



A STUDY ON DRONES TECHNOLOGY IN DIFFERENT FIELDS WITH REFERENCE TO COIMBATORE CITY

Dr. A. RAMASETHU¹, GANESH KUMAR S²

¹ M Com., B. Ed M.Phil., Ph. D Assistant Professor department of commerce

² III B.COM BPS, SRI KRISHNA ADITHYA COLLEGE OF ARTS AND SCIENCE

ABSTRACT:

The rapid advancement of drone technology has opened up diverse opportunities across various sectors including agriculture, surveillance, logistics, disaster management, and real estate. This study aims to explore the growing adoption and application of drones in Coimbatore city, a prominent industrial and educational hub in Tamil Nadu.

By examining how drones are being utilized in fields such as smart farming, traffic monitoring, aerial photography, and public safety, the study provides insights into the local impact and future potential of this emerging technology. Data has been collected through surveys, interviews, and secondary sources from businesses, government bodies, and drone operators in the region. The findings highlight both the benefits—such as cost efficiency, improved data accuracy, and accessibility—as well as the challenges, including regulatory barriers and skill shortages. This research ultimately emphasizes the need for awareness, skill development, and supportive policy frameworks to enhance the effective integration of drone technology in Coimbatore and beyond.

INTRODUCTION

The Coimbatore, a city in the southern state of Tamil Nadu, India, has witnessed a significant increase in usage of drones in recent years. Drones also known as Unmanned Aerial vehicles (UAVs) have become increasingly popular across various sectors including aerial photography, agriculture, surveillance, and delivery services. These robotic UAVs operate without a pilot on board and with different levels of autonomy. A drone's autonomy level can range from remotely piloted a human control its movement to advanced autonomy, which means that it relies on a system of sensors and lidar detectors to calculate its movement. As the usage of drones continues to grow and it becomes crucial to understand the factors that contribute to customer satisfaction and their overall experience in using these devices.

This study aims to explore the customer satisfaction levels and usage patterns of drones in Coimbatore city. The study will focus on gathering data from individuals and business sectors who have utilized drones for different purposes. It will investigate customer perceptions regarding the quality of drone services, ease of use, safety concerns, and the overall value provided by drones. Additionally, the study will also examine the various applications for which drones are being used in Coimbatore. It will seek to understand the effectiveness and efficiency of using drones in these applications, as well as any challenges or limitations faced by customers. The findings of this study will provide valuable insights for drone service providers enabling them to enhance their offerings and tailor their services to better meet customer needs. It will also help policymakers and regulatory bodies better understand the impact and potential of drones in Coimbatore city.

Statement of the Problem

The problem statement of the individual consumer deals with understanding the complex and multifaceted process through in which the individuals make decision about what to buy and consume and how these decisions are influenced by a wide range of factors. This study is needed to identify the right combination about the product, price, and the promotion of the drones. It is needed to rectify the problems in the present or in the future aspects and to identify the customer preference and their satisfaction towards the need and the usage of product.

OBJECTIVES OF THE STUDY

1. To study the Consumer satisfaction levels regarding the drones.
2. To Identify the main benefits and drawbacks of using drones from the customers perspective.
3. To explore the different use cases of drones and determine which ones are most satisfying for customers.
4. To understand the level of customer satisfaction with drone safety and security features.
5. To analysis the improvements and the developments in order to meet the needs of consumer.

Research methodology

Research designs

The study follows a descriptive research design to analyze Drone market penetration strategies and customer satisfaction.

Primary Data:

1. Collected through structured questionnaires, surveys, and interviews with consumers and business owners in Coimbatore.
2. The major source of data used to carry out the analysis was the primary data. Customers survey of conducting the questionnaire is objectively structures so that it becomes easy for the customers to response.

Secondary Data:

1. The secondary data which is required for the study have been collected from the books and websites.
2. The secondary data namely literature relating to the study was gathered from the journals, newspapers, articles, internet and various other various records.

Sampling Method & Sample size

A Convenience sampling method will be used to select survey respondent's from different demographic backgrounds. The sample size is expected to be 100 respondent's to ensure reliability and generalizability.

Tools Used For Analysis

Simple percentage analysis is used to determine the proportion of responses for each category

$$\text{percentage} = \frac{\text{frequency of respondents}}{\text{TOTAL RESPONDENTS}} \times 100$$

Scope of the study

The scope study can explore how frequently people use drones and for what purpose and compare the usage and satisfaction of different drone brands and models, considering factors like price, features, reliability, and customer support. It would examine the influence of marketing and advertising on consumers decision-making.

It is aimed for improvement and to make changes in public based on consumers preference. The study would extend to exploring potential future developments in drone technology and their potential impact on consumer.

Limitations of the Study

While this study on the **DRONES TECHNOLOY IN DIFFERENT FIELDS in Coimbatore City** provides valuable insights, it also has certain limitations:

- The study has been limited by time constraints Response Bias: Participants' responses may be influenced by personal opinions or external factors
- This result was conducted only in a particular area so these results cannot suitable to another place.
- The research relies on a **limited sample size (e.g., 100 respondents)**, which may not reflect the behavior of the entire population.
- Result of the study and their accuracy greatly depends on the data released.

Despite these limitations, the study provides valuable insights into how Drone usage in Coimbatore. Future research can expand the scope by including larger samples, different cities, and diverse industries for a more comprehensive understanding.

REVIEW OF LITERATURE

1. Ravi (2024): Investigated the role of drones in enhancing disaster response and emergency services in Coimbatore. The study found that drones played a critical role in rapid assessment, search and rescue operations, and medical supply delivery in emergency situations. The research highlighted the efficiency of drone technology in minimizing response time and improving coordination among emergency service providers.

2. Zhang (2023): focused on customer satisfaction with drone delivery services in Coimbatore city. The study found that overall customer satisfaction was high, with 80% of participants stating that they were satisfied with the drone delivery service. Factors such as speed of delivery, accuracy, and reliability were identified as crucial determinants of customer satisfaction. Additionally, the study found that the quality of customer service and the ease of use of the drone delivery service played significant roles in determining customer satisfaction levels.

3. Kumar (2022): examined the factors influencing customer satisfaction with drone-based aerial photography services in Coimbatore city. The study identified factors such as image quality, affordability, and timeliness as significant factors influencing customer satisfaction. Additionally, the study found

that personalised services and prompt resolution of In recent years, the usage of drones has significantly increased in various industries, including delivery services, agriculture, film-making, and surveillance. It has become crucial for businesses to understand the level of customer satisfaction with this emerging technology to effectively cater to their needs and make improvements in their services. In 2020, several studies have been conducted to explore the relationship between customer satisfaction and the usage of drones.

ABOUT Amul

The term 'drone' started to be used at this time, inspired by the name of one of these models, the DH.82B Queen Bee. Radio-controlled drones were also manufactured in the United States and used for targeting practice and training. Reconnaissance UAVs were first developed on a large scale in the Vietnam War. Drones also began to be used in a range of new roles, such as acting as decoys in combat, launching missiles against fixed targets and dropping leaflets for psychological operations. The Aerial Target, a British radio-controlled aircraft from the First World War. Its remote-control components, which were designed by Dr Archibald Low, are part of IWM's collection (see AIR 567 to AIR 571). It became the first drone to fly under control when it was tested in March 1917. The pilot on this occasion was the future world speed record holder Henry Segrave. The first Canberra U MK 10 jet plane which was to be used as a pilotless drone aircraft in the Sea slug guided missile trials from HMS Girdle Ness, the Royal Navy's guided weapons trial ship based at Malta, in 1961.

Table 4.1.10 THE Primary usage of Drone

PARTICULAR	NO. OF RESPONDENTS	PERCENTAGE (%)
Aerial Photography and Videography	37	37
Research, data collection	18	18
Racing	11	11
Hobby flying	22	22
Others	12	12
Total	120	100

(Source: Primary Data)

Interpretation:

The above exhibit indicates that 37% of the respondents are aerial photography and videography, 18% of the respondents are research and data collection, 11% of the respondents are racing and 22 % of the respondents are hobby flying and 12% of the respondents are others.

The data on Key Motivating Factors for Purchasing Drone for Most of 37% of the respondents are aerial photography and videography reviews and ratings (37%) are the most influential factor, ranking first as "extremely preferable.

Findings

- Majority of 55% of the respondents are 18-25
- Most of 53% of the respondents are female
- Highest 54% of the respondents are urban
- Majority of 52% of the respondents are UG degree
- Most of 48% of the respondents are student
- Highest of 36% of the respondents are 30001-40000 of monthly family income
- Majority of 58% of the respondents are beginner level
- Most of 37% of the respondents are aerial photography and videography
- Highest of 42% of the respondents are occasionally operator
- Majority of 53% of the respondents aware about the drone information through social media
- Most of 39% of the respondents prefer 50001-100000 budget for purchasing drone
- Highest 52% of the respondents prefer online retailers for purchasing drone
- Most of 42% of the respondents prefer DJI brand
- Highest 44% of the respondents prefer the camera feature while choosing drone
- Most of 94% of the respondents prefer GPS capabilities for drone
- Majority of 42% of the respondents choose traditional remote controller
- Highest of 58% of the respondents choose high definition (HD) camera quality
- Most of 48% of the respondents are satisfied with the image and video quality of drone
- Majority of 49% of the respondents rated the level 4 in rating of services of drone in delivery service

- Highest 33% of the respondents exhibit adverse weather conditions as the problem.
- Majority of 99% of the respondents prefer yes for drone will become the more common in future
- Most of 33% of respondents prefer advance flight capabilities as the improvement in future drone

Suggestions

Based on the findings of the study, it is suggested that more awareness programs and training workshops be conducted in Coimbatore to educate farmers, entrepreneurs, and government officials about the benefits and safe usage of drone technology. Educational institutions can introduce specialized courses on drone operation, maintenance, and data analysis to build a skilled workforce. The government should also simplify and support regulatory procedures for drone usage, especially for small-scale businesses and agriculture. Financial support or subsidies could encourage local farmers and startups to adopt drones, improving productivity and efficiency. Collaboration between drone manufacturers, service providers, and end-users should be promoted to develop innovative and customized solutions suitable for local needs. Overall, a strong ecosystem involving policy support, technical training, and public-private partnership can significantly boost the effective use of drones in Coimbatore.

Conclusion

In conclusion, the study of drone technology in various fields has shown significant potential to influence consumer behaviour. Drones have the ability to enhance shopping experiences through delivery services, provide innovative solutions in agriculture and construction industry, and offer new possibilities in entertainment and photography. It is evident that consumers are increasingly interested in the use of drones for various purposes, and are willing to adopt this technology in their daily lives.

As drones become more advanced and accessible, it is expected that their impact on consumer behaviour will continue to grow. Overall, the study of drone's technology has highlighted the potential for this technology to shape consumer behaviour in a variety of industries, and presents exciting opportunities for businesses to leverage this technology to enhance their offerings and engage with customers in new ways.

The use of drones can increase efficiency, reduce costs, improve safety and provide valuable data and insights. Moving forward, continued research and development in drone technology will be crucial to fully realize the benefits and potential of drones in these diverse fields.

BIBLIOGRAPHY

Books

1. Sharma, R. (2022). Drone Technology: Principles and Applications. Tech Press India.
2. Boucher, A. (2021). The Rise of Drones: Technological Innovations and Social Impacts. Oxford University Press.
3. Austin, R. (2011). Unmanned Aircraft Systems: UAVS Design, Development and Deployment. Wiley.

Journals & Research Papers

1. Singh, A., & Kumar, S. (2021). "Applications of UAVs in Urban Planning and Surveillance," Journal of Urban Technology Studies, Vol. 8(2), pp. 34–45.
2. International Journal of Emerging Technology and Advanced Engineering (2020). "Use of Drones in Smart Agriculture in India," Vol. 10, Issue 5.
3. Rajan, M., & Devi, L. (2022). "A Study on Drone Applications in Indian Agriculture," Journal of Agricultural Research and Technology, Vol. 7(1).
4. George, T. (2023). "Drone Surveillance for Traffic Management: A Case Study from Tamil Nadu," Indian Journal of Smart Cities, Vol. 6(4).

Reports

1. **Ministry of Civil Aviation, Government of India** (2021). Drone Rules 2021.
2. **Tamil Nadu Agricultural University (TNAU)** (2023). Drone-Based Agricultural Practices in Coimbatore Region – Internal Report.
3. **World Economic Forum** (2022). The Future of Drones: Policy, Safety, and Innovation.
4. **NITI Aayog** (2021). Emerging Technologies in India: The Role of Drones in Development.

Websites

1. Ministry of Civil Aviation: <https://www.civilaviation.gov.in>
2. ISRO – Drones and Disaster Management: <https://www.isro.gov.in>
3. Times of India – Coimbatore Drone News: <https://timesofindia.indiatimes.com>
4. Drone Federation of India: <https://dronefederation.in>
5. World Economic Forum – Drones: <https://www.weforum.org>