

Original Research Article

Commercial Plant Nurseries in Kerala: A Critical Analysis of Key Success Drivers

ABSTRACT

This study investigates the factors that are pivotal to the success of commercial plant nurseries in Kerala, with a focus on key dimensions impacting agribusiness performance. The study had been conducted among the plant nursery entrepreneurs in three districts of Kerala *ie.* Thiruvananthapuram, Thrissur, and Wayanad. Among the five primary dimensions analyzed for the study, social responsibility emerged as the most significant contributor to success, followed by employment and customer-related dimensions. The findings indicated that most respondents demonstrated moderate to high levels of success, with fewer falling into the low-performance category.

Principal Component Analysis (PCA) identified eight core factors shaping nursery success, which include influence and competence, social capital, financial acumen, achievement motivation, community and asset, self-driven leadership, self independence, and creativity. It was observed that entrepreneurs from elderly category tended to have limited use of mass media tools, such as the internet and mobile technology, and exhibited lower managerial capacity which undermined their ability to handle operational and employee-related challenges.

In summary, social responsibility dimension played a critical role in the success of agribusiness ventures, complemented by strategies focused on employment and customer engagement. The study highlights the importance of entrepreneurial traits and factors such as influence and competence factor, social capital factor, financial acumen factor in the success of commercial plant nurseries, which calls for framing more policies oriented towards formulating & imparting softskill development training programs to nursery entrepreneurs in improving the leadership skills and managerial ability.

Keywords: Plant nursery; agribusiness; dimensions of success; entrepreneurs; PCA; entrepreneurship; customer.

INTRODUCTION

Commercial plant nurseries play a vital role in Kerala's agricultural landscape, supporting the economy, enhancing livelihoods, and fostering agricultural innovation. In a region where plantation crops like tea, coffee, and rubber drive export income and offer substantial employment, nurseries have become essential in sustaining diverse agricultural activities. For

instance, studies like Patil et al. (2017) highlighted the economic viability of nursery ventures, showing positive returns for tomato seedling nurseries in Karnataka, where high demand fuels profitability. Similarly, Kerala has experienced a rise in nursery-based agribusinesses focused on crops with robust export potential, along with ornamental and forestry plants like eucalyptus.

Nevertheless, the growth of nurseries across different regions reveals common challenges and potential solutions. In Tanzania, ornamental nurseries are expanding but struggle with land tenure insecurity and pest management issues (Pastory et al., 2020). Veken et al. (2008) noted that European nurseries caused problems with plant migration by dispersing species outside of their native regions.

Meanwhile, in Bangladesh, small-scale nurseries demonstrate impressive benefit-cost ratios, though challenges in land ownership and marketing remain as bottlenecks (Mamun et al., 2018). These findings underscore the need for greater institutional support, effective pest control measures, and secure land tenure to sustain commercial plant nurseries.

Agripreneurship, holds immense potential for economic growth and rural revitalization by transforming agricultural activities into business-oriented ventures. In commercial plant nurseries, agripreneurship brings localized production, low-risk investment, and job creation, offering favorable returns on investment across various plant types, from ornamental to medicinal species (Vinayagam et al., 2020; Larinde, 2014; Aravind et al., 2023). Shifting from traditional farming to agribusiness, particularly in the nursery sector, can diversify income sources and generate employment, driving growth in rural areas. However, challenges like limited land access, water scarcity, and financial constraints must be addressed to enable sustainable expansion (Bairwa et al., 2014; Larinde, 2014).

In Kerala, agripreneurship studies reflect the changing dynamics of agriculture, where entrepreneurial ventures increasingly shape the sector's future. Research by Somanath and Seema (2022) reveals that off-farm agripreneurs tend to be more effective than on-farm counterparts, with significant variations in marketing and risk management capabilities. In Thiruvananthapuram, many farmers are moving away from traditional agriculture, citing economic challenges (Renjini & Radha, 2019). This shift signals a critical need for innovation and support to reinvigorate agribusiness. Youth perception studies in Kottayam also highlight the strong link between agriculture and entrepreneurship, where young farmers see agripreneurship as a path to financial independence and adaptability in agriculture (Thomas, 2020).

In this backdrop, the present study explores the factors contributing to the success of commercial plant nurseries in Kerala, and unravels relation of agripreneurship, resource management, and innovative practices in sustaining and growing nursery business. By identifying success factors and challenges, the research aims to inform policy recommendations that can enhance Kerala's commercial plant nursery sector, fostering sustainable agricultural growth, income generation, and resilience in the face of economic and environmental challenges.

MATERIALS AND METHODS

The study has been conducted among the plant nursery entrepreneurs from the three districts of Kerala *ie.* Thiruvananthapuram, Thrissur, and Wayanad during April to September 2024. By using (SRSWOR) method, 30 respondents were selected from each of the districts contributing to a

total of 90 respondents. The nurseries with minimum 3 years of experience were selected for the study.

This study used the success index developed by Irene (2016) and modified by Jayasudha (2021). The index has five dimensions viz. financial, customer, employment, lifestyle and social responsibility and each has a series of statements measured on a five-point continuum, ranging from significantly lower, to significantly higher with a respective rating of 1, 2, 3, 4 and 5 for positive statements, and the reversed rating for negative statements. The results were added to measure the success of nursery entrepreneurs.

The standardized score was found out by using the equation

$$Z_i = \frac{X_i - X_{min}}{X_{max} - X_{min}}$$

Where, Z_i = standardized score, X_i is the score of n th individual of i th variable, X_{min} is the minimum score obtained and X_{max} is the maximum score obtained. With standardized mean score overall ranking of dimensions were obtained .

Mean score was found out for each variable under each dimension and was ranked according to the mean score obtained for each statement in different dimensions. Individual score was found out for each individual according to different dimensions and based on this level of success were assessed for each individual and grouped into the categories like, low, low to mean, mean to high and high.

In order to maximize the amount of variation, accountant PCA was utilized in this study to determine the different underlying elements from a pool of variables.

The data was collected using pre – tested and well-structured interview schedule. Each agripreneur were personally interviewed to collect the information. The collected data was analyzed using statistical tools such as mean score, standard deviation and principal component analysis.

RESULTS AND DISCUSSION

Dimensions of Nursery Business Success

Dimensions of plant nursery business success are the key areas that determine how well a nursery operates and thrives. These include financial aspects, like profits and managing costs, employment opportunities created by the business, and customer satisfaction, which reflects how well the nursery meets the needs of its buyers. Other important factors are lifestyle benefits, such as improving quality of life, and social responsibility, which looks at the nursery's contributions to the community and environment. A successful nursery is therefore a diverse business that combines operational efficiency, customer focus, financial stability and innovative marketing to grow and thrive in a dynamic industry.

The dimensions of business success according to Irene (2016) and modified by Jayasudha (2021) includes various dimensions such as financial dimension, employment dimension, customer dimension, lifestyle dimension, social responsibility dimension. The nurseries with

minimum 3 years of experience were selected.

Financial dimension

Profit largely determines entrepreneurial success in terms of a company's return on capital. Regardless of whether it is a small, medium or large company, the economic return determines its success. Here, these dimensions include profitability, sales, sales growth, market share, debt ratio, company growth, return on investment, labor relations and company image.

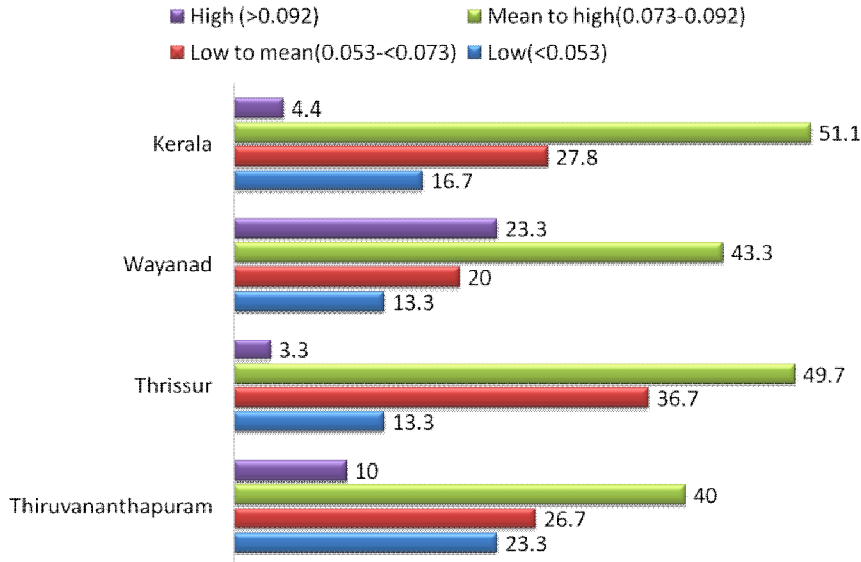
Table 1. Ranking of financial dimensions

Sl. no.	Success criteria	Mean score
1	Sales growth	3.61
2	Debt clearance	3.24
3	Sales turnover	3.14
4	Profitability	3.09
5	Return on investment	2.91
6	Market share	2.83
7	Business growth	2.75

The table 1. clearly shows that sales growth is the main concern of an entrepreneur (3.61) and debt clearance (3.24) is the second most important concern. As debt decreases, the nursery enterprise profit level increases. It also showed that sales turnover (3.14) and profitability (3.09) increased a company's financial support. Financial aspects such as return on investment (2.91), market share (2.83) and business growth (2.75) determine economic success in a limited way.

Fig. 1. Distribution of respondents according to their financial dimension level (%).

Financial dimension



From the Fig 1., it can be seen that more than three quarters of the total respondents (51.1%) belonged to the mean to high level, followed by 27.8 per cent in the low to mean level category, 16.7 percent to the low level and 4.4 percent to the high level of financial criteria. Most agro-entrepreneurs were in the mean to high level category because they valued sales growth and debt repayment more than profits. With high sales growth and no debt, the nursery operation was considered a success.

With regard to distribution of agripreneurs according to financial dimension within each district in Wayanad 43.3 per cent of the respondent belongs to mean to high level category, in Thrissur 49.7 per cent respondent belongs to mean to high level category and in Thiruvananthapuram 40 per cent have mean to high level category.

Employment dimension

Creating more jobs is one of the criteria for the success of an organization. The strong organizational structure includes division of labor so that more employees can achieve their goals. This dimension includes the number of employees, employee satisfaction, employee absenteeism and employee loyalty

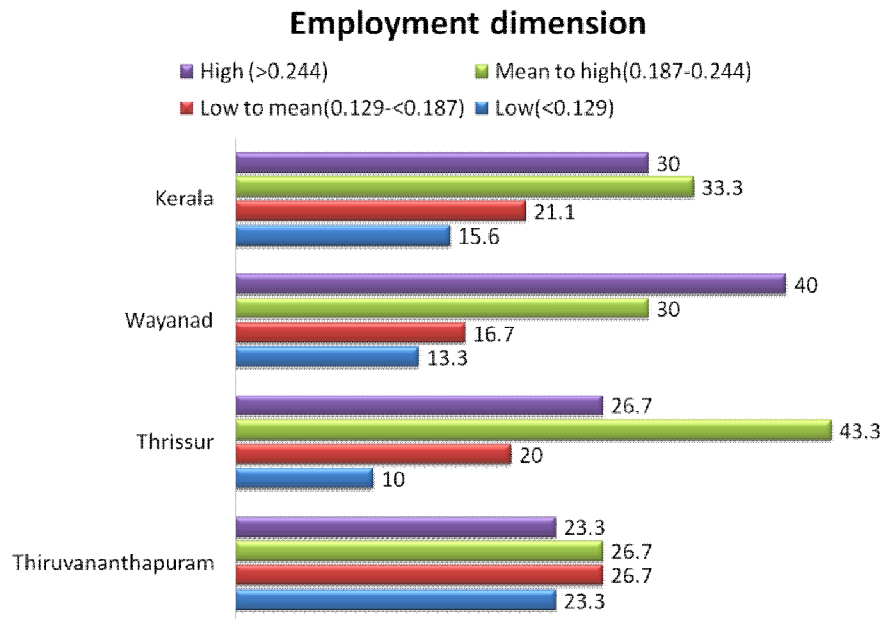
Table 2. Ranking of employment dimensions

Sl. no	Success criteria	Mean Score
1	Employee loyalty	4.97
2	Employee satisfaction	4.79
3	Number of employees	4.59

4	Employee absenteeism	1.83
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Table 2. shows that employee loyalty (4.97) is considered as a company's success. Employee satisfaction (4.79) shows that the company's growth depends on employees. As the company grows, more number of employees (4.59) could get job opportunities. Employee absenteeism (1.83) negatively impacts a business by reducing productivity, increasing the workload of other employees, and potentially increasing operational costs. Therefore, they view employment as a criterion for business success. According to respondents, retaining the existing employee and gaining their loyalty and satisfaction was seen as a success of an enterprise rather than increasing the number of employees.

Fig. 2. Distribution of respondents according to their employment dimension level(%)



From the Fig 2., it can be seen that nearly one-third of the total respondents (33.3%) belonged to the mean to high level category, followed by 30 per cent with high level, 21.1 per cent with low to mean and 15.6 per cent with low-level category in employment dimension.

A mean to high level of employment dimension in a nursery is often due to effective management practices, including strong communication between entrepreneur and employees, fair compensation and growth opportunities for the employees. Additionally, a positive work environment that promotes employee engagement and aligns personal goals with organizational goals contributes to higher employee engagement and productivity.

With regard to distribution of agripreneurs according to employment dimension within each district in Wayanad 40 per cent of the respondent belongs to high level category, in Thrissur 43.3 per cent respondent belongs to mean to high level category and in Thiruvananthapuram 26.7 per cent have mean to high and low to mean level category.

Customer dimension

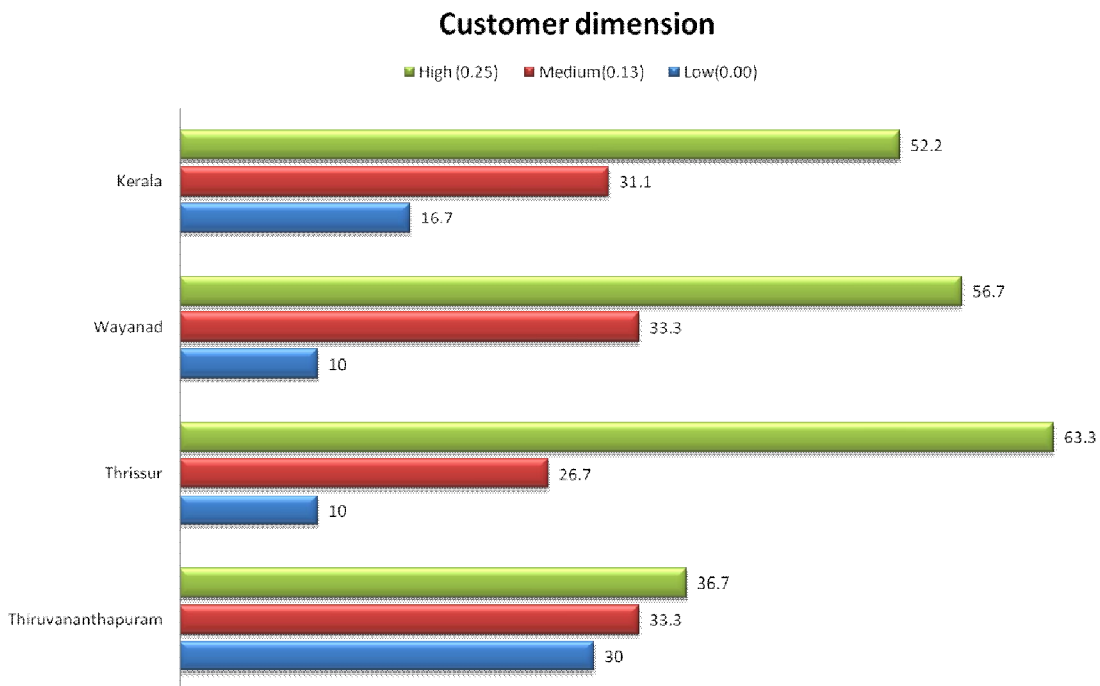
This refers to the degree of customer group stability and the regularity with which the entrepreneur is praised. It includes consumer satisfaction, customer loyalty, trust, good feedback and working relationships in the workplace.

Table 3. Ranking of customer dimensions

Sl. no	Success criteria	Mean Score
1	Customer satisfaction	4.99
2	Customers trust	4.97
3	Good feedback	4.96
4	Customer retention	4.44

Table 3. shows that customer satisfaction (4.99) is considered an important factor in business success, followed by customer trust (4.97), good feedback (4.96) and customer retention (4.44). Because we know that satisfied customers are the best source of advertising, most farmers consider customer satisfaction to be an important criterion for success.

Fig. 3. Distribution of respondents according to their customer dimension level.



From the Fig 3., more than half of the nurseryentrepreneurs (52.2%) had a high level, followed

by 31.1 percent of medium level and 16.7 percent of low level in customer dimension level. Because the respondents viewed their customers as a source of business success.

A high level of customer dimension in a nursery is often due to the consistent delivery of highquality products or services that meet or exceed customer expectations. In addition, strong customer relationships, effective communication and excellent after-sales support promote loyalty and trust and increase customer satisfaction and retention.

With regard to distribution of agripreneurs according to their customer dimension, within each district in Wayanad 56.7 per cent of the respondent belongs to high level category, in Thrissur 63.3 per cent respondent belongs to high level category and in Thiruvananthapuram 36.7 per cent have high level category.

Lifestyle dimension

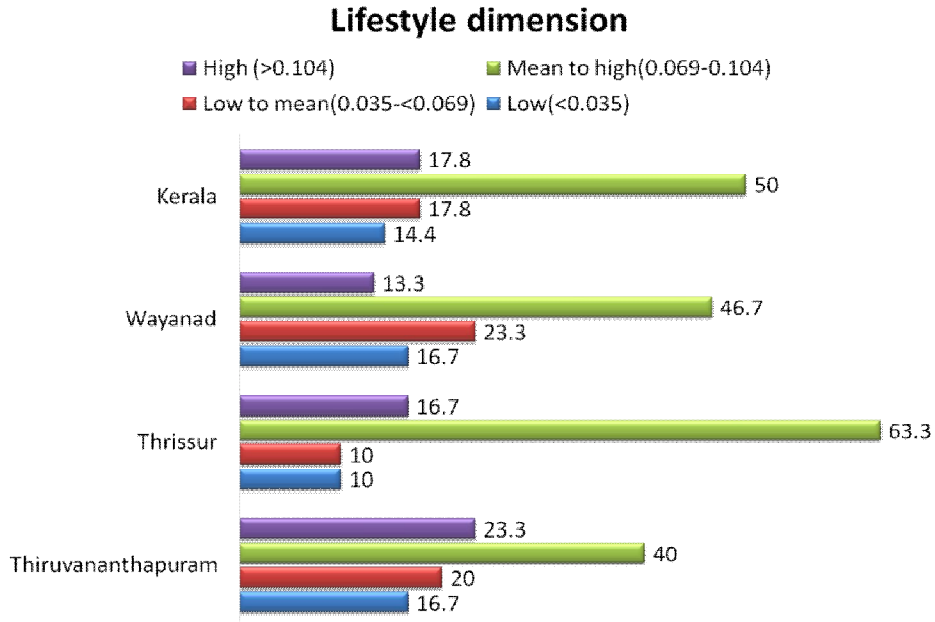
Personal satisfaction, career advancement, work-life balance, business survival and recognition are all factors in the lifestyle dimension. The entrepreneur's perception of how the community views him or her as an individual is called social recognition.

Table 4. Ranking of lifestyle dimensions

Sl. no	Success criteria	Mean Score
1	Personal satisfaction	4.50
2	Career progress	4.18
3	Work life balance	3.49
4	Survival in business	3.26
5	Being recognized by others	2.70

The table 4. shows that personal satisfaction (4.50) is the key to the company's success. For an agricultural entrepreneur, career progress (4.18) and work-life balance (3.49) were crucial to his success, followed by his survival in the business(3.26) and recognition from others (2.70). This suggests that personal satisfaction was viewed not only as making a profit, but also as an achievement that an agripreneur could enjoy over the course of his or her life.

Fig. 4. Distribution of respondents according to their lifestyle dimension level.



From the Fig.4 It is observed that half of the respondents (50%) are under the mean to high level category followed by high (17.8%), low to mean (17.8) and low (14.4%) level category in life style dimension level.

A moderate level of lifestyle dimension in an organization can result from a moderate work-life balance, where employees experience some flexibility but are still occasionally exposed to work-related pressures. Additionally, while the company may offer certain wellness and leisure benefits, these may not be comprehensive enough to fully support a balanced lifestyle for all employees.

With regard to distribution of agripreneurs according to lifestyle dimension within each district in Wayanad 46.7 per cent of the respondent belongs to mean to high level category, in Thrissur 63.3 per cent respondent belongs to mean to high level category and in Thiruvananthapuram 40 per cent have mean to high level category.

Social responsibility dimension

This dimension is measured by factors such as providing employees with a pleasant working environment, creating additional jobs, and providing products at a reasonable cost. It shows how the entrepreneur is accountable to his employees and customers.

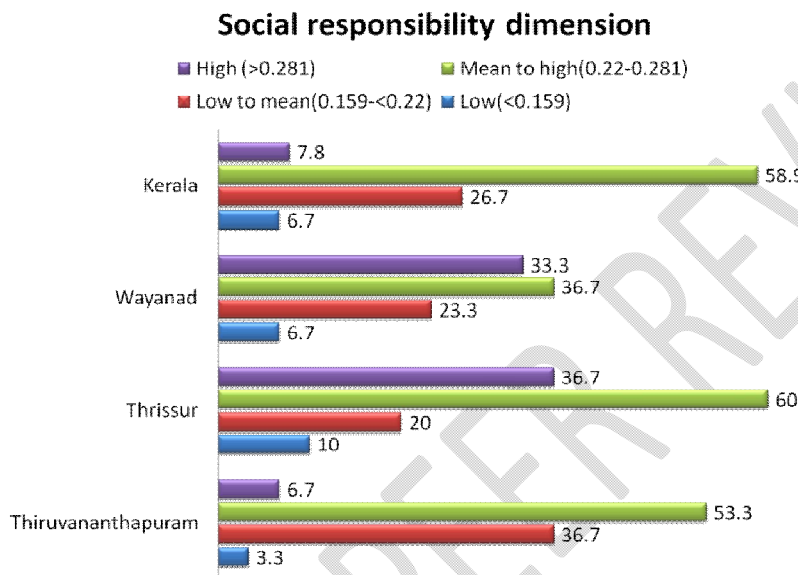
Table 5. Ranking of social responsibility dimensions

Sl. no	Success criteria	Mean Score
1	Creating better environment	4.51
2	Producing products at affordable price	3.57

3	Creating more jobs	3.32
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Table 5. shows that creating a good environment (4.51) is considered an important social responsibility, followed by marketing products at an affordable price (3.57) and creating more jobs (3.32). Every company had some responsibility to contribute to society; This study showed that creating a good environment for both the employee and the society was viewed as their business success.

Fig. 5. Distribution of respondents according to their social responsibility dimension level.

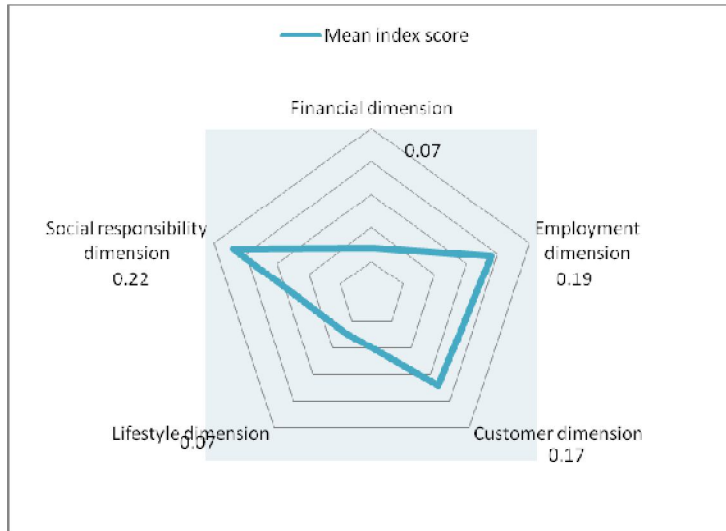


From the Fig 5. and table, the majority of the respondents (58.9%) belonged to the mean to high level category followed by low to mean(26.7) high (7.8%) and low (6.7%) category in social responsibility level.

With regard to distribution of agripreneurs according to lifestyle dimension within each district in Wayanad 36.7 per cent of the respondent belongs to mean to high level category, in Thrissur 60 per cent respondent belongs to mean to high level category and in Thiruvananthapuram 53.3 per cent have mean to high level category.

Overall ranking of dimensions in Business success

Fig. 6. Distribution of respondents according to their overall ranking of dimensions in business success



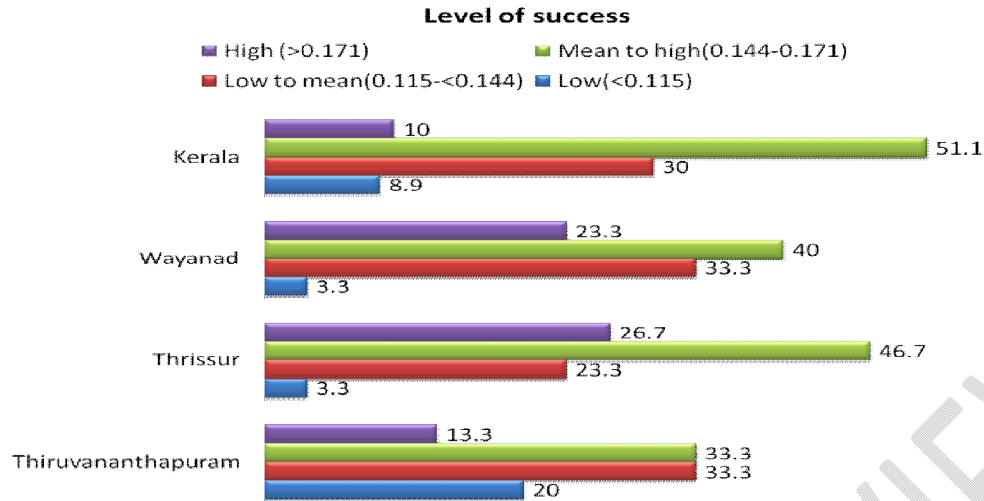
From the fig. 6. , it is observed that the social responsibility dimension(0.22) is considered as a major factor determining the success of agribusiness followed by employment dimension (0.19), customer dimension (0.17), financial dimension (0.07) and lifestyle dimension (0.07).

Agripreneurs from Thrissur district possessed a social responsibility dimension mean index score of 0.23 compared to that of agripreneurs from Wayand (0.22) and Thiruvananthapuram (0.21) districts respectively. Also in employment dimension mean index score, Wayanad (0.2) have high scores compared to that of agripreneurs from Thrissur (0.19) and Thiruvananthapuram (0.17) districts respectively. In customer dimension mean index score, Thrissur (0.19) has a high score compared to that of agripreneurs from Wayanad (0.18) and Thiruvananthapuram (0.13) districts respectively. In the financial dimension mean index score, Thrissur (0.07), Wayanad (0.07) and Thiruvananthapuram (0.07) have the same score. In lifestyle dimension mean index score, Thrissur (0.07) and Thiruvananthapuram (0.07) have high scores compared to that of agripreneurs from Wayanad (0.06) and districts respectively.

Level of success of agripreneurs

The degree of success was measured by the total score obtained from the various dimensions, including the financial, customer, lifestyle, employment and social responsibility dimensions.

Fig. 7. Distribution of agripreneurs according to the level of success



From Table 4, it was observed that the majority of the respondents (51.1%) had mean to high level of success followed by 30 per cent, 10 per cent and 8.9 per cent of agripreneurs had low to mean, high and low level of success respectively. The low, low to mean, mean to high and high category is classified based on mean and standard deviation obtained from the responses of the agripreneurs.

With regard to the distribution level of success of agripreneurs within each district, three districts namely Wayanad, Thrissur, Thiruvananthapuram had 40, 46.7, and 33.3 per cent respectively agripreneurs that belonged to the mean to high level category.

Principal Component Analysis (PCA) of the Plant Nursery Entrepreneurs in Kerala

For the PCA analysis of components affecting the success of each plant nursery entrepreneur, a large number of variables were used initially and after continuous iterations, that was reduced into eight dimensions which together explained at least 68 % variance for all the communities.

Table 6. Factors influencing success of commercial plant nursery business in Kerala

Principal components	Eigenvalue	percentage of variance	cumulative percentage of variance
PC1	2.184	12.131	12.131
PC2	2.004	11.134	23.265
PC3	1.718	9.547	32.812
PC4	1.579	8.772	41.584

PC5	1.445	8.028	49.612
PC6	1.215	6.752	56.365
PC7	1.085	6.03	62.395
PC8	1.07	5.942	68.336
PC9	0.941	5.228	73.565
PC10	0.898	4.991	78.556
PC11	0.757	4.206	82.762
PC12	0.654	3.633	86.395
PC13	0.639	3.549	89.944
PC14	0.522	2.902	92.846
PC15	0.483	2.681	95.527
PC16	0.353	1.962	97.489
PC17	0.294	1.634	99.123
PC18	0.158	0.877	100

Table 7. Factor loadings of variables

Variables	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8
<i>Credit orientation</i>	0.551	0.102	0.482	0.386	-0.161	-0.055	-0.138	0.208
<i>Risk orientation</i>	0.383	-0.1	0.432	0.226	0.039	0.18	-0.513	0.153

Economic motivation	0.251	0.274	-0.037	0.447	0.088	0.377	0.439	0.17
Self reliance	-0.076	0.396	0.324	0.22	-0.014	0.092	0.54	-0.252
Managerial ability	-0.046	-0.3	-0.041	-0.263	-0.23	0.497	-0.006	0.272
Self confidence	-0.159	-0.398	-0.452	0.302	0.002	0.445	-0.043	-0.047
Social networking	-0.021	-0.553	0.448	-0.13	0.443	-0.048	0.043	-0.205
Self actualisation	0.043	0.129	0.138	-0.65	0.14	0.427	0.096	-0.029
Critical thinking	0.249	0.103	0.432	-0.054	-0.373	0.212	0.156	-0.197
Persuasive ability	0.36	-0.26	-0.322	-0.247	-0.29	-0.034	0.149	0.157
leadership ability	0.75	-0.206	-0.341	-0.173	0.287	-0.099	0.181	-0.063
Competition orientation	0.799	-0.054	-0.196	0.093	0.324	-0.057	0.011	-0.014
Innovativeness	-0.139	0.205	0.331	-0.392	0.174	-0.202	0.104	0.611
Mass media orientation	-0.208	-0.538	0.007	0.37	-0.289	0.001	0.158	0.375
Age	0.094	0.682	-0.435	-0.003	-0.193	-0.18	-0.082	0.224
Family members	-0.329	0.278	-0.142	0.299	0.375	0.09	-0.266	-0.119
Distance from near town	0.242	0.321	-0.031	-0.218	-0.374	0.302	-0.331	-0.246

Landholding	-0.067	0.286	-0.048	0.024	0.546	0.409	-0.062	0.293
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Table 7. shows the component loadings of the data. Here, the items (variables) having higher values in same dimension were grouped as one factor. Accordingly, in terms of contribution to Dimension-1, the variables competition orientation(0.799), leadership ability(0.75) and credit orientation(0.551) had maximum contribution. Most variables suggest the competency and influence of a nursery entrepreneur so this dimension can be named as **Influence and competence factor**. In case of Dimension 2, age (0.682), social networking (-0.553), and mass media orientation(-0.538) had high contributions. In this dimension variables shows the social networks and relationships among the nursery entrepreneur, so this can be called as **Social capital factor**. In Dimension 3, credit orientation(0.482), self confidence(-0.452), social networking(0.448), risk orientation(0.432), critical thinking(0.432) and age(-0.435) had high contributions. In this most variables shows the adeptness and agility aspect of an entrepreneur, so it is named as **Achievement motivation factor**. In Dimension 4, economic motivation (0.447) and credit orientation(0.39) has high contributions. In this most variables shows the economic motivation of the entrepreneur to do business, so it is named as **Financial acumen factor**. In Dimension 5, land holding(0.546), and social networking(0.443) had maximum contributions. In this most variables shows the collective resources, relationships, and physical or financial resources of the entrepreneur to do business, so it is named as **Resource network factor**. In Dimension 6, managerial ability(0.497), self confidence(0.445), self actualization(0.427) and landholding(0.409) had high contributions. In this most variables shows the individuals are motivated by personal commitment and initiative to maintain and grow the connection, independent of external influences, so it is named as **Self driven leadership factor**. In Dimension 7, self reliance (0.54), economic motivation(0.439) and risk orientation(-0.513) had maximum contributions. In this most variables show the ability of an entrepreneur to rely on himself to do business, so it is named as **Autonomy factor**. In Dimension 8, innovativeness(0.611) has high contributions. In this most variables show the creativity of an entrepreneur to do business, so it is named as **Creativity factor**.

Fig. 8. Biplot diagram of Principal Component Analysis

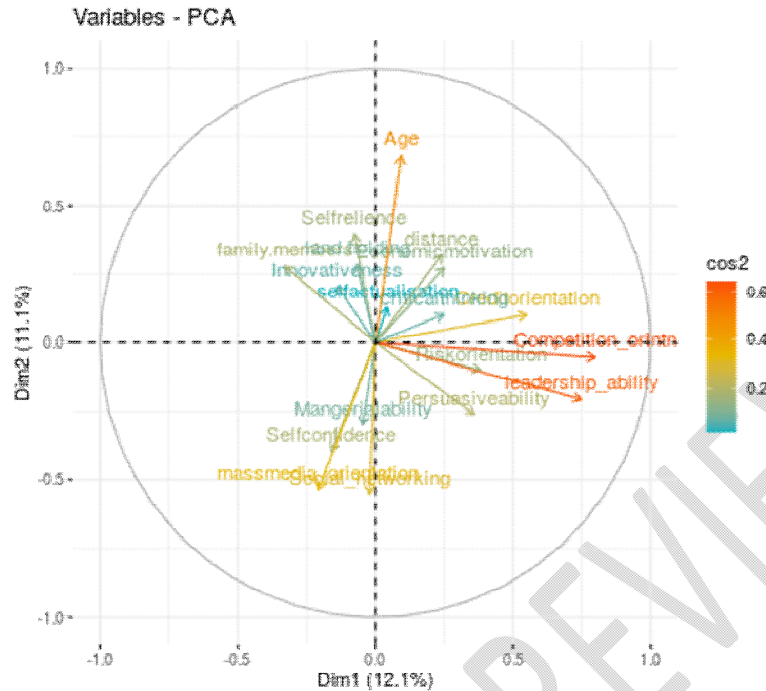


Fig 8. diagrammatically represents the different component loadings in the analysis. The lines going from centroid are the eigen vectors representing different variables of the factor. The vectors with negative loadings (situated at bottom side and left side) represent a negative relationship with the particular factor. For example, here, we can see age and mass media orientation are in opposite directions. This indicates those entrepreneurs who are in the old aged category, only have less mass media usage like phone and internet. Similarly, family size and risk orientation are in opposite directions. This indicates the entrepreneur has more members in the family has a low risk-taking mentality. on the contrast, competition orientation and leadership ability are going in same direction displayed that with an increase in competition orientation leadership ability also increases.

CONCLUSION

From this study different dimensions such as financial dimension, customer dimension, employment dimension, lifestyle dimension, social responsibility dimension were analysed, among which social responsibility dimension was considered as a major factor determining the success of agribusiness followed by employment dimension and customer dimension. Another major observation was that majority of the respondents belonged to mean to high level of success category. Using PCA it was observed that there are eight principal component factors contributing primarily to the success of the commercial plant nurseries of Kerala viz. influence and competence factor, social capital factor, financial acumen factor, achievement motivation factor, resource network factor, self driven leadership factor, autonomy factor and creativity factor.

The study highlights the importance of these entrepreneurial traits and factors in the success of commercial plant nurseries, which calls for the need for framing policies that promote market penetration, business acumen, resilience and networking skills through market interventions and trainings,

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