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An Exploratory Study of Pilot Training and Recruitment in Europe

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Abstract

Pilot training and recruitment is of fundamental importance for the aviation industry. Yet, a number of Commercial Pilot's License (CPL) applicants trained by Approved Training Organizations (ATOs) fail their airline assessments. To provide some clarity on why this is happening, we conducted in-depth interviews with twelve industry professionals and a detailed documentary analysis was undertaken. We found that the main reasons are: (1) Lack of preparation or technical knowledge; (2) Poor communication skills; and (3) Poor display of teamwork and leadership. The paper suggests that regulation should be implemented for ATO's to use screening processes on potential students to increase quality or Airline Pilot Standard Multi Crew-Cooperation (APS MCC) system, as an additional training system on top of what is being taught in ATOs. Regulations should further be linked with regular audits in place for smaller airlines to increase the effectiveness of their pilot assessments and recruitment processes in order to increase safety. Areas of further research as also identified.

Keywords

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1. Introduction

There has been extensive research into the global pilot shortage that was seriously affecting European airlines and the aviation industry as a whole [2, 7, 10]. There are many reasons for the pilot shortage including lack of financial resources to cover training costs for potential new trainees due to the high prices; high percentage of pilot attrition (retirement or death of captains); increased traffic growth; very difficult and strict entry assessments in both the medical and aptitude tests (for safety reasons); and many more.

Considering all the barriers in place already, which limit the supply of pilots, it is very worrying that many qualified pilots cannot get a job with an airline. Airline assessments throughout Europe are typically quite similar to each other in the steps, which are required to be passed by an interviewee pilot. These include passing Aptitude Tests such as the WOMBAT, or COMPASS [36], or one of the many other available on the market examinations [4, 18]. Then the pilots have to pass an Individual or Panel Interview, Group Exercises, Psychometric Evaluation or Personality Questionnaires, and finally the Aircraft Simulator. However, there is no official standard selection process for airline pilots' assessments. At this stage, the pilots would have already passed their entire 12-24 month training through an Approved Training Organization (ATO), also known as "flight schools", which includes 650 hours of theoretical study and 210 flight hours granting them a Frozen Air Transport Pilot License (ATPL, Frozen ATPL is given in Europe until the pilot has flown commercially for 1,500 hours at which point they receive their full ATPL

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Certificate) at the end. Otherwise, they could have chosen the Multi-Crew Pilot License (MPL) route which is the newest form of pilot training focusing on getting the pilot trained for a specific type of aircraft introduced by the International Civil Aviation Organisation (ICAO) in 2006. The MPL allows holders to exercise the privileges of the Frozen ATPL, but is limited to a certain aircraft type, certified for multi-pilot operation only. There is a lot of debate which way is better amongst aviation experts as the new MPL route is a lot more expensive considering the increase in time spent in the aircraft simulator though it is argued that it gives pilots a lot more hands-on knowledge to the specific aircraft they are being trained on [35].

Pilots also have a choice of going through their training in a modular or integrated fashion, meaning they could have it broken down and done part by part to be completed at their discretion and time or have it done in one full-time integrated course, known as Ab-Initio Training (from zero to pilot). After that, whether or not they took the ATPL or MPL route, they would have then completed their Type Rating Certification which takes up to another 2 months to finish. This means that before they sit their airline assessments, most pilots would have had to undergo roughly 2 years of training, costing up to €120,000 [11, 20], yet somehow, half of all those pilots fail some part of their final airline assessments. Having such a large percentage of the pilots who manage to not only overcome the financial barrier of entry, but also pass any preliminary assessments in the ATOs and the medical exams, to then fail to pass airline assessments securing them work in Europe is a serious problem that must be addressed.

The aim of this paper is to investigate why pilots fail in European commercial airline assessments and interviews, even though they have successfully passed training through official ATOs. More specifically this paper will:

1. Outline the current standards to which pilots are trained in ATOs.
2. Discover the minimum requirements for cadet pilot entries into Commercial Airlines.
3. Identify the key reasons for which 50% of pilots fail some airline assessments.
4. Give recommendations on how to improve the current pilot educational system.

The paper contributes to the body of knowledge by conducting research in an area significantly under-researched, but of importance to the airline industry especially considering the impact of COVID-19 on labour negotiation power.

The remainder of the paper is organized as follows. Section 2 begins by elaborating on the literature review associated with the pilot training. The methodology followed is outlined in Section 3. Section 4 outlines the results while Section 5 concludes the paper by providing some recommendations.

2. Literature Review

Research on the topic of Pilot Training is scarce and mainly led by practitioners rather than academics [19]. One source on the topic of Pilot Training is Captain Andy O'Shea, Chairman at European Aviation Safety Agency (EASA) Aircrew Training Policy Group (ATPG). He reported that only 48% of roughly 1000 candidates were found successful in the airline assessments of Ryanair. The analysis of huge amounts of data for the Competency-Based Training and Assessment element allowed the identification of competency weaknesses and planning of a course that addressed the weaknesses [26]. A potential solution to this is the enhancement of Multi Crew-Cooperation MCC to a standard [31]. This led to the implementation of the Airline Pilot Standard Multi Crew Cooperation (APS MCC) in 2016 [16]. This consequently contributed to an increased number of successful cadet applicants.

Recognizing the main challenges and weaknesses of pilots in these airline assessments, such as "Communication; Leadership and Teamwork; Problem Solving and Decision Making; and Workload Management" [31] meant that now it was known where the focus should be directed at.

Burns also discussed the issues newly trained pilots face when applying for jobs, as well as advice on the selection of pilot academies for budding pilots [8]. The Department of Transportation in Croatia published a study on the challenges sometimes found in training regiments within ATOs applying Root-Cause Analysis [3]. Some of the issues found were with inaccurate documentation due to some of the students not filling-in their required documents post-flight in time and either having to go back and fill them in from memory or having to input rough estimates. This resulted in under-prepared pilots once their training was complete and an extra step in the process to be implemented for pilot instructors to check the students' documentation was recommended.

Additionally on the issues of pilot training, there has been coverage by news organizations and specialized aviation societies. These have linked the challenges of pilot training and recruitment to the global pilot shortage, manufacturing constraints, and to the possible solutions available, including discussions on the introduction of the APS MCC [11].

In 2017, of the roughly 70,000 commercial airline pilots active in the European region [9], Irish Air Line Pilots Association (IALPA) estimates there are about 6,000 unemployed pilots in Europe today equal to approximately 8% unemployment [21]. Although 50% of new pilots fail certain airline assessments, they eventually find employment.

Multiple other studies have dealt with topics related to

pilot errors, variance in pilot performance, pilots failing medical examinations, and flight safety once pilots are already within the airline [9, 27, 28]. Although these do not typically relate to challenges with pilot training and recruitment, a speculation is made that each of these would be intrinsically linked to how the pilots were trained before entering the airline and how they have upheld or improved their standards, though no concrete link can be made without a much larger study conducted. This will be examined in more detail in *Section* 5.

Current regulations by EASA on Aircrew Regulation and Training are set out and met by all ATOs before they can be granted with a license to be an ATO [15]. For the 50% failure rate at airline assessments to be what it is, this means that the minimum standards set out in EASA's regulation are not the same as some airline standards. Nevertheless, current safety standards in the aviation industry are indeed at an all-time high with the number of accidents resulting in fatalities being in a downward trend for several years now [24]. However, it is very much worth noting that the larger airlines with very strict airline assessments for flight crew have considerably better safety scores than smaller airlines. Not every airline's data on airline assessment failure rate is accessible, but most of the top airlines use similar if not the same type of assessments [4, 18]. This shows a probable correlation between those who have more lax assessments and a significant increase in filed safety reports – at least from the reports filed in the following Air Crash Investigation Units for 2019: AAIU [1], BEA [5], BFU [6], and DSB [14]. However, for causality to be confirmed, a much larger empirical study would need to be performed.

3. Research Methodology

Document analysis is a method commonly used in aviation [25]. For this specific topic, lack of statistics, record keeping, data protection and confidentiality imposed major difficulties. One of the key interviewees – Andy O'Shea- provided some data for Ryanair in this practitioner paper "The Challenges of Pilot Supply" that are presented in Section 4.

Due to the complexity of the topic, interviews with key experts were conducted to provide empirical evidence. The interview is a widely used research method in aviation that has been used in safety [25, 30], business and complex issues [33, 17].

Table 1 lists the interviewees of this study. When it came to the sample size, twelve seemed like a reasonable number providing for multiple people from each position to be interviewed to try and remove subjectivity even further by not relying anywhere on a single source (e.g. Three Heads of Training; Two Pilot Trainees, etc.) Due to the overwhelming benefits of face-to-face interviews, they were the predominant type used; however, due to limitations in availability, or due to several of the interviewees being in different countries, phone and video call methods also had to be used.

Finally, ethical guidelines and regulations were strictly followed. Giving everyone the choice to remain anonymous also ensured that fear of answering honestly was removed [29]. Only one interviewee chose to avail of this option.

Table 1: List of interviewees

Name	Title	Type
Karl O'Neill	Captain in Aer Lingus	Phone
Roy Forrest	Trainee at Atlantic Flight Training Academy	Phone
Andy O'Shea	Chairman of Aircrew Training Policy Group (ATPG) Ex-Head of Training and Deputy Chief Pilot of Ryanair	Face-to-Face
Margie Burns	CEO of Aviation Selection Consultants	Phone
Michael Ryan	Head of Training of BAA	Phone
Petter Hörnfeldt	Base Type Rating Examiner at Mentour 360 SL	Videocall
Darragh Owens	Head of Training at National Flight Centre	Phone
Douchan Stanulov	COO, Sofia Flight Training Academy	Face-to-Face
Stefan Stefanov	Head of Training, Sofia Flight Training Academy	Face-to-Face
Slav Adanov	Trainee at Sofia Lesnovo Academy	Face-to-Face
Anonymous	Captain at a Low-Cost Airline	Face-to-Face
Krasimir Kucarovy	Type Rating Instructor Examiner at Wizz Air	Face-to-Face

4. Analysis & Discussion

As mentioned in the previous sections, the fact that challenges with pilot training and recruitment do exist is irrefutable. The change in pass rates after the adoption of the APS MCC alone proves it to be true.

The standards to which pilots are trained in ATOs are set by EASA and ICAO regulations. ICAO regulation on the topic of training can be found in Annex 1 on Personnel Licensing [22]. This can mainly be split into two areas: Standards and Recommended Practices (SARPs) which the Annex above is, and Doc 9868 "Procedures for Air Navigation Services – Training" (PANS-TRG) which is not enforced, but acts as a recommendation, which relates to the responsibilities and guidelines in place for approved training organizations [23]. The main issue faced here is that many of the proposals in the PANS-TRG are in fact guidelines that ATOs can decide whether they are to be implemented and to what extent. Furthermore, since PANS-TRG are complementary to the SARPs and not mandatory, there is understandably a difference in the quality of ATOs with those who implement the extra steps, albeit probably cost more,

and those who do not. Much like the choice of implementing the APS MCC system or not from the side of ATOs.

Reviewing application processes and consulting the interviewees, we found that the average or typical standards for airline assessments of the major airlines in Europe, such as Aer Lingus, Air France, EasyJet, Ryanair, Wizz Air, etc. are typically quite similar and follow the same recommendations from ICAO and EASA. Most airlines have listed as acceptable criteria the same minimums that ATOs are subjected to from these regulations. Yet 50% of the applicants to these airlines coming out of ATOs supposedly fail these exact assessments. This leads to the very important question of whether or not the minimum training required by regulation is even being met by some of these ATOs.

Interviewees Adanov and Kucarov stated that in some ATOs students would often not be tracked for the number of hours flown. Not all ATOs possessed GPS tracking software in their aircraft to monitor student flights and very few instructors verify the information students wrote down in their logbooks going back to the issues signalled by the Croatian Ministry of transport [3]. Furthermore, the approach given to the theoretical knowledge was looked at from the perspective of getting past it as quickly as possible as the evident culture at some ATOs seems to look at just passing the exam and then forgetting all the material covered until then soon after as confirmed by interviewees Adanov, Owens and Kucarov. Owens stated that "A lot of students come in and say "oh I will get the theory out of the way" and a lot of (ATO) courses are structured to re-enforce that message". The other factor leading to poor training from ATOs relates to the student-ATO relationship. O'Neill in his interview stated that he is concerned that the student pilots are resistant to getting honest feedback during their training and the ATO's receive pressure to treat them as customers that need to be satisfied.

The issue here is finding out if this is down to regulatory standards being too low; airline standards being too high; or if ATOs are failing to prepare students for what is expected of them; or if it is simply down to the students. Stating that students fail simply because in any exam there is a failure rate and it so happens that the one to become a pilot is very high seems to dismiss any possible underlying issue. Although there always are additional factors including performance in exam situations, these assessments are for pilots who are supposed to, if successful, work in very stressful situations where there may be moments of limited time to think and react to ongoing situations.

According to the interviewees, the main reasons for the 50% failure rate at the airline assessments were: lack of preparation or technical knowledge; poor communication skills; or poor display of teamwork and leadership. The first of these can be ameliorated by ATOs focusing on teaching the cadets only the theoretical knowledge and how it can be applied in their job as flight crew, and thus convert it to working and long-term memory according to Cowan [13].

Table 2. Comparison of ATO and Airline Minimum Requirement

	ATO Min. Training Reqs	**Aer Lingus Reqs**	**Air France Reqs**	**easyJet Reqs**	**Ryanair Reqs**	**Wizz Air Reqs**
Theoretical Knowledge	14 ATPL exams for EASA CPL	EASA CPL / Frozen ATPL	EASA CPL / Frozen ATPL	EASA CPL / Frozen ATPL	EASA CPL / Frozen ATPL	EASA CPL / Frozen ATPL
Language Proficiency	English Operational Level (Level 4)	English Operational Level (Level 4)	Fluency in French & English Ops. Level (Level 4)	English Operational Level (Level 4)	English Operational Level (Level 4)	English Operational Level (Level 4)
Experience	200hrs total|100hrs as Pilot-in-Command	M	200hrs	1000hrs|500hrs on a/c over 10T MTOW	100hrs as Pilot-in-Command	200hrs
Medical Examination	Class 1	Class 1	Class 1	Class 1	Class 1	Class 1
Validity to work in EU	M	Required	Required	Required	Required	Required
APS MCC-Training	Not required	M	M	M	Preferred	M
MCC Training Completed	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	If applicable
UPRT Certificate	Advanced UPRT mandatory since 20/12/2019	Advanced UPRT mandatory since 20/12/2019	Advanced UPRT mandatory since 20/12/2019	Advanced UPRT mandatory since 20/12/2019	Advanced UPRT mandatory since 20/12/2019	Advanced UPRT mandatory since 20/12/2019
Flight School Report	Mandatory	M	M	M	Mandatory	M
References	Not required	Mandatory	M	M	M	M
Vetting Procedure	Not required	Mandatory	M	M	M	Mandatory
Key Competencies	Not required	Essential Criteria to match	M	M	M	M
Age Limit	17yo to obtain PPL, 18 for CPL, 21 for ATPL	M	None	M	Not over 65	M

The database (of the ATPL exam) is of 19,000-20,000 questions. Memorizing those questions without a comprehensive understanding of the content is possible and poses a risk to the successful training of pilots according to Adonov. All interviewees confirmed that airline assessments are not too difficult and do not differ significantly from the syllabus of ATOs. Table 2 compares the ATO and Airline Minimum Requirements. The interviewees suggest that the difficulties seem to be in applying or even remembering the theory.

A very big issue seems to be the transfer from theory to practice, but when the exams only focus on rote-learning it is difficult to encourage cadets to gain a comprehensive understanding of concepts when it is a lot easier to just learn them by heart. The second reason - 'Communication skills' range from the level of English proficiency by the cadet to the actual way of communicating (tonality, clarity, etc.). This can be at improved by ATOs by possibly providing additional lessons for students, at least concerning Aviation Operational English on top of the typical modules or outsourcing that to competent language schools. Finally, core competencies are also important. Core competencies can be taught to some extent, but they are at the end of the day something people either have or do not [8].

The APS MCC system seems to cover almost all points from the main reasons mentioned above. Considering it has managed to improve initial approval figures up by 25% on the pass rates, it should be considered by ATOs as an addition to the syllabus [31]. This seems to benefit most parties since ATOs would not have to increase screening processes and pre-training, which could have resulted in a lower amount of students annually, but still, they would be able to guarantee higher quality cadets, who have a seemingly higher success rate for passing airline assessments.

Additionally, almost all interviewees believe that there is a significant correlation between the fees an ATO charges and the quality of training with the higher prices ATOs offer a better training. Interviewees Hornfeldt and Ryan suggest that low fees pose challenges to ATOs in securing quality instructors and aircraft, but attractive training material and facilities. The anonymous interviewee believes that price is less correlated to quality since price depends on the market's economic situation and a country in Eastern Europe with a living wage being a fraction of that of some western countries cannot be expected to charge the same fee with Western ATOs (approximately €120,000). The interviewees argue that between ATOs in the higher priced bracket the difference in quality is actually very little and that reputation and ATO-airline connections explain the small price differences.

According to interviews conducted with Adanov, Anonymous and Forrest, the top factors influencing the choice of the pilot academy for student-pilots are: a) Price, b) Location and c) Quality of training. Of course, there are exceptions to this rule where 'Quality' is actually the top deciding factor, but for the majority of cadets 'Price' is indeed the biggest element. This typically splits the price-sensitive students with those who seek reputation and best quality.

Those who are price-sensitive who seem to be the majority, and are self-sponsored, need to consider additional costs (e.g. relocation) according to interviewee Ryan and therefore their choices of ATOs are even more limited to those with no financial constraints. The socio-economic background of the potential pilots is posing restrictions for their access to quality training and many times attend 'cheaper, but of lower quality' ATOs. Due to this, ATOs that are of lower or barely-acceptable quality are still getting students to train with them and they have no incentives to improve the quality of service. Many times, they promote high employability rates capitalising in the strong industry trend –at least prior to COVID-19. However, the quality of graduating pilots is questionable.

If ATO minimum assessments for training standards and airline assessments supposedly do not differ significantly, then some of the 50% of pilots who fail should not be able to become pilots at all, or at least until they either redo parts of their training or improve certain skillsets. Yet, with unemployment of only 8% (Note this is all before COVID-19 became a global pandemic. Since then, numbers may differ greatly), it means that 42% of students, who fail, still manage to get jobs in other airlines. However, a presumption that must be made is that not all 50% of those pilots who fail are completely inadequate. Some of them are failing due to unfortunate circumstances on the day. Others could have still been properly trained, but simply did not 'make the cut' just barely and found work elsewhere while still being of very sound quality. As the anonymous interviewee said "…there are some people who simply may have performed poorly on the day of the assessment but may actually end up being very good pilots. There are also cadets who are indeed poorly trained and poorly prepared but of course it depends on what kind of additional training they would receive from the airline that then hires them".

Furthermore, there are other reasons for pilot unemployment too, aside from poor pilot qualification as it would be naïve to believe those assumptions account for all 42% and some of them even may go back and revise or retrain to pass again or may simply be taken in all the same to be further trained by the airlines. This latter method was in-depth discussed with Stanulov when looking into the Lufthansa Technik's approach to the global shortage of Technical Staff such as engineers. Stanulov said, "They dropped the standards for recruitment due to this high demand and simply decided to say "okay, we'll just train them more ourselves then". He suggests that this is a way for airlines to deal with the global pilot shortage too, encouraging them to engage in 'uptraining' even lower quality pilots to reach their own

demand. All of this means that there are possibly airlines out there admitting pilots of lower standard than should be acceptable, and even if all 50% who fail aren't a concern, there still seems to be a considerable amount of them who most likely are worth raising worry. Especially considering that, multiple interviewees believe that the cadet flight logbooks are being forged with false hours. Kucarov believes that out of these 200 required hours, about 30% of the hours have not been flown by some pilots.

Kelly and Efthymiou stated that Pilot error has been attributed as the cause of many aviation accidents in the past [25]. From statistics available from Air Accident Investigation Units (AAIUs), in some of the major countries in Europe, the majority of accident reports are linked to 'smaller airlines' probably with less strict airline assessments for pilots. More accidents appeared to have occurred at least in 2019 by 'smaller airlines; but for a deeper understanding, an analysis into the causality of these accidents compared to the standards of pilot recruitment standards in the affected airlines would be more useful.

In a case from 2019, an accident report from the Safety Investigation Authority of Finland (SIAF) of flight MTL650P stated that "The airline had not completely complied with its own safety management system. Oversight authorities do not always detect the difference between the safety management that operators promise to follow and their real-world practices" [34]. This poses serious threats to the industry especially if this is found to be applicable to pilot recruitment by 'smaller airlines' where they aren't forced to comply strictly to the internal safety management system – the effects of which can become exponential if the pilots aren't of an acceptably high standard too as stated by interviewee Kucarov.

All of this leads back to some extent to the Interviewee Stanulov suggests that suggest only when a problem or an accident actually occurs do people go back to evaluate the training of these pilots and often it is far too late.

In an industry supposedly governed by safety, the lack of efficient and effective regulation imposed on ATOs to screen potential future pilots or train them to a more appropriate airline standard is a serious flaw. Furthermore, 'smaller airlines' should invest more heavily in pilot screening as well, though issues arise with this too as the predicted future pilot shortage does pressure these airlines to accept any candidates that apply more often than not. According to Stefanov some airlines' pilot recruitment process lacks thorough assessments and requires only the provision of documentation.

5. Conclusions & Recommendations

This paper established that the minimum standards set by regulatory bodies like EASA and ICAO for ATO's to achieve were of sufficiently high standards as they matched the minimum requirements for some of the top European airlines for cadet pilots. This meant that the reasoning behind the 50% failure rate of some cadet pilots of airline assessments in these very same airlines had to be something else. Some of the key reasons for failure were established to be Insufficient Technical Knowledge and Preparation; Poor Communication Skills; Poor Teamwork or Lack of Leadership. This paper determined that the main way of improving each of these aspects either relied on the students themselves or on the ATOs. Another possibility for the failure rates was do with poor regulation over how strictly the monitoring of students in ATOs was undertaken. Though minimum requirements have been set, implementation and constant application is never a guarantee, especially in places where profits may be prioritised. Moreover, this paper reviewed the possibility that the industry's safety standards on which it relies so heavily may be affected by inadequate training of pilots. This further highlights the necessity for strict airline assessments and their importance in keeping safety standards in the industry at an all-time high.

The responsibility for fixing the issue lies with ATOs and regulators. As stated by multiple interviewees, cooperation across the entire industry would be best for increasing safety, which in itself is no easy task. Increased regulation from ICAO and EASA is highly recommended pushing for stricter admittance and pre-screening protocols for new cadets to ATOs. EASA regulations and guidelines are not as strict for pilot training, as airline standards require for recruitments since they are the final entity in the chain responsible for the safety of people.

Further training in the form of the APS MCC system to be added by more ATOs is also necessary. Regular audits to ensure the existence, and boost the effectiveness, of their pilot assessments and recruitment processes in order to increase safety are also needed. The introduction of mandatory pre-screening at all ATO's as in an industry governed by safety values should be prioritised over the short-term business interests. Finally, the integration of the APS MCC system in the training syllabus of ATO's or making it a mandatory course for pilots to ensure they are capable of working in an airline environment to the airline standard can have a significant impact on effective training and success of pilots in assessments.

A further research on the factors that affect pilot performance in airline assessments as well as an empirical study on safety implications of pilots receiving certification from ATO's while being possibly unprepared is recommended. Moreover, pilot retention is another important area that remains under researched. The attraction, retention and promotion of female pilots should also be investigated. Finally, the impact of COVID-19 on pilots negotiating power and the business sustainability of ATOs need to be researched.

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