8-25-2025

Successful Hiring Strategies of Unmanned Aerial System Leaders in the United States

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Walden University
2025

Abstract

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by

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MBA, Embry Riddle Aeronautical, 1999

BA, Berea College, 1979

Research Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

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August 2025

Abstract

Ineffective hiring strategies in the unmanned aerial systems (UAS) industry can result in performance deficiencies, increasing operational costs and reducing profitability, which hinders industry growth. UAS leaders are concerned about these impacts on organizational and economic outcomes. Grounded in Kristof-Brown's person–organization fit theory, the purpose of this qualitative pragmatic inquiry project was to explore the strategies used by UAS industry leaders who successfully hired personnel capable of minimizing performance inefficiencies. The participants were six UAS industry leaders in the United States who had effective hiring practices. Data were collected using semistructured interviews. Through thematic analysis, three themes were identified: importance of hiring operators who possess the necessary qualifications and technical competence, need for reliability and assurance of product quality, and importance of employing strategic recruitment practices to locate and retain qualified operators. A key recommendation is for UAS leaders to develop "get it right the first time" initiatives, which will reduce the amount of rework, improve quality, and reduce costs. The implications for positive social change encompass leveraging community support structures, which offers the potential to foster individual advancement and promote organizational responsibility amidst a dynamic labor market, enhancing sustainability and strengthening local community resilience and economic stability.

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Dedication

I dedicate this doctoral project to my wife, Jelena Evans, and my children, Alexander Evans, Elizabeth Evans, and Kristina Ciunele for their love, prayers, and support. I appreciate your inspiration and your unparalleled love that has been with me through this long and at times, frustrating process. Ultimately, I owe all praises and thanks to Jesus Christ for being my Lord and Savior. There were so many days when I just wanted to give up, but with prayers and God's grace and mercy, I was able to keep going to reach my goal. I genuinely thank you all for your understanding with me amid this accomplishment.

Acknowledgments

Many thanks to Almighty God, the giver of knowledge, wisdom, and health, from whom all favors stream. I want to acknowledge the individuals who helped me reach my goal of completing this dissertation. My genuine appreciation to my committee chair, Dr. Patsy A. Kasen, for her phenomenal direction and clear advising, and for ensuring that I was consistently focused and on track. In addition, I say thank you for your indispensable feedback and kind assistance. My committee members, Dr. Don Carpenter, and Dr. Matt Knight. I am very grateful for all your explicit feedback and sharp thoughtfulness regarding points of interest. I stretch out my appreciation to Walden University's workforce and fellow scholars whose huge commitments made my opportunity at Walden a memorable one. Finally, I am grateful to all my spiritual mentors whose constant prayers and counsel helped me throughout this journey. Thank you all.

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Section 1: Foundation of the Project

Background of the Problem

Unmanned aerial systems (UASs) including drones and related technologies in automated power systems and data analysis have evolved and found significant applications in mapping, aerial surveying, and sensors for monitoring (Mohsan et al., 2023). In addition to aerial surveying and sensor monitoring, UAS technology has been used in data analysis, and an accurate combination of datasets improves individual understanding of specific information (Zhang & Zhu, 2023). UAS technologies including drones have been integrated with tracking and GIS data software and have been integrated with safety and security software (Mohsan et al., 2023; Quamar et al., 2023). Therefore, given the significance of these systems and integrated software, recruiting qualified and experienced operators is crucial.

UASs are beneficial to many industries either for commercial use in agriculture to inform farmers of nutrient level problems or in scientific research to collect accurate data in areas deemed challenging for humans (Rejeb et al., 2022). Explaining its widespread use in different fields, Gargalakos (2024) examined the role of unmanned aerial vehicles (UAVs), similar to UASs, in military communications. It was reported the efficiency and reliability of military operations were improved with UAVs through enhanced coordination and real-time data transmission. In the current landscape of UAV applications, Mohsan et al. (2023) established that despite technological limitations and security vulnerabilities, UAVs have been used in logistics, agriculture, and surveillance (Zhang & Zhu, 2023). While generative artificial intelligence has enhanced the accuracy and efficiency of threat intelligence, UASs have aided the timely sharing and tracking of important information.

UAVs and UASs are terms often used interchangeably, but they refer to different components within the realm of unmanned flight. A UAV, commonly known as a drone, is the aircraft itself without a human pilot onboard. In contrast, a UAS encompasses the UAV along with additional elements such as the ground control station, communication links, and the personnel required for operation. This distinction highlights that while the UAV is the flying component, the UAS includes all necessary components for the system's operation (Zhang & Zhu, 2023).

Hiring trained and qualified UAS operators is crucial for industries and organizations using UAV technology. Several researchers have investigated how organizations leaders can enhance their employee's use of UAS systems (Carter & Greer, 2013; Kunde & Duncan, 2024). Employee training, professional development, and transformational leadership styles increase the utilization of UAVs (Carter & Greer, 2013). However, what needs to be understood is that while UAS technology has attracted the attention of businesses, some leaders are lacking strategies to hire qualified UAS operators in the United States (Carter & Greer, 2013; Clemens & Huffman, 2024). This project explored successful strategies unmanned aerial leaders have used to hire operators with the qualifications needed to reduce costs associated with performance deficiencies in the United States.

Business Problem Focus and Project Purpose

The specific business problem that I addressed in this project was that some unmanned aerial system leaders lack successful strategies to hire operators with the qualifications needed to reduce costs associated with performance deficiencies. Therefore, the purpose of this qualitative pragmatic inquiry was to identify and explore successful strategies used by some UAS leaders to hire operators with the qualifications needed to reduce costs associated with performance deficiencies.

The target population consisted of business leaders who have successful strategies employing UAS operators. I used purposive sampling to select six participants through social networks and professional associations. To collect this project's data, I used semistructured interviews with six participants in the United States who have successfully implemented strategies to hire UAS operators, FAA and DOT documents with information on UASs, and publicly available records and documents on UASs. I used person–organization fit theory as the guiding conceptual framework to explain how employees perform better and experience greater job satisfaction when their values and goals align with those of the organization (A. L. Kristof-Brown et al., 2005).

Research Question

What successful strategies do UAS leaders in the United States use to hire operators with the qualifications needed to reduce costs associated with performance deficiencies?

Assumptions and Limitations

Assumptions

Assumptions are beliefs that without proof are taken as facts and are not part of the research problem under investigation (Braun & Clarke, 2022). I made four assumptions in this qualitative pragmatic inquiry. The first assumption was that all participants were knowledgeable about the project phenomenon. I recruited business leaders who indicated they were knowledgeable about UASs and had some strategies to hire qualified operators successfully for their businesses. The second assumption was that the business leaders recruited for this project participated willingly and answered all the semistructured interview questions honestly. Third, I assumed that business leaders are involved in hiring qualified UAS operators. The fourth assumption was that some UASs business leaders who lack strategies to hire operators may use the strategies identified in this project to recruit qualified operators to reduce costs associated with performance deficiencies.

Limitations

Limitations are imposed restrictions or potential weaknesses in the project that are beyond the researcher's control (Theofanidis & Fountouki, 2019). Limitations may affect the research design, results, and conclusions. The first limitation was that while the project participants were business leaders, they may not have had first-hand information about the project phenomenon as they may rely on their subordinates to develop strategies for hiring qualified UAS operators. Although I assumed that participants were honest in their responses, the limitation was that some participants may have withheld crucial information about the strategies they have used to hire qualified UAS operators. The UAS industry often deals with sensitive data and proprietary information related to technology and operations. Participants may have had concerns about confidentiality and the potential exposure of sensitive information during interviews. Participants may have provided biased or inaccurate responses when self-reporting their experiences, perceptions, or behaviors. Though within the required sample size for qualitative research, data from six participants may not have been enough for the researcher to establish why some UAS leaders have failed to hire qualified operators.

Transition

I identified and explored successful strategies used by some UAS leaders to hire operators with the qualifications needed to reduce costs associated with performance deficiencies. I used this section to introduce the project and provide a background to the problem. I also used this section to describe the business problem focus, project purpose, assumptions, and limitations. In Section 2, I will review the professional and academic literature. In Section 3, I will discuss the project ethics, the nature of the project, data collection and analysis activities, reliability, and validity. Section 4 will include a discussion of the project findings and the implications for business practice, social change, and further research.

Section 2: The Literature Review

A Review of the Professional and Academic Literature

In this section I will present a detailed synthesis of existing literature on the topic relating to identifying and exploring successful strategies used by some UAS leaders to hire operators with the qualifications needed to reduce costs associated with performance deficiencies I used the world wide web, the Walden University Library, and Google Scholar to locate databases needed to obtain scholarly articles, books and other publications that were deemed relevant to the topic of project. I searched several databases, such as PubMed Central, Database of Abstracts of Reviews of Effects, PsycINFO, UpToDate, PubMed, Psycharticles, ProQuest, PsychoInfo, Academic Premier, Sage, JSTOR, ResearchGate, EMBASE, ScienceDirect, Google Scholar, Cochrane Library, Emerald, EBSCO, and Elsevier. To maintain the accuracy and reliability of the sources used, I ensured that the majority of articles were published within the 5-year range (2021–2025) and relevant seminal articles on strategies used by UAS leaders to hire operators.

To explore the topic key phrases included *UAS recruitment strategies*, *leadership in the UAV sector*, and *drone industry workforce development*. I also searched terms such as *skills-based hiring in UAS*, *competency requirements for UAS leaders*, and *effective leadership in the UAS sector* to understand qualifications and hiring trends. I further incorporated industry-specific keywords such as *remote pilot recruitment*, *UAS operational leadership*, and *workforce diversity in UAS* to delve into the unique needs of the drone industry. Additionally, terms like *FAA regulations and workforce development* and *UAS leadership in U.S. defense and commercial sectors* help connect hiring practices to policy and regional factors. The following sections or themes were discussed based on the literature search conducted: talent acquisition and recruitment strategies for UAS operators, training and certification alignment for UAS operators, strategies to retain top talent and continuously improve their skills in the UAS field, cost-efficiency through strategic hiring, and the conceptual framework.

Talent Acquisition and Recruitment Strategies for UAS Operators

The selection of qualified UAS operators involves several steps that include advertisement to the right audience, individual advertisements, and partnerships with schools. Hiring should be done strategically so that the organizations hire for traditional flight-related skills, as well as new technological skills such as the use of artificial intelligence and better monitoring systems (Powell, 2023). Specialized job announcements should contain equal ratios between technical requirements and organizational culture, safety, regulations, and advancement. In addition, partnerships with educational institutions are essential for identifying the demand for the curriculum, offering internships to provide practical exposure to students, and promoting research addressing new technological challenges (Menkhoff et al., 2022). The connected initiatives help in building up a steady source of well-trained UAS operators who can meet the existing and potential requirements of the technology.

Targeted Outreach

Targeted outreach for the recruitment of UAS operators entails considerations of the most appropriate means and source of reach for best results. In line with the above arguments, Kunde and Duncan (2024) noted that organizations need to consider that only skilled UAS operators who are also ready to embrace disruptive technologies would produce optimal results. Likewise, Clemens and Huffman (2024) established that the effectiveness of the outreach efforts is derived from the fact that UAS technology is a rapidly growing field, and hence, organizations should target individuals and platforms in which technically inclined candidates are interested in the advancement of the field. In addition, leaders can use online media and business networks to demonstrate the employer's adherence to the principles of innovation and professional growth, which are vital indicators that determine the demand for qualified staff (Attaran & Celik, 2023). Thus, a call for organizations to develop specific recruitment programs for the talent acquisition of UAS operators is warranted.

The targeted outreach should emphasize the technological advancement possibilities within the organization. Powell (2023) established that, as a result of the use of artificial intelligence and other sophisticated technologies in UAS operations, outreach should be made to candidates with traditional piloting experience and knowledge of new-age technologies. Organizations should consider targeting their advertisements at technical conferences, industrial events, and specialized job fairs where organizations can interact directly with candidates who meet the technical qualifications. Similarly, effective outreach techniques should also highlight the organization's commitment to utilizing superior forms of communication technology and infrastructure which are especially appealing to highly professional personnel (Gargalakos, 2024). The evolution of UAS technology has created new imperatives for targeted outreach strategies. Hwang and Kim (2023) highlighted the need to get across to such candidates with relevant competencies in growing fields such as data security. Therefore, targeted outreach means that organizations should source their advertisements in forums that are not normally related to aviation such as technology-based professional groups and forums for recruiting UAS operators.

Effective outreach programs emphasize potential collaborations with advanced technologies that may interest skilled UAS operators. Currently, well-qualified applicants are demanding job opportunities that will enable them to work closely with high-technology systems as well as diverse organizational practices (Wen et al., 2023). Similarly, military transition programs also appear as another important channel of delivery that is relevant to the targeted approach. The programs offer a source of experienced UAS operators who come with skills and structured methods in safety and security components in noncombat usage (Michaelides-Mateou, 2023). Military-trained personnel tend to have very good knowledge of airspace regulations and air traffic management, which can be very useful in integrated airspace operations. The military-to-civilian transition programs should have tailored marketing messages and plans of how the personnel can advance in their careers as well as how their skills from the military can be utilized. People are more likely to respond to such calls implying development and career progress (Carter & Greer, 2013). Organizations should promote the concept of learning and career enhancement in their communication materials such as training programs, certification, and career gradation which can effectively target the UAS operators.

Targeted outreach is also facilitated by industry partnerships. Employers should work with industry associations, professional societies, and certification vendors to increase their access to qualified UAS operators (Tikhonov et al., 2023). The partnerships can help in finding access to specialized talent and the members of the organizations can attend industry conferences and professional development programs. Partnerships also assist organizations to clarify their cultural understanding and appreciate it in the context of the candidates who may join the organizations, thus enhancing the candidate-organization fit (Öz et al., 2022). Year-round prospecting plans based on events, professional conferences, and educational programs for graduating classes should be created by organizations (Savaş, 2022). Messages should then be developed for specific populations of candidates, to reflect the interests and concerns of different types of candidates, as well as the characteristics of their specific career stage, whether they are career changers, recent graduates, or transitioning veterans.

Specialized Job Postings

Developing appropriate and highly specific job ads for the UAS operator positions is crucial in the acquisition of UAS talent. The qualifications and skills expected in UAS job postings should be clearly stated in addition to meeting technical standards, as well as the leadership and organizational culture factors that will lead to enhanced long-term employment (Carter & Greer, 2013). The details of the job announcements should reflect an organization's plans for transformational leadership and professional training because both these aspects have an impact on operators' drive and productivity (Carter & Greer, 2013). Effective communication of organizational value and culture in job advertisements assists the organization in attracting people with good value propellers, which increases performance levels and decreases turnover (C. Lee, 2023). The job postings should specifically mention the technical competencies needed to work with the digital component, such as previous experience with monitoring systems or the ability to perform predictive analysis (Attaran & Celik, 2023). In this way, the companies will be able to build a pool of highly qualified candidates for UAS operators' positions and guarantee the effective work of such operators in the long term.

Organizations should balance their job advertisements to reflect both present technical demands and future growth possibilities for new technologies. Specialized job postings should capture the current technological environment of UAS operations such as the use of Blockchain to ensure that the candidates posted for various jobs are not only qualified for the current operations but are flexible enough to deal with future advancements in technology (Hwang & Kim, 2023). As a result of the introduction of sophisticated technologies in the execution of UAS activities, complicated technical requirement descriptions should be included in job advertisements (J. Wang et al., 2021). J. Wang et al. (2021) established that the job requirements should be stated more precisely concerning communication systems experience and network management proficiency. The job postings should also describe specific technical experiences required for the complex UAS platform, such as artificial intelligence and automated threat recognition technologies (Powell, 2023). Therefore, when presenting technical job specifications, they should be in such a manner to portray the organization's concern in technological development and the expectations of the candidates.

Safety and regulatory compliance are other important aspects of targeted job postings for the hiring of UAS operators. There is a need to clearly state the regulatory and safety responsibilities of the job in the advertisement to help the applicants appreciate that the job goes beyond technical functions (Mohsan et al., 2023). The safety measures include defining necessary certificates, licensing, and experience in using safety management systems. The job postings should also highlight their safety concerns and adherence to the law as these factors play a significant role in attracting qualified employees with professionalism (Henderson, 2022). An ideal job description should indicate operational proficiency and adaptability clearly in line with piloting, simulation, different UAS platforms, and different environments so that the candidates understand the technical skills that are required (Kunde & Duncan, 2024). Through the use of technical knowledge, flexibility and focus on safety and legal requirements organizations can create detailed job descriptions that appeal to highly skilled and responsible UAS operators.

The development of UAS technology in recent years has brought new challenges for job posting creation. Job descriptions should portray the organization as involved in new technological applications of UAS, for instance, surveillance systems, big data, and self-operations (Merz et al., 2022). This approach assists in recruiting self-motivated candidates who have a passion for the development of technology in the field. Specialized job advertisements should also highlight professional development opportunities (Cieślak, 2021). Most of the job descriptions in successful organizations highlight the need for learning and career development. Job postings should also specify the possibilities of participating in research and development activities, as this can be valuable for highly skilled candidates willing to contribute to technological progress (Shrestha et al., 2021). Altogether, revealing the progressive application, training and development, and engagement in research and development, the organizations can develop attractive job advertisements for like-minded candidates, who are willing to work for the development of the technological advancement in the UAS sector.

Partnerships With Educational Institutions

Strengthening cooperation with educational institutions can be recognized as one of the key factors of a stable source of qualified operators of UAS. The partnerships should be aimed at curriculum development that is relevant to the market, including piloting skills and new technologies (Menkhoff et al., 2022). According to the research conducted by Mohsan et al. (2023), organizations should establish partnerships with educational institutions to provide programs that will help to overcome the current challenges, technology restrictions, and security threats. The programs can be internships and research where students get practical experience while organizations get to assess promising candidates at an early stage of their careers (Mohsan et al., 2023). The incorporation of these new technologies in learning programs is especially significant, highlighting the importance of the student mastering new technologies' standards (Dimitriadou & Lanitis, 2023). Thus, the reviewed studies have shown that the development of close educational connections allows organizations to ensure that academic curricula meet the requirements of industries, promote technological advances, and contribute to the cultivation of a pool of qualified UAS operators for addressing existing and future tasks.

Partnerships are needed in the creation of curricula that would prepare students for the technological aspects of contemporary UAS operations. Technological integration calls for collaboration between industry practitioners and academics to ensure that the training courses offered meet the current technological trends in the industry (Baca et al., 2021). The partnerships can be further developed by involving organizations in advisory boards, offering guest lectures, and providing mentorship programs that assist students in translating their academic knowledge into practice. Acquisition of leadership attributes in combination with professional competencies is an essential aspect of partnership education (Albeaino & Gheisari, 2021). The partnerships ensure that there is development of programs that would address all the needs of the UAS operations that graduates are bound to encounter. Carter and Greer (2013) support this approach indicating that organisations that allocate resources to leadership capability and educational partnerships note enhanced operation performance and fewer gaps in performance. By developing cooperation between business and educational institutions, educational affiliations can develop programs that provide graduates with the essential knowledge and leadership qualities needed to address the changing needs of today's UAS operations.

The present analysis of advanced technology integration in educational partnerships shows that infrastructure and resources play a considerable role in the process. According to Attaran and Celik (2023), students should be exposed to digital twin technology and simulation systems to expose them to current technology being used in the industry. In the same way, Ruiz et al. (2022) stated that it is critical to have realistic practice in communication systems and such partnerships should be reinforced by the use of new technologies and operational systems. Further, incorporating cybersecurity education into UAS curricula is becoming more important to make sure students will be able to mitigate the existing threats related to data protection and system susceptibilities in autonomous functions (Pyzynski & Balcerzak, 2021). Focusing on access to more advanced tools, practical hands-on experience, and cybersecurity knowledge, educational partnerships can ensure students' readiness to address the technical and operational aspects of the current UAS systems and build a strong workforce capable of supporting further developments and maintaining industry stability.

Another important aspect of the educational partnership is the research collaboration activity. Group research activities are beneficial in addressing industrial concerns because they allow students to address real-life challenges (Hamissi & Dhraief, 2023). The cooperation can be in the sphere of topics such as security improvement, organization efficiency, and technology for the improvement of educational institutions and industrial partners. The research partnerships could be used by organizations to make sure that they are always abreast with the newest technologies as well as to produce future generations of UAS experts (Hamissi & Dhraief, 2023). Similarly, companies and educational institutions can create courses that would suit a specific industry and ensure that graduates have the right qualities to operate UAS effectively (Fisher et al., 2021). The beneficial educational partnerships can help address the issues that affect the industry, develop new technologies, and train students for effective employment in UAS operations, including the pertinent certification programs to be established through collaborative research.

The effectiveness of educational partnerships for the recruitment of UAS operators is contingent upon ongoing evaluation and enhancement. Reviewing the performance of the program and graduate employment statistics helps organizations adapt partnership processes as well as ensure that such processes meet the demand of the job market (Herrington et al., 2024). There is also the need for organizations to communicate frequently with their educational partners to ensure that programs are up to date with organizational needs and technological advancements (Ben Aissa & Ben Letaifa, 2022). Besides, the integration of benchmarking that is in use within the industry in partnership evaluations can help to identify the level of effectiveness of the program against the benchmarks internationally so that students can be assured of competitiveness and relevancy in the increasingly globalized market (Fakhraian et al., 2023). Thus, the nature of the educational partnerships should be reconsidered to ensure that the training programs in UAS offered by the graduation institution meet the industry needs and provide the graduates with the set of competencies necessary for successful performance in the rapidly growing field of UAS.

Training and Certification Alignment for UAS Operators

The UAS industry is a relatively new and diverse technology field that requires stringent professional credentialing and sound management. Certification is particularly important when considering how drones are being operated in commercial, military, and research endeavors (Mazur et al., 2022). As these application areas advance, organizations have to establish effective structures for monitoring, assessing, and enhancing operational performance and safety, and managing legal obligations (Askerbekov et al., 2024). The seminal problem is how to build complex systems for selecting, accrediting, and training UAS professionals capable of handling complex technical, legal, and organizational environments of present-day UASs (Richards, 2022). The management of certification has therefore assumed strategic significance in terms of pre-hiring assessment, integration with industry benchmarks, avoidance of a performance gap, and sound governance frameworks that should be capable of evolving with the ever-changing face of new-age drones and their operation.

Pre-Hiring Assessment

Organizations should ensure that during the first step of selecting a candidate to operate UAS, they validate the industry-requisite certifications. The critical step helps to guarantee that the candidates for employment have the initial relevant requirements to operate UAS safely and efficiently (Baron & Louis, 2021). The approach also ensures that the credentials to be validated should include certification authenticity, the date of expiration, and other specializations. The credentials should have standard processes by which organizations can verify them against industry databases and certification authorities (Michailidis & Vouyioukas, 2022). The screening should also include the currency of the certifications and any continuing education requirements that have been met. The process of certification validation serves the organization's best interest by keeping them in check with the regulations while making sure that the candidates meet the minimum standard necessary for the job (Jan et al., 2022). Through the creation of a routine process of checking certification during the initial stages of the screening process, organizations can be in a position to narrow the field and avoid wasting time in the recruitment process by targeting candidates who do not meet the most basic certification standards for the operation of UAS.

A more thorough analysis of candidate qualifications based on specific requirements for the UAS platform is a critical factor for operational competency. Leaders should evaluate the candidates' knowledge of the specific UAS systems that will be utilized for a specific task, including platform type, technology type, and operation type (Jardine & Givigi, 2021). The evaluation should also consider the candidates past working experience on similar systems, knowledge of the maintenance requirements of the platform, and the emergency procedures on the particular UAS type (Yue & Wang, 2024). Likewise, leaders should develop clear matrices correlating candidate attributes to the relevant platform demands, such as prior experience with comparable controls, payload operations, and navigation systems (Tikhonov et al., 2023). The targeted evaluation also ensures that candidates have not only general knowledge of UAS but also adequate skills in operating the unique platforms used in the organization and therefore improve on operations and minimize training costs once they join the organization.

One of the most important aspects of UAS operator recruitment is the employment of a rigorous process of defining and documenting potential candidates' shortcomings concerning the job description (Di Sorbo et al., 2023). Leaders should develop lists of attributes that enable them to evaluate the match against the basic and ideal standards for the position (Lobo et al., 2021). Technical competencies, certification levels, and emerging technologies should be incorporated into the documentation process (Murray et al., 2024). Organizations should define their gap analysis in terms of whether it is measurable or if training or certification is necessary. The level of detail increases the chances of developing suitable training interventions supports the onboarding strategy and serves as the starting point for determining the likely time to acquire additional certifications or skills (Ferraro et al., 2022). The gap analysis also considers the organization's future needs in terms of technology and the planned platform acquisitions so that the identified gaps are not only compared to the present standards but also in terms of the future.

Industry Standards Integration

Periodic documentation audits of the documentation systems help in the checking of the documents to ensure that they are up to date and depict the formats of the current industry (Marshall, 2021). Other records that should also be captured during documentation include operator certifications, the next renewal date, and any endorsement or rating needed for certain operations. Organizations should adopt digital tools for maintaining and updating certification records, as well as for providing access to current standards and the status of operators (Gadelrab & Abouhogail, 2021). The systematic approach to documentation maintenance allows its formal check for compliance or certify gaps quickly and detect areas of certification coverage lack (Ho et al., 2021). Thus, organizations need to keep all the documentation most up-to-date possible to ensure that there is constant compliance with the regulations while at the same time managing the UAS operator certifications.

Certification bodies and industry regulators have to be contacted and engaged to keep abreast with operational requirements for UASs. Leaders should attend industry forums regulatory meetings, and certification body workshops to foster these relationships (Cromwell et al., 2021). Communication with these entities aids organizations in being aware of up-and-coming changes and allows the organizations to participate in the development of new standards. The communication also helps resolve certification issues more quickly and offers direct consultations on difficult regulatory questions (Grote et al., 2022). Organizations should ensure that communication lines are kept active (D. Lee et al., 2022). As a result of having points of contact in certification bodies, verifying processes take less time and one is immediately informed of changes. Ensuring that strong relationships with certification bodies and regulators are fostered is thus the key way through which organizations manage to maintain active compliance and be in a position to make changes as soon as new requirements in the industry are realized.

Leaders have to engage in systematic surveillance of new certification demands, especially concerning the development of new generations of UAS. The approach entails having awareness of the new technological change that may be prevalent in areas such as artificial intelligence, auto systems, and sensor integration needs certification (Nex et al., 2022). Continual scanning of the industry environment enables the detection of other growing certification requirements that may not have been compulsory at the time of benchmarking. Similarly, leaders should assign specific personnel or working groups that are supposed to monitor related technologies and their effects on the necessity of operator certification (Macrae, 2022). The monitoring should include attendance at industry and technology conferences and membership in professional associations where new certification standards are initially introduced (Schweiger & Preis, 2022). The process should include routine check-ups of proposed regulations and standards that may impact certification requirements. Through the continuous observation of emerging certification requirements, the operators are better placed to ensure that new UAS operators have the required certification and training for effective operations.

Organizations should ensure that their UAS operators maintain a high level of compliance with safety and regulatory standards. The alignment involves checks on the business processes concerning safety processes and prerequisites occasionally (Matalonga et al., 2022). Such compliance requirements should include safety audits, periodic reviews of the standard operating procedures, and regular checks on the new regulations. Leaders should employ indexation procedures for surveillance of conformity signals and the addressing of any shortfalls (Fakhraian et al., 2023). The approach also entails record keeping of safety injuries, regulatory breaches, and actions taken about the same. Safety and regulatory compliance should be performed for all operators by training regularly with a focus on changes in safety and regulation (Szoke et al., 2024). When the safety and regulatory cultures are implemented, leaders can be able to attain superior safety and regulatory performance without having to deal with significant risk factors in the UAS operation by the operators.

Performance Gap Prevention

Organizations need to ensure that they develop different onboarding programs that systematically address the certification aspects of new UAS operators. There should be prior certification audits of certification plans, identification of other certification requirements, and the strategy to achieve certification (Chamola et al., 2021). The onboarding structure should encompass the theoretical knowledge phase and the phase that challenges the competency of the operators to ensure that they are capable of performing the tasks of the organization. The plans should be specific to the type of UAS platforms for use and the operations environment but should not significantly depart from conventional practices (Jovanovic et al., 2022). Within the onboarding process, there should be certain milestones to assess the outcomes and propensity of modifying the plan. Onboarding documentation is utilized to control the flow and conformity of onboarding for all new operators recruited into the organization (Feng et al., 2021). Thus, the reviewed studies have confirmed that with the help of proper onboarding models that meet the criteria of certification, it is possible to educate new operators and at the same time, preserve organizational performance and safety.

Organizations need to specify time frames for achieving more certificates based on the organization's need and goals concerning operational efficiency and compliance (Pettke et al., 2021). Leaders should propose clear work plans, which include the time that should be devoted to certification preparation, the time windows for examinations, and the time needed for practical training (Mohsan et al., 2022). The timelines should also take into account the organization requirements and the operator's capacity, without exaggerating the time estimated for the task accomplishment. Regular progress meetings are important to check that operators are on track and to intervene where objectives are not met (Telli et al., 2023). The timeline structure should necessarily incorporate such aspects as particular stages, dates to accomplish them, and penalties for failing to meet the deadline. Such timelines should also depend on the availability of resources and operational requirements within organizations (Mukhamediev et al., 2021). In this way, certification times should be set and attained sensibly so that organizations can guarantee that their UAS operators are well-certified and ready for operation while the UAS stays aligned with the industry standards constantly.

Leaders should develop elaborate training initiatives that focus on areas in UAS operations, which are perceived to lack knowledge. The programs should comprise didactic sessions where the operators are taught different concepts and practical sessions where they apply different methods and strategies (Rugo et al., 2022). The training content should be reviewed to match the new technologies, operation procedures, and industry practices. The programs should have components that would allow for checks on understanding and effective competencies gained during the programs (Butcher et al., 2021). Similarly, organizations should also ensure that the training programs are adaptable to the learning styles and experiences of the learners as well as the trainers thus maintaining a tangible standard. A continuous review of training effectiveness assists in the determination of inefficiencies and the need for modifications of programs with relevance to current operation issues (Daud et al., 2022). Such training allows organizations to meet high operational expectations while training their operators for enhanced performance and compliance with industry standards.

Mentorship programs are critical in ensuring that UAS operators receive the necessary support in their professional development. The programs should allow old operators to work hand in hand with the newcomers as they share knowledge and imbue the newcomers with hands-on experience (Majid et al., 2021). Thus, there should be plans for interaction regularly and identifiable goals for the mentor and the mentee. When choosing a mentor, organizations should consider the level of experience and efficiency in the industry, the ability to convey information and assist those with less experience as operators (Mandirola et al., 2021). The formal and informal learning should be part of the structure in the course of the actualization of the mentorship program while focusing on the set achievement of the key skills (Grindley et al., 2024). This way, by implementing structured mentorship programs organizations learn to train operator skills alongside growing a healthy culture of learning and professional development that translates to the organization's UAS operations alignment with industry requirements.

Strategic Governance

A dedicated UAS certification management office becomes essential because of the increasing intricacies of the regulations and technologies in the operation of UAS (Salinas & Lewandowski, 2024). The office is centralized to oversee the sophisticated tracking of pilot certifications, drone operator licenses, and technical knowledge in the business, defense, and research sectors (DeVito et al., 2022). The office also establishes broad methodologies for various forms of certification such as remote pilot licenses, mission-specific certifications, and high technological skills certifications (Sándor & Pusztai, 2022). Through this approach, organizations can streamline certification procedures and synchronize the methods of verifying the competencies that are offered concerning emerging technologies and compliance with evolving international regulations (Pettke et al., 2021). Sophisticated technological structures allow for oversight of certifications in real-time, estimation of skills necessary for employment of unmanned systems, and even targeted training for individuals. The office is critical in providing operational focus in maintaining stringent professional professionalism, the challenge of organizing and regulating skill demands, and importantly, facilitating the preparation and accreditation of new UAS operators.

In the UAS industry, a cross-functional certification oversight committee is required to assist leaders in maintaining correct certification and industry conformity among new UAS operators. The committee amalgamates professionals from aviation regulatory bodies, drone technology specialists, operational safety professionals, training professionals, and strategic planners (Wanner et al., 2024). Through collaboration, the committee creates multifaceted certification plans that can respond to the complexity of UAS professional training. Individuals cooperatively evaluate new technologies that entered the market, changes in regulations, and crucial skills needed for mission-critical positions in business, academia, and defense industries (Aposporis, 2024). The committee establishes flexible certification structures that incorporate state-of-the-art technology while at the same time enhancing safety standards to ensure that UAS has professionals with relevant competencies (Bruneau, 2024). By structuring the management of certifications, the committee makes oversight of certification an active process for keeping up the professionalism of UAS operators and their alignment with the industry.

An enterprise-wide certification policy framework for UAS can help in establishing a governance document that can state the set professional credentials of an individual as well as the alignment of the industry (Tran & Nguyen, 2022). The governance document outlines specific standards for the certification of UAS professionals that include licenses for pilots, recognition of technological proficiency, acknowledgment of undertakings according to mission types, and obligatory lifelong learning for professional advancement (Amarasingam et al., 2022). When it comes to credential management, having a clear structure in place can allow leaders to conform to rules and regulations set by the industry, commonly followed practices and technology trends. The enterprise-wide certification policy framework for UAS outlines line operational procedures for initial certification, recurrent skill verification, technology standards evaluation, and specialized mission competency (Serebryakov et al., 2023). The framework incorporates high-performance standards, safety regulation, and learning approaches that consider the growth of unmanned systems technology (Alamouri et al., 2021). By enacting such a holistic program of certification, the framework for professional certification recasts credentialing as a management tool for sustaining professional competence and relevancy in the UAS profession.

The certification for UAS requires a complex approach to strategic management, which involves highly selective employment criteria, strict compliance with the requirements of the industry, and flexible management systems (Baron & Louis, 2021; Michailidis & Vouyioukas, 2022). To achieve operational efficiency, safety, and consistency, organizations need to create complex systems that include central certification management, cross-functional supervision, and enterprise-wide policies (DeVito et al., 2022; Sándor & Pusztai, 2022). The new technologies should be monitored constantly for the development of the IT infrastructure, and the relationship with certification bodies has to be strong while the training and mentoring should be adaptive (Cromwell et al., 2021; Nex et al., 2022). Through comprehensive UAS operator certification, leaders can manage performance risks, work within legal requirements, and sustain the necessary advantage in the constantly shifting UAS environment (Alamouri et al., 2021). The future of UAS operations depends largely on the development of fit-for-purpose, future-proof certification frameworks that will capture emerging technologies while also maintaining high levels of safety and professional standards.

Strategies to Retain Top Talent and Continuously Improve Their Skills in the UAS Field

Use of Career Development Programs

Providing employees with a clear career path for professional growth can reduce their intention to quit the organization in UAS field (Nwaogu et al., 2024). Research indicates that employees are more likely to remain with employers who offer them a clear path for their career advancement (Herrington et al., 2024). In this regard, leaders in the UAS field should provide a career progression channel for employees from entry-level positions to managerial positions in the organization (Mohamed et al., 2020). Such a clear career path with growth opportunities may contribute to the retention of top talents in the UAS field. When employees feel that their employers value their professional growth through the establishment of career development programs to advance their skills in the UAS field, they are more likely to commit to the organization. The literature has also revealed that individualized career path that is based on employees' area of specialization such as pilots, air traffic controllers and engineers in UAS, can foster staff commitment to the organization and improve retention rates and needed skills in this field (Neto et al., 2024). Therefore, for organizations in the UAS field to retain talents they need to ensure their staff have a clear path for their career progression and the skills needed to perform their roles.

Offering employees financial resources to access industry certifications may improve their skills and lead to high retention of top talent in the UAS field. While some professions may not require professional certification from recognized engineering bodies, professions such as pilots require various certifications of recognition to practice their skills (Aposporis, 2024). As a result, one strategy to help leaders retain top talents in the UAS field is to ensure their employees have requisite certifications and provide financial support for those who do not have such certifications (Zhaoxuan et al., 2021). Such actions from the leadership may make employees feel valued and recognized by their employees and thus result in increased commitment and retention of top talent in the organization. However, some researchers established that there is no significant relationship between offering financial support for industry-recognized certification and retention of top talent (Grebner & Fay, 2022). Yet, one study indicated that although employees may need financial support for industry-recognized certification, it is unlikely to affect their intention to stay with their employers if they lack a clear career path for their professional growth (Nwaogu et al., 2024). Thus, employees need financial support to attain various industry-recognized certifications, and this may contribute to increased commitment and retention of top talents.

Career development programs can lead to increased satisfaction and staff engagement that contribute to the high retention of top talents in the field. Across the empirical literature, it is evident that career development programs enable employees access to industry-specific learning opportunities; this increases their engagement and commitment to attain organizations' goals because they feel valued and recognized, making them committed to their roles (Mendes et al., 2022). The feeling of recognition and being valued may lead to enhanced motivation that encourages staff to remain in their organization, contributing to a high rate of retention of top talents in the field of UAS (Albeaino et al., 2022).

Along this line of thought, Umar (2021) conducted a qualitative study to explore the applications of drones for safety inspection. According to the researcher, most employees leave organizations to look for employers who can value their services by offering their path and opportunity to growth. Based on this finding, the author suggested that to retain top talents in any field of practice, organizations need to offer staff learning opportunities to increase their motivation and this will in turn lead to a high likelihood of retaining such employees for their foreseeable future (Umar, 2021). Effective strategies such as career development programs can thus lead to a high level of employee satisfaction and engagement that may translate to a high retention rate of top talents in the organization, especially in the UAS field.

Use of Mentorship Programs

Engaging in mentorship programs can help practitioners in the UAS field to share vital expertise and skills with employees and this can lead to increased retention (Russell, 2023). The sharing of best practices and technical skills with employees who have limited skills may help in developing new professionals in the UAS field which contributes to the increase of top talents and skills in that particular organization (Onososen et al., 2022). Employees may have different levels of skills in the UAS field and engaging in mentorship programs promotes the exchange of ideas and skills on how to handle technical challenges in the field leading to increased engagement and contributing to a high level of staff retention (Bugayko et al., 2024). Still, through mentorship programs, organizations can assign employees with experienced mentors, who would offer them on-the-job training and guidance to address issues that require technical skills including how to solve issues associated with simulated drone operations and enhanced safety protocols (Whitman et al., 2023). Mentorship is thus an important strategy that leaders can use to retain and improve the skills of top-talent employees in UAS.

Supporting employees in their roles that require technical knowledge can spur their commitment to the organization, leading to high retention of top talent (Attaran & Celik, 2023). Attaran and Celik (2023) revealed that digital twins significantly contribute to operational safety by allowing for real-time monitoring and predictive analysis of drone behavior and this requires advanced technical skills to operate drones. Thus, mentoring staff on the use of drones can enhance their confidence and capability to tackle this technical responsibility that requires a high level of technology for better risk assessment and incident response for positive outcomes (Xu & Turkan, 2022). This illustration highlights the need for mentorship programs to enhance employee technical skills as those with adequate technical skills are less likely to quit their jobs but those with limited skills may quit their roles in the field due to the limited capability to handle such demanding tasks. On this same note, research also indicates that assigning mentors to staff can help them understand how drones such as digital twins can be integrated into UAS operations and this requires important skills and qualifications necessary for employees in the sector (Bolaji et al., 2024). In this regard, mentorship programs can be a pathway to train employees how to navigate this technology which later leads to increased commitment among employees, and this contributes to increased retention of talented employees in the UAS field.

Promoting innovation and creativity through mentorship programs can lead to improved retention of top talents in the UAS field. In a field that is driven by technology such as UAS where it requires innovation, mentors can share skills and ideas that spur innovation and creativity through job training, leading to increased top-talent retention (Lercel & Andrews, 2021). Such retention shows that UAS emphasizes the importance of technological innovations in enhancing safety practices. This suggests the need for employees trained in advanced technologies and the need for mentors who would mentor staff by sharing key ideas and skills that align with utilizing cutting-edge safety and innovative solutions (Ernst et al., 2023). Such actions by leaders in the UAS field may lead to increased commitment by staff to undertaking such as demoing and challenging tasks, leading to improved retention of top talent.

Other studies have also indicated the need to establish mentorship programs to enhance creativity and innovation as a component of UAS field among employees (Herrington et al., 2021; Zhao et al., 2024). Such mentorship programs would contribute to improved retention of talented staff. Staff who engage in mentorship activities with their mentors are more likely to learn technical and innovative ideas and this can promote their commitment to the organizations and improve retention. Thus far, the findings discussed suggest the importance of mentorship programs to enhance innovation among employees leading to improvement in retaining talented staff in the UAS field.

Use of Continuous Education in the UAS Field

To retain top talents and enhance their skills in the UAS field, leaders may need to provide regular and continuous training. Recent research demonstrates that employees need technical skills to work and a technology-led field such as UAS and thus organizations should offer employees training that would improve their skills to enhance their commitment to their roles and opt to retain in the workplace with limited intention to quit (Catchings et al., 2024). Kunde and Duncan (2024) investigated various training programs and instructional techniques aimed at improving the piloting skills of users operating UAVs. This included analyzing both traditional and innovative training methods. The authors found that hands-on training combined with simulation-based instruction significantly enhances user proficiency. Additionally, they discovered that tailored training programs that accommodate different skill levels lead to better performance outcomes and could lead to improved retention of employees in the UAS field. Research also indicated the need for effective learning and training strategies such as seminars and workshops to promote the safe and efficient operation of UAVs and improved retention of top talents, which is crucial as the use of these systems expands across various industries, requiring advanced skills (Kim et al., 2023). This regular training leads to improved proficiency in UAS operations and enhanced safety that contributes to the subsequent retention of top talented employees in organizations.

Leveraging peer learning programs can be an effective way of retaining and enhancing the skills of top talents in the UAS field. Peer learning programs may promote sharing of ideas and skills among staff contributing to increased engagement and motivation to face challenging tasks in the UAS field, leading to improved retention of top talents (L. Wang et al., 2024). Collaboration between less experienced and more experienced staff or UAS operators can be an effective approach to offering practical learning in the UAS field (Kumar et al., 2024). Such collaboration can lead to enhanced engagement and motivation among employees who end up committing to the organization, thus increasing the retention of top talents. UAS operations require improved technical skills from the staff and pairing experienced UAS operators and those with limited skills or experience provides effective job learning that improves the skills of the less experienced, contributing to a high level of retention (Askerbekov et al., 2024). As a result, Mohsan et al. (2023) emphasized the need for enhanced training and education to handle the advanced technology and technical skills the operations require when working with drones in the UAS field. Therefore, staff should be provided with an opportunity to engage in peer-to-peer learning programs for employees with different skills and unique ideas for continuous learning. These peer learning programs may improve the skills of employees, and lead to improved retention of talented staff in the UAS field.

There may be a need for different modes of learning that improve employee skills and retention. The emphasis on the need for qualified personnel and training aligns with the need for different learning modes in partnership with institutions providing course content specific to the UAS field to improve skills and retain talented staff (Maghazei & Netland, 2020). This promotes staff morale leads to reduced intention to quit and increases the retention of top talents in the UAS field. Offering employees with different education modes such as remote learning opportunities that provide flexible learning options can enable them to attain the advanced skills required to operate drones in the UAS field (Ali et al., 2024). On the other hand, other researchers indicated that engaging employees in seminars and workshops for hands-on learning and training with industry professionals can enhance their motivation to stay in the organization within the UAS field (Clemens & Huffman, 2024). These workshops and seminars with industry professionals can offer training such as simulated drone piloting, an assemblage of drones, and simulation flights thus improving employees' skills and promoting their retention in the UAS field. In this regard, providing employees with different learning approaches can foster their skill set and promote their retention in the UAS field.

While training may be an important factor in retaining staff, lack of it can have severe ramifications for the UAS field. Without proper training, employees become highly susceptible to making mistakes and errors while working with drones in UAS due to limited skills and competency to solve technical problems that come with advanced technology (Hwang & Kim, 2023). This limitation in skills contributes to reduced retention of top talents in the industry. Additionally, untrained staff often struggle to recognize errors and technical problems that a drone may develop in the UAS field, resulting in delayed incident response and could trigger for increased turnover of top talents (Michaelides-Mateou, 2023).

Comprehensive training programs are essential for cultivating a strong culture of retaining top talented employees with the skills needed to operate UAS (Li et al., 2022). Mohsan et al. (2023) also reported that employees required adequate skills in technology, particularly the use of AI in learning simulated flights, and maintenance of drones to enhance. Overall, limited training opportunities can be a factor that can lead to reduced skills and high turnover of top talent in the UAS field, suggesting the need to enhance the training of staff to improve their skills and retention of top talent.

Cost-Efficiency Through Strategic Hiring

Maximizing Resource Allocation When Recruiting Staff

Using staffing agencies to hire staff can be a cost-effective strategy to identify high-performing candidates (Reynoso Vanderhorst et al., 2023). To balance cost management with hiring qualified UAS operators, leaders may need to outsource hiring services from staffing agencies that already have a pool of candidates with the required skills (Shaheen et al., 2020). Hiring of temporary recruitment agencies for short-term operations can be a cost-effective strategy to reduce the fixed cost of recruitment and hiring of top candidates. Hiring high-performing candidates using hiring agencies can help organizations in the UAS field reduce the advertisement cost and recruitment costs including time consumed during the long process for selection through interviews and subsequent induction and training costs (Cavalaris, 2023). According to Velusamy et al.

(2021), hiring top talents can have cost implications in the UAS field due to the scarcity of individuals in this field. As a result, organizations can leverage the available resources such services of staffing companies that provide staffing services at lower cost while promising top-quality candidates with the needed specified skills. Therefore, leaders in the UAS field can strategically balance their cost management by involving private recruitment agencies that can offer recruitment services and provide top talents at reduced fixed costs.

Leaders can optimize available low-cost resources such as allocating more resources to critical positions. This may help in ensuring that positions that require a high level of skills are filled before hiring staff for the positions requiring low technical skills (Hubbard & Hubbard, 2020). A similar claim was made in a qualitative study conducted to investigate cost optimization when hiring staff for organizations UAS sector (Scholz et al., 2023). The findings indicated that allocating resources based on the level of skills and expertise required in the position to be filled can help leaders focus on more critical positions with less focus on noncritical roles. Related results were also reported in a different study which indicated the need for organizations to define specific roles that require a high level of skills to avoid allocating more resources to low-skill or less critical positions that can be performed by non-technical staff, contributing to effective cost management (Sigala & Langhals, 2020). Based on this empirical evidence, leaders in the UAS field can balance cost management through prioritization of critical positions and training internal staff for positions that do not need highly technical skills.

Hiring the services of external operators can also be cost cost-effective strategy to balance cost management in identifying and hiring high-performing candidates. The one-off cost of operations for short-term projects can be effective in ensuring cost efficiency through the strategic hiring of technical staff in the UAS field (Gheisari et al., 2020). The results suggest that outsourcing skilled labor may lead to effective cost management by reducing fixed costs in the form of salary and other benefits that regular employees would be receiving every month. Although external operators with UAS expertise may be expensive in the short term when hired to address a technical problem, in the long term they may be cost-effective for the organization (Emad Alfaris et al., 2024). Expertise charges a one-time payment based on the contract and the level of expertise needed and this cost may only be felt in the short term during the duration of the contract (Alfaris et al., 2023). As a result, the positive side of hiring expertise on short-term contracts for the specific critical role of the project is that it can help the organization balance cost management for cost efficiency in strategic hiring.

Adopt Creative and Innovative Recruitment Approaches

Leveraging innovative approaches such as remote interviews can be a cost-efficient approach in strategic hiring in the UAS field. Organizations incur large amounts of costs while conducting recruitment for specific positions in the workplace and involving creating and innovation in hiring such as the use of remote interviews rather than physical interviews during candidate selection can be cost-effective in balancing cost management in the UAS field that requires top talent staffs (Rejeb et al., 2021). This thought was replicated in other studies which revealed that physical interviews in the recruitment process can be costly for organizations in the UAS field. On the one hand, leaders who conduct their recruitment process through online platforms such as Zoom and Skype for interviews can cut the cost of physical interviews, contributing to effective balancing of cost management (Sopha et al., 2024). Such creativity and innovation in the recruitment process can be an important and cost-effective hiring strategy that helps leaders balance cost management in the UAS field.

Providing ways for learners to gain job experience through internship programs can be effective in balancing cost management in strategic hiring to identify high-performing candidates in the UAS field. As indicated in qualitative research conducted by Yucesoy et al. (2024), internships can be a cost-effective channel that UAS leaders can use to absorb more talented staff. Offering student internship programs for on-the-job training could be an effective way of acquiring talented candidates for various job positions that require technical skills (Daud et al., 2022). Interns have the required skills and understand the process of the organization, making them ideal candidates to fill different job vacancies at low cost of recruitment and even low salaries and other compensation packages (Kang et al., 2024). This makes it a cost-efficient strategy for hiring employees to fill vacant positions, contributing to balanced cost management. Using internships can be a creative and effective way of managing the costs of hiring employees in the UAS field when identifying high-performing candidates.

Performance Testing and Predictive Analytics

Continuous assessment of staff in performance testing can help leaders in UAS to cost-effectively identify high-performing candidates. While some organizations use simulations to test employees' level pilot skills and how they can operate UAS systems such as drones, other organizations focus on critical thinking skills such as problem-solving in critical situations (Hamissi & Dhraief, 2023; Pongsakornsathien et al., 2020). Also, performance testing through quizzes about the maintenance of drones and the integration of different systems can be effective in promoting cost efficiency in hiring high-performing candidates for balanced cost management (Prakasha et al., 2022). Performance testing can thus be important for cost efficiency in hiring high-performing candidates while balancing cost management.

Predictive analytics may be effective in cost-efficiency for strategic hiring of high-performing candidates for cost management in the UAS field. Leaders in the UAS field can use data analytics to identify quality candidates by analyzing past data on training, performance assessment and objectives accomplished in their previous tasks (Rastgoftar et al., 2023). This may help leaders identify qualified candidates who can fill vacant positions without incurring recruitment costs of advertisement and interviews. As a result, organizations may use low cost in recruiting high-performing candidates which is a cost-efficient strategy for balancing cost management in strategic hiring in the UAS field (Bremner & Eisenhardt, 2022). Using data analytics to predict likely results on recruitment, performance and scenarios on drone operations is also another strategy to hire high-performing candidates' cost-efficiently for balanced cost management in the UAS field (Du et al., 2024; Fakhraian et al., 2023). Across the empirical literature reviewed, predictive analytics can be used by leaders in the UAS field as a cost-efficiency strategy to balance cost management by predicting suitable and high-performing candidates without incurring more costs in the recruitment process.

Conceptual Framework

The purpose of this qualitative pragmatic inquiry project was to identify and explore successful strategies used by some UAS leaders to hire operators with the qualifications needed to reduce costs associated with performance deficiencies. The conceptual framework that grounded this project was the person–organization fit theory. I used this theory to explain how employees perform better and experience greater job satisfaction when their values and goals align with the organization. As the guiding conceptual framework, I used the constructs of the person–organization fit theory to engage with the participants to identify the strategies to hire qualified operators successfully. I also used the constructs of the framework to explain why some UAS leaders have failed or lack the strategies to recruit qualified operators to reduce costs associated with performance deficiencies.

The person–organization fit theory is a framework that was developed by scholars and researchers in organizational behavior and psychology to measure employee and organizational compatibility. The person–organization fit theory explores whether an individual's beliefs and values are compatible with the organization's values, missions, and ethics (Morley, 2007). The person–organization fit theory, also known as P–O fit, was first proposed by Schneider in 1987 and refined by Kristof-Brown and colleagues in the 1990s and 2000s (A. Kristof-Brown et al., 2023; A. L. Kristof-Brown & Jansen, 2007; Schneider, 1987). When defining the person–organization fit theory, Schneider discussed the attraction-selection-attrition (ASA) framework laying the foundation for researchers to investigate and describe how a person's values, goals, and culture with that of their organizations (A. L. Kristof-Brown & Jansen, 2007).

Schneider's ASA framework emphasized how the compatibility between the individual's and organizational culture shapes workplace dynamics (Schneider, 1987). A. L. Kristof-Brown et al. (2005) asserted that, unlike the ASA framework, the P-O fit explored the congruence between organizational culture and individual values that impact job satisfaction, performance, and commitment. A. L. Kristof-Brown et al. (2005) asserted that in P-O fit, fit occurs when two parties share similar characteristics, conditions are met, and one party meets the needs of the other party. Therefore, when the values and goals of a person are compatible with the organization's values and culture. Thus, it is arguable that the person–organization fit helped the researcher describe why some leaders lacked effective strategies to hire qualified UAS operators.

P-O fit compatibility with this project is anchored on the framework's application by other researchers. For instance, Roth et al. (2022) used the person–organization fit framework to describe how a person's political ideology influenced their liking of a particular organization and decision to leave or stay with the organization. Cao and Hamori (2020) used the person–organization fit framework to investigate how the fit between organizational supplies and employees' personal needs influenced their commitment and turnover. The results indicated that a fit between the employees' personal needs and organizational supplies positively influenced their commitment to the organization and turnover intentions. While fit can occur in different situations, they may vary depending on the issues experienced by each party. I used this conceptual framework to understand how the UAS industry requires specialized skills such as expertise in drone technology, data analysis, and regulatory knowledge. P–O fit theory suggests that candidates with these specific skills and a shared commitment to the industry's goals are more likely to excel. Effective hiring strategies should focus on identifying and attracting individuals who not only possess these technical skills but also align with the leadership values of innovation and safety.

Transition

The literature on talent acquisition and recruitment strategies for UAS operators highlights the increasing demand for skilled professionals in the rapidly growing UAS sector (Attaran & Celik, 2023; Baron & Louis, 2021). Effective recruitment strategies focus on identifying candidates with both technical expertise and soft skills required for leadership and operational excellence (Menkhoff et al., 2022; Powell, 2023; Tikhonov et al., 2023; Wen et al., 2023; Yue & Wang, 2024). Organization leaders emphasize targeted outreach programs, partnerships with academic institutions, and leveraging industry-specific job boards to attract qualified talent (Clemens & Huffman, 2024; Gargalakos, 2024).

Training and certification alignment for UAS operators is another critical area of focus. Research underscores the importance of aligning training programs with evolving regulatory requirements, such as those set by the Federal Aviation Administration (FAA) (Attaran & Celik, 2023). Certification pathways ensure that UAS operators meet standardized safety and technical benchmarks, fostering trust and competence in both defense and commercial applications (Jardine & Givigi, 2021; Michaelides-Mateou, 2023). Furthermore, programs tailored to specific industry needs, such as agriculture, logistics, or surveillance, enhance operator preparedness and versatility.

To retain top talent and continuously improve their skills, organizations implement strategies such as career development opportunities, mentorship programs, and ongoing training in emerging technologies (Tikhonov et al., 2023; Wen et al., 2023; Yue & Wang, 2024). Retention efforts also include competitive compensation packages, workplace flexibility, and a culture of innovation to maintain employee satisfaction and engagement (Jardine & Givigi, 2021; Menkhoff et al., 2022; Michaelides-Mateou, 2023; Powell, 2023). Upskilling programs are critical for ensuring that operators stay adept at handling advancements in UAS technology and maintain operational excellence.

Section 3: Research Project Methodology

The purpose of this qualitative pragmatic inquiry was to identify and explore successful strategies used by some UAS leaders to hire operators with the qualifications needed to reduce the costs associated with performance deficiencies. This project's purpose was informed by the problem that some UAS leaders have higher training costs than other UAS leaders which can result in loss of competitive advantage. The problem that prompted this qualitative research was that some UAS leaders lack successful strategies to hire operators with the qualifications needed to reduce costs associated with performance deficiencies.

Cost-efficiency through strategic hiring emerges as a significant theme. Streamlined recruitment processes, supported by predictive analytics and workforce planning, help reduce costs associated with turnover and mismatched hires (Attaran & Celik, 2023; Gargalakos, 2024; Jardine & Givigi, 2021). Strategic hiring ensures that the right mix of skills and experience is brought into the organization, optimizing resource utilization and minimizing operational downtime (Tikhonov et al., 2023; Wen et al., 2023; Yue & Wang, 2024). In Section 3 I will present the research project methodology where the project ethics, nature of the project, population, sampling, participants, data collection activities, interview questions, data organization and analysis techniques, reliability and validity were discussed. Section 4 includes the findings and conclusions of the project.

I used this section to provide a detailed discussion of the research method and procedures that will be followed to address the research problem. In this Section, I discussed the project ethics, and nature of the project including a discussion of the qualitative research method, pragmatic inquiry, population, sampling, and participants. The section also included a section on data collection activities, interview questions, data organization, and analysis techniques. The project's reliability and validity were also discussed in this section. I concluded the section with a summary of the key sections and a summary of Section 4 where I presented the findings obtained using the selected researcher method and design.

Project Ethics

My role as the researcher was to manage the research process. Managing the research process may include identifying the data sources that could be used to collect the data to address the research problem and answer the research questions. As the researcher, my primary role was to prevent the risks of the selected research method failing, coordinate all the research aspects, and ensure the quality of the research process and findings. Busetto et al. (2020) asserted that qualitative researchers should ensure that the research processes including participant recruitment, data collection, and analysis procedures are conducted in a manner that yields appropriate data answering the research question and addressing the research problem. Agreeably, Mwita (2022) explained that qualitative researchers are tasked with selecting and using suitable techniques to interact with the participants and collect quality data. Since collecting inaccurate data or using inappropriate techniques to conduct the project may jeopardize the research findings, accurate and appropriate approaches must be used (Yin, 2018). I used semistructured interviews; publicly available records; and FAA, DOT, and UAS documents to collect detailed information about the project phenomenon.

While I am drawn to technology and fascinated with UASs, my relationship with the project phenomenon and topic is developing. Extensive research on UASs has revealed the need to ensure the security and integrity of the data governing the use of UAS. Wen et al. (2023) and Powell (2023) contended that blockchain technologies and generative AI technologies improved the accuracy and efficiency of shared information. Whereas this is the case, regulatory hurdles, technological limitations, and security vulnerabilities negatively impact the operational capabilities of UAVs (Mohsan et al., 2023). These reported challenges have necessitated the need for research exploring how training and education to address them (Mohsan et al., 2023). While I do not hold any position of influence in technological organizations or over the project participants, I ensured that the participants were free to honestly share their experiences about some leaders' lack of successful strategies to hire qualified UAS operators to reduce the costs associated with performance deficiencies (Suwedi-Kapesa et al., 2023). I do not anticipate issues related to the researcher's positionality influenced the research findings and data collection outcomes.

My role as the researcher is connected to ensuring the ethics of the project and upholding the principles of *The Belmont Report*. As a researcher, I must respect the participant's confidentiality, uphold the principle of justice, and ensure their well-being. Comparable to quantitative research, qualitative researchers must demonstrate their commitment to addressing complex ethical concerns when conducting qualitative research (Potthoff et al., 2023). Ethical issues in qualitative research may include participant vulnerability, intrusive and emotionally burdening interview questions, approval from the ethics committee, and obtaining informed consent (Moriña, 2021). To ensure that my project is conducted ethically and complies with *The Belmont Report*, I obtained approval from the Institutional Review Board (IRB). *The Belmont Report* contains the principles and guidelines researchers may use to address the ethical issues related to using human subjects in qualitative research (National Commission for the Protection of Human Subjects in Biomedical and Behavioral Research [NCPHSBBR], 1979). Therefore, qualitative researchers must adhere to and uphold the principles of beneficence, respect, and justice as described in *The Belmont Report* (Redman & Caplan, 2021).

Before conducting this project, I followed the IRB protocol and obtained informed consent from the project participants while acknowledging their autonomy. The IRB approval # is 03-10-25-1205598 for this project, which will be used to reference this doctoral project and any future funding or publication submissions.

The research was conducted in strict adherence to IRB protocol, with informed consent obtained from all participants. The email invitation and interview protocol were developed according to IRB guidelines and included in the project's appendix, ensuring participants' autonomy and voluntary participation are fully respected. Eeckhout et al. (2023) asserted that obtaining informed consent demonstrates the researcher's acknowledgment of the participant's autonomy, respect, and communication between the researcher and participants. I obtained informed consent from the participants by providing them with information about the project and their role in the research process. This information is crucial as it will ensure the participants understand the project, the research processes, and how the semistructured interviews will collect the data needed to address the research problem. I used informed consent to inform potential participants that participation is voluntary, the risks and benefits of participating in the project, and that they had the right to withdraw from the project at any time. The informed consent preceded the data collection process and I reviewed the consent form with the participants to ensure they understood the research process and their role in the research.

The process of participants withdrawing from the project was simple. The participants needed to provide verbal or written indicating their decision to leave the project. Fernandez Lynch (2020) explained that qualitative researchers should use the IRB-provided informed consent to ensure that the project participants understood the project's purpose, autonomy, respect and that they can withdraw from the project without penalty or punishment if they choose. I used the consent form to inform potential participants that participation was voluntary and that they could withdraw from the project at any time. Although researchers may use incentives to attract and maintain participant participation, no rewards or incentives were offered to participants No participants decided to withdraw from the project.

Another important ethical role is protecting the identities of project participants. The IRB requires qualitative researchers to mask their participant's identities to achieve confidentiality. Instead of their real identities, I used alphanumeric codes such as P1, P2, P3, et cetera. Obscuring the identity of participants and organizations is an important aspect of the principle of beneficence (Panos et al., 2021). In addition to masking the participants' identities, I secured the semistructured interview transcripts in an encrypted folder in a password-protected computer while data from publicly available UAS documents will be stored in a secure safe for 5 years.

Nature of the Project

To answer my research questions and address the research problem, I used a qualitative research method. Busetto et al. (2020) explained that researchers use a qualitative research approach to explore, describe, and understand contextual problems as experienced or perceived by participants. A qualitative research approach was appropriate for this project because I sought to explore, describe, and understand how some UAS leaders have higher training costs than other UAS leaders which can result in loss of competitive advantage. I used the qualitative research method to understand the participants' experiences with the project phenomenon and how they make sense of the research problem.

Using a qualitative research approach for this project helped me explore and develop an in-depth understanding of why some leaders in UAS lacked strategies to hire qualified operators to reduce the costs associated with performance inefficiencies. The research design was a pragmatic inquiry. A pragmatic approach allows researchers to strategically combine and borrow from established qualitative methods to meet a project's needs. Pragmatic inquiries are guided by an existing framework with detailed research and practice change goals (Ramanadhan et al., 2021). I used pragmatic inquiry to identify and interpret strategies to analyze complex phenomena and address real-world problems. In this project, used pragmatic inquiry to identify and explore successful strategies used by some UAS leaders to hire operators with the qualifications needed to reduce costs associated with performance deficiencies. My research was inductive, focusing on individual decision-makers within a real-world problem.

Population, Sampling, and Participants

The target population consisted of business leaders who have successfully employed strategies to employ qualified UAS users. The project utilized semistructured interviews with six business leaders who demonstrated proven success in UAS personnel strategies. I used inclusion criteria to determine individual project participants. Kraft et al. (2020) explained that using inclusion criteria to decide who participates in the research process will increase the researcher’s chances of recruiting knowledgeable participants and obtaining rich and nuanced data about a complex phenomenon. The inclusion criteria helped me recruit business leaders who provided me with detailed and meaningful information on why some lack strategies to recruit qualified UAS operators successfully. Therefore, to participate in this project, the participants must have implemented strategies that have sustained their business for a minimum of 5 years, achieved measurable cost reductions, and provided insights supported by publicly available government documents and archival records related to UAS operations. I used a purposive sampling technique to select six business leaders from the target population. Qualitative researchers use purposive sampling to select participants who can provide information relevant to the research questions, purpose, and problem statement (Palinkas et al., 2015). With purposive sampling, I recruited a smaller sample that provided me with relevant data about the project phenomenon. To finalize the sample, I used data saturation. With data saturation, I engaged with the participants using semistructured interviews until no new data or themes were identified (Guest et al., 2020). Hennink and Kaiser (2022) stated that at data saturation, there is a redundancy of the information from the purposive sample.

I used social connections and professional associations to recruit participants. Using social contacts and professional associations helped me identify and recruit business leaders for a meaningful researcher-participant interaction. Though there are other data sources from which I retrieved data, I engaged with business leaders who had access to publicly available government documents related to UAS and access to public records and archival reviews pertinent to UAS operations. I recruited the business leaders through social contacts and professional associations. I asked people in my networks and associates to recommend or help identify business leaders who were knowledgeable about the project phenomenon and willing to participate in this qualitative pragmatic research.

To establish a working relationship with the project participants, I shared detailed information about the project with them. I explained to the participants the process of signing the informed consent and I helped them prepare for the semistructured interviews to collect primary data. After my initial interaction with the participants, I used email communication and text messages to form mutual relationships while preparing them for the project. Using the strategies that I have discussed in this subsection ensured that I improved their comprehension of the project and their willingness to provide the researcher with in-depth information about the phenomenon under investigation.

Obtaining rich and thick data helped me identify and describe why some leaders lack strategies to recruit qualified UAS operators.

Data Collection Activities

As the researcher, my primary role was to gather detailed and relevant data to address the research problem and answer the questions. In this project, I was the primary data collection instrument. In addition to being the primary data collection instrument for the project, qualitative researchers coordinate the entire research process, and collect, and analyze the collected data for information answering the developed research questions (Busetto et al., 2020). I used semistructured interviews with open-ended questions to gather detailed insights about the project phenomenon. Elhami and Khoshnevisan (2022) asserted that qualitative researchers use semistructured interviews to capture detailed information about the project by allowing participants to explain the phenomenon from their perspectives and experiences. Therefore, using semistructured interviews allowed the participants to share their experiences and perceptions openly without interruption. With this research instrument, I had the opportunity for follow-up and probing questions to solicit further information about the phenomenon.

I used an interview protocol to conduct the semistructured interviews. Using the interview protocol helped me maintain and ensure consistency with multiple participants, mitigate bias, and support the project's reliability and validity. Collecting qualitative data is a complex process and if done hurriedly and inappropriately may jeopardize the credibility of the research findings (Yin, 2018). Therefore, I used the interview protocol to guide the semistructured interviews to gather detailed insights about the phenomenon in its natural setting or the real world (Siedlecki, 2022). My interview protocol was divided into subsections beginning with a section on opening statements, a list of the semistructured interviews, prompts and probing questions, and questions to close the semistructured interviews. The interview protocol ensured that the semistructured interviews were administered consistently to all participants. The interview protocol describing how the semistructured interviews were conducted is in the Appendix.

The reliability and validity of the semistructured interviews was ensured by audio-recording the interviews. In addition to audio-recording the interviews, I conducted follow-up interviews with the participants to review their responses and ensure that I interpreted the information shared by the participants correctly. To enhance the validity and reliability of the project, I engaged in member checking, reflexivity, and triangulation. I used these strategies to enhance the trustworthiness of the findings and conclusions. In addition to the semistructured interviews as a data source, I reviewed public FAA and DOT documents for information about UAS and strategies organizations and businesses have used to recruit qualified operators. For triangulation purposes, I also reviewed other publicly available documents on UAS recruitment strategies from the internet and business archives.

Interview Questions

I used these semistructured interview questions to collect data from six business leaders:

1. Over the years of your experience, what successful strategies have you used to hire qualified operators?

2. How did you measure the success of the strategies you used to hire qualified operators?
3. Did your strategies result in the reduction of costs associated with performance deficiencies?
4. How do you measure if your strategies resulted in reducing the costs associated with performance deficiencies?
5. What other information would you like to share regarding the successful strategies you used to reduce the costs associated with performance deficiencies that we have not already discussed?

Data Organization and Analysis Techniques

Organizing and managing data for this project was important before data analysis. As the researcher, I organized my data using a system that included labeling text and audio files protected with a password (Degeling & Rock, 2020). Reflexivity journals, research logs, researcher notebooks, and tables were effective systems and techniques I used for data organization. Accurately organizing my data was an opportunity to conceptualize, immerse, and interact with the data to identify patterns, and interpret the data to address the research problem and answer the questions. For this qualitative pragmatic inquiry, thematic analysis was appropriate for a rigorous and systematic analysis of the data from semistructured interviews, DOT, FAA, and publicly available documents (Braun & Clarke, 2022). Braun and Clarke (2022) stated that in qualitative research, thematic analysis allows researchers to use coding procedures to develop ideas and meaning, and gather detailed insights about the qualitative data. During data analysis, I used reflective thematic analysis steps for an in-depth understanding and interpretation of the qualitative data.

I followed a logical and interactive thematic analysis process when analyzing qualitative data. In step one of the thematic analysis, I transcribed the audio-recorded interviews before immersing myself in the data through multiple readings of the interview transcripts. Reading the interview transcripts numerous times while listening to the audio recordings ensured that I had familiarized myself with the information participants shared about the phenomenon (Braun & Clarke, 2022). In the second step, I generated initial codes using the NVivo software. While color coding helped refine the coding process, the NVivo software coded and categorized the data for easy analysis. I searched for themes in the next step and subsequently reviewed the themes in the fifth step. I defined and named the themes in step five, abstracted the main results in step six, interpreted the findings in step seven, and produced the final report in step eight. These procedural steps ensured that I arrived at descriptive conclusions about the project phenomenon.

To correlate the key themes with the theoretical framework and the reviewed literature, I used reflexivity. Braun and Clarke (2022) reported that reflexivity allows qualitative researchers to determine final themes from the intersection of the researcher's subjective experiences and the constructs of the guiding theoretical framework. Reflexivity helped me generate and discuss fully developed themes addressing the research problem and answering the developed research question. After data collection and analysis, I will securely store electronic and raw data for 5 years.

Reliability and Validity

In qualitative research, reliability and validity are concepts that must be upheld as they relate to the issue of trustworthiness (Coleman, 2021). The concepts of dependability, confirmability, transferability, and credibility constitute the issue of trustworthiness (Lincoln & Guba, 1985). Addressing these issues in this qualitative project ensured I achieve the required methodological quality and rigor. As Famula (2024) noted, understanding and transparency of research findings characterize high-quality qualitative pragmatic inquiry.

Reliability

The consistency of the research findings after a project has been replicated in different research settings constitutes the concept of reliability (Yilmaz, 2013). Qualitative researchers can achieve consistency by exploring the dependability and auditability of the research findings (Coleman, 2021). This project's dependability was enhanced through an accurate and detailed description of the data collection and analysis procedures. I used the NVivo software to streamline and focus my decisions concerning data collection and analysis processes. Therefore, maintaining a detailed and accurate description of data sources, data collection, and analysis procedures helped me achieve dependability. I also used triangulation to achieve dependability. Fusch and Ness (2015) defined triangulation as a technique that allows researchers to use multiple methods and sources for data collection. I used an interview protocol to ensure participants are asked similar semistructured interview questions.

Validity

Qualitative researchers can ensure the validity of their findings by achieving credibility, confirmability, and transferability (Coleman, 2021). Credibility is whether the research findings can be trusted or believed by readers and other researchers (Lemon & Hayes, 2020). To enhance the credibility of my research, I implemented member checking by allowing project participants to review my interpretations of their responses to the interview questions and potentially modify their responses. Since credibility is associated with confidence in the research results, data triangulation was used. I triangulated this project's data using semistructured interviews, DOT, and FAA UAS documents on strategies to recruit qualified operators. In addition to achieving credibility, I used triangulation to address instances of researcher bias and gather detailed insights and understanding of the research problem. Transferability is the accuracy with which the research findings may be replicated in a different research setting (Lincoln & Guba, 1985). Qualitative researchers may demonstrate validity by ensuring the findings apply to other contexts (Yilmaz, 2013). To enhance transferability, I developed and used an interview protocol when engaging with participants during semistructured interviews.

I also provided a thick description of the research processes. I ensured that I provided an accurate and detailed description of the research setting, population and sample, data collection activities, and analysis techniques. This ensured that the research findings can be replicated following the described steps. Confirmability is the accuracy or the accurate representation of the participant's responses (Moser & Korstjens, 2018). In this research project, the concept of confirmability is crucial for ensuring the objectivity, accuracy, and integrity of the findings. To solicit in-depth data on the project phenomenon, probing questions were employed, and thorough transcription reviews were conducted to ensure accuracy of participant interview transcripts (Lemon & Hayes, 2020). Hennink and Kaiser (2022) emphasized that employing data saturation techniques aids in achieving credibility, transferability, and confirmability. Thus, adhering to rigorous data saturation practices during data collection enhances the reliability and validity of this project. reported that qualitative researchers use the concept of confirmability to measure their project's objectivity, accuracy, and integrity. For this project, I used probing questions to solicit in-depth data about the project phenomenon and reviewed the participant's interview transcripts for accuracy (Lemon & Hayes, 2020). Hennink and Kaiser (2022) reported that using data saturation during data saturation may help the researcher achieve credibility, transferability, and confirmability. Therefore, adhering to the concept of data saturation during data collection will help me achieve reliability and validity.

Transition and Summary

In this project, I explored why some UAS leaders lack successful strategies to hire operators with the qualifications needed to reduce costs associated with performance deficiencies. In this section, I stated the research problem, purpose, project ethics, and nature of the project. I also used this section to discuss the project's population, sampling, participants, data collection interviews, data organization, and analysis techniques. In Section 4, I discuss the research findings and the implications for social change, business practice, further research, and project conclusion.

Section 4: Findings and Conclusions

The purpose of this qualitative pragmatic inquiry was to identify and explore successful strategies used by some UAS leaders to hire operators with the qualifications needed to reduce the costs associated with performance deficiencies. This project's purpose was informed by the problem that some UAS leaders have higher training costs than other UAS leaders which can result in loss of competitive advantage. The problem that prompted this qualitative research is that some UAS leaders lack successful strategies to hire operators with the qualifications needed to reduce costs associated with performance deficiencies.

In this section, I will describe the findings and conclusions in this project. This will include a presentation of findings. The business contributions and recommendations for professional practice will also be described. The implications for social change will also be presented. The section will end with concluding statements.

Presentation of the Findings

The research question that guided this project was: What successful strategies do UAS leaders in the United States use to hire operators with the qualifications needed to reduce costs associated with performance deficiencies? To answer this question, interview data were collected from six business leaders who have successfully employed strategies to employ qualified UAS users. Table 1 below describes the participant demographic information.

Table 1

Participant Demographic Information

Participant	Gender	Age
P1	Male	60
P2	Female	59
P3	Male	45
P4	Female	39
P5	Female	32
P6	Male	36

To correlate the key themes with the theoretical framework and the reviewed literature, I employed reflexivity. Braun and Clarke (2022) stated that reflexivity allows qualitative researchers to determine final themes from the intersection of the researcher's subjective experiences and the constructs of the guiding theoretical framework. Reflexivity helped me generate and discuss fully developed themes that addressed the research problem and answered the research questions. Three overarching themes emerged from the interviews: qualifications and competence, reliability and quality assurance, and strategic recruitment practices. These themes are made up of smaller codes. Between three and six participants contributed to each theme.

Theme 1: Qualifications and Competence

A common theme that emerged from the interviews was the importance of hiring operators who possess the necessary qualifications and technical competence. Across the board, UAS leaders emphasized the value of hiring individuals who are not only licensed under FAA regulations but who also demonstrate sufficient knowledge, experience, and access to the proper equipment. The presence of these qualifications was seen as fundamental to ensuring job readiness and reducing the likelihood of performance deficiencies that could result in financial losses. This theme is grounded in the principles of the Human Capital Theory, which emphasizes the value of employee skills, education, and experience as assets that enhance organizational productivity (Becker, 1993). Participants consistently referenced the necessity of hiring licensed, well-trained operators – aligning with the idea that investment in human capital leads to better outcomes and cost savings by avoiding errors or rework. Table 2 presents information about this theme.

Table 2

Qualifications and Competence Theme and Contributing Codes

Code	Contributing Participant	Frequency
Hiring licensed and knowledgeable operators	P1	2
Operator qualifications and regulatory knowledge	P6	1
Requirement for license and personal equipment	P3	2
Hiring based on credentials and resources	P4	1

P1 shared, “I look for someone who has a license and has the knowledge and experience.” This underscores the necessity of baseline certification and experience for individuals entering the field. Similarly, P3 stated, “I look for someone who is licensed and has their own equipment.” P6 added that operators must “have the equipment, and know about the airspace...and understand the rules,” especially in proximity to restricted airspace such as airports. P4 reinforced this need, stating, “That person or crew needs to be licensed and have equipment.”

These insights support that qualifications and competence serve as gatekeeping criteria that help UAS leaders filter out underqualified candidates from the outset. The requirement for proper credentials ensures regulatory compliance, while experience and the possession of personal equipment signal that the operator is prepared to perform independently. These factors ultimately align with the research question by demonstrating that qualified operators are less likely to cause project delays, rework, or customer dissatisfaction— reducing costs associated with performance deficiencies.

These findings confirm prior research highlighting the importance of technical qualifications and credential validation in UAS hiring. Jardine and Givigi (2021) and Baron and Louis (2021) emphasized the need for rigorous standards when selecting operators. Similarly, Michailidis and Vouyioukas (2022) and Askerbekov et al. (2024) concluded that regulatory compliance and skill-matching are foundational to operational safety and efficiency. The participants’ emphasis on qualifications reinforces these studies and supports current best practices in specialized technical hiring.

Theme 2: Reliability and Quality Assurance

The second major theme concerned the need for reliability and assurance of product quality. UAS leaders consistently referenced the importance of hiring individuals who have a proven track record and consistently deliver high-quality products. Trust, consistency, and accountability emerged as key hiring criteria that leaders rely on to minimize the risk of errors and additional expenses. This theme reflects concepts from both human capital theory and RBV, where reliability and consistent performance are seen as internal capabilities that provide sustained competitive advantage (Barney, 1991). Leaders who repeatedly used the same operators based on prior performance demonstrate how accumulated trust and tacit knowledge can be valuable strategic resources. Table 3 presents information about this theme.

Table 3

Reliability and Quality Assurance Theme and Contributing Codes

Code	Contributing Participant	Frequency
Pay-for-performance strategy	P2	1
Customer satisfaction as a hiring metric	P5	1
Efficiency and reliability in hiring	P1, P3	3
Cost reduction through avoiding rework	P1, P6	4
Quick replacement of underperforming hires	P4	1

P2 explained, “They don’t get paid unless it’s a quality product,” highlighting a results-based approach to mitigating risk. P1 noted that when operators underperform, “I need to hire someone else to do the job again," which incurs further cost and time. P5 reinforced this point: "Success is when the drone pilot or operator gives me a quality product that meets or exceeds the customer's demand." Similarly, P4 asserted, "If they can't deliver what I'm needing, then, I'm on to someone else." P3 shared that they relied on "the same individual drone operators... who can deliver a quality product," indicating the value of long-term relationships with proven professionals.

This theme speaks directly to the research question by showing that UAS leaders implement performance-based standards and build relationships with consistent, high-performing operators to avoid rework and enhance service delivery. These strategies effectively reduce the likelihood of performance deficiencies, thus lowering costs and protecting client relationships. Participants' focus on known, reliable operators and performance-based accountability aligns with research by Powell (2023), who found that trust and consistency reduce oversight and rework costs. Tikhonov et al. (2023) and Clemens and Huffman (2024) echoed the cost-saving benefits of performance reliability in high-skill environments. The idea of paying for performance rather than time further supports outcomes-focused contracting models emerging in technical service industries. Therefore, this theme affirms key business strategies centered on quality control and operational accountability.

Theme 3: Strategic Recruitment Practices

UAS leaders also discussed the importance of employing strategic recruitment practices to locate and retain qualified operators. This theme centers on the practical approaches used to identify capable individuals, including the preference for local hires, deliberate and selective recruitment, and the reuse of proven talent. Leaders expressed that these strategies were key to finding the right personnel in a competitive and sometimes unpredictable labor market. This theme supports human capital theory's assertion that investment in the recruitment process—through partnerships, deliberate selection, or local hiring—enhances organizational capability. It also relates to strategic HRM principles that align workforce planning with business goals (Wright & McMahan, 1992). Table 4 presents information about this theme.

Table 4

Strategic Recruitment Practices Theme and Contributing Codes

Code	Contributing Participant	Frequency
Hiring local and flexible operators	P1	2
Time constraints in recruitment	P5	1
Deliberate and careful recruitment	P6	2

P1 emphasized, "I would try to hire a smaller, more local company or operator – they are usually more flexible." Similarly, P5 noted the challenge of finding qualified people in rural areas: "Finding the right drone pilot...takes time, as a business owner, I don't have a lot of time to search." P6 stated, "Recruiting takes time and energy – so, I spend a lot of time to find the right person," reflecting a careful and selective approach to hiring.

These recruitment practices reflect a desire to ensure operators are not only qualified but also a good fit logistically and culturally. The data from the interviews demonstrate that participants believe that by streamlining the hiring process through the use of trusted and local operators, UAS leaders can better control costs and ensure operational efficiency. These strategies align with the research question by illustrating how deliberate hiring approaches reduce risks associated with poor performance, ultimately lowering the costs that come with repeat work or dissatisfied customers.

In the literature review it was noted that there is growing interest in talent pipeline development, particularly via technical school partnerships and veteran hiring (Michaelides-Mateou, 2023; Wen et al., 2023). The participants' recruitment strategies, including local sourcing and careful vetting, reinforce these approaches. Studies by Kunde and Duncan (2024) and Savaş (2022) supported the idea that proactive recruitment reduces long-term inefficiencies. The findings validate these claims while acknowledging the trade-off between speed and precision in hiring.

Business Contributions and Recommendations for Professional Practice

The findings from this project offer applicable insights for the professional practice of business within the UAS industry. As UAS technologies become more widely adopted across sectors, hiring qualified operators has emerged as an operational concern. This project helps clarify how a focus on operator qualifications, reliability, and thoughtful recruitment may contribute to the effectiveness of hiring practices. While the findings are not intended to be generalized to all business contexts, they may offer useful reference points for organizations grappling with similar challenges.

The theme of qualifications and competence connects with prior studies that call for rigorous pre-hiring assessment and credential validation. Business leaders in this project emphasized the necessity for FAA licensing, airspace knowledge, and operator equipment readiness, echoing findings from Jardine and Givigi (2021) and Baron and Louis (2021), who highlighted the importance of matching candidate credentials with platform demands. These requirements appeared to serve as a baseline for operator selection, reflecting what the literature frames as foundational to safe and effective UAS operations.

Reliability and quality assurance were also emphasized by participants and reflect a concern present in existing research. Powell (2023) and Tikhonov et al. (2023) noted that consistency and trust in operator performance reduce costs related to oversight, rework, or customer dissatisfaction. Participants' emphasis on hiring known, consistent operators and holding them accountable to product quality aligns with those insights. While this approach may not guarantee cost reductions, it reflects a practical strategy for mitigating risk and maintaining client satisfaction.

Strategic recruitment practices, including hiring locally or working with a small pool of operators, appeared in participants' responses as a practical solution to logistical challenges and recruitment inefficiencies. These findings support observations from Wen et al. (2023) and Michaelides-Mateou (2023), who suggested that partnerships with technical schools or military transition programs can strengthen access to skilled operators. The participants in this project indicated that deliberate and careful hiring—though time-consuming—offered a more sustainable way to match candidates with organizational needs.

The relevance of these findings lies in their potential to inform business leaders who are navigating the operational challenges associated with hiring for technical and regulatory roles in UAS. Though limited in scope, the results suggest that attention to qualifications, performance reliability, and strategic recruitment may help organizations minimize inefficiencies tied to poor hiring outcomes. UAS leaders, aviation project managers, and others in adjacent fields may consider integrating similar approaches into their hiring workflows.

Dissemination of these findings may occur through UAS trade associations, FAA-sponsored training events, or workforce development workshops. Incorporating these strategies into onboarding documentation or internal training materials may also be useful for standardizing practices. While more research is needed to generalize these approaches, this project offers a starting point for conversations around improving hiring practices to reduce performance deficiencies in the UAS field.

Implications for Social Change

This project also carries potential implications for positive social change, particularly through its focus on equitable access to skilled employment and the improvement of operational standards within the UAS industry. By identifying effective hiring strategies that emphasize qualifications, reliability, and deliberate recruitment, UAS leaders may contribute to broader workforce development goals that promote the worth and capability of individuals seeking employment in a growing technological field (Carter & Greer, 2013).

Hiring practices that focus on competence and consistent performance not only serve operational goals but also support the professional development of individuals. As organizations implement structured hiring and training strategies, they create environments where individuals with the appropriate skills—regardless of background—are more likely to succeed. This can lead to more inclusive hiring practices, especially when recruitment efforts intentionally engage underrepresented populations through partnerships with community colleges, technical schools, or military veteran programs (Michaelides-Mateou, 2023; Wen et al., 2023).

At the community level, increasing access to well-paying and skill-based jobs in the UAS field may contribute to local economic growth, especially in rural or underserved areas where UAS applications in agriculture, surveying, and infrastructure monitoring are expanding (Mohsan et al., 2023). Strategic recruitment and workforce investment can support the development of regional talent pipelines, reinforcing both economic stability and community resilience (Attaran & Celik, 2023).

Organization leaders that adopt the practices identified in this project may also help set industry norms that prioritize operational safety, regulatory compliance, and workforce integrity. This reinforces institutional values aligned with public trust and accountability. When businesses function effectively and treat workforce development as a strategic priority, they promote cultures that value continuous learning, responsibility, and advancement—fostering a sense of purpose and dignity among workers (Herrington et al., 2024).

While the project does not seek to transfer its findings beyond the UAS industry, the emphasis on thoughtful hiring and workforce development aligns with broader social goals of increasing economic opportunity, enhancing professional identity, and supporting communities through skilled employment. The implementation of these practices, particularly in technical and emerging sectors, may ultimately contribute to social structures that support individual advancement and organizational responsibility in a rapidly evolving labor market (Cao & Hamori, 2020; A. Kristof-Brown et al., 2023).

Recommendations for Further Research

Although this project contributes to a growing understanding of hiring practices within the UAS industry, several opportunities for future research remain. Because the findings were drawn from a limited number of participants in leadership roles, future studies may benefit from expanding the sample to include perspectives from operators themselves. Understanding the experiences, motivations, and challenges faced by UAS operators could deepen insights into recruitment and retention dynamics and reveal opportunities for mutual alignment between business goals and workforce needs (Carter & Greer, 2013).

This project focused on qualitative interviews to generate rich, thematic data. Quantitative or mixed-methods approaches could further validate the identified themes or explore the statistical relationships between hiring practices and business outcomes such as cost, quality, and efficiency. Such data could strengthen the generalizability of recommendations and support the development of evidence-based hiring models (Cao & Hamori, 2020).

Cross-industry comparisons may also prove beneficial. While this project focused on UAS leaders in the United States, future research might examine hiring strategies in related fields such as autonomous systems, logistics, or advanced manufacturing. Comparative research could reveal which practices are industry-specific and which may be transferable across technical fields facing similar workforce challenges (Herrington et al., 2024).

Longitudinal research could offer further insight into how hiring strategies evolve over time and under different economic or regulatory conditions. As the UAS industry matures and policies shift, tracking changes in hiring behavior could help organizations remain adaptive and resilient. Research could also examine the long-term career trajectories of operators to assess whether certain hiring models promote retention, advancement, and satisfaction (A. Kristof-Brown et al., 2023).

Conclusion

This project explored the successful strategies used by UAS leaders in the United States to hire operators with the qualifications needed to reduce costs associated with performance deficiencies. Through semistructured interviews, three core themes emerged: the importance of operator qualifications and competence, the value of reliable and quality-assured performance, and the strategic approaches to recruitment adopted by UAS leaders. These findings were supported by and compared with the existing literature, which emphasized regulatory compliance, workforce dependability, and the need for focused, context-specific hiring practices.

The implications of these findings extend beyond individual organizations. When business leaders adopt thoughtful hiring strategies grounded in qualifications and proven performance, they can help foster industry standards, reduce inefficiencies, and improve client satisfaction. At the same time, such practices can promote access to meaningful employment opportunities, particularly when inclusive recruitment is prioritized. These practices hold the potential to promote positive organizational and social change by contributing to workforce development and operational excellence.

While the project is limited in its geographic and sample scope, it provides a foundation for continued research and discussion. Recommendations for future research include expanding the sample to include operator perspectives, exploring quantitative relationships between hiring and performance outcomes, and conducting cross-industry comparisons. These directions could help advance knowledge in this emerging field and support the development of equitable, effective, and adaptable hiring strategies in technical industries like UAS.

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Appendix: Interview Protocol

Primary Business Research Phenomenon Under Project and Overarching Research Question

The topic for my research project is *Successful Hiring Strategies of Unmanned Aerial System Leaders in the United States.* The overarching research question is What successful strategies do unmanned aerial system leaders in the United States use to hire operators with the qualifications needed to reduce costs associate with performance deficiencies?

Primary Research Goal to Achieve from This Interview

The purpose of this interview is to explore strategies that were used to sustain the operations of your business enterprise beyond 3 years.

Introduction

1. Thank you for participating in this project. Your participation in this educational project on the survivability of micro, small, and medium enterprises (MSMEs) is important. It will help better understand how to support MSMEs, which are indispensable to national economies, in implementing appropriate strategies to sustain their operations.
2. I will be interviewing you and several other owner-managers of MSMEs. So, I hope to have adequate information for this research project. Before we get into the meat of things, I would like to go over just a few things with you.

3. First, you should know that your participation is totally voluntary. So, if I ask a question that you don't want to answer, or if you need to stop the interview at any time, just let me know.
4. Also, with your permission, I will be audiotaping the interview and taking some notes. Later, I will provide you with a transcript of the audiotape along with my notes so you can look at them, review them, and make any corrections that you see need to be made, making sure that we captured what you needed to say accurately.
5. This project may be shared with faculty members and colleague students and in sharing, there will be no mention of your names. Even if I use direct quotes, I will use pseudo names. It might also be used in conferences and professional meetings.
6. I will keep your shared information strictly confidential and safely stored for 5 years after my project's completion date and then destroy them.
7. Do you have any questions?
8. As you know, we have set about 60 - 90 minutes for this interview. Does that seem to be ok for you? We won't go beyond that time unless you wish to do so.
9. Is audiotaping still fine?
10. Ready to go?
11. Let's get started then!

Initial Probe Questions

1. Please state your name and title.
2. What is your current scope of responsibility within the organization?
3. How would you describe your tenure with the organization?

4. How would you describe the organizational experience of your company over the past several years?

Targeted Interview Questions

While asking these questions, I will watch for nonverbal cues, paraphrase as needed, and follow up on responses with probing questions to obtain more depth.

1. Over the years of your experience, what successful strategies have you used to hire qualified operators?

2. How did you measure the success of the strategies you used to hire qualified operators?

3. Did your strategies result in the reduction of costs associated with performance deficiencies?

4. How do you measure if your strategies resulted in reducing the costs associated with performance deficiencies?

5. What other information would you like to share regarding the successful strategies you used to reduce the costs associated with performance deficiencies that we have not already discussed?”

Targeted Follow-up Questions

1. What specific strategies have been most effective in hiring qualified operators within your organization over the years?
2. To what extent have the implemented hiring strategies contributed to reducing costs associated with performance deficiencies?
3. What methods or tools do you use to quantify the impact of hiring strategies on cost reductions related to performance deficiencies?

4. What metrics or benchmarks have you used to evaluate the success of the strategies employed for hiring qualified operators?

Targeted Wrap-up Question

Is there anything else you feel can be important to this project?

Closing

1. Thank you very much for your time, The information you provided is valuable and will help me successfully complete my project.
2. I would like to schedule a follow-up interview with you to review and discuss the audiotape transcript and my notes to ensure I interpreted your responses accurately. Would xx date and xx time be okay for you?
3. I will provide you with the transcript and notes at least three days in advance to allow you sufficient time to review.
4. Again, thank you very much for participating in my research project.