstly, to carry out the study, all the cultivators engaged with marigold

cultivation of Laxmibill area are assumed as the study population, of which 130 such cultivators are selected with Roscoe's (1975) rule of thumb, which states that taking any sample between 30 and 500 is adequate; also recommended by Tabachnick and Fidell, (2013); MacCallum et al., 1999. Using a non-probability sampling technique-Snowball sampling the respondents are chosen as suggested by Green, Tull, & Gerald (1999).

Secondly, in the light of the stated objectives of the present study a schedule is developed with 55 questions and a *protocol interview* has been conducted with 10 potential respondents to carefully assess their understanding of the questions. Doubts are clarified as per their query as suggested by Diamantopoulos, Reynolds, & Schlegelmilch (1994); followed by a pre-tested with a small group of respondents (15) as suggested by Zikmund & Babin (2012) to check for clarity of questions, relevance, and completeness. Further, a little modification to the questions and statements' content, format and wording has been made and 5 questions/statements have been dropped based on the outcomes of such pre-test.

Thirdly, a survey on 130 respondents is conducted; since survey approach is suitable when a researcher is trying to obtain a broad and representative overview of a situation (Fisher, 2007). The schedule comprising 50 questions and statements including socio-economic background of the respondents is used to collect the primary data. Fixed alternative questions/statements have been used as it is easier for the respondents to answer and it enables comparability of answers and facilitates coding, tabulation and interpretation of data (McDaniel & Gates, 2010; Hair et al., 2010). Personal interview is conducted since it allows for an in-depth understanding of decision-making processes and for gaining relevant background information from key informants (Oberhofer & Dieplinger, 2014). Secondary data were collected from journals, monographs, research reports, conference proceedings, magazines, newspapers, and websites.

Procedure

For the purpose of data collection, the schedule is used and a rapport has been established with the selected respondents. The purpose of the study is briefly explained to them, so as to get reliable response from them. The

respondents are requested to read the questions and statements of the schedule carefully and doubts are clarified whenever requested. The enumerator filled up the schedule. They have also been assured to maintain anonymity as suggested by (Jobber, 1985; Oppenheim, 1992). In order to minimise the risk of comprehension and ambiguity problems, definitions of key question concepts are made available to the respondents especially translating into Bengali to the respondents for their easy understanding; as suggested by Peytchev et al., 2010. After successful completion of the process they are thanked for their cooperation.

A close-ended schedule with a 5 point Likert scale ranging from strongly disagree (1) to strongly agree (5) is used. According to Cooper (2000), this type of scale is considered to be an interval scale. To consolidate the data, Factor analysis is carried out. On the factors obtained through Factor analysis the Pearson's Chi-square test (on the basis of selected demographic variables) and Mann Whitney U test (on the basis of gender) are applied to see if there is any difference in the opinion of respondents on the factors so obtained. The other statistical tool applied is Descriptive Statistics.

Statistical Tools for Data Analysis

The data collected through schedule and personal interviews have been further processed by using IBM SPSS-20.

Measures

The study has revealed that majority of the respondents are men (80 percent), Hindus (85.4 percent), single (52.2 percent), in the age group of 18-25 years (50 percent), belong to middle class families (56.7 percent), OBC in caste (38.5 percent), having monthly income INR 5,000-10,000 (53 percent), have studied upto Madhyamik (56.92 percent), have own funds (49.23 percent), involved in cultivation 3-5 years (66.92 percent), owner of land (81.54 percent), pay annual rent of land (50 percent), have land 5-10 acre (50 percent).

The descriptive mean of motivating factors for marigold cultivation includes: cultivation for your own interest

(4.32), desire to be self-employed (4.45), continuation of family tradition (3.93), to improve financial status of family (4.56), to work independently (4.12), due to fertile land (3.79), to earn money for lively hood (4.33), for personal satisfaction (3.70), to acquire social status (3.81), support and inspiration from family members (4.12), minimum initial investment (3.64), past experience and exposure (3.94), demand (4.34), good profit margin (3.67), ease to cultivation (3.89), favourable climate (3.85), Easy availability of fertiliser (3.03), easy availability of inputs (3.63), influence from reference group (4.45) etc.

The descriptive mean of problems of marigold business includes: paucity of capital (4.69), lack of suitable land (3.64), shortage of skilled labourers (3.95), banks are very shaky in extending loans (3.78), due to scarcity of good quality of seeds (3.92), frequent change in weather (4.33), high fertiliser costs (3.94), insufficient support from Horticulture Department (4.16), volatile demand (3.23), insufficient Government facilities (4.04), raising transportation costs (4.08), and price fluctuation (4.23).

Results

A total of 130 respondents have asked questions on 33 key issues (sections B & C of the schedule) related to their perceptions about the motivating factors for marigold cultivation and the problems faced by them in marigold cultivation. To measure the effectiveness of the questions of the schedule are tested for its reliability. The reliability is checked using Cronbach's alpha, which stands out as 0.722. Cronbach's alpha is used in this study to assess the degree of consistency between multiple measurements of a variable Hair et al., 2005. It is also referred to as the coefficient of reliability describes how closely related the items are as a group in defining the construct.

The Kaiser-Mayer-Olkin (KMO) measure of sampling adequacy (MSA) is a statistic that indicates proportion of variance in variables that might be caused by underlying factors value. KMO measure is .688, exceeding the recommended value of 0.6 which indicates that the data is adequate for factor analysis (Kaiser & Rice, 1974). The overall significance of correlation metrics is tested with Bartlett Test of Sphericity (approx. chi square=1305.428 and significance at .000) provided support for validity of the factor analysis of the data set. A small value less than

0.05 of significance level has been recommended suitable for the study (Kline, 1994). On the basis of the results it is implied that the dataset is fit for conducting Factor analysis.

Factor analysis is used to uncover the latent structure of a set of variables. It is a set of techniques which, by analysing correlations between variables, reduces their number into fewer factors which explains much of the original data, more economically (Nargundkar, 2010). It is used to determine the smallest number of factors that can best represent the inter-relationships among different aspects of motivating factors for marigold cultivation and the problems faced by the marigold cultivators. Factor analysis is being chosen as a method for data reduction, since it is suitable for identifying correlations among variables in complex sets of data (Mitchellmore & Rowley, 2013). It states the collection of methods used to examine how underlying constructs influences the responses on a number of measured variables (DeCoster, 1998). Principal Component Analysis (PCA) has been conducted to find and club the components under the suitable heads. The communalities represent the amount of systematic variation for each variable that is, accounted for by the set off factors in the study and the value ranges from 0 to 1. According to Zilmer & Vuz (1995), communalities below 0.30 suggest that the few variables are associated and thus a suitable factor model may not emerge. Therefore, such values need to be removed from the scale. In this study all the values in the communalities are above 0.50, thus indicating that the variables provide a sufficient explanation for the factor solution. High communality values (>.6) indicate that the variables are adequately accounted for by the factor solution.

Table 1: Knowledge & Experience Factor

Components	Factor Loading	Communalities
Round the year demand	.765	.627
Ease to cultivation and continuation	.680	.616
Previous experience and exposure	.642	.682

Factor 1 is assigned the name as 'Knowledge & Experience', which explains 16.689 percent of the variables and includes three items with statistically

significant factor loadings ranging from .765 to .642 and Cronbach's alpha.711.

Table 2: Economy & Profit Factor

Components	Factor Loading	Communalities
Desire to be self-employed	.773	.715
To earn money	.731	.730
To improve financial status of family	.681	.663
Relatively good profit margin	.644	.571
Requirement of minimum initial investment	.596	.611

Factor 2 is assigned the name of 'Economy & Profit' which explains 14.32 percent of the variables and includes five items with statistically significant factor loadings ranging from .773 to .596 and Cronbach's alpha .642.

Table 3: Social Support & Desire Factor

Components	Factor Loading	Communalities
Continuation of family tradition	.712	.713
To acquire social status	.6583	.690
Support and inspiration from family members	.659	.596
For your own interest	.603	.665
For personal satisfaction	.572	.647
Work with full independence	.551	.641
Influence from reference group	.533	.559
Availability of fertile land	.510	.606

Factor 3 is assigned the name of 'Social Support & Desire' which explains 14.12 percent of the variables and includes eight items with statistically significant factor loadings ranging from .712 to .510 and Cronach's alpha .617.

Table 4: Cultivation Supporting Factor

Components	Factor Loading	Communalities
Favourable climate for cultivation	.771	.715
Easy availability of fertiliser	.685	.728
Support from Horticulture Department	.598	.647
Different government schemes	.559	.614
Inputs for cultivation are easily available	.544	.679

Factor 4 is assigned the name of ‘Cultivation Supporting’ which explains 13.25 percent of the variables and includes five items with statistically significant factor loadings ranging from .771 to .544 and Cronbach’s alpha .613.

Table 5: Problems on Factors of Production Factor

Components	Factor Loading	Communalities
Lack of suitable land for the cultivation	.705	.634
Scarcity of good quality of seeds	.662	.621
Shortage of skilled labourers	.620	.543
Paucity of capital	.570	.603
Banks are very shaky in extending loans	.529	.648

Factor 5 is assigned the name of ‘Problems on Factors of Production’ which explains 13.15 percent of the variables and includes five items with statistically significant factor loadings ranging from .705 to .529 and Cronbach’s alpha .577.

Table 6: Problems on Supporting Activities Factor

Components	Factor Loading	Communalities
Frequent change in weather	.685	.643
High fertiliser costs	.632	.598
Insufficient support from Horticulture Department	.570	.602
Government facilities are not enough	.524	.577
Raising transportation costs	.753	.677
Low price of flowers	.482	.668
Volatile demand		

Factor 6 is assigned the name of ‘Problems on Supporting’ which explains 6.56 percent of the variables and includes seven items with statistically significant factor loadings ranging from .685 to .524 and Cronbach’s alpha .589.

From Table 7, we get the Eigen values which are the variances of the factors that have been extracted by using PCA method. Eigen values are used to determine the number of factors to be extracted. Since Eigen values of 1 or greater than 1 are considered to be significant (Ho, 2006), all other factors with Eigen values less than 1 are disregarded in the analysis. Six factors have been extracted for this study whose Eigen value is greater than 1, as they explain 78.089 percent about the total variables taken into consideration. This percentage of the variance is regarded as sufficient to represent the data (Pett, Lackey & Sullivan, 2003). An Eigen value of 1.00 is the most common used criterion for deciding among the factors (Bryant & Yarnold, 1995). The rotation sums of squared loadings shown in the table represent the distribution of the variance after the Varimax rotation. Varimax rotation is an orthogonal rotation which is commonly used, as it tries to maximise the variance of each of the factors in

Table 7: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.840	16.689	16.689	4.840	16.689	16.689	3.922	12.077	12.077
2	3.381	14.32	31.009	3.381	14.32	31.009	3.581	11.691	24.767
3	2.255	14.12	45.129	2.255	14.12	45.129	3.487	10.589	35.356
4	2.004	13.25	58.379	2.004	13.25	58.379	3.116	9.690	45.046
5	1.567	13.15	71.529	1.567	13.15	71.529	2.991	8.995	54.041
6	1.100	6.56	78.089	1.100	6.56	78.089	2.565	7.665	61.706

Extraction Method: Principal Component Analysis.

such a way that the total amount of variance accounted for its distribution over the five extracted factors.

PCA has been carried out in order to analyse the various components. PCA is central to the study of multivariate data. PCA of a data matrix extracts the dominant pattern in the matrix in terms of a complimentary set of score and loading plots. The most general pattern of relationship could not be identified through the component matrix, so rotational matrix is produced. Highest factor loading has been taken for consideration under different components.

Allen et al., 2008 propose that lack of competence is more likely to be an important barrier for women than for men. They find that significantly fewer women believe themselves to have sufficient skills for business and that women are less self-assured in their perceptions of their own running a business and that women are less self-assured in their perceptions of their own abilities than men. On the basis of this finding and from the Factor analysis extraction we generated six hypotheses and their null form has been tested using IBM SPSS 20. Mann-Whitney U test has been conducted in order to validate the hypotheses (on the basis of *gender*). The Mann-Whitney U test is a non-parametric statistic test most frequently used to assess whether two independent groups are significantly different from each other or not. This test is used in the study to analyse the data from two groups of independent samples. The null hypothesis states that the two groups do not have differences in their perceptions about the six factors whereas the alternative hypothesis states that the two groups do differ systematically.

- **H₀₁:** There is a significant difference between men and women respondents in their perception of Knowledge & Experience Factor.
- **H₀₂:** There is a significant difference between men

and women respondents in their perception of Economy & Profit Factor.

- **H₀₃:** There is a significant difference between men and women respondents in their perception of Social Support & Desire Factor.
- **H₀₄:** There is a significant difference between men and women respondents in their perception about Cultivation Supporting Factor.
- **H₀₅:** There is a significant difference between men and women respondents in their perception of Problems on Factors of Production factor.
- **H₀₆:** There is a significant difference between men and women respondents in their perception of Problems on Supporting Activities factor.

From Table 8, at 5 percent level of significance, the Mann-Whitney U-test statistic is insignificant for all the six factors, i. e. we reject all the null hypotheses and conclude that there is no significant difference in the perceptions of the respondents on the basis of their gender about the factors generated from the PCA.

Impact of Selected Demographic Variables on Motivating Factors for Cultivation (MFC)

In order to find out whether there is any sort of association between the selected demographic variables of the respondents and motivating factors for cultivation, cross tabulation and Chi square test is performed at 5 percent significance level, the corresponding null hypothesis and alternative hypothesis are as follows:

- **H₀:** There is no significant association between the demographic variables (Monthly Income, Age, Level of Education, Economic Status of Family &

Table 8: Mann-Whitney U Test Statistics

Particulars	Knowledge & Experience	Economy & Profit	Social Support & Desire	Cultivation Supporting	Problems on Factors of Production	Problems on Supporting Activities
Mann-Whitney U	3084.008	3236.500	3161.340	3377.167	2921.157	3098.765
Wilcoxon W	3421.879	3188.614	3296.206	3354.250	3986.807	3563.908
Z	-.379	-.522	-.088	-.425	-.661	-.436
Asymp. Sig. (2-tailed)	.603	.578	.711	.628	.631	.653

Grouping Variable: Gender

The null hypotheses are:

Marital Status) of the respondents and the motivating factors for marigold cultivation.

- H_A : There is significant association between the demographic variables (Monthly Income, Age, Level of Education, Economic Status of Family & Marital Status) of the respondents and the motivating factors for marigold cultivation.

The findings of the Chi-square test are as follows:

1. The *monthly income* and the motivating factors for cultivation are to be related in a way that lower the monthly income, higher the motivation for marigold cultivation. The Chi square value is 31.768 and the likelihood ratio is 34.454. Further, the significance value is 0.000, which is less than 0.05. So, the null hypothesis is rejected and alternatively H_A is accepted. In other words, there is significant association between monthly income and motivating factors for marigold cultivation.
2. The *age* of the respondents and the motivating factors for marigold cultivation is to be related in a way that lower the age, higher the motivation for marigold cultivation. The Chi square value is 28.93 and the likelihood ratio is 22.67. Further, the significance value is .0232, which is more than 0.05. So, the null hypothesis is rejected and alternatively H_A is accepted. In other words, there is no significant association between age of the respondents and the motivating factors for marigold cultivation.
3. The *level of education* of the respondents and the motivating factors for marigold cultivation is to be related in a way that lower the level of education, higher the motivation for marigold cultivation. The Chi square value is 19.887 and the likelihood ratio is 16.924. Further, the significance value is 0.002, which is less than 0.05. So, the null hypothesis is rejected and alternatively H_A is accepted. In other words, there is significant association between level of education of the respondents and the motivating factors for marigold cultivation.
4. The *economic status of family* of the respondents and the motivating factors for marigold cultivation is to be related in a way that lower the age, higher the motivation for marigold cultivation. The Chi square value is 41.650 and the likelihood ratio is 36.679. Further, the significance value is 0.065, which is less than 0.05. So, the null hypothesis is rejected and al-

ternatively H_A is accepted. In other words, there is significant association between economic status of family of the respondents and the motivating factors for marigold cultivation.

5. The *marital status* of the respondents and the motivating factors for marigold cultivation is to be related in a way that lower the age, higher the motivation for marigold cultivation. The Chi square value is 63.980 and the likelihood ratio is 54.458. Further, the significance value is .0312, which is less than 0.05. So, the null hypothesis is rejected and alternatively H_A is accepted. In other words, there is no significant association between marital status of the respondents and the motivating factors for marigold cultivation.

Discussion

Factor analysis has identified six underlying constructs which explain the different motivating factors for marigold cultivation and indicates the problem of cultivation. High values for the factor loadings and the communalities indicate that the items extracted are statistically significant. Extraction of these internally consistent measures facilitates the calculating of composite variables that can be used in further analysis as suggested by Hair *et al.*, (2010). PCA also facilitated data reduction for the study. Table 9 presents the summary of the Factor analysis.

Table 9: Summary Results of Factor Analysis

No.	Factors	No. of items	Cronbach's Alpha
1	Knowledge & Experience	3	.711
2	Economy & Profit	5	.642
3	Social Support & Desire	8	.617
4	Cultivation Supporting	5	.613
5	Problems on Factors of Production	5	.577
6	Problems on Supporting Activities	7	.589

The six factors generated from the Factor analysis further tested on the basis of gender (Mann Whitney U-test) and on the basis of selected demographic factors (Chi square test). The six hypotheses are formed based on

such extracted factors and their null forms are tested. The results indicate that there is significant association has established from Mann Whitney U-test and we reject all the six null hypotheses. In other words, the perception of respondents is akin in all the six factors when tested on the basis of independent variable gender.

Conclusion

The purpose of the study is to assess the motivating forces for choosing marigold cultivation and to report the problems the respondents are suffering in cultivation. Using schedule and personal interviews 130 respondents are chosen by different non-probability sampling techniques. The schedules are tested for validity by protocol interview and pre-test. The reliability test (Cronbach's Alpha) and sample adequacy test (KMO and Bartlett's Test of Sphericity) is also carried out. The data collected through survey is processed by IBM SPSS-20. The data dimension test (Factor analysis) extracts six factors viz. Knowledge & Experience, Economy & Profit, Social Support & Desire, Cultivation Supporting, Problems on Factors of Production and Problems on Supporting Activities factor. Based on such factors six hypotheses are generated and their null forms are tested on the basis of gender (Mann Whitney U-test) and based on selected demographic factors (Chi square test). The outputs of the Mann Whitney U-test indicate that there is no significant differences exist in the perception of respondents and hence we reject all the null hypotheses. The Chi-square test although reject the null hypothesis based on monthly income and level of education but reject H_0 on the basis of age, economic status of family and marital status of the respondents. The results document that a number of factors motivate the respondents for marigold cultivation but the cultivation encounter series of problems which not only reduce the output but also adversely affect the bottom-line of the business.

Although there is notable contribution from this study especially for economic development of the cultivators, the results of this study need to be viewed and acknowledged in lights of its limitations. The study is carried out only in Laxmibill area with a small sample size due to parsimony of cost and time constraint. The study is not addressed with issues related to other areas of marigold business like the contribution of this business to state's revenue exchequer, rate of employment generation, assessment of business model, marketing issues, impact of government

schemes to finance to run the business and so on. The sample of the study has chosen using different non-probability techniques eliminate are not flawless. Again, the accuracy of the findings depends up on the responses provided by the respondents of the study. Non-parametric tests like Mann Whitney U-test and Chi square test is used which is less powerful (which means that if there is a genuine effect in our data then a parametric test is more likely to detect it than a non-parametric one) and less restrictive than parametric tests.

Managerial Implications

The results obtained from the study have practical implications for chalking out strategies to address the pertinent problems detected from this empirical study. The potential entrepreneurs may take a note from the finding in taking their strategic decision to commence marigold cultivation. The existing entrepreneurs may also chalk out appropriate plans to combat the problems indicated from the study. The Horticulture and Food Department may utilise the results of the study for their policy formulations and revisions. The banks and financial institutions may use the research report for amending their small sector lending policies to cover the unbanked entrepreneurs of marigold business under the ambit of formal banking system.

Future Research Direction

In future, researches may be carry out a larger scale by considering a greater sample size from all over Tripura to authenticate the differences between the cultivator and customer expectations and perceptions about the marigold business. Study may be attempted to address the cultivation, marketing and finance problems. Further, intra-state and inter-state comparative studies may also be attempted between marigold and other floriculture constituents like rose, jasmine; between rubber and marigold; between marigold and zetrofa and so on.

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