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A Study on Analyzing the Level of Public Compliance with Drone Laws in Northern Cyprus

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Abstract

The undertaking that this investigation seeks to embark upon pertains to the elucidation of the extent of legal cognizance concerning the operation of drones among the populace residing in the Girne vicinity of Northern Cyprus, particularly individuals who have attained the age of 18 years or older.

By evaluating the levels of awareness within this demographic, this study aspires to furnish significant insights that may be of utility to the Civil Aviation Authority of the Turkish Republic of Northern Cyprus. It is postulated that the findings could potentially instigate modifications to prevailing regulations, while concurrently underscoring the necessity for strategies aimed at enhancing public awareness and compliance regarding drone legislation.

In conjunction with the survey instrument, the responses of 396 participants were solicited through a battery of both close-ended and open-ended inquiries that pertained to drone-related legal stipulations, individual privacy statutes, data safeguarding laws, security protocols, restricted zones, and overarching drone regulations.

The findings of this research reveal considerable deficiencies in the knowledge of specific regulatory frameworks and indicate a pronounced lack of awareness pertaining to the repercussions that may arise from violations of drone operational statutes.

The survey results indicate that a notable 69% of participants were uninformed about how to access pertinent regulatory information, thus accentuating the critical need for improved mechanisms of information dissemination. Considering these findings, there remains an exigent requirement for a thorough educational initiative aimed at informing the public of their legal obligations and the requisite protocols for the safe operation of drones.

1. Introduction

Everyone in the modern world has come across at least one news report related to “drones,” UAVs (Unmanned Aerial Vehicles), UAS (Unmanned Aircraft Systems), RPAS (Remotely Piloted Aircraft Systems) (Keilman, 2019). Some may not know exactly what these terms imply, as they have become commonplace. With the dramatic rise in the development and use of small drones, commonly referred to as “drones” and “UAVs,” European nations and an increasing number of states around the world have attempted to provide safety policies, laws, and regulations (Labib et al., 2021). Some industrialized nations have developed elaborate drone regulations, while for many countries, regulations still do not exist (Alamouri et al., 2021). Unique challenges emerge when drone use increases in any given region; this includes unpreparedness and a lack of public knowledge, which increases the need for future research.

Additionally, with any new technology, there are often social consequences and ethical concerns. Such was the case with the emergence of the internet and social media (Green, 2021). Drones and drone use are not exempt from the failure to foresee negative consequences; they have emerged in society and thus have become a societal issue. The first place that there is an issue with preparedness is at the public level with misperceptions (Türk, 2020).

2. Literature Review

As the use of drones increases at an exponential rate, it has become paramount for governments across the globe to set up standard rules to preventpose potential dangers caused by misuse of the technology. Unmanned Aerial Vehicles (UAVs) or drones have been used widely in commercial, recreational and government areas in recent years (Labib et al., 2021). This technological advancement has however been faced with the following issues of privacy infringement, data security and possibly threats to safety. As a result, different parts of the world and individual countries have taken actions to create rules for the use and incorporation of drones within designated airspace (Türk, 2020).

Currently, the European Union (EU) has been at the forefront of regulating the operations of drones especially through the enactment of Regulation (EU) 2019/945 known

as the 'Nano drones' regulation and Regulation (EU) 2019/947 which outlines the 'Specific Operations Requirements' of the drones. These regulations offer detailed specifications on manner in which drones should be manufactured, designed and operated with the intention of reducing risk associated with these vehicles (de-Miguel-Molina et al., 2018). The ICAO has also done this by issuing standards that encourage the safe operation of Remotely Piloted Aircraft Systems (RPAS) in international aviation, which are expected to be fully introduced by November 2026 (ICAO, 2024).

However, there remains significant variation as to how these regulations are applied across countries or regions. Still, some countries have managed to implement advanced regulatory environments, while others lack sufficient economic capital and regulatory framework at all (Konert & Dunin, 2020). This disparity does not only create complexities regarding the international usage of drones but also the application of safety and security policies especially in areas that have weaker regulatory frameworks (Scheppele et al., 2020).

Developing the public's understanding and knowledge about the applicable rules and maximum surveillance and operational limits of drones is very important for enhancing compliance and safety of such operations. The findings show that over fifty percent of drone users possess a limited understanding of the prevailing rules and may inadvertently breach the guidelines, contributing to the elevation of safety threats (Green, 2021). These views were confirmed by data regarding the specific knowledge of regulatory rules, such as the distance to avoid restricted zones and privacy rights, when flying a drone; when the study was conducted in Northern Cyprus, the results showed moderate knowledge of general safety rules but relatively poor knowledge of rules and penalties (Keilman, 2019).

This is key to closing the awareness gap so that the regulations are effectively disseminated. Community programs, available on the Internet, of enforcement of present regulations for the use of drones have been proposed as feasible ways to improve understanding and adherence of drone safety matters (Lee et al., 2022). Of equal importance is the availability of current and concise information from official regulatory authorities to enhance compliance by drone users (Rushiti et al., 2024).

Based on the findings that have been identified above concerning the lack of adequate knowledge on drone usage and regulation, several recommendations are made as follows. However, educational programmes should first be tailored, to create awareness of the general rules and regulations regarding the use of drones. Such could be online training programs, public education and sensitization, incorporating drone safety, and regulation information into university and college academic programs (Mohsan et al., 2023).

Moreover, the regulatory bodies should work to ensure that they make information easily available by designing their websites and the other materials that they post in simple ways that will allow the end-users to easily find out what the current regulations are and what is expected of them in terms of compliance. Sharing such information with community-based organizations and local authorities can also help boost awareness and knowledge (McLachlan et al., 2022). Thus, it is crucial for different regulatory authorities to employ all those mentioned strategies to improve compliance and, thus, increase the level of public safety and private individuals' privacy.

3. Regulatory Developments

In regulating the operation of civil drones in the EU, Regulation (EU) 2019/945 of the European Parliament and the Council provided the parameters for a regulatory framework. The act complements the basic regulation (EU) 2018/1976)) and lays down the requirements for the manufacture, design and acceptance of drones and drone control components and systems (de-Miguel-Molina et al., 2018). These are the types of UAS which are intended to operate in the riskier specific categories. The non-compliance of manufacturers with their regulations shall lead to withdrawal of type certificates, restrictions on the place of use, or outright ban of the UAS.

While these developments are taking place in Europe, ICAO is also working to introduce regulations on the matter. Consequently, the aviation industry has entered a significant transformation process with the integration of Remotely Piloted Aircraft Systems (RPAS). In this regard, ICAO has come up with Annex 6, Part IV to provide guidance on how RPAS can be integrated into the airspace in a safe and efficient manner. This annex contains standards and recommended practices (SARPs) governing international RPAS operations, which can be considered a breakthrough in the advancement of aviation safety and effectiveness. This regulation which has been in force starting July 2024 and will be effective from 26 November 2026 outlines the general requirements for the member states of ICAO, civil aviation authorities (CAA), air navigation service provider (ANSP), and aircraft operators while outlining the process of acquiring an RPAS Operator Certificate (ROC).

Annex 6, Part IV provides the framework for safe and harmonized operations of international RPAS. It seeks to improve operational safety through the integration of RPAS into the traditional aviation structures, take advantage of the opportunities offered by integration of RPAS into the civil aviation environment, increase operational efficiency and benefits from the use of RPAS in member state operations and to develop consistency amongst member states for improved globally efficiency in civil aviation-RPAS operations. System, such as increased operational efficiency and environmental advantages, and promote global aviation safety and efficiency by ensuring consistency among member states, facilitating smoother international RPAS operations (ICAO, 2024).

3.1. Key Provisions and Requirements

Drones will need to comply with the requirements of Regulation (EU) 2019/945. Such requirements are common for all Member States (MS) of the EU. Those common requirements essentially focus on the so-called 'Manufacturer Side' of the drone regulation, focusing on the requirements to be fulfilled by the manufacturer or their authorized representatives (de-Miguel-Molina et al., 2018). A core aspect therein is that the manufacturer needs to have a Quality Assurance System in place, ensuring that those drones are designed and produced properly, in accordance with a proper risk management process. Moreover, also Management and Control provisions are stipulated, ensuring that manufacturing and design provisions adhere to the requirements put forward in the Safety Management System. The core provision for drone regulation within those Regulations relies on the Extra-European Regulation EU 2019/945 and the Implementing Regulation EU 2020/746 (Lavallée, 2019). Requirements set common for all MS consists of operational limitations, categorization, and other issues. Importantly, those limitations

are not assessed by the NAA before use but are enforced by the Manufacturer. Drones cannot be used for certain categories of operations without any other written approval. Limitations and restrictions comprise 'Simulations', Registered Drones', 'Service-provision', 'Software As A Service', 'Fleet Management', 'Short-term rentals', 'Accredited services', 'Remote Pilot Training', 'Compliance Monitoring', 'Data Collection', 'Data Management', 'Data Processing', 'Data Analysis', 'Data Storage', 'Multi-Use Operations', 'Operations Above 120m', 'Cross-Border Operations', 'Drone Design', 'Scope Change', 'Design Change', 'Maintenance', 'Repair', or depending on 'Service impact' and/or probable occurrence of Extended Contingencies (Konert & Dunin, 2020).

3.2. Implementing Regulation 2019/947

In this regard, three parameters should be determined for new proposed regulations based on the experience gathered with manned aviation regulatory frameworks: what to regulate (the regulatory "content"), at what level of governance to do it (the regulatory "process"), and how to regulate (the regulatory "approach"). To address the first aspect, the existing manned aviation regulatory frameworks could be a starting point to gather an understanding of "what" parameters have been considered to mitigate risks. Drawing on the developed conclusions, the broadest agreement was found that the minimum measurable "parameters" should encompass the type of operation, the type of UAV, and the mass of the UAV (de-Miguel-Molina et al., 2018). With regards the second aspect, the system of law of the EU Member States is decentralized. New regulations may be issued at the national level, the EU level or at both levels. Several motions in favor of broader EU regulation have been put forward since it is believed that EU-level rules would make UAVs operations easier in a cross-border context, as well as facilitating the emergence of a fully integrated single market (Pagallo & Bassi, 2020).

A rapid timeline for compliance has been proposed based on existing national laws. The proposed timeline encompasses an easing of existing blanket permissions, and a two-stage planned approach to additional requirements. During the first stage, existing systems would be made more transparent to authorities through continuous mandatory airworthiness checks and annual assessments of compliance with the initial permission. The second stage would introduce new requirements such as detailed descriptions of system capabilities, advanced pre-and post-flight procedures, hard-to-fake identification marks, and restrictions on pilot qualifications. Lastly, independent audits would check compliance with the previous requirements. Only after the satisfactory completion of an audit, the national law would grant the wider permission to operate UAVs at a higher risk level involving a medium or a great risk (McLachlan et al., 2022).

3.3. Registration System for Drone Users

According to Regulation 2019/947 on the rules and procedures for the operation of unmanned aircraft, drone users must register with the relevant authority before they can fly their drone. This regulation establishes a registration system for drone users which comes into effect from 31 December 2020 (de-Miguel-Molina et al., 2018). All drone users must apply online for registration with the relevant national competent authority. The regulation specifies the responsibilities of the Member States and the Commission regarding the registration of drone users. Member States must set up and operate a registration system for drone users, ensure they have a unique identification number and establish an electronic system to provide this identification number (Rushiti et al., 2024). The Commission must develop a user-friendly central database of drone users which holds the identification numbers and relevant information on the drone users.

Every drone user is required to register with the relevant authority as soon as they decide to use a drone or drone services (McLachlan et al., 2022). National legislations hand this task to the national authorities who are obliged to set up a registration system following specified conditions. The Commission will also take the lead in developing a central database to ensure all drone users in the European Union have a unique identification number. There are significant fees attached to the registration, which is a one-time cost incurred by all users that do not necessarily own drones. The more advanced and more capable drones that might be misused also face higher fees, but it is noteworthy that all users including toy drone users face them. The regulation also specifies timeframes however it is doubtful whether Member States can comply with these on time (Belwafi et al., 2022).

3.4. Classification of UAS Device Classes

Classification of UAS device classes is stipulated in the Implementing Regulation 2019/947. UAS device classes are classified as UAS device classes. UAS device classes can be classified under four. Class of UAS device shall be determined by the following parameters, including: the maximum mass of the UAS taken off on purpose – not exceeding 250 g, from 250 g up to 2 kg, from 2 kg up to 25 kg, and from 25 kg (Nikodem et al., 2018). The deployed geographical area of operation of the UAS on design purpose, including operation in the 'Open' category, operation in 'Specific' category, and operation in the 'certification basis' category (de-Miguel-Molina et al., 2018). The operational purpose of the UAS on design purpose, including Uplink video, photographic and or other sensory data capture, UAS freight transport, UAS operation for Surveillance and monitoring of activities and events, and UAS operation to provide telecommunication networks.

Once class of UAS device is determined, and the parameters envelope pertinent for compliance demonstration purpose is defined, the operational requirements of the UAS device including limitations and restrictions shall be specified as per Chapters 3 to 8 of the new article. The classification of UAS device classes is only applicable to UAS devices that are not specifically in the declared drone market, to quote the respective brand and models selling UAS devices in the market, but to clarify, ownership of such UAS devices does not exempt compliance to the technical requirement stated in the new regulatory framework.

3.5. Variations in Implementation Among EU Member States

In January 2018, the European Authorities established an aviation safety agency in charge of the regulation and safety oversight of drone operations. Following this resolution, the TRNC also evaluated its situation towards the regulations of drone applications and initiated efforts to prepare regulations (de-Miguel-Molina et al., 2018). The EU common safety rules began to be applied by the member states in July 2020. The regulation of drone applications is presented as a narrative comparison between the EU member states (Scheppele et al., 2020). In the first chapter, necessary background information is provided about the EU and its member countries. There is general information in the second chapter about drone applications in the world and their benefits and risks. In the

final third chapter, there is a discussion of the regulatory requirements in the EU and its member states, and the intended regulation approach in the TRNC. It is observed that the already accepted drone regulations by the EU member countries are quite different from one another. This is an obstacle for the free circulation of drones among EU member states. On the other hand, similar problems with many EU countries are also being faced in the TRNC.

In studies conducted since the 1990s, the use awareness of drone applications in EU member states has been evaluated, and their efforts to prepare regulations have been scrutinized. By means of an online survey, drones' usage in urban settings, public awareness, possible advantages, and concerns of citizens about drone applications have been investigated. Analyses of evaluations and efforts to prepare drone regulations in EU member countries have indicated that, while some member states possess intensive usage and investments in drones, some other states have low to nonexistence awareness of drones (Lavallée, 2019). With all these efforts, it is indicated that the authorized agencies of the states located in central EU countries are more active in the preparation of regulations. On the other hand, the need for regulation is reported by almost all EU member states.

National regulations relating to drone flying generally include:

- Registration of the drone, drone operator, and/or pilot.
- Possession of a drone liability insurance policy (may include EU standard).
- Compliance with technical and airworthiness requirements outside EU rules.
- Certification and/or approval of the drone outside EU rules.
- Safety zones where no drone flying is permitted outside EU rules.
- Local restrictions on drone flying outside EU rules.
- Limitations on the use of drones for commercial purposes/specific applications outside EU rules.
- Additional drone pilot training requirements outside EU rules.
- Compliance with a national drone flying code of conduct (may include EU standard) or other provisions outside EU rules (Thompson et al., 2024).

3.6. Challenges in Enforcement and Compliance

Creating a regulatory framework for the operation of UAVs poses significant challenges in enforcing compliance. The fine line separating those who obey the regulations from those who do not becomes increasingly difficult to enforce. As these machines become cheaper and increase in numbers, there could be a tendency for failure to comply with airspace regulations. In this regard, UAVs over the top of high-security areas may play the role of a fly-on-the-wall, shooting photographs or video-feeding in real time and endangering civil liberties. UAVs mean easier infiltration into airspace and a big challenge to the current airspace security paradigm (Mohsan et al., 2023)

Even without the legislation of drones and UAVs, defense in depth would be an important priority, especially in the case of determining the combat zone. Combat identification of a drone using its on-board sensors operating in the tactical frequency bands would be easy for operators on the non-combat side of the combat zone, most of which would be friendly in the airspace over military maneuvers (Di et al.2021). All radars whose antenna does not point at the UAV approaching on a ground clock angle would be ineffectual until the drone passes the airspace, anything between a minute to a month in advance depending on the advance over ground tactical speed, while easily feasible jamming of the drone on its path to the combat zone would hardly affect the targets on that same side. Once in the airspace over military operations, either redundancy in air defense radar is required or legislative changes to grant access to defense contractors' intelligence drones and information they can relay to their clients' government, neither of which seems too probable (Rossiter & Cannon, 2022).

Similarly, the infiltration of drones of non-friendly governments and armed non-state organizations on a covert path is a possibility and may have already occurred. Military-grade drones, for instance, can be disassembled and sent through a series of camouflaged shipments, preferably without a sign of consistency for them not to be suspiciously analyzed, and a routine period of delivery which might make it impossible to reconstruct them before the premeditated operation. They may even fly under the cover of a commercial UAV company hired to do prospecting or studying the physical features of an area of interest, but who are in fact just gathering intelligence and observing the air defense capabilities appreciably on a random time of the year to set up a low-risk target, with later installments of flights controlled by a likely projectable future scenario.

4. Drone Regulation in TRNC

There are several issues directly impacting privacy, safety, disruption, noise, terrorist attacks, malicious use, or matter conflict by drones that need to be curbed or controlled by the government, while there are significant advantages, innovation, and increment in daily comfort, safety, speed, effectiveness, etc. that compel the additional growth of drone technology and operations (Lee et al., 2022). In the TRNC, the use of drones is regulated by various safety and operational restrictions. These guidelines are designed to ensure the safe and responsible use of drones by setting specific weight limits and permission procedures.

Imposing stringent restrictions regarding the use of drones in the TRNC is aimed at preventing threats to airspace and preserving security. In particular, these rules are applied to reduce possible risks in the airspace, to exclude unlawful actions in some zones, and to provide immediate actions, if necessary. Such regulations ensure that drone technology is used in a safe and prudent manner while setting the standards that must be adhered to in terms of operation and safety (Civil Aviation Department of TRNC).

Main restrictions and safety measures involved in the drone regulation system in the TRNC;

-Weight and Altitude Restrictions: The maximum weight allowance for UAVs to operate within TRNC airspace ranges up to only 249 grams. It is permissible to fly drones below this weight at a height of up to 50 meters above the land under some circumstances without seeking approval from the Civil Aviation Authority. Such conditions include that the operator has undertaken the required training and is not under the influence of alcohol or any other drugs.

-Visual Contact and Safety Distance: Operators should also be able to visually always monitor their drones. They are also supposed to maintain the least altitude difference of 150 meters to avoid collisions with other aircraft, people, vehicles, marine vessels, and structures. These are flights in congested airspace or over events, where approval must be sought not less than five working days before the flight.

-Prohibited Zones and Safety Areas: A security buffer is set up of 6 km around any airports and a 1. Area within a 5-kilometer radius of the helipads where UAV operations are prohibited. Moreover, no flight is allowed in sensitive areas, including prohibited areas, military facilities, populated areas, and archaeological sites without the permission of the controller. Aerial photography of military restricted areas is prohibited. However, nominated aerial photography of restricted military zones is prohibited.

-Flight Records and Reporting Obligations: The candidate shall keep a record of flight hours and other appropriate details as a logbook. These records must be maintained for at least two years and the Civil Aviation Authority must have access to these records. In addition, any occurrences or incidences concerning drones must be brought to notice within 48 hours.

-Registration Requirement: All drones used in the TRNC must be registered with the Civil Aviation Authority. This registration should include the drone's technical specifications, model and serial number, and the operator's contact information (Civil Aviation Department of TRNC).

5. Methods and Study Design

A survey focusing on information related to the regulations governing non-commercial drone usage in the Turkish Republic of Northern Cyprus was conducted by the Civil Aviation Management Program of Cyprus Science University among individuals aged 18 and over residing within the borders of Kyrenia between the dates of 02/02/2024 and 27/08/2024. The survey was carried out with a total of 396 participants, consisting of 271 men and 125 women. The sample was selected from those aged 18 and over who are legally responsible for their actions according to the laws of the TRNC. The total number of individuals aged 18 and over in the Kyrenia region was determined to be 35,397. Calculations using the sample size formula with finite population correction indicate that a sample size of approximately 381 would allow us to reliably estimate the characteristics of the population in the Kyrenia region with a 95% confidence level and a 5% margin of error (Cochran, 1977). In this study, however, a total of 396 participants were reached.

$$n = \frac{Z^2 \cdot p \cdot (1-p)}{E^2 -} \cdot \frac{N}{N + \left(\frac{Z^2 \cdot p \cdot (1-p)}{E^2} - 1\right)}$$

$$n = \frac{1.96^2 \cdot 0.5 \cdot (1-0.5)}{0.05^2} \cdot \frac{35397}{35397 + \left(\frac{1.96^2 \cdot 0.5 \cdot (1-0.5)}{0.05^2} - 1\right)}$$

$$n \approx 381$$

5.1. Evaluation of Survey Results

The aim of the study is to measure the levels of legal awareness related to drone usage and to share the findings with the TRNC Civil Aviation Authority, thereby influencing potential amendments to existing regulations and highlighting the need for adjustments that will enhance public awareness. Participants were informed in advance about the content and purpose of the survey. Since the survey was anonymous, there was no need to obtain informed consent. The participants' task was to anonymously respond to 13 closed-ended questions by selecting one of the options: 'yes,' 'no,' or 'maybe.' They could also express their general opinions through 2 additional questions. To effectively analyze the survey responses, the questions were divided into three thematic categories. The first category addressed demographic information (Q1-Q3), the second category covered experience and ownership (Q4-Q5), and the third category focused on awareness of drone regulations (Q6-Q15). However, questions 8 and 14 aimed to understand participants' true level of awareness by requesting their own views, knowledge, and comments. Based on this approach, the results have been obtained as follows.

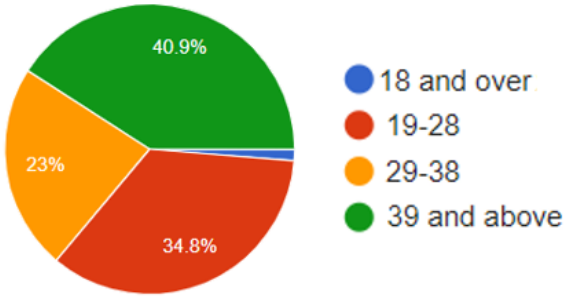

Figure 1. Age Distribution

40.9% of respondents are aged 39 and above, indicating that most survey participants are in the more mature age group. Younger age groups, such as those aged 19-28 (34.8%) and 29-38 (23%), also make up a significant portion of the participants. This age distribution provides a broad perspective in examining awareness levels about drone usage and regulations across different age groups. This situation indicates that older individuals have higher levels of awareness.

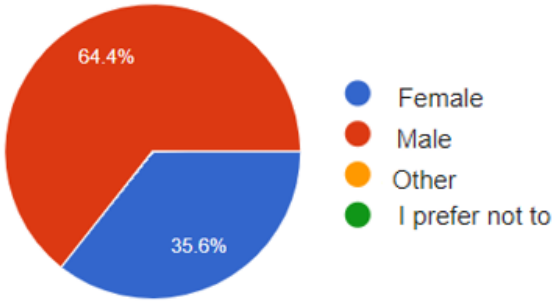

Figure 2. Gender Distribution

64.4% of respondents are male, while 35.6% are female. This gender distribution might suggest that men show more interest in drone usage and related regulations, or that they are more active in participating in such surveys.

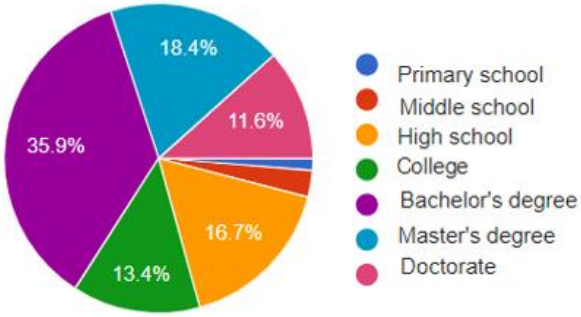

Figure 3. Educational Status

35.9% of respondents hold a bachelor's degree, 18.4% have a master's degree, and 11.6% have a doctoral degree. This high level of education indicates that the respondents are generally well-educated and potentially more aware of regulatory and technological issues.

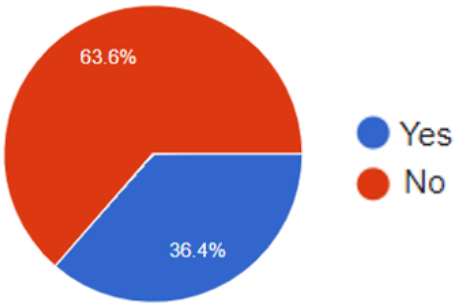

Figure 4. Experience with Drone Usage

63.6% of respondents have never operated a drone before. This indicates that drone usage is not widespread, or that most participants have not yet had the opportunity to try this technology.

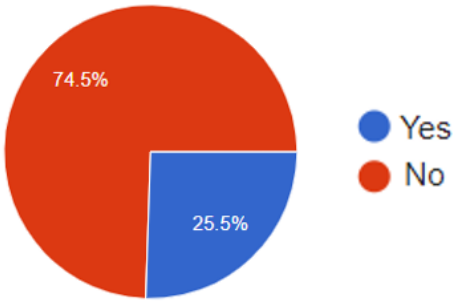

Figure 5. Drone Ownership

74.5% of respondents do not own a drone. This suggests that drone ownership is relatively low, and many people may still not consider purchasing or using this technology.

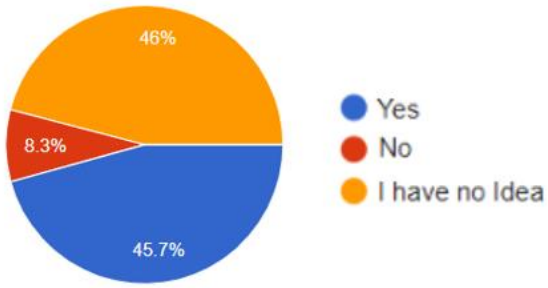

Figure 6. Awareness of Existing Drone Legislation

46% of the respondents stated that they were unaware of the existence of drone legislation on the other 45. 7% of the people know that it exists. This indicates that there is a serious vice in the promotion of drone regulations and that the users should be made to have more knowledge about these regulations.

Figure 7. Knowledge of How to Access the Regulations

69.4% of respondents said that they are not aware where they can find information on drone regulations. This means implying that these regulations in question or the ways in which such information can be obtained are not easily available to the general public.

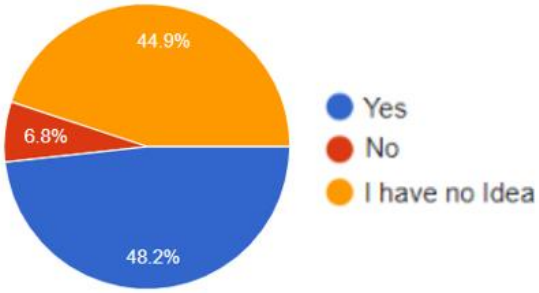

Figure 8. Registration Obligation

44.9% of respondents are unsure about the requirement for drone registration. This highlights the need for more information dissemination regarding registration requirements.

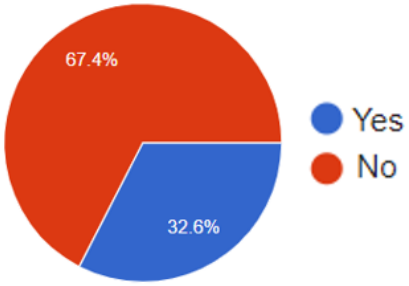

Figure 9. Awareness of Altitude Restrictions

67.4% of respondents had no idea about altitude regulations concerning drones. This implies a very poor level of safety

knowledge and compliance, thus a high number of potential safety hazards.

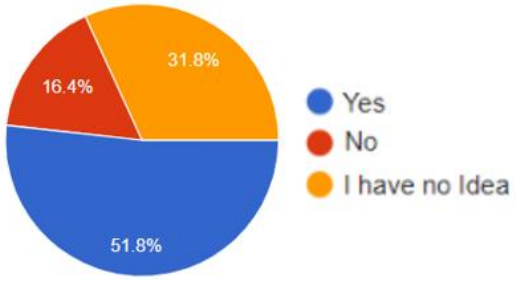

Figure 10. Knowledge of Authorization and License Requirement

51.8% of respondents believe that a license or authorization is necessary for drone operation, while 16.4% think it is not required. Additionally, 31.8% of respondents stated that they are unaware of such requirements. These results indicate a widespread lack of awareness regarding licensing requirements for drone usage. More clear communication about licensing and authorization is essential to increase compliance with the regulations.

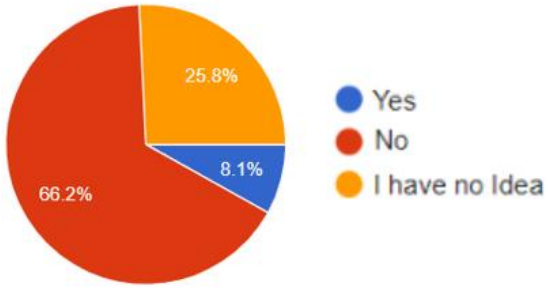

Figure 11. Operational Zone Knowledge

66.2% of respondents indicated that operating a drone near an airport is illegal, However, the fact that 25.8% of respondents are unsure about this highlights a lack of comprehensive understanding of safety rules near airports, suggesting that more information dissemination is necessary. The 8.1% who believe it is legal to operate near an airport reflect a potentially dangerous misunderstanding.

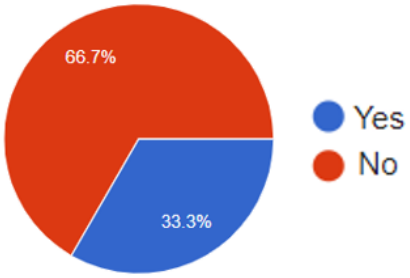

Figure 12. Awereness of the Privacy and Data Collection

66.7% of respondents indicated they are not aware of the privacy and data collection rules related to drone usage. This shows a significant gap in knowledge concerning personal data protection and privacy. Increased awareness and education could help users become more sensitive to privacy rights.

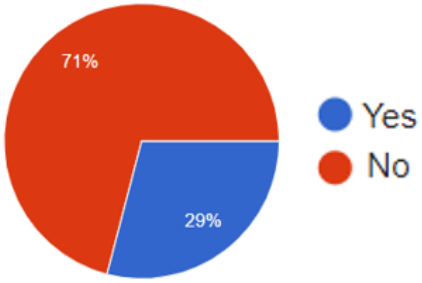

Figure 13. Awareness of Sanctions For Non-Compliance with Laws

71% of respondents are not aware of the sanctions that may be applied if a drone is not operated legally. This indicates that legal regulations are not well understood, and there is a need to raise awareness about potential sanctions. Addressing this lack of knowledge is critical to improving compliance with regulations.

Two more open-ended questions were taken from the previous study and tested along with the closed-ended questions in the survey.

To the question of where the regulations can be accessed responses show that majority of the survey participants said they directly get information regarding the legal regulations for the use of drones over the internet. The official regulatory authorities emerged as the most mentioned source, often using broad terms for them such as ‘civil aviation’ or ‘Directorate General of Civil Aviation.’ A few participants also mentioned two websites specifically and the ability to access further information via internet searches.

However, there are concerns as a significant percentage of the responses contained phrases such as ‘I don’t know’ or similar statements, suggesting that some of the participants are not aware of the specifics of the existing regulations, or are not aware of how to obtain this information themselves. A few other participants mentioned international aviation authorities (e-g., ICAO, EASA) or local authorities, which indicates that the awareness level is not uniform among the participants.

These responses indicate that the level of awareness in the Kyrenia region, among the people aged 18 and over, regarding the ways of obtaining the regulations on drones and other information concerning these regulations is different. This situation proves that accessing information can be different and there are some problems with the awareness of the corresponding authorities. It can be pointed out that there is a need for familiarization and awareness campaigns as many participants indicated that they either do not know how to obtain this information or have inaccurate information. This could result into difficulties in following or observing the legal requirements concerning drone operations. From the responses to the open-ended question, it is evident that there is lots of awareness among participants concerning the rules regarding privacy and data collection. The majority of answers focus on prohibitions of photographing or obtaining information in military facilities, on private territories, and in places that could infringe personal privacy.

Some of the participants mentioned in particular that it is prohibited to collect information about a person, or his property without the latter's prior consent and that it is impossible to use such information when the subject does not consent to it.

One common notion that arises out of the responses is that, before taping people or invading their privacy through photography, consent must be sought. It is well understood that such operations should be kept out of the reach of the vicinity of residential buildings and people and a safe buffer should be kept ensuring that privacy is not invaded. There are cases where the participants referred to the particular legal requirements indicating an awareness of the existing legal provisions.

Furthermore, there are other comments about restricted areas like 'military sites,' 'airport,' or 'historic regions' to suggest participants' understanding of security issues and security measures under national security laws. This consciousness of regulation can also be inferred from the acknowledgement that permissions from the respective authorities are necessary before flying drones in certain zones. Although some of the answers suggest a specific regulation or procedure that the participant was unfamiliar with or only partially aware of. This means that although the public appreciates the value of privacy and protection of their data, they may lack adequate knowledge of the specifics of these regulations across the different fields.

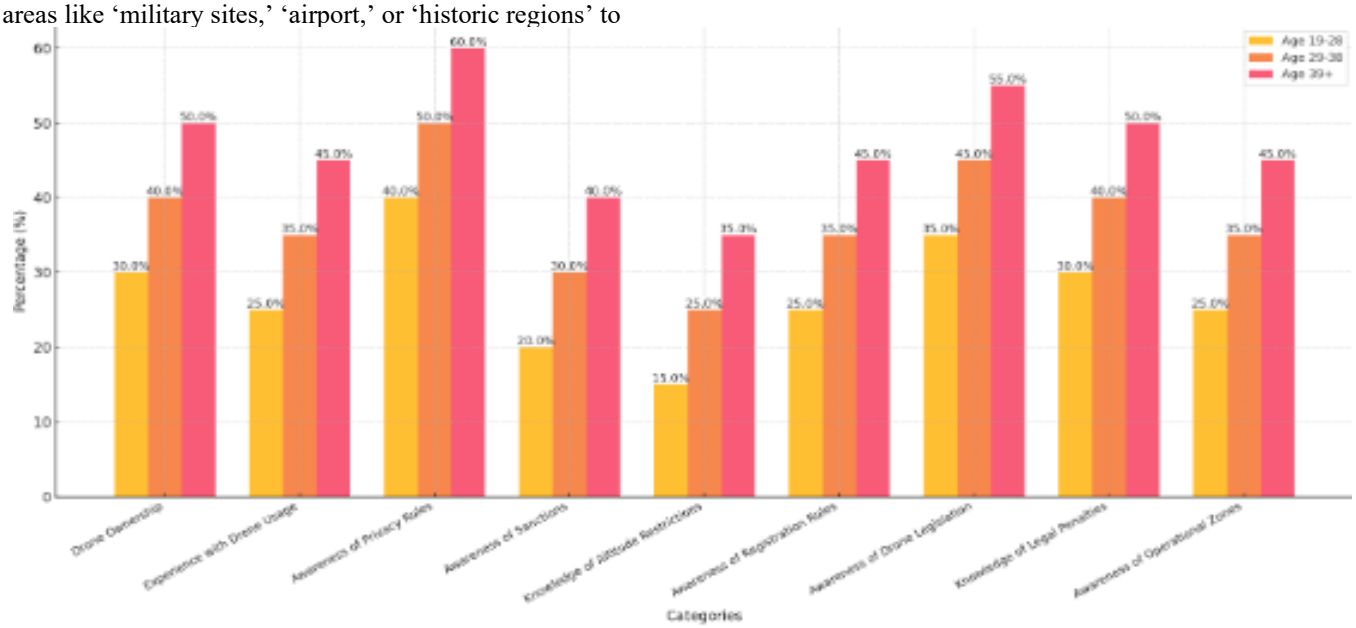

Figure 14. Comparision Of Awareness Level By Age Group

The data on the correlation of age brackets with various categories of awareness demonstrates a very striking pattern: the awareness about the level of knowledge concerning operational zones, legal aspects, and privacy dos and don'ts increases steadily with age. Therefore, it stands to reason that, compared to the younger population, older people aged 39 and above have a better grasp of drone-related concepts.

One answer to this paradigm might be the social cognizance built up due to the lifetime experience and responsibilities of older people where appreciation of regulatory laws may be more pronounced. For example, the people who belong to the 39 and older category are likely to already be or for a long time will be engaged in professional or leisure activities where they will have to know how to own a drone, operate it, and also know the laws regulating it. Also, older respondents understand better privacy and safety issues, hence the higher knowledge they had about privacy prohibitions and penalties.

On the other hand, younger people (ages 19-28 and 29-38) show lower levels of awareness, especially when it comes to technical and legal rules about drones. This might be because they haven't been exposed to or aren't very interested in drone regulations, as they likely use drones more for fun or casual purposes. Also, their lower awareness could mean there's a lack of education or information designed specifically for younger people.

From a policy standpoint, these results show the need for focused education efforts to help younger age groups understand drone rules better. Adding drone regulations to school programs or using social media and other online platforms that younger people use could help improve compliance and safety when using drones. At the same time, since older individuals are more aware of these rules, they could play an important role in encouraging safe and responsible drone use in their communities.

In short, this study highlights the importance of tailoring awareness campaigns to fit the unique traits and requirements of different age groups. By focusing on these differences, regulators and educators can better share information about drone rules and safe practices, making their efforts more thorough and impactful.

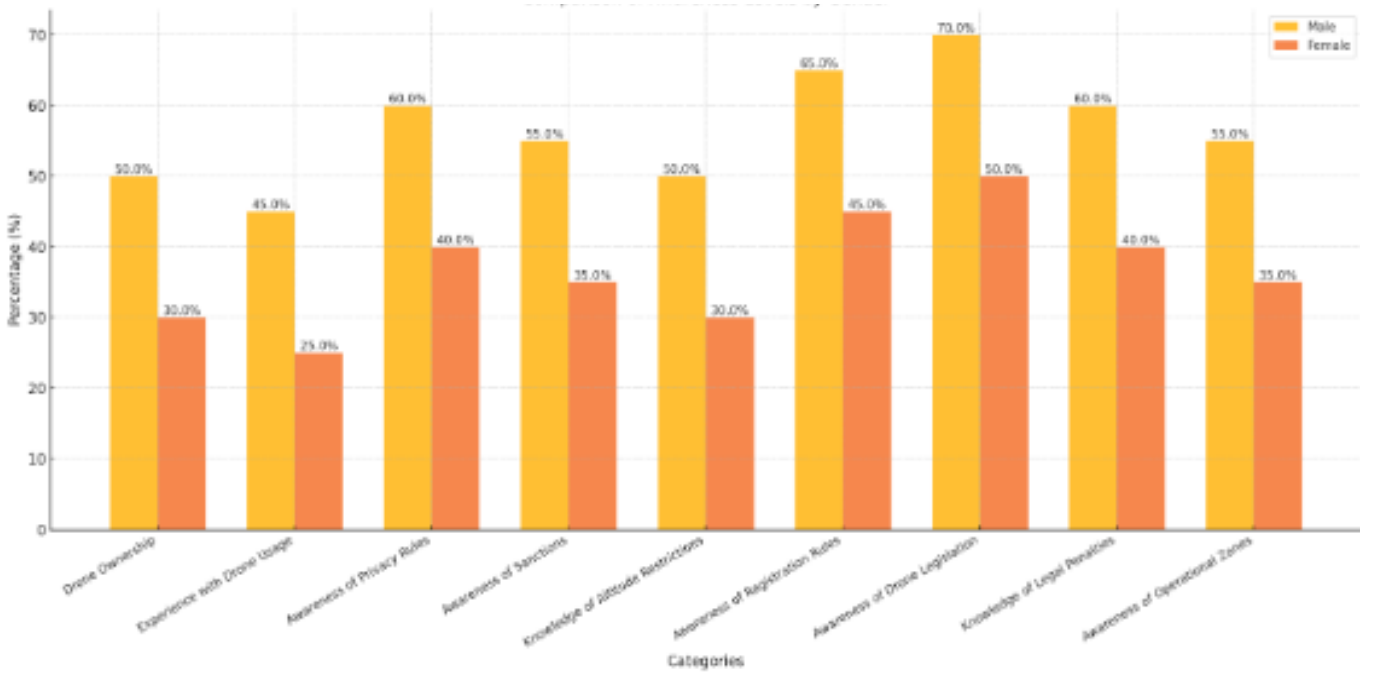

Figure 15. Comparision Of Awareness Level By Gender

The differences in how men and women understand and are aware of drones can be explained by a few reasons. Men might have more chances to use drones, either for work or hobbies, which makes them more familiar with how drones work and the rules around them. On the other hand, women might not have as many opportunities to use drones, possibly because of societal norms or fewer chances to engage with technology. Men might also see drones and their rules as more important or useful in their daily lives or jobs, so they pay more attention and learn more about them. Women, however, might not feel the same connection or relevance to these topics.

These differences could also point to problems in how information about drones is shared. If the materials or campaigns about drones and their rules don't consider both men and women equally, women might not get the same level of information. Also, traditional ideas about gender roles and what society expects from men and women might affect how they interact with drones and related topics.

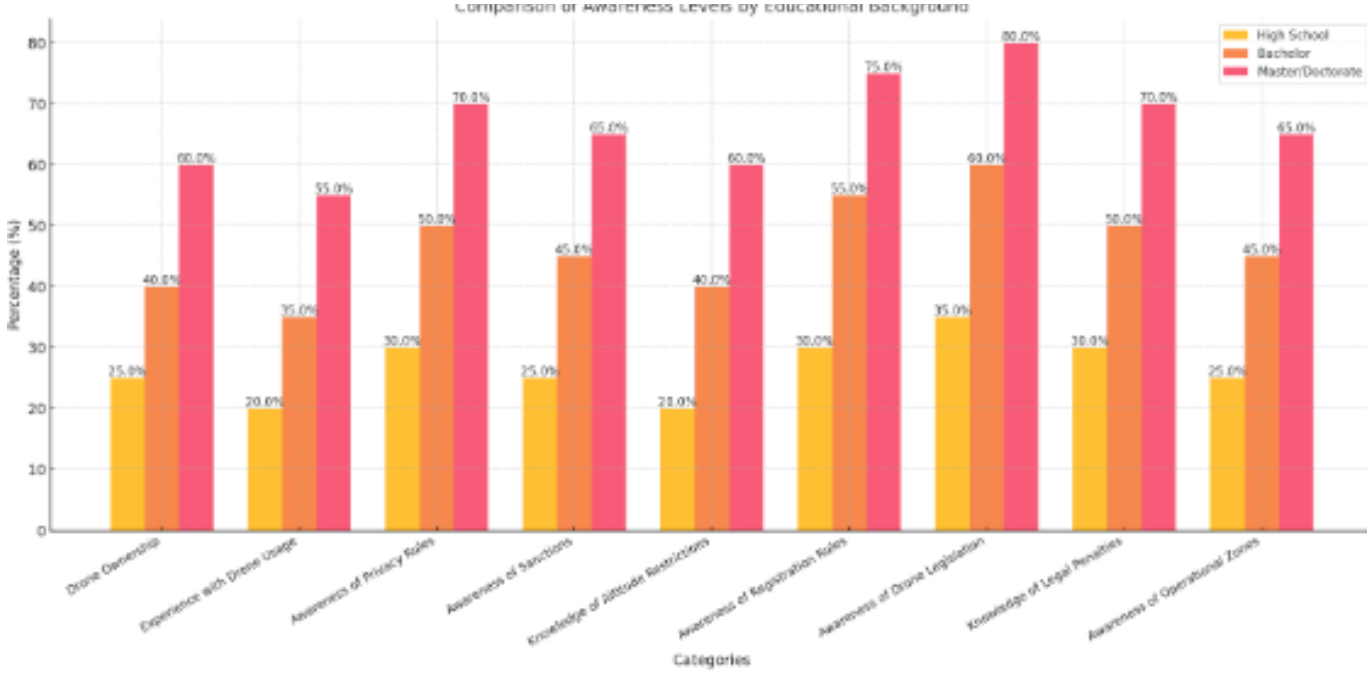

Figure 16. Comparision Of Awareness Level By Educational Background

The chart shows a clear link between education and how much people know about drones. People with more education, especially those with Master's or Doctorate degrees, know more about owning drones, how to use them, and the rules for flying them. In contrast, people with less education, like high school graduates, know less about these things.

Going to college or university probably gives people better access to resources, teaches them how to do research,

and lets them use advanced technology. All of these things help them become more aware of important issues. For instance, people with higher degrees show the most awareness in areas like knowing the legal consequences of breaking rules (70%) and understanding drone laws (80%). This suggests that formal education might be very important in helping people understand complicated topics, like the legal and ethical issues related to using drones. On the other hand, people who have finished high school show much less awareness in all areas, such as owning drones (25%) and knowing how to use them (20%). This difference points to a possible issue in how education and information are shared, especially for those with less formal education. It indicates that the current efforts to educate and inform might not be doing enough to help this group.

The findings from the survey of respondents from the Kyrenia region are crucial in establishing public knowledge on the legality of non-commercial drones. The results indicate that while, participants show average of average levels of general knowledge, fine-tuned to regulation such as privacy protection and no-go areas as the military no entry zones, private property, etc. there is a major lack of awareness about specific regulatory observations and the penalties accompanying violations to them. In this respect, the lack of broader legal literacy is truly reflected in the lack of educational programs and better methods of distribution.

The survey results, therefore, show that a large number of the respondents were not sure on how to get pertinent information from the regulators, which can be inferred to mean that the current efforts at dully communicating with the regulators are ineffective. It is crucial to address this issue to ensure that there is a high level of safety and compliance with the regulations by the users of drones. Timely and clear updates on rules and regulations concerning the usage of drones should be provided to the public adequately and comprehensively.

Further studies should include comparative cross-sectional studies encompassing a higher participation of the general population to build a wider picture of the populace's awareness. These studies could help create specific information and educational materials and Internet-based training modules easily incorporated into educational programmes, or integrated into media campaigns, to enhance legislative knowledge in the field of unmanned aviation.

The aforementioned gaps in knowledge and dearth of awareness could help increase compliance with drone-related legal requirements as established by the TRNC Civil Aviation Authority and other regulating agencies and foster public safety and the privacy of the individual. Stakeholder involvement via focused discussion and partnership will be valuable in the proper execution and further evolution of drone rules.

Ethical approval

Not applicable.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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