International Journal of Research in Human Resource Management

E-ISSN: 2663-3361
P-ISSN: 2663-3213
IJRHRM 2025; 7(2): 646-655
Impact Factor (RJIF): 6.16
www.humanresourcejournal.com
Received: 10-08-2025
Accepted: 15-09-2025

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Demographic and contextual profiling of employees in Kerala-based startups: A descriptive analysis

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DOI: https://www.doi.org/10.33545/26633213.2025.v7.i2f.384

Abstract
Startups are at the forefront of economic innovation, particularly in emerging markets like India. While much attention has been given to their scalability and technological disruption, less is known about the employees who drive these enterprises, especially in regional contexts. This study offers a descriptive analysis of 698 employees working in startups across Kerala, focusing on demographic and organisational variables such as age, gender, education, work type, startup sector, and geographic location. Through frequency distributions and cross-tabulation analysis, this paper uncovers patterns in gender representation, educational qualification, urban-rural distribution, and tenure dynamics. The findings suggest a workforce dominated by young, early-career professionals with notable gender parity and a strong urban concentration. These insights provide a foundation for future empirical investigations into leadership, job design, and retention strategies in startup environments. Implications for human resource practices and policy development in the regional startup ecosystem are discussed.

Keywords: Startups, demographic analysis, Kerala, HRM, cross-tabulation, organisational behaviour

1. Introduction

Startups are fundamentally different from traditional firms in their risk orientation, agility, and human capital dependency. Their non-hierarchical, innovation-driven cultures attract a unique workforce characterised by adaptability, autonomy, and a preference for meaningful work (Cardon & Stevens, 2004; George & Zahra, 2002) [6, 11]. They are often defined as companies that develop technology-driven products or services (Saura *et al.*, 2019) [21]. Understanding who comprises this workforce, especially in emerging economies, is key to shaping policies and HRM interventions.

Research suggests that younger professionals are more inclined to join startups, seeking learning opportunities and fast career progression (Saks, 2006; Van der Heijden *et al.*, 2009) [20, 28]. Gender diversity has also emerged as a performance-enhancing factor, contributing to collective intelligence and decision quality (Woolley *et al.*, 2010; Eagly & Carli, 2003) [26, 8]. Education level, sectoral exposure, and organisational tenure influence job crafting behaviour, commitment, and innovation potential (Kirkman & Rosen, 1999; Wrzesniewski & Dutton, 2001; Bakker *et al.*, 2012) [13, 27, 29].

Kerala presents an ideal empirical context with its high literacy rate (96.2 per cent), gender parity in education, and robust state-backed initiatives like the Kerala Startup Mission. KSUM's initiatives, including incubation centres, seed funding programs, and international collaborations, have made Kerala a national leader in inclusive entrepreneurship. Furthermore, Kerala's model has inspired policy adoption in other Indian states, contributing to the decentralisation of India's startup economy (Future Technology Summit, 2023) [10].

This paper thus aims to provide an empirical base for understanding startup employees in Kerala, with implications for both OB theory and practice.

2. Research Objectives and Questions

2.1 Objectives

1. To describe the demographic characteristics of employees working in startups across Kerala.
2. To examine the organizational context (work type, sector, location) in which these employees operate.

3. To explore relational patterns between demographic and contextual variables using cross-tabulation.
4. To inform HRM policy and future OB research specific to startup settings.

3. Literature Review

3.1 Demographic Profiling of Startup Employees

The demographic composition of startup employees has been a growing area of inquiry in organisational behaviour and entrepreneurship research. Startups, characterised by their dynamism and flat organisational structures, often attract a workforce that is distinct from traditional corporate environments. Studies (Baron & Hannan, 2002; Cardon & Stevens, 2004) [4, 6] suggest that startups primarily attract younger individuals seeking rapid career growth, skill accumulation, and meaningful engagement.

Recent empirical analyses underscore this trend. For instance, De Clercq and Belausteguigoitia (2017) [7] found that the median age of employees in early-stage startups in emerging economies hovered around 28 years, indicating a preference for early-career professionals. In the Indian context, NASSCOM (2023) [17] similarly reported that over 60 per cent of startup employees were under 30 years of age. This youthful demographic composition supports the high-risk, high-reward environment typical of startups, where adaptability, tech-savviness, and learning agility are prized (Saks, 2006) [20].

Gender representation has shown significant shifts in startup ecosystems. Traditionally male-dominated, startups have seen rising female participation rates, driven by both societal changes and specific policy interventions. Woolley *et al.* (2010) [26] demonstrated that gender-diverse teams exhibit higher collective intelligence, a crucial factor for innovation-driven firms. Gender-inclusive hiring practices, as evidenced in some studies, suggest that startups with proactive diversity strategies outperform peers on innovation metrics (Ali *et al* 2021) [30]

Educational attainment is another critical demographic variable. Startups, particularly in tech-driven sectors, often require employees with advanced technical and analytical skills. Research by Kirkman and Rosen (1999) [13] indicated that team-based structures in startups favour highly educated individuals who can work autonomously. In India, a study by Kalyani (2022) [12] confirmed that 78% of startup employees hold at least a bachelor's degree, with 25 per cent possessing postgraduate qualifications, reflecting the knowledge-intensive nature of startup roles.

Thus, evidence points toward a workforce profile dominated by young, well-educated individuals, with improving gender diversity a pattern this study seeks to examine specifically within Kerala's vibrant startup ecosystem.

3.2 Organisational Context: Work Types, Sectors, and Geographic Distribution

Understanding the organisational setting in which employees operate is vital to contextualising workforce characteristics. Startups differ markedly by sector, work type (full-time, freelance, hybrid), and location (urban vs. semi-urban), each influencing employee experiences and expectations.

Sectorally, technology, healthcare, fintech, and edtech dominate the startup landscape (World Economic Forum, 2024) [31]. In an analysis of startup sector employment trends, Autio *et al.* (2014) [3] found that sectoral variations have a significant impact on job roles, skill demands, and tenure. For instance, employees in tech startups often engage in project-based, outcome-driven work compared to the client-facing, relationship-building roles common in-service startups.

Work type also reflects startups' adaptive and flexible operational models. A 2023 study by Ambition Box reported that nearly 80 per cent of Kerala startup employees had access to flexible or hybrid work arrangements, a trend accelerated by post-pandemic workplace transformations. Bloom *et al.* (2022) [5] demonstrated that hybrid models not only increased employee satisfaction but also reduced attrition rates in startup environments.

Geographically, urban hubs have historically dominated startup activity due to better infrastructure and talent pools (Florida, 2002) [9]. However, emerging research suggests a gradual dispersion into semi-urban areas. In India, initiatives like the Kerala Startup Mission (KSUM) have democratised entrepreneurial activity across urban and semi-urban zones (NASSCOM, 2022) [16]. Saxenian (2006) [22] highlighted that regional ecosystems' decentralisation could lead to more inclusive economic development, a phenomenon observable in Kerala's distributed startup hubs in Kochi, Thiruvananthapuram, and Kozhikode.

Thus, the organisational context in terms of sector, work type, and location shapes employee profiles and experiences, necessitating its inclusion in workforce analyses.

3.3 Relational Patterns between Demographic and Contextual Variables

The interplay between demographics and organisational context is critical for understanding workforce dynamics. Several studies have cross-tabulated variables like gender and job roles, age and sectoral distribution, and urban-rural employment patterns.

3.3.1 Gender and Job Roles

Research consistently reveals occupational segregation by gender, even within startups. (Ali *et al.*, 2021) [30] found that women in startups are more likely to occupy support and HR roles, whereas technical and leadership positions remain male-dominated. However, initiatives to bridge this gap have shown promising results. In Kerala, KSUM's Women Entrepreneurship Support Program aims to integrate women into technical and leadership tracks, though systematic evaluation is ongoing.

3.3.2 Age and Sector

Younger employees typically cluster in high-growth, technology-oriented startups (Autio *et al.*, 2014) [3]. Meanwhile, more experienced professionals gravitate toward consulting, healthcare, and education technology startups where domain expertise outweighs youthful dynamism. A 2023 study by Scaalex indicated that Kerala's health tech startups had relatively older average employee age compared to fintech ventures, reflecting sector-specific human capital needs.

3.3.3 Location and Startup Context

Urban startups benefit from talent density but face higher turnover rates (Startup Genome, 2023) [24]. Semi-urban startups, while facing initial talent acquisition challenges, report higher employee loyalty. (Lafuente *et al.*, 2020) [14] demonstrated that regional startups often achieve greater social embeddedness, fostering employee commitment.

These relational patterns are vital for developing nuanced HRM policies and organisational designs that align workforce composition with startup strategic goals.

3.4 Implications for Workforce Strategy and Organisational Design

Understanding demographic and organisational patterns has profound implications for human resource management (HRM) and organisational behaviour (OB) in startups.

3.4.1 Talent Acquisition and Retention

Startups must tailor their recruitment strategies to appeal to the young, flexible, and digitally proficient workforce. Strategies promoting work-life balance, meaningful work, and rapid career progression resonate more with startup employees than traditional monetary incentives alone (Saks, 2006; Wrzesniewski & Dutton, 2001) [20, 27].

3.4.2 Diversity and Inclusion (D&I)

Promoting gender diversity is not merely a normative goal but a strategic imperative. Research by Nishii (2013) [18] showed that inclusive climates enhance innovation and reduce employee turnover. Kerala's startup ecosystem, with its progressive gender policies, could be a model for integrating D&I into startup DNA.

3.4.3 Workplace Flexibility

The post-pandemic reality has embedded flexible work as a baseline expectation. Startups offering remote work, hybrid models, and results-oriented workplace cultures are better positioned to attract top talent. Bloom *et al.* (2022) [5] argue that flexible startups enjoy a competitive edge in employee satisfaction, innovation capacity, and scaling success.

3.4.4 Regional Ecosystem Development

Policymakers and startup support organisations must continue decentralising startup hubs to semi-urban areas. Not only does this tap into latent talent pools, but it also ensures more equitable economic development (Florida, 2002; Saxenian, 2006) [9, 22].

In sum, a robust understanding of employee demographics and contextual dynamics can significantly enhance startup HR strategies, contributing to organizational sustainability, innovation capacity, and broader ecosystem development.

Table 1: Summary of Review of Demographic Variables

Author(s)	Year	Focus Area	Key Findings/Insights
Cardon & Stevens	2004 [6]	Human Resource Management in Startups	Startups attract employees seeking autonomy, fast learning, and meaningful work.
Baron & Hannan	2002 [4]	Startup Organizational Culture	Early organizational structures significantly shape workforce expectations and experiences.
De Clercq & Belausteguigoitia	2017 [7]	Work Overload & Innovation	Startup employees face high demands but support mechanisms enhance innovation potential.
Woolley *et al.*	2010 [26]	Collective Intelligence and Gender	Gender-diverse teams demonstrate higher collective intelligence and better decision-making.
Ali, Kulik, & Metz	2021 [1]	Gender Inclusion & Innovation	Inclusive climates in startups lead to superior innovation performance.
Kirkman & Rosen	1999 [13]	Team Empowerment	Education and autonomy correlate with effective team-based structures in startups.
Saks	2006 [20]	Employee Engagement	Meaningful work and developmental opportunities drive engagement, not just monetary incentives.
Autio *et al.*	2014 [3]	Sectoral Impact on Startups	Startup sectors (tech, health, edtech) vary in job roles, skills demands, and employee dynamics.
Bloom, Han, & Liang	2022 [5]	Hybrid Work in Startups	Flexible and hybrid models increase employee satisfaction and retention.
Lafuente, Vaillant, & Rialp	2020 [14]	Regional Startup Ecosystems	Semi-urban startups achieve better social embeddedness and loyalty among employees.
Nishii	2013 [18]	Diversity and Organizational Climate	Inclusive environments enhance innovation and reduce employee turnover.
Saxenian	2006 [22]	Regional Economic Development	Decentralized startup ecosystems foster inclusive growth and regional innovation.
Florida	2002 [9]	Talent and Urban Centers	Urban hubs traditionally dominate startups, but regional hubs are gaining importance.
Kalyani	2022 [12]	Career Preferences in Startups	Young Indian graduates prefer startups for fast career progression and meaningful roles.
Wrzesniewski & Dutton	2001 [27]	Job Crafting	Employees proactively shape their roles, enhancing satisfaction and organizational fit.
Startup Genome	2023 [24]	Global Startup Trends	Affordable talent and flexible work are key competitive advantages.
NASSCOM	2022 & 2023 [16, 17]	Indian Startup Ecosystem Trends	Youth-dominated, technology-driven sectors, increasing focus on AI/ML capabilities.
AmbitionBox	2023 [2]	Kerala Startup Workforce Trends	High prevalence of flexible work and urban concentration in Kerala startups.
WISER	2023 [25]	Gender Participation in Startups	Women's workforce participation in startups is rising, improving gender parity.

Source: Authors Work

4. Research Methodology

4.1 Research Design: This study uses a descriptive research design to analyse categorical demographic and organisational variables. The approach provides a foundational understanding of the employee population in Kerala's startups.

4.2 Sample and Context: The data were collected from 698 employees registered under Kerala Startup Mission (KSUM) certified startups operating across various sectors, including EdTech, IT, Robotics, FinTech, and Services. The selection was purposive, focusing on early-stage and growth-phase firms across urban and rural areas of Kochi, Thiruvananthapuram and Kozhikode districts.

4.3 Data Collection Instrument: A structured questionnaire was distributed via digital platforms and in-person to employees. The instrument collected demographic data and organisational context variables (e.g., tenure, work type, experience).

4.4 Data Analysis Techniques: Descriptive statistics (frequencies, percentages) were used to profile respondents. Cross-tabulation analyses were conducted to examine relationships between categorical variables. These methods are widely used in workforce studies (Lohr, S. L. 2019, Pasek, J., & Krosnick, J. A. 2010) [15, 19]

5. Data Analysis and Interpretation

The frequency analysis was conducted on data collected from 698 employees working across startups registered under the Kerala Startup Mission (KSUM). The analysis explored demographic variables (gender, age, marital status, educational qualification) and contextual variables (type of work, sector, location, urban/rural setting, and years of work experience).

Table 2: Descriptive Statistics of Demographic Variables

Variable	Category	Frequency	Percent
Gender	Male	350	50.1
	Female	348	49.9
Age	20-25 years	297	42.6
	26-30 years	281	40.3
	31-35 years	120	17.2
Marital Status	Married	243	34.8
	Unmarried	455	65.2
Educational Qualification	Graduation (UG)	450	64.5
	Post-Graduation (PG)	248	35.5
Type of Work	Technical	369	52.9
	Non-Technical	329	47.1
Startup Sector	Edutech	254	36.4
	Robotics	197	28.2
	IT	228	32.7
	Fintech	9	1.3
	Service	10	1.4
Location of Startup	Calicut	199	28.5
	Kochi	456	65.3
	Trivandrum (TVM)	43	6.2
Context of Startup	Urban	255	36.5
	Rural	443	63.5
Work Experience (in Years)	Below 1 year	78	11.2
	1-3 years	335	48.0
	4-6 years	166	23.8
	Above 6 years	119	17.0

Source: Author's Work

5.1 Gender Distribution

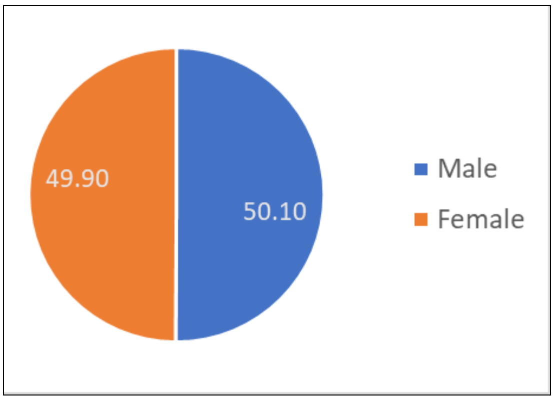


Fig 1: Gender

The sample presented an almost equal distribution between male (50.1 per cent) and female (49.9 per cent) employees. This indicates high gender parity, a progressive finding compared to traditional corporate sectors where women often remain underrepresented. This balance is likely influenced by Kerala's historical emphasis on gender equality, high female literacy rates (96 per cent), and targeted initiatives like the Women Entrepreneurship Support Program under KSUM. Such parity enhances team diversity, fostering creativity and collective intelligence (Woolley *et al.*, 2010) [26]. Kerala startups could leverage this balanced workforce to boost innovation outputs, and policymakers should continue strengthening gender inclusion initiatives to sustain this positive trend.

5.2 Age Distribution

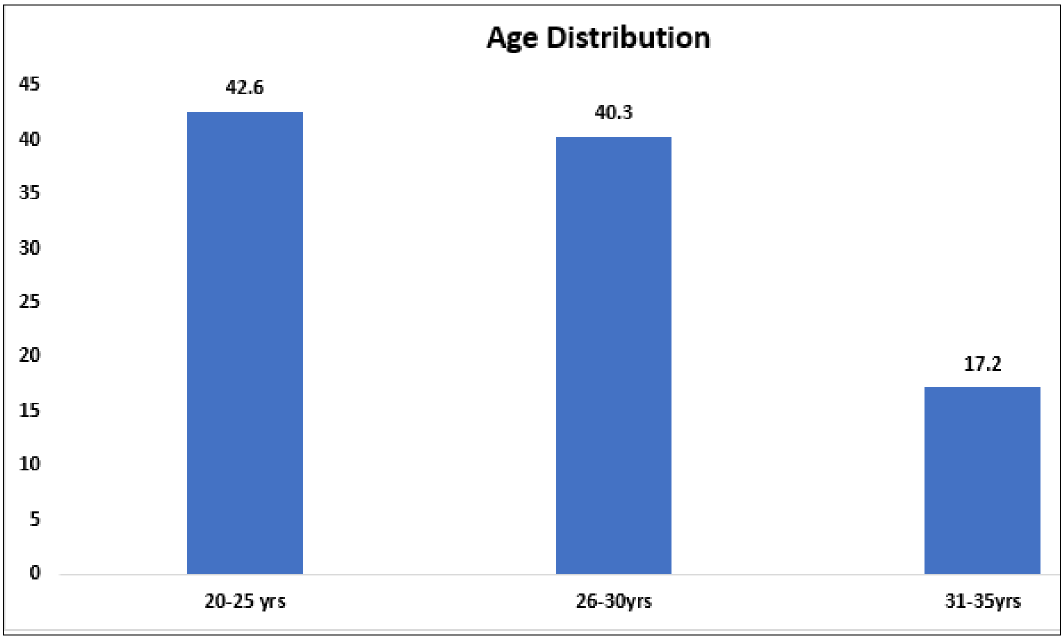


Fig 2: Age Distribution

The workforce was predominantly young, with 42.6 per cent aged 20 to 25 years and 40.3 per cent aged 26 to 30 years. Only 17.2 per cent belonged to the 31 to 35 years bracket. The youthful workforce suggests high levels of digital literacy, adaptability, and openness to innovation, critical traits for startups operating in rapidly evolving sectors like AI, robotics, and fintech. However, it also signals potential challenges in experience-based decision-making and leadership continuity. Therefore, startups may need to invest in mentorship programs and leadership development initiatives to harness the energy of youth while nurturing strategic thinking capabilities.

5.3 Marital Status

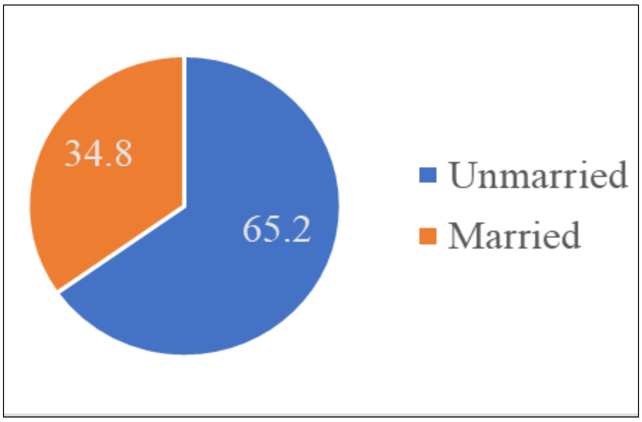


Fig 3: Marital Status

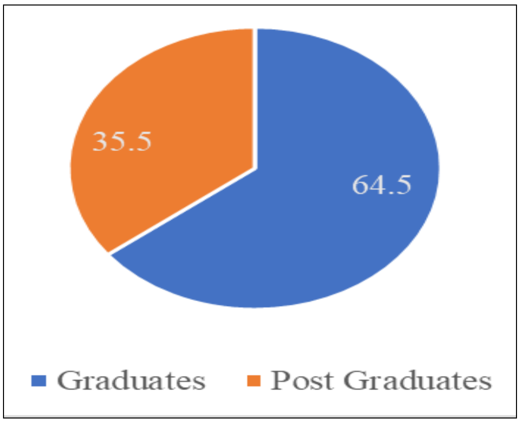


Fig 4: Education Qualification

A majority (65.2 per cent) of the respondents were unmarried, while 34.8 per cent were married. Younger, unmarried employees often exhibit greater mobility, willingness to engage in high-risk projects, and flexibility in work arrangements. However, they may also have higher attrition rates. HR managers in Kerala startups should thus design retention strategies that focus on career growth, skill development, and flexible work models to sustain engagement among this demographic.

5.4 Educational Qualification

64.5 per cent of employees were graduates, while 35.5 per cent held postgraduate degrees. A well-educated workforce positions Kerala startups favourably for engaging in knowledge-intensive and technology-driven innovations. However, the relatively lower postgraduate percentage suggests a potential need for specialised upskilling in areas like deep tech, machine learning, and data science. Collaboration with academic institutions for continuous learning programs could address this gap.

5.5 Type of Work: Technical vs Non-Technical

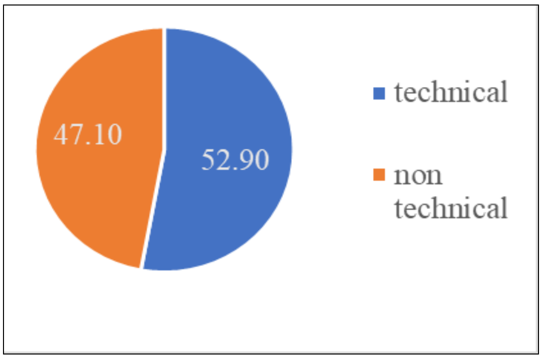
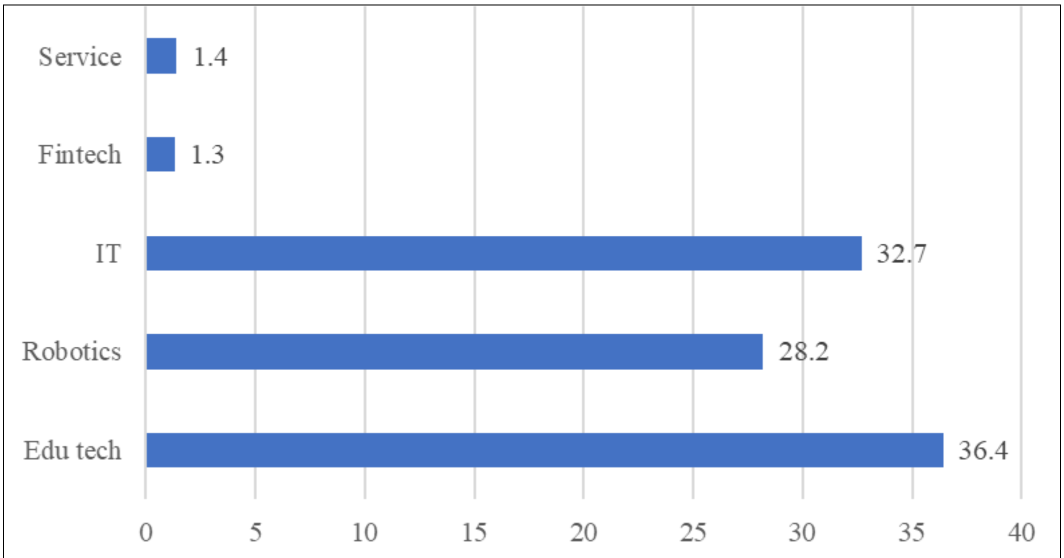


Fig 5: Types of Roles

52.90 per cent of the employees were engaged in technical roles, while 47.10 per cent were in non-technical roles (management, HR, marketing, etc.). The near balance between technical and non-technical roles reflects the holistic operational needs of startups beyond just product development. While technical expertise is vital, success equally depends on business development, customer engagement, and operational efficiency. Kerala startups must thus cultivate interdisciplinary team environments that value both technical and business competencies.

5.6 Sectoral Distribution

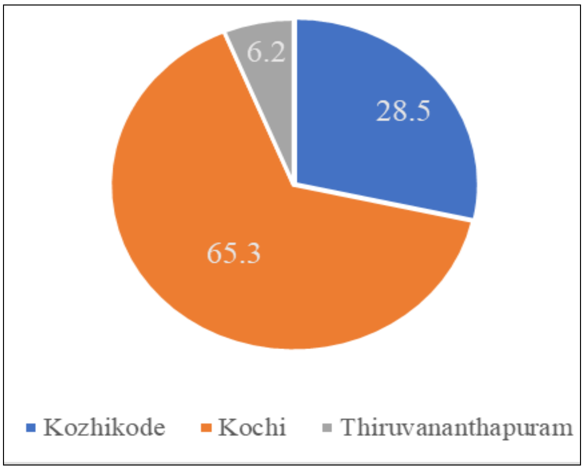


	Edu tech	Robotics	IT	Fintech	Service
Series1	36.4	28.2	32.7	1.3	1.4

Fig 6: Sectoral Distribution

Employees were distributed mainly among Edutech (36.4 per cent), Robotics (28.2 per cent), and Information Technology (32.7 per cent). Fintech (1.3 per cent) and Service (1.4 per cent) sectors had minimal representation. The dominance of Edutech and IT sectors is consistent with Kerala's strong education system and digital initiatives. Robotics' significant share indicates emerging specialisation. However, the under-representation of fintech and service startups suggests untapped potential in financial inclusion and service innovation. Policymakers could introduce sector-specific incentives to diversify Kerala's startup landscape further.

5.7 Geographic Distribution (Kozhikode, Kochi, Thiruvananthapuram)



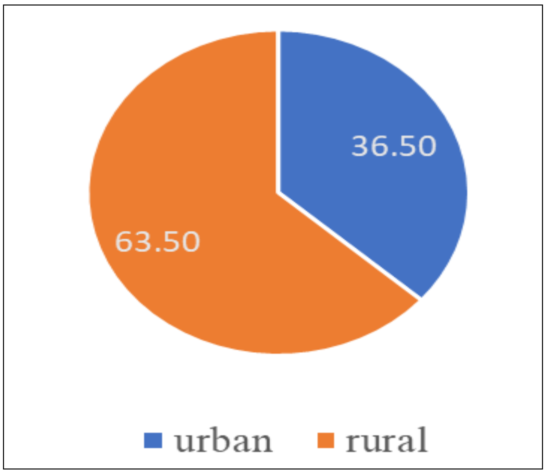
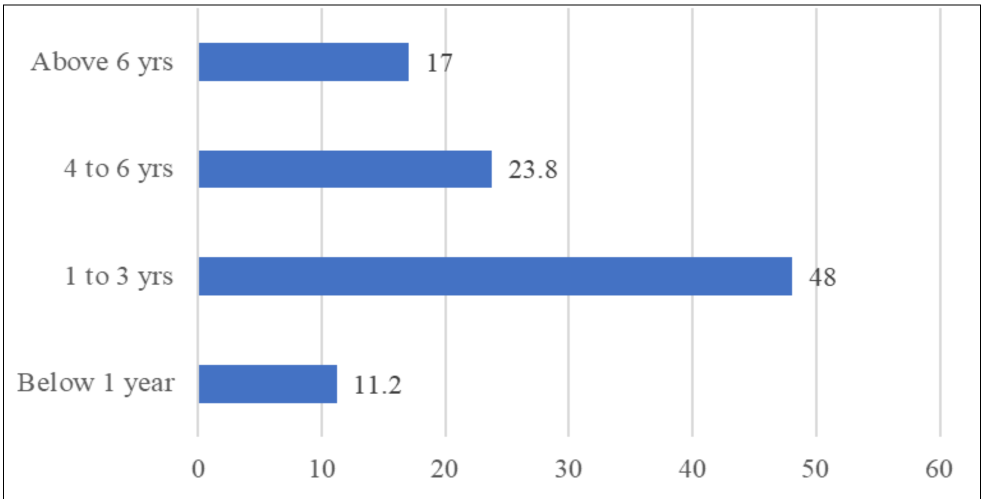


Fig 7: Geographic Distribution, **Fig 8:** Urban Rural Distribution

The majority of respondents were based in Kochi (65.3 per cent), followed by Kozhikode (28.5 per cent), and Thiruvananthapuram (6.2 per cent). Kochi's dominance as a startup hub highlights the city's infrastructural advantages, access to talent, and investor networks. However, the concentration raises concerns about regional imbalances. Encouraging more decentralised growth towards Kozhikode and Thiruvananthapuram can promote equitable development, reduce congestion, and tap into wider local talent pools.

5.8 Urban vs Rural Setting: Interestingly, 63.5 per cent of employees reported working in rural startups, while only 36.5 per cent worked in urban centres. This finding disrupts the common notion that startups flourish only in urban areas. Kerala's decentralised innovation model, supported by rural incubators and digital infrastructure, seems effective. Rural startup growth can drive local employment, curb urban migration, and foster inclusive economic development. Future policies should continue supporting rural entrepreneurship through better funding access and rural-focused skill-building programs.

5.9 Total Years of Work Experience



	Below 1 year	1 to 3 yrs	4 to 6 yrs	Above 6 yrs
Series1	11.2	48	23.8	17

Fig 9: Work Experience

Workforce experience was primarily concentrated in the 1 to 3 years range (48 per cent), with 23.8 per cent having 4 to 6 years of experience, and 17 per cent having more than 6 years. Only 11.2 per cent had less than one year. The high proportion of employees with 1 to 6 years of experience suggests a semi-mature workforce beyond the entry-level, but still growing in leadership capacities. Startups must thus design career pathways, skill enhancement, and leadership training initiatives to harness this growing experience base and reduce attrition risks as employees become more marketable.

5.9. Chi-Square Test Summary (Age × Gender)

Table 3: Chi-Square Test Summary (Age × Gender)

Test	Value	df	p-value
Pearson Chi-Square	15.93	2	< .001
Likelihood Ratio	16.00	2	< .001
Linear-by-Linear Assoc.	10.82	1	.001
N	698		

A cross-tabulation of gender and age among employees in startups in Kerala reveals statistically significant differences in gender distribution across age categories. The Pearson Chi-Square test yielded a value of $\chi^2(2, N = 698) = 15.934$, $p<.001$, indicating a meaningful association between gender and age group. The effect size, measured by Cramer's V (V = .151, $p<.001$), suggests a weak but statistically significant relationship. Specifically, the data indicate that women are more represented in the youngest age category (20 to 25), with 174 female employees compared to 123 males. However, this trend reverses in the older age brackets, with males outnumbering females in both the 26 to 30 and 31-35 age groups. Correlation analyses further support this pattern; both Pearson's r (-.125, p=.001) and Spearman's ρ (-.133, $p<.001$) indicate a negative association between age and female representation. These findings suggest that while women enter the startup workforce in high numbers at early career stages, their presence diminishes as age increases, whereas the male workforce tends to remain more stable or even increase over time

The gender-age dynamics observed in Kerala's startup ecosystem carry significant practical implications. The high proportion of women in the 20 to 25 age group likely reflects the region's strong emphasis on female education and a growing trend of early-career women entering tech and innovation-driven industries. However, the sharp decline in female representation in subsequent age groups (26 to 30 and 31 to 35) suggests potential challenges in career continuity, possibly influenced by social factors such as marriage, childcare responsibilities, or insufficient organisational support. This trend highlights the need for startups to develop inclusive HR policies that foster long-term retention and career advancement for women. Strategies could include flexible work arrangements, re-entry programs after career breaks, mentoring initiatives, and leadership training tailored to female employees. Additionally, ecosystem enablers like Kerala Startup Mission may consider incentivizing inclusive practices and supporting gender-focused interventions. Addressing these disparities is crucial not only for gender equity but also for sustaining a diverse and innovative workforce in Kerala's growing startup landscape.

Table 4: The frequency distribution of participants' total years of startup work experience based on urban/rural status.

Urban/Rural Status	Below 1 Year	1-3 Years	4-6 Years	Above 6 Years	Total
Urban	52	122	38	43	255
Rural	26	213	128	76	443
Total	78	335	166	119	698

Table 5: Chi-Square Test Summary Table

Test Statistic	Value	df	p-value
Pearson Chi-Square	43.88	3	< .001
Likelihood Ratio	43.39	3	< .001
Linear-by-Linear Assoc.	16.83	1	< .001
N	698		

A chi-square test of independence was conducted to examine the relationship between urban/rural status and total years of work experience in the startup. The results revealed a statistically significant association between these two variables, $\chi^2(3, N = 698) = 43.88$, $p<.001$.The cross-tabulation indicated that individuals from urban areas were more likely to report work experiences clustered in the 1 to 3 years category (n = 122) and had relatively higher representation in the above 6 years group (n = 43) compared to below 1 year (n = 52) or 4 to 6 years (n = 38). Conversely, individuals from rural areas showed a substantial concentration in the 1to3 years (n = 213) and 4 to 6 years (n = 128) experience ranges, with relatively fewer in the above 6 years group (n = 76) and below 1 year (n = 26).

6. Discussion

The findings of this study shed light on the distinctive workforce characteristics shaping Kerala's startup ecosystem. The employee demographic is notably youthful, with a dominant age group of 20 to 30 years, suggesting a strong early-career orientation. This trend aligns with global startup patterns, where young professionals are drawn to dynamic, learning-intensive environments. However, the youthful profile also raises questions about experience gaps and leadership pipeline development, necessitating structured career progression programs within startups.

The gender composition reveals an impressive near-equal representation of males (50.1 per cent) and females (49.9 per cent). Such gender parity is uncommon even in advanced startup ecosystems and points to Kerala's progressive educational and social environment. However, further analysis uncovers a concerning attrition trend among female employees as age increases, indicating systemic barriers to women's sustained career advancement. This calls for proactive organisational strategies like mentorship, re-entry support after career breaks, and leadership grooming programs specifically targeted at women.

Sectoral analysis shows that startups are primarily clustered around EduTech, IT, and Robotics sectors, capitalising on Kerala's strong literacy rates and digital push. However, the negligible presence in Fintech and Service sectors suggests unexplored opportunities, especially given Kerala's growing consumer markets and evolving financial needs. Strategic incentives, sector-focused incubators, and targeted skill development could help diversify the ecosystem.

Interestingly, a significant number of startups operate in rural settings, breaking the traditional association of startups with urban centres. This decentralisation is a positive development for inclusive growth and suggests that Kerala's digital infrastructure and government initiatives like KSUM are bearing fruit. However, sustaining rural startup growth will require continuous policy support, access to capital, and high-quality talent pipelines.

Finally, the majority of employees possess work experience between 1to 3 years, indicating a semi-mature workforce. Although this demonstrates a growing pool of skilled individuals, the high concentration in early-career stages points to potential risks of high turnover and skill drain if retention and growth opportunities are not adequately addressed.

Thus, Kerala's startup ecosystem presents a vibrant, inclusive, and dynamic portrait but also demands strategic interventions to ensure its sustainable scaling and global competitiveness.

7. Major Findings

The analysis reveals several notable trends within Kerala's startup workforce. The ecosystem is predominantly youth-driven, with 83per cent of employees under the age of 30, reflecting strong early career engagement. Gender representation is nearly balanced, marking a significant achievement compared to traditional corporate sectors. Sectorally, employment is concentrated in EduTech, IT, and Robotics, while FinTech and Service-based startups remain relatively underrepresented. Interestingly, 63.5 per cent of employees are based in rural startups, indicating the success of decentralization initiatives and the inclusive spread of entrepreneurial activity beyond urban centers. However, workforce stability appears limited, as 48 per cent of employees have only one to three years of experience, suggesting high mobility within the sector. Additionally, female participation declines with age, pointing to persistent career discontinuity and retention challenges for women in the startup ecosystem.

8. Scope and Implications

This study is among the first to comprehensively profile startup employees in Kerala, offering critical empirical insights for researchers, policymakers, and entrepreneurs alike. It highlights workforce characteristics essential for strategic human resource management (HRM), talent retention, and inclusive leadership development. Policymakers can utilise these findings to tailor ecosystem support initiatives that focus on sectoral diversification, rural entrepreneurship, and gender parity. Furthermore, startups can design employee engagement, career progression, and flexible work policies to enhance loyalty and reduce attrition. The study sets a foundational benchmark for future research into startup workforce behaviour, regional innovation models, and organisational development in emerging markets.

9. Limitations

While this study offers valuable insights, several limitations should be acknowledged. First, its cross-sectional design captures data at a single point in time, restricting the ability to observe workforce evolution or long-term trends. Second, the regional focus on Kerala limits the generalizability of findings to other states or international contexts. Third, the reliance on self-reported data introduces the possibility of respondent bias, potentially affecting the accuracy of demographic and professional information. Lastly, the study employs only descriptive and relational analyses without testing causal relationships; future research could strengthen this by incorporating regression or structural modelling approaches. Building on these limitations, subsequent studies could adopt longitudinal designs, conduct comparative analyses across states, and examine behavioural constructs such as job satisfaction, organisational commitment, and innovation outcomes to provide a more comprehensive understanding of startup workforce dynamics.

10. Conclusion

Kerala's startup workforce offers a unique blend of youthfulness, gender balance, and emerging sectoral strength, positioning it as a promising model for regional innovation ecosystems. The predominance of young, educated professionals combined with the success of rural startups demonstrates Kerala's potential to lead inclusive startup development in India. However, challenges such as sectoral concentration, high workforce churn, and declining female workforce participation with age must be addressed proactively.

For Kerala's startups to maintain their growth trajectory, targeted interventions around leadership development, diversity, sectoral expansion, and rural infrastructure enhancement are critical. Policymakers, ecosystem enablers, and entrepreneurs must work collaboratively to translate the demographic advantage into sustainable economic impact. Strengthening workforce resilience, encouraging gender-equitable career pathways, and fostering diversified startup ecosystems will be pivotal for Kerala to emerge as a globally recognised innovation hub.

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