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Customer preference, entrepreneurial skills and innovation in landscape gardening and nursery enterprises: A study of Raipur city, Chhattisgarh, India

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Abstract

Customer preference and entrepreneurial skill together shape the growth, product mix, competitiveness and marketing strategy of landscape gardening and nursery enterprises. This paper combines two linked enquiries carried out in Raipur City, Chhattisgarh, India, to present an integrated picture of how demand-side customer preference and supply-side entrepreneurial capability jointly influence enterprise performance in this sector. Primary data were collected through structured interview schedules from 10 nursery and landscape enterprises (selected through multi-stage random sampling, representing 20% of the 50 registered nurseries in Raipur) and, separately, from 246 customer respondents determined using Cochran's sample-size formula with finite population correction at 95% confidence level and 5% margin of error. Data were analysed using frequency, percentage and mean-based descriptive statistics. On the demand side, the majority of customers (53.3%) belonged to the 25-40 years age group, household customers (50.4%) formed the dominant segment, ornamental plants were the most preferred category (41.5%), and variety of plants and products (46.3%) together with plant quality (35.0%) were the two most influential purchase factors, while price (11.0%), online reviews (4.1%) and location (3.7%) played a minor role. On the supply side, innovation and creativity, customer relationship management, and adaptability to market changes were each reported by 90.0% of nursery owners, followed by employee training and development (80.0%) and leadership skills (70.0%); innovative practice was reflected in wide adoption of smart irrigation systems (90.0%), eco-friendly and sustainable gardening practices (80.0%) and plant subscription/home-delivery services (80.0%), while more capital-intensive corporate landscaping services were adopted by only 40.0% of enterprises. Read together, the two data sets show that Raipur's nursery enterprises are innovating and adapting in ways that are well matched to customers' stated preference for variety and quality over price, but that comparatively weaker enterprise-level leadership and employee-training practices may constrain how far this alignment can be scaled. The study identifies specific research gaps left open by treating customer preference and entrepreneurial capability as separate, unlinked phenomena, and offers recommendations for entrepreneurs, extension agencies and future researchers.

Keywords: Customer preference, entrepreneurial skills, innovation, adaptability, nursery enterprise, landscape gardening, Raipur, Chhattisgarh

1. Introduction

Landscape gardening and nursery enterprises form an important and rapidly expanding segment of urban horticulture in India, driven by rising urbanisation, growing environmental awareness, and increasing consumer interest in home and commercial beautification. Rapid city growth, shrinking residential space, and a rising preference for green living have together created a strong market for ornamental plants, indoor greenery, terrace gardens and professional landscaping services. In this evolving market, the long-term competitiveness of nursery and landscape enterprises is determined jointly by two forces that are usually studied in isolation: how accurately enterprises read and respond to customer preference on the demand side, and how strongly enterprise owners possess and exercise the entrepreneurial skills — innovation, leadership, customer relationship management, employee development and adaptability needed to translate that reading into competitive practice on

the supply side.

Customer preference refers to the choices customers make among available plant types, products and services on the basis of quality, price, variety, aesthetic appeal and convenience, and it functions as a critical determinant of demand, product-mix planning, inventory decisions and marketing communication for nursery and landscaping businesses. Prior studies on ornamental horticulture markets have consistently shown that plant quality, product variety and price are the principal attributes shaping consumer choice ^[1]. Physical attributes of plants, including flower form, colour and size, have similarly been found to strongly influence outdoor ornamental plant selection ^[2], while household and residential buyers have emerged as the dominant customer segment for ornamental plant producers and retailers in several market-profile studies ^[3].

At the same time, entrepreneurial skill is a key determinant of an enterprise's ability to innovate and adapt in a

competitive market, particularly for nursery and landscape gardening businesses that must continuously respond to changing customer preference, technology and environmental conditions. Innovation and adaptability have been repeatedly identified as central components of entrepreneurial behaviour among horticultural and nursery entrepreneurs, alongside leadership ability, decision-making capacity, risk orientation and management orientation [5]. Nursery and ornamental horticulture entrepreneurs who regularly adopt innovative marketing and technological practices, including active use of social media and digital engagement tools, have been found to sustain stronger customer reach and business performance [6], although evidence from Indian floriculture and nursery enterprises indicates considerable variation in the level of specific entrepreneurial skills such as leadership and innovativeness, with many enterprises falling in the medium rather than high category [5].

Raipur City, the capital of Chhattisgarh, has witnessed considerable urban expansion, improved connectivity, and rising demand for ornamental and landscape plants in recent years, making it a suitable location to examine, within a single market, how customer preference and enterprise-level entrepreneurial skill jointly shape the functioning of local nursery and landscape enterprises. Against this background, the present combined study was carried out with two specific objectives: (i) to analyse the impact of customer preference on landscape gardening and nursery enterprises in Raipur City, and (ii) to identify the key entrepreneurial skills that promote innovation and adaptability in nursery management among the same population of enterprises.

2. Materials and Methods

2.1 Study area

The study was conducted in Raipur City, the capital of Chhattisgarh State, India, located at approximately 21.25°N latitude and 81.63°E longitude. Raipur is the largest city and a major centre of administration, trade, education and industry in the state, and experiences a tropical wet and dry climate with an average annual rainfall of 1,200-1,400 mm. Its strategic location, expanding urban population, improving transport infrastructure and rising demand for ornamental and landscape plants have together made it a suitable area for the development, and study, of nursery and landscape gardening enterprises.

2.2 Sampling design and sample size

A multi-stage random sampling procedure was used to ensure a representative and unbiased sample. Raipur City was first divided into its municipal wards, from which a random selection of wards was made. Within the selected wards, a sampling frame of nursery and landscape enterprises was prepared using municipal records, local trade directories and field verification, and enterprises were then randomly drawn from this frame. A total of 10 nursery and landscape enterprises, representing 20% of the 50 registered plant nurseries operating in Raipur City, were selected for both the enterprise-level entrepreneurial-skill survey and as the base population for the customer-level survey. From each selected enterprise, the owner, manager or a senior employee was interviewed as the key respondent for the entrepreneurial-skill component.

For the customer-level survey, the population of customers was estimated at approximately 3,000 (10 enterprises × an average of 300 customers per enterprise per month). Using Cochran's formula for an infinite population ($z = 1.96$ at 95% confidence level, $p = 0.2$, $e = 0.05$), an initial sample of 246 respondents was obtained; applying the finite population correction for $N = 3,000$ gave a corrected minimum sample of 228. The study retained the full sample of 246 customer respondents for analysis, which exceeds the finite-population-corrected requirement and was considered adequate to capture the diversity of customer preference in the study area.

2.3 Data collection

Both primary and secondary data were used. Primary data on customer preference were collected through a pre-tested, structured interview schedule administered by personal interview, covering customer demographic profile, type of customer, type of plant preferred, and factors influencing buying behaviour; customer-preference-related items (plant-quality preference, product-variety preference, service satisfaction, aesthetic value and purchasing behaviour) were designed on a five-point Likert scale ranging from 'Strongly Agree' to 'Strongly Disagree', in addition to closed-ended categorical questions on customer profile and buying-behaviour factors.

Primary data on entrepreneurial skills were collected, from the owner, manager or senior employee of each of the same 10 enterprises, through a separate pre-tested, structured interview schedule capturing (i) a dichotomous (yes/no) checklist of five entrepreneurial competencies — innovation and creativity, leadership skill, customer relationship management, employee training and development, and adaptability to market change; (ii) categorical self-rating scales assessing the level of each competency (for example, 'regularly/occasionally/rarely' for innovation and employee training, 'strong/moderate/weak' for leadership, 'excellent/good/fair' for customer relationship management, and 'highly/moderately/less adaptable' for adaptability); and (iii) a checklist of innovative products, services and technological trends offered by the enterprise, along with receipt of government support or subsidy.

Field data collection for both components was carried out between 10 March and 25 April 2026. Secondary data were drawn from journals, business records, market reports and relevant published literature.

2.4 Analytical technique

The collected data for both components were coded, tabulated and analysed using descriptive statistical tools, namely frequency and percentage analysis, to determine the distribution of customers across demographic categories, customer type, plant-type preference and buying-behaviour factors, and, separately, the proportion and level of each entrepreneurial skill and innovative practice among sampled enterprise owners. Results are presented in tabular form and interpreted jointly in relation to the study objectives and relevant published literature.

3. Results and Discussion

This section is presented in two parts. Part A reports customer-level results on the impact of customer preference,

based on the responses of 246 customers. Part B reports enterprise-level results on entrepreneurial skills, innovation and adaptability, based on the responses of the 10 sampled nursery owners/managers. The two parts are interpreted together at the end of this section.

Part A: Customer preference

3.1 Age profile of customers

The age distribution of customers helps identify the dominant market segment served by nursery and landscape enterprises, and provides a basis for planning age-appropriate products, services and promotional activities.

Table 1: Distribution of respondents according to age group (n = 246)

Age Group	Frequency	Percentage (%)
Below 25	81	33.0
25-40	131	53.3
40-60	27	11.0
Above 60	7	2.7
Total	246	100.0

The majority of respondents (53.3%) belonged to the 25-40 years age group, followed by those below 25 years (33.0%); respondents aged 40-60 years and above 60 years constituted 11.0% and 2.7% of the sample, respectively. This indicates that young, working-age customers form the principal market for nursery and landscape products in Raipur City, likely because this group has greater purchasing power, an active interest in home and terrace gardening, and higher exposure to gardening trends through digital and social media platforms. This finding is consistent with ^[4], who reported that younger residential customers show strong interest in landscaping for recreational and aesthetic reasons, often coinciding with home ownership.

3.2 Type of customer

Categorising customers by type clarifies the composition of the clientele served by nursery and landscape enterprises and the relative importance of different demand sources.

Table 2: Frequency and percentage distribution of type of customer (n = 246)

Type of Customer	Frequency	Percentage (%)
Household	124	50.4
Office/Institution	69	28.1
Builder	33	13.4
Hotel/Commercial	20	8.1
Total	246	100.0

Household customers formed the largest customer segment (50.4%), followed by office/institutional buyers (28.1%), builders (13.4%), and hotel/commercial customers (8.1%). This pattern indicates that residential demand for ornamental plants, home gardening and terrace/landscape beautification is the mainstay of the nursery and landscape business in Raipur City, broadly in agreement with ^[3], who similarly reported household and residential buyers as the dominant consumer group for ornamental plant producers and retailers. The comparatively smaller share of institutional, builder and commercial customers suggests an underexploited opportunity for enterprises to expand through long-term

service contracts, bulk landscaping projects and customised institutional supply arrangements.

3.3 Type of plant preferred by customers

Customer preference for specific plant categories is a direct indicator of market demand and guides nursery production and stocking decisions.

Table 3: Distribution of customers according to type of plant preferred (n = 246)

Type of Plant Preferred	Frequency	Percentage (%)
Ornamental plant	102	41.5
Fruit plant	53	21.5
Indoor plant	41	16.7
Decorative plant	34	13.8
Medicinal plant	16	6.5
Total	246	100.0

Ornamental plants emerged as the most preferred category (41.5%), followed by fruit plants (21.5%), indoor plants (16.7%), decorative plants (13.8%) and medicinal plants (6.5%). This ranking closely mirrors global consumer patterns, in which flowering and ornamental plants have consistently been reported as the most preferred nursery product category ^[2]. The strong preference for ornamental over medicinal plants suggests that aesthetic and decorative value, rather than functional or health-related benefit, is the dominant motivation for plant purchase among customers in Raipur City.

3.4 Factors influencing customer buying behaviour

The examination of factors that shape purchase decisions provides direct evidence of how customer preference translates into buying behaviour, and hence into demand for nursery and landscape enterprises.

Table 4: Factors influencing customer buying behaviour (n = 246)

Factor Influencing Buying Behaviour	Frequency	Percentage (%)
Variety	114	46.3
Quality	86	35.0
Price	27	11.0
Online Reviews	10	4.1
Location	9	3.7
Total	246	100.0

Variety of plants and products was reported as the most influential factor by 46.3% of respondents, followed by plant quality (35.0%), price (11.0%), online reviews (4.1%) and location of the nursery (3.7%). The dominance of variety and quality over price and location indicates that customers in Raipur City base their purchase decisions primarily on the diversity and health of the plant stock available, rather than on cost or convenience alone. This is partly consistent with, and partly divergent from, the findings of ^[1], who reported that plant selection/variety (20.0%), price (20.1%) and plant quality (19.9%) carried nearly equal weight among United States ornamental plant consumers, with quality rated as the single most important attribute; in the present study, however, variety and quality together accounted for over 81% of responses, while price and location were markedly less influential, reflecting comparatively lower price sensitivity

among Raipur customers.

Part B: Entrepreneurial skills, innovation and adaptability

3.5 Entrepreneurial skills possessed by nursery owners

An overall assessment of five core entrepreneurial competencies was carried out on a yes/no basis to determine the proportion of nursery owners demonstrating each skill.

Table 5: Entrepreneurial skills possessed by nursery owners (n = 10)

Entrepreneurial Skill	Frequency	Percentage (%)
Innovation and Creativity	9	90.0
Customer Relationship Management	9	90.0
Adaptability to Market Changes	9	90.0
Employee Training and Development	8	80.0
Leadership Skills	7	70.0

Innovation and creativity, customer relationship management, and adaptability to market changes were each reported by 90.0% of nursery owners, indicating that these three competencies are the most widely and strongly held entrepreneurial skills in the study area. Employee training and development was reported by 80.0% of owners, while leadership skills, though still substantial, were comparatively the least widespread at 70.0%. This pattern is broadly consistent with ^[5], who found that Indian floriculture nursery entrepreneurs commonly display a bundle of related competencies, though the intensity of individual skills varies across enterprises.

3.6 Level of innovation and creativity

Table 6: Level of innovation and creativity among nursery owners (n = 10)

Response Category	Frequency	Percentage (%)
Regularly introduce new plant varieties/services	5	50.0
Occasionally introduce new plant varieties/services	4	40.0
Rarely introduce new plant varieties/services	1	10.0
Total	10	100.0

Half of the nursery owners (50.0%) regularly introduce new plant varieties and services, 40.0% do so occasionally, and only 10.0% rarely innovate. This finding aligns with ^[6], who reported that the majority of nursery and ornamental horticulture entrepreneurs regularly adopted innovative marketing and technological practices; it contrasts with a South Gujarat study on ornamental nursery owners, where innovativeness was reported to be adopted only occasionally by the majority (52.0%) of respondents and regularly by just 21.0% ^[8], suggesting that the pace of innovation adoption among Raipur's nursery owners is comparatively faster.

3.7 Adaptability to market changes

Table 7: Level of adaptability to market changes among nursery owners (n = 10)

Response Category	Frequency	Percentage (%)
Highly adaptable	6	60.0
Moderately adaptable	3	30.0
Less adaptable	1	10.0
Total	10	100.0

Sixty percent of nursery owners were highly adaptable to market changes, 30.0% moderately adaptable, and only 10.0% less adaptable, indicating that most enterprises are able to modify their strategies and operations in response to changing customer preference, emerging trends and technological advancement.

3.8 Leadership skills

Table 8: Level of leadership skills among nursery owners (n = 10)

Response Category	Frequency	Percentage (%)
Strong leadership skills	6	60.0
Moderate leadership skills	1	10.0
Weak leadership skills	3	30.0
Total	10	100.0

Sixty percent of nursery owners possessed strong leadership skills, 10.0% moderate, and 30.0% weak leadership abilities. This is markedly stronger than the pattern reported for commercial floriculture nursery owners in Andhra Pradesh, where the majority (67.5%) exhibited only occasional leadership behaviour and just 16.7% displayed consistently strong leadership ^[5], suggesting that leadership, while still a comparatively weaker skill within the present study area, is nonetheless more consistently exercised here than in some other regional nursery markets.

3.9 Customer relationship management

Table 9: Level of customer relationship management among nursery owners (n = 10)

Response Category	Frequency	Percentage (%)
Excellent customer relationship management	7	70.0
Good customer relationship management	2	20.0
Fair customer relationship management	1	10.0
Total	10	100.0

Seventy percent of nursery owners exhibited excellent customer relationship management, 20.0% good, and only 10.0% fair. Read alongside the customer-level finding that variety and quality, not price or location, drive purchase decisions (Table 4), this high level of self-reported customer relationship management suggests that Raipur's nursery owners are, at least in disposition, well positioned to engage the very preference dimensions their customers report as most important.

3.10 Employee training and development

Table 10: Level of employee training and development among nursery owners (n = 10)

Response Category	Frequency	Percentage (%)
Regularly provide employee training	3	30.0
Occasionally provide employee training	5	50.0
Rarely provide employee training	2	20.0
Total	10	100.0

Half of the nursery owners (50.0%) occasionally provide employee training, 30.0% do so regularly, and 20.0% rarely invest in employee development, making this the weakest-performing entrepreneurial practice identified in the study.

3.11 Innovative trends and technologies adopted by enterprises

Table 11: Innovative trends and technologies offered by nursery and landscape enterprises (n = 10)

Trend/Technology	Frequency	Percentage (%)
Smart Irrigation Systems	9	90.0
Eco-Friendly and Sustainable Gardening Practices	8	80.0
Plant Subscription and Home Delivery Services	8	80.0
Vertical Gardening	7	70.0
Organic Plants and Organic Gardening	7	70.0
Native Plant Landscaping	7	70.0
Landscape Design and Consultancy Services	6	60.0
Water-Efficient Landscaping (Xeriscaping)	6	60.0
Terrace Gardening	5	50.0
Corporate Landscaping and Maintenance Services	4	40.0

Smart irrigation systems were the most widely adopted innovation (90.0%), followed by eco-friendly and sustainable gardening practices and plant subscription/home-delivery services (80.0% each), and vertical gardening, organic gardening and native plant landscaping (70.0% each), while landscape design/consultancy and xeriscaping were offered by 60.0% of enterprises, terrace gardening by 50.0%, and corporate landscaping and maintenance, the most capital- and skill-intensive service, by only 40.0%. This distribution mirrors patterns reported elsewhere, in which the adoption of new nursery trends is dominated by vertical gardening, smart irrigation and organic production techniques in response to urbanisation and limited growing space^[10], and confirms that the high levels of self-reported innovation and adaptability recorded above translate directly into observable business practice, with the lowest adoption occurring for the trend that demands the greatest investment, technical skill and long-term client commitment.

In addition to owners' own entrepreneurial effort, institutional support appears to reinforce innovation capacity: 80.0% of nursery owners reported receiving some form of government assistance, most commonly horticulture training programmes (70.0%) and support for protected cultivation technologies (60.0%), while the remaining 20.0% had not accessed any

support, generally attributable to limited awareness of available schemes^[9]. Similarly, regular business promotion, practised by 60.0% of owners primarily through social media marketing and participation in exhibitions, has been found elsewhere to improve market reach and sales performance for small nursery businesses^[7], further complementing the innovation and adaptability documented in this study. At the same time, labour-related problems emerged as the most serious operational constraint reported by nursery owners, which may limit the pace at which innovative and adaptive practices can be scaled up despite owners' strong entrepreneurial orientation.

3.12 Integrated discussion: linking customer preference and entrepreneurial capability

Considered jointly, the customer-level and enterprise-level findings indicate a broadly favourable, though incomplete, alignment between what Raipur's nursery customers want and what its nursery owners are equipped to deliver. Customers overwhelmingly prioritise product variety and plant quality over price and location (Table 4), and enterprise owners report correspondingly high levels of innovation and creativity (90.0%) and adaptability to market change (90.0%), together with concrete adoption of variety-expanding practices such as vertical gardening, organic production and native plant landscaping (Table 11). The dominance of household customers as the core demand segment (Table 2) is also mirrored by the high level of self-reported excellent customer relationship management (70.0%) among owners (Table 9), suggesting that enterprises are, in general, organisationally oriented toward the segment that in fact drives most of their revenue.

However, two points of misalignment or risk are worth flagging. First, the comparatively weaker leadership (70.0%) and, especially, employee-training practices (only 30.0% regular) among enterprise owners raise the question of whether the variety- and quality-led growth that customers demand can be sustained at scale without a more trained workforce, since expanding plant range and maintaining plant health are labour- and skill-intensive activities. Second, the low customer-reported reliance on online reviews (4.1%) sits somewhat uneasily alongside the fact that plant subscription and home-delivery services, which typically depend on digital customer engagement, have already been adopted by 80.0% of enterprises; this suggests either that these digital services are being adopted ahead of clear customer demand, or that customers are engaging with these services through channels other than online reviews. Both observations point to specific, testable directions for future enterprise strategy and research in the study area.

4. Conclusion

The study concludes that customer preference and entrepreneurial capability jointly shape the performance of landscape gardening and nursery enterprises in Raipur City, Chhattisgarh. On the demand side, young and working-age household customers constitute the core market, and their purchasing decisions are driven predominantly by product variety and plant quality rather than by price or nursery location, with ornamental plants remaining the most preferred product category. On the supply side, innovation and creativity, customer relationship management, and

adaptability to market changes are the entrepreneurial skills most widely possessed by nursery owners, translated into concrete practice through wide adoption of smart irrigation, eco-friendly gardening and home-delivery services, while employee training and development and, to a lesser extent, leadership skill remain comparatively weaker areas. Read together, these findings show that Raipur's nursery enterprises are, in broad terms, innovating in the directions their customers value, but that strengthening leadership and structured employee training would help ensure this alignment can be sustained as enterprises grow. The study recommends that nursery and landscape entrepreneurs in Raipur widen product range, upgrade plant quality, design customer-segment-specific marketing strategies targeting household and young/working-age consumers, invest in regular structured employee training and leadership development, expand awareness and uptake of government support schemes, and extend capital-intensive innovative services such as corporate landscaping as business capacity allows, in order to strengthen enterprise competitiveness and support sustainable growth of the sector in the region. Future research, informed by the gaps identified in Section 2, should pursue larger, linked customer-enterprise samples across multiple cities to test statistically whether enterprise-level entrepreneurial capability is associated with customer-reported satisfaction and loyalty.

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