



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

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This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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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 i.e. 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

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demonstrated moderate to high levels of success, i.e., 61.1%, 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 and the total variance explained by PCA is 68%. It was observed that older entrepreneurs 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: Agripreneurship; dimensions of success; entrepreneurs; entrepreneurship; PCA; plant nursery.

1. 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.

2. MATERIALS AND METHODS

The study has been conducted among the plant nursery entrepreneurs from the three districts of Kerala i.e. 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 a minimum of 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 have 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 i^{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 dimensions 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.

3. RESULTS AND DISCUSSION

3.1 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.

3.1.1 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.

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.

Gholap et al. (2022) underscored that the profitability of ornamental nurseries relies heavily on managing operational costs, mainly labor and inputs, which contribute to a favorable benefit-cost ratio and high return rates.

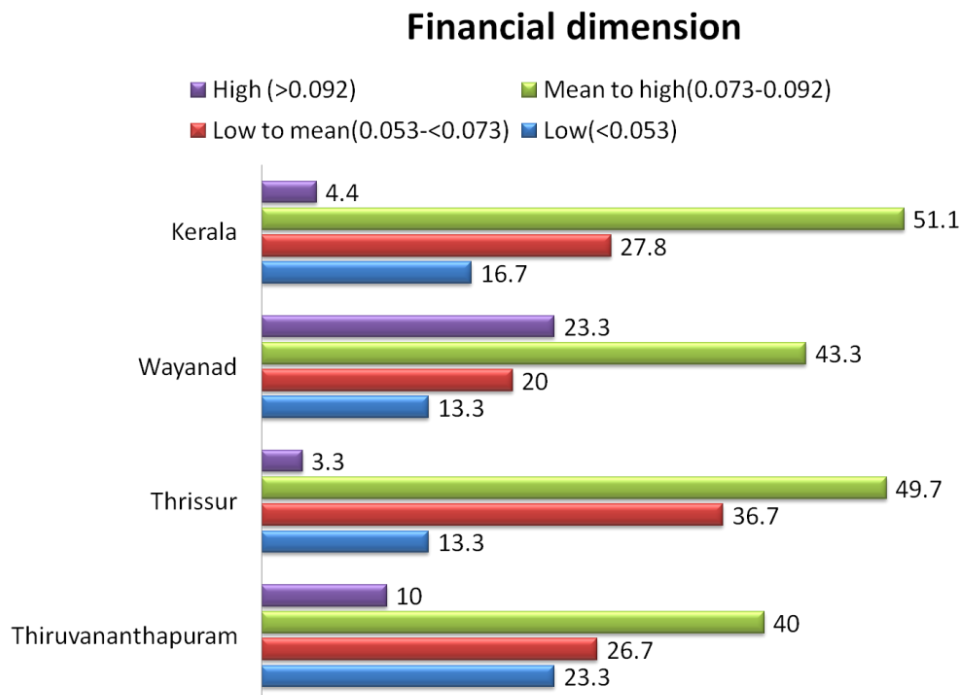


Fig. 1. Distribution of respondents according to their financial dimension level (%)

3.1.2 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 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

employees and gaining their loyalty and satisfaction was seen as a success of an enterprise rather than increasing the number of employees.

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.

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

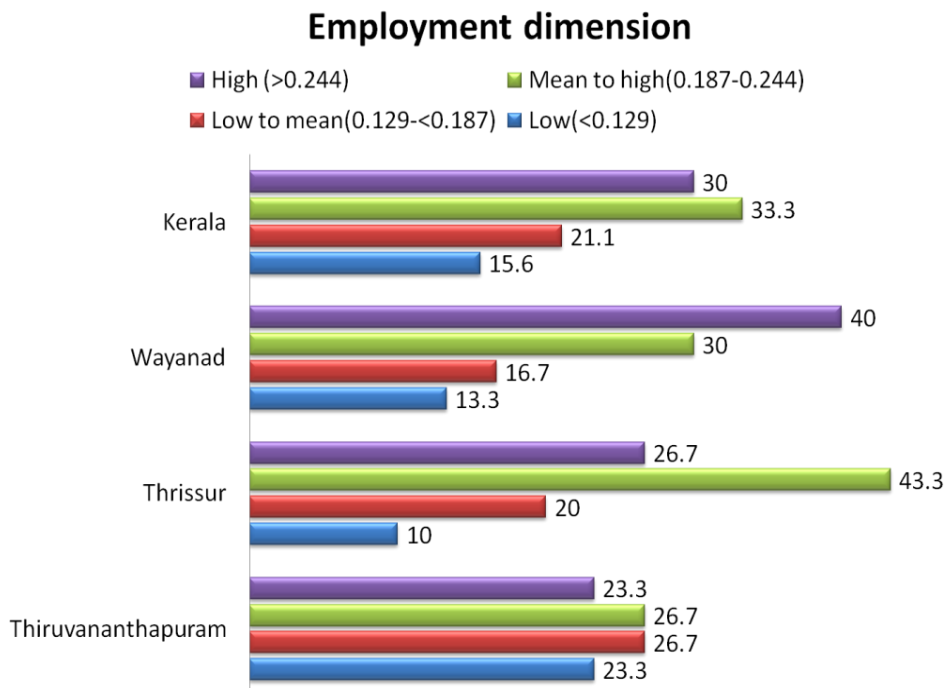


Fig. 2. Distribution of respondents according to their employment dimension level(%)

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

Ni et al. (2024) examined nurseries in Buleleng Regency, Indonesia, and found that local labor plays a major role in sustaining the businesses.

3.1.3 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 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.

From the Fig 3., more than half of the nursery entrepreneurs (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 high quality 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.

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

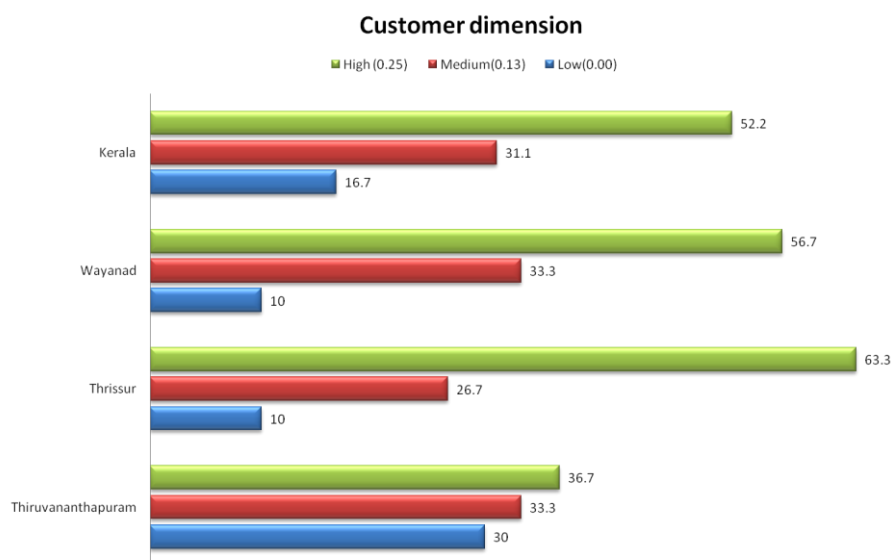


Fig. 3. Distribution of respondents according to their customer dimension level

Chaudhary et al. (2023) in his paper examines best practices for e-commerce plant sales, focusing on challenges like plant quality assurance, shipping, website design, and customer service. It highlights the potential of user-friendly platforms that enable nurseries to directly sell products, educate customers, and provide an exceptional shopping experience. Key strategies include effective product descriptions, intuitive navigation, and robust customer support. The findings suggest that such platforms can offer sustainable growth opportunities for the green industry.

3.1.4 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.

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.

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.

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

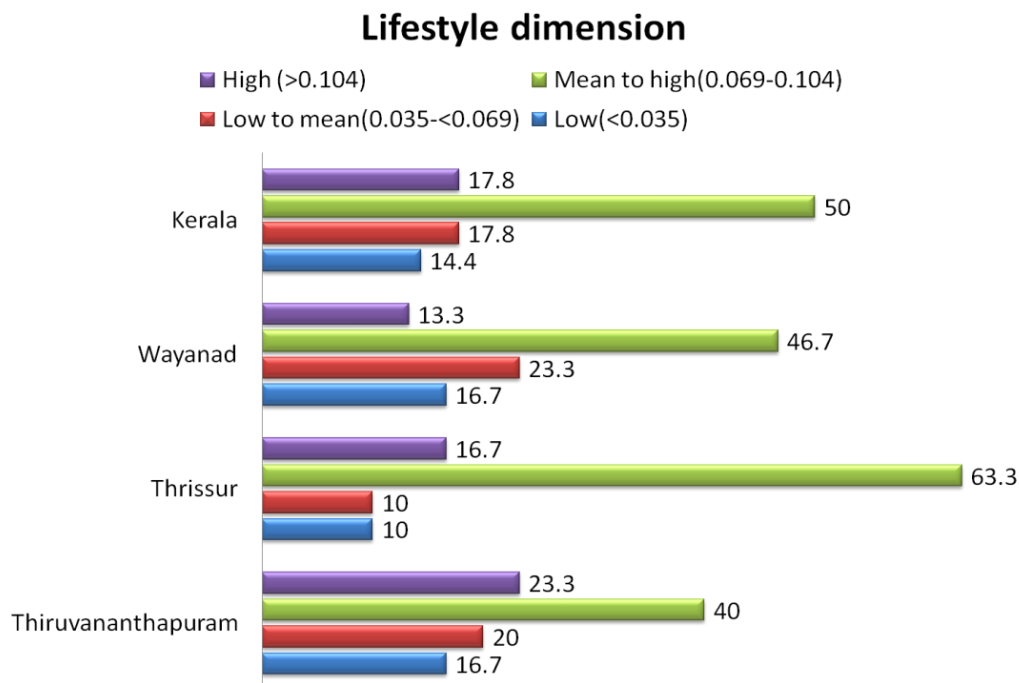


Fig. 4. Distribution of respondents according to their lifestyle dimension level.

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.

Aravind et al. (2023) presented a case study on a successful nursery entrepreneur in Tamil Nadu, illustrating how lifestyle and family heritage contribute to business growth and resilience. The studies emphasize that nursery ownership is often rooted in personal and family identity, shaping lifestyle and community involvement.

3.1.5 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 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.

From the Fig. 5 and Table 5, 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 (Somanath 2009).

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

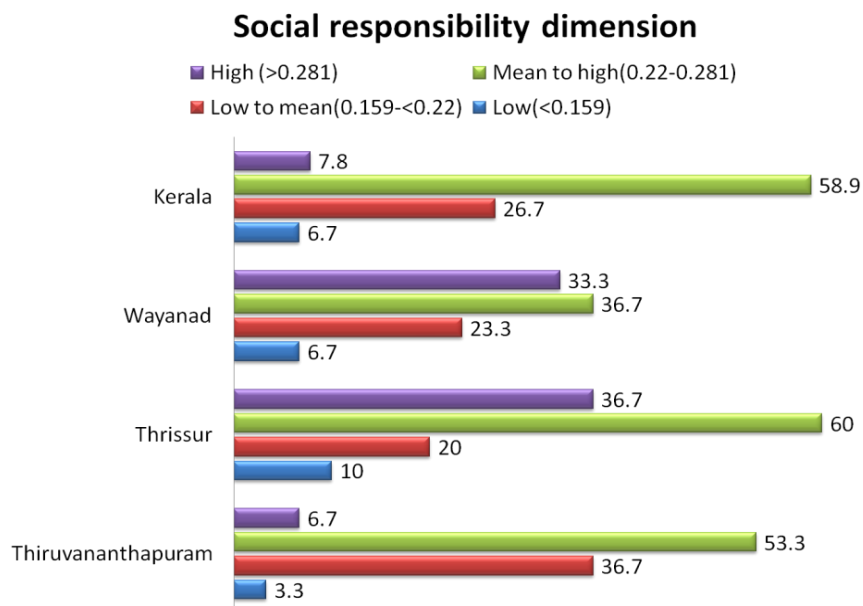


Fig. 5. Distribution of respondents according to their social responsibility dimension level

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.

The article "Models and Strategies for Implementation of Social Responsibility in Modern Enterprises" by Adhira Pradha et al. (2023) offers a comprehensive examination of corporate social responsibility (CSR). It explores the historical evolution, theoretical foundations, and practical strategies for CSR implementation in diverse industries. Highlighting CSR as a strategic necessity, it discusses its role in fostering innovation, stakeholder trust, and business sustainability, while identifying challenges and future opportunities. This study bridges theoretical insights with real-world practices, underscoring CSR's pivotal role in contemporary business success.

3.2 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 Wayanad (0.22) and Thiruvananthapuram (0.21) districts respectively. Also in employment dimension mean index score, Wayanad (0.2) had 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) had 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) had the same score. In lifestyle dimension mean index score, Thrissur (0.07) and Thiruvananthapuram (0.07) had high scores compared to that of agripreneurs from Wayanad (0.06) and districts respectively.

3.2.1 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.

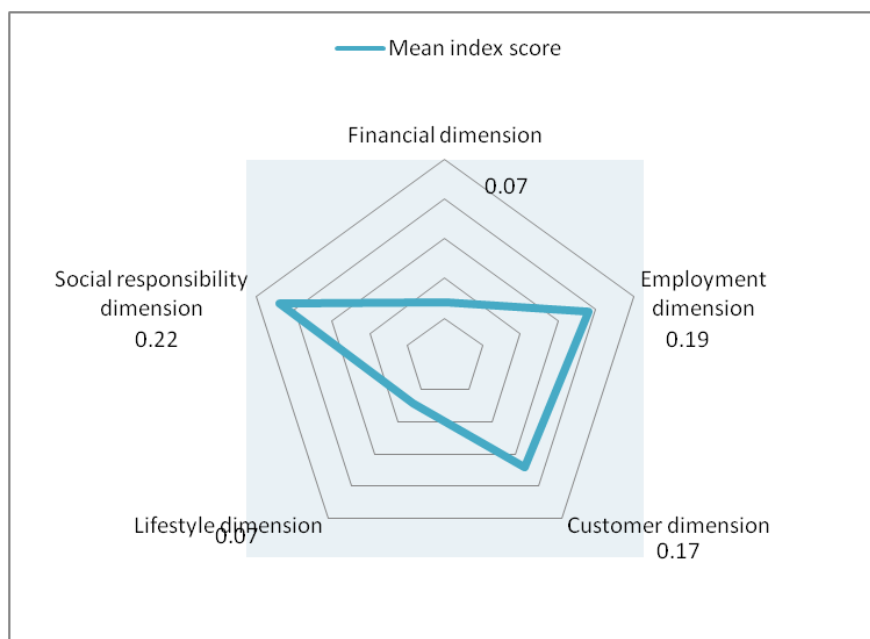


Fig. 6. Distribution of respondents according to their overall ranking of dimensions in business success

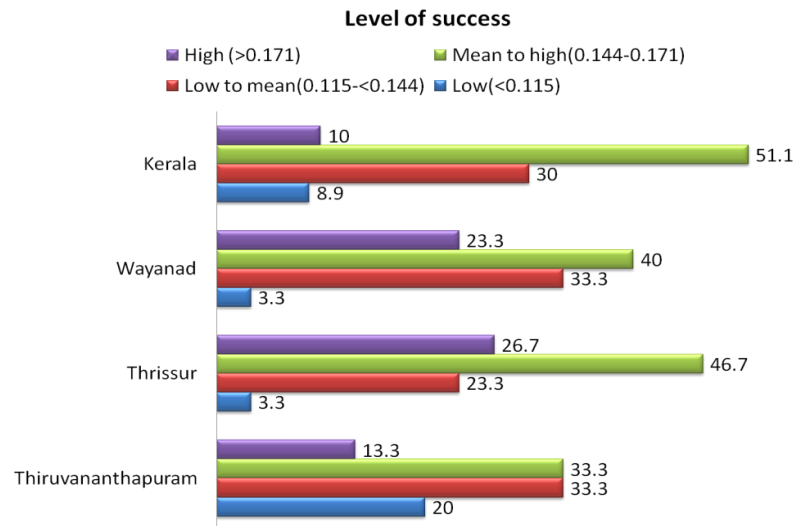


Fig. 7. Distribution of agripreneurs according to the level of success

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.

Aravind et al. (2023) in his study highlights the success of a young nursery entrepreneur from Thanjavur, India, who inherited entrepreneurial skills from his family. It emphasizes the low investment required for nursery businesses, making them a viable entrepreneurial opportunity. The entrepreneur's ability to diversify products and establish a prominent local presence demonstrates the potential of this business model. The study also underscores the need for government support to help entrepreneurs to expand, diversify, and create wealth and jobs.

3.3 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 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 show 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.

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

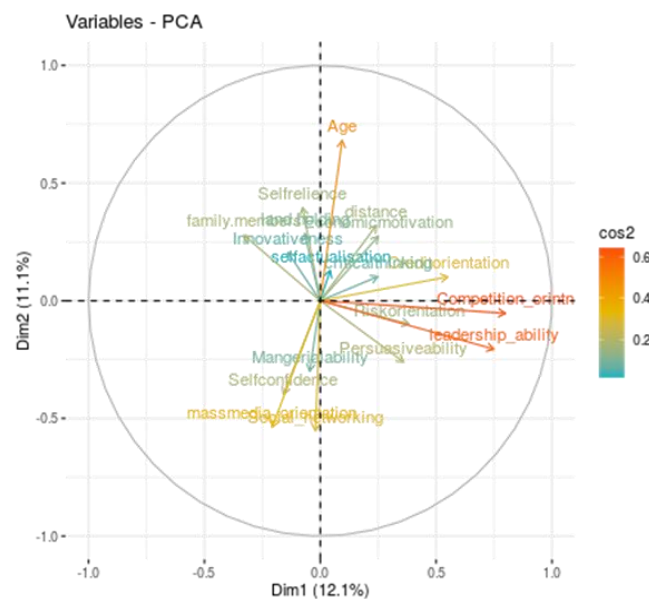


Fig. 8. Biplot diagram of principal component analysis

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
<i>Economic motivation</i>	0.251	0.274	-0.037	0.447	0.088	0.377	0.439	0.17
<i>Self reliance</i>	-0.076	0.396	0.324	0.22	-0.014	0.092	0.54	-0.252
<i>Managerial ability</i>	-0.046	-0.3	-0.041	-0.263	-0.23	0.497	-0.006	0.272
<i>Self confidence</i>	-0.159	-0.398	-0.452	0.302	0.002	0.445	-0.043	-0.047
<i>Social networking</i>	-0.021	-0.553	0.448	-0.13	0.443	-0.048	0.043	-0.205
<i>Self actualisation</i>	0.043	0.129	0.138	-0.65	0.14	0.427	0.096	-0.029
<i>Critical thinking</i>	0.249	0.103	0.432	-0.054	-0.373	0.212	0.156	-0.197
<i>Persuasive ability</i>	0.36	-0.26	-0.322	-0.247	-0.29	-0.034	0.149	0.157
<i>leadership ability</i>	0.75	-0.206	-0.341	-0.173	0.287	-0.099	0.181	-0.063
<i>Competition orientation</i>	0.799	-0.054	-0.196	0.093	0.324	-0.057	0.011	-0.014
<i>Innovativeness</i>	-0.139	0.205	0.331	-0.392	0.174	-0.202	0.104	0.611
<i>Mass media orientation</i>	-0.208	-0.538	0.007	0.37	-0.289	0.001	0.158	0.375
<i>Age</i>	0.094	0.682	-0.435	-0.003	-0.193	-0.18	-0.082	0.224
<i>Family members</i>	-0.329	0.278	-0.142	0.299	0.375	0.09	-0.266	-0.119
<i>Distance from near town</i>	0.242	0.321	-0.031	-0.218	-0.374	0.302	-0.331	-0.246
<i>Landholding</i>	-0.067	0.286	-0.048	0.024	0.546	0.409	-0.062	0.293

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.

4. 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 Keralaviz. 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 skill through market interventions and trainings,

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The author(s) hereby declare that generative AI technologies, specifically Grammarly, and OpenAI's GPT-4 were consciously used for language correction purposes only during the writing or editing of this manuscript. All content,

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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