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How can a regional airline attract a new hire pilot to work for their company? This question is being asked more frequently now that qualified pilots are scarce. The aviation industry cycles between times of disparity and times of prosperity. In periods of disparity, entry-level pilots seeking work with a company may not have a job offer for years on end, while in times of prosperity, new pilots have the option to choose which airline they would like to work for. Once given the option to choose, it is often difficult to predict how applicants will make their decision on which company to work with. Given the cyclical nature of regional airline pilot hiring, little formal research has been conducted on determining how job applicants choose a particular airline to work for. The present research merges motivational research with pilot hiring research to provide insight into how newly qualified pilots choose their future employer. What follows is a discussion of the relevant motivational and pilot hiring research to present the basis of the present study.

Challenges to Airline Pilot Hiring

Currently, the regional airline industry is suffering from a shortage of pilots. This shortage is expected to grow to a 35,000 pilot shortfall by the end of 2035 (Higgins et al., 2013). This has created a very competitive environment for regional airlines to acquire new pilots. In addition to the short supply of qualified pilots, the Federal Aviation Administration (FAA) has increased the minimum requirements for a pilot to be qualified to work as a regional airline pilot (FAA, 2013) as a result of Public Law 111-216 which was passed by Congress on August 1, 2010. A pilot must now possess an Airline Transport Pilot (ATP) certificate to operate as a crewmember of an airliner carrying passengers. An ATP certificate requires a minimum of 1,500 hours of flight experience in comparison to the 250 hours needed for a Commercial Pilot certificate which was the minimum standard before the passing of Public Law 111-216. Despite reductions to the 1,500-hour requirement allowed for pilots who graduate from a military flight program or an accredited aviation degree program, this climate has made it difficult for regional airlines to attract qualified pilot candidates.

Regional airlines are using several means to attract pilot candidates to their company (Airline Pilots Central, 2016). They can offer pay incentives (one-time signing bonuses, reoccurring annual bonuses, or higher hourly pay rates), pathway programs that connect aviation degree-seeking students with a regional or major airline while they are in their sophomore or junior year of school, or favorable working agreements, such as more days off each month, minimum pay guarantees, or better benefit packages. Additionally, internal opportunities within the company can appeal to qualified pilot candidates, such as quick advancement opportunities,

favorable crew bases located in areas that are cheap to live, new aircraft, and a positive work culture. Finally, some regional airlines provide the opportunity for their pilots to ‘flow’ through the regional airline on to a pilot position with a major airline after reaching a certain tenure with the company. These flow programs are enticing to some pilots as they can achieve their ultimate career goal of being a pilot for a major airline without having to repeat the application and interview process.

Regarding pilot candidates, someone who is seeking a career as an airline pilot will typically follow one of three pathways in order to meet the qualifications: 1) complete a military pilot training program, 2) complete an aviation degree program from an accredited university, or 3) attain their pilot certification from an informal pilot training program outside of the university system. Each of these programs yields slightly different candidates and have different minimum qualifications for becoming a regional airline pilot. The present research focuses on graduates of aviation degree programs, a group that makes up approximately 51% of pilots hired at regional airlines (Bjerke et al., 2016).

Due to the increased demand for regional airline pilots and the small pool of qualified candidates, those pilots who meet the minimum qualifications from all three pathways often have the opportunity to choose their future employer. From the pilot candidate’s point of view, this can create a challenge in determining the regional airline that aligns with their career goals. The present research attempted to bring clarity to some of these difficulties by surveying recent graduates from a well-recognized aviation degree program in the United States. Specifically, this research sought to identify what motivated aviation degree-seeking students and recent graduates to complete their degree program, and how those motivations influenced their choice of a regional airline to work for. The impetus behind this research is two-fold: first and foremost, to help pilot candidates make a more informed decision on where to work after they meet minimum qualifications, and second to inform regional airlines on the motivation styles of aviation degree program graduates and how these motivation styles can be used to attract pilot candidates.

This research is guided by three primary research questions: 1) what motivation style is most common among aviation degree program students and graduates, 2) what is an aviation degree graduate’s most common reason for choosing a particular regional airline, and 3) are there significant correlations between the motivation style of an aviation degree graduate and their reason for selecting a particular regional airline.

Theoretical Framework on Motivation

In reviewing the literature relating to student motivation, there is a significant body of research that can be used to help better understand the motivation of degree-seeking aviation students and graduates. Self-Determination Theory (SDT) is a theoretical framework relating to motivation that has yet to be applied in the study of aviation student's and recent graduate's aspirations. In self-determination theory, Ryan and Deci, (2000a) make a distinction between different types of motivation, breaking motivation into three categories: intrinsic motivation, extrinsic motivation (containing four subsets), and amotivation. Ryan and Deci (2000a) proposed a continuum of motivation types along with their applicable loci of causality and regulatory processes. A student who is intrinsically motivated is one who completes an activity entirely for the satisfaction of doing so rather than some external consequence. An amotivated student is on the opposite end of the motivation spectrum and is one who does not value a particular activity. Within the extrinsic motivation construct, there are three categories: external, introjected and identified. The externally motivated student does an activity in order to attain an external reward, whereas the introjected student completes an activity in order to avoid feelings of guilt or anxiety. Finally, the extrinsic-identified motivation type is one in which a student does an activity because it is something that supports their personal values or desires. The integrated motivation construct is also part of the extrinsic motivation category and shares many similarities with the extrinsic-identified and intrinsic categories, however; integrated students complete an activity more based upon the "instrumental value of completing a task" (Ryan & Deci, 2000b, p. 60). It is important to note that this theory is heavily applied towards student engagement and learning outcomes, but hasn't been directed at measuring current aviation students and graduates of aviation programs motivation.

In attempting to determine why an aviation graduate would choose to work for a particular airline, it is useful to understand how they are motivated. Aviation students could be pursuing an aviation degree for a variety of reasons: a lifelong passion for flying (intrinsic motivation), to attain a high paying position as an airline pilot (extrinsic-external motivation), to travel (extrinsic-introjected motivation), to have the prestige associated with a position as an airline pilot (extrinsic-identified motivation), or they could simply be trying to appease their parents who have found career success in the aviation industry (amotivation). How students are motivated has an impact on the choices they make. It is believed that the theoretical framework of SDT can be applied to determine how aviation students and graduates are motivated. When these motivations are compared with the participants declared reasons for choosing a particular regional, it may be

possible to gain insight into the reasoning behind a graduate's choice of regional airline.

Theoretical Framework of Person-Organization Fit

There is no existing literature pertaining specifically to motivation and airline pilot job-seekers, but a considerable amount of empirical research has been conducted in other disciplines. This body of research can be used to guide the research of airline pilot new hires.

Person-organization (PO) fit, the compatibility of an employer with their place of employment (Kristof, 1996), is an important consideration when researching the job application and recruitment process. Job seekers are looking for a workplace that fits with their values or supports their goals. Swider, Zimmerman, and Barrick (2015) found that these assessments begin from the applicant's first contact with the company (through recruitment documentation or websites) and continue through the entire hiring process. Swider et al. (2015, p.888) found that applicants undergo a continuous evaluation of how well an organization fits their values as they continue through the recruitment process.

The PO fit discussion must also include specific research on the millennial generation who is currently entering the job market. Millennials have different career expectations and priorities while "placing more importance on the individualistic aspects of a job" (Ng, Schweitzer, & Lyons, 2010, p. 281). Cho, Park, and Ordonez (2013) found "significant relationship with a millennials value of social media, their attitudes toward different social media policies, and their job-seeking patterns" (p. 798). The present study sought to measure regional airline applicant considerations when trying to determine PO fit at a regional airline.

Method

Procedure and Participants

The participants recruited for this study were students and graduates of an aviation degree program in the United States. Most participants had graduated within the preceding two years while a few participants were current aviation students completing their final semester of the aviation degree program. Survey participation was entirely voluntary. An online survey (administered through Qualtrics) was used to conduct this research. Each participant confirmed their willingness to participate before initiating the survey. The survey was delivered to 256 participants who were given a little over two weeks to complete.

After two weeks, the final pool of participants included 134 (17 female) ranging from 20 to 38 years ($M = 25.51$; $SD = 3.17$). The distribution of male to female respondents is indicative of the aviation industry as a whole, which has typically been a male-dominated industry. Regarding the race of participants, 118 were white. This distribution is typical of the aviation program as a whole and is also reflective of the disparity between white and non-white pilots in the airline industry. The total flight hours of participants ranged from 222 to 4,000 ($M = 1570.48$; $SD = 682.25$). Participants had far more consistent levels of dual instruction given (amount of flight hours spent providing flight instruction to others) $M = 665.78$; $SD = 272.36$ (Table 1). Nineteen of the participants were current students, and the remaining 115 were graduates of an aviation degree program.

Measures

Current and recent graduate student's reasons for completing an aviation degree were measured using Vallerand et al.'s (1992) Academic Motivation Scale (AMS). This scale contains 20 items measured on a Likert scale (1 = Does not correspond at all; 7 = Corresponds exactly) asking participants to indicate to what extent each item corresponds with one of the reasons they chose to complete an aviation degree. The intrinsic motivation construct was measured with four positively-worded items, for example, *Because I experience pleasure and satisfaction while learning new things*. The external motivation construct was measured with four positively-worded items, for instance, *Because with only a high-school degree I could not attain a high-paying job at an airline*. The identified motivation construct was measured with four positively-worded items, for example, *Because eventually, it will enable me to enter the job market as an airline pilot*. The introjected motivation construct was measured with four positively-worded items, for example, *Because when I succeed in college, I feel important*. The amotivation construct was measured with four negatively-worded items, for example, *I once had good reasons for taking an aviation degree, however not I wonder whether I should have continued*. The integrated regulation construct was not measured by this scale.

Choosing a Regional Scale

In addition to the motivation measures, the survey included a measurement of the reasons a graduate opted to work for a particular regional airline. These 10 items were also measured using the same 7-point Likert scale. This measurement asked, *Using the scale below, indicate to what extent each of the following items*

corresponds to why you chose (or would choose) the regional airline that you currently work for (or hope to work for). The items measured were: crew base, hourly pay, signup bonus, aircraft type, captain upgrade time, the recommendation of a friend, flow agreement with a major airline, favorable working contract, pathway program from university to regional to major, and a campus visit by the regional airline.

Factor analysis was performed on the scores of these survey items to assess construct validity. The result was a four-factor solution which explained 72% of the variation in the data. Items for crew base and hourly pay loaded onto one factor. A second factor related to bonus pay, flow agreement, and contract, which are fixed factors associated with working for a particular regional airline. A third factor loaded items relating the aircraft type and upgraded time, which related to external status. The final factor loaded elements that related to pathway program, friend recommendation, and campus visits which relate directly to the pathway program. There were two factors that only had two items and low Cronbach's Alpha ($\alpha < .70$) making this scale suspect to poor construct validity. Repeated analysis specifying three factors did not yield any better results. For this reason, this scale could not be reduced to more compact factors when used as a measurement of motivation styles. This scale still holds valid information regarding the reasons a graduate would choose a particular regional airline, and each item can be compared with the motivation styles to determine individual, inter-item correlations. This information is valuable for regional airlines in trying to determine how best to attract new hire pilots to their organization.

Academic Motivation Scale

A preliminary analysis of the measures was conducted to check for response rate and reliability (Refer to Table 1 for detailed results relating to all measurements in this survey). The amotivation scale had a low mean response value ($M = 2.60$) and a high Cronbach's alpha ($\alpha = 0.96$). This is not alarming in this case as successful graduates of an aviation degree program are unlikely to reach their position as a regional airline pilot while exhibiting amotivation, given the level of dedication and commitment (both time and financial) required to successfully reach this stage in their career. The external motivation scale initially yielded an adequate yet low Cronbach's alpha ($\alpha = .70$), however it was determined that a removal of one of the items ("Because with only a high-school degree I could not attain a high-paying job at an airline") would yield a Cronbach's alpha that was in the good range while maintaining the integrity of the scale. The extrinsic – introjected, extrinsic – identified, and intrinsic scales all yielded Cronbach's alpha values between .80 and .90 which indicated reliability. The scales were then averaged into a new variable

to determine the appropriateness of the distributions. All average scales were within normal ranges for skewness and kurtosis with the exception of the amotivation scale which yielded a skewness that was just outside of normal bounds but still acceptable for further analysis.

Furthermore, exploratory factor analysis was performed to assess construct validity. Principal Axis Factoring (PAF) with Direct Oblimin rotation was conducted on the data set, specifying a five-factor solution in anticipation of detecting one factor for each motivation style. The resultant five-factor solution explained 81.9% of the variance in the data. However there were numerous cross-loadings and the extrinsic motivation – Identified scale loaded with the amotivation scale. Extrinsic motivation – introjected was identified by one factor, intrinsic motivation was determined by another factor, and the combination of amotivation and extrinsic motivation – identified loaded onto a third factor. The remainder of the scales cross-loaded with each other.

A second-factor analysis was conducted after the removal of the extrinsic motivation – identified scale from the analysis as it was not theoretically different from the amotivation scale based on the loadings found in the previous analysis. This resulted in a four-factor solution which accounted for 79.3% of the variance in the data. Items for extrinsic motivation – introjected loaded onto one factor, extrinsic motivation – external onto another factor, amotivation onto a third factor, and intrinsic motivation onto the fourth factor. See Table 2 for more detail regarding the factor analysis completed on these scales.

Findings

Descriptive Statistics

In general, aviation graduates report crew base and hourly pay as the most important factors when choosing a regional airline. Time to upgrade and the recommendation of a friend are the next most important factors. The least important factors are the pathway programs, and campus visits. An analysis of the motivation scales indicates that extrinsic – identified and intrinsic motivation styles had the highest means. This finding is expected as aviation degree students tend to be highly self-driven students. Also not surprisingly, amotivation had the lowest mean. Given the cost and complexity of completing the aviation degree program, students who lack motivation are likely to drop-out of the program before graduation.

Correlations Among Scale Items

Bivariate correlations were conducted on both scales. The strongest, positive correlation within the motivation scale was between the intrinsic and the identified motivation types. This result is reasonable as there are strong similarities between these types of motivation. Statistically significant, positive bivariate correlations were found between the external regulation, introjected, identified, and intrinsic motivation. As such it was not unexpected that amotivation had a statistically significant, negative correlation with all of the remaining motivation scales except the introjected scale. This finding is supported by the literature that indicates amotivated students complete an activity without valuing the activity or feeling competent to complete the activity.

Bivariate correlations within the preferences for choosing a regional airline scale found statistically significant, positive correlations between campus visits and pathway program, pathway program and flow to major, crew base, and hourly pay, signup bonus and flow to major, signup bonus and favorable working agreement. Weaker, statistically significant bivariate correlations were found between hourly pay and friend recommendation, signup bonus and hourly pay, aircraft type and upgrade time, aircraft type and friend recommendation, campus visit and friend recommendation. One statistically significant (weak) negative correlation was found between pathway program and crew base.

Finally, correlations between the motivation styles and the preferences for choosing a regional airline scale found several statistically significant relationships. The strongest positive correlations were between identified motivation and crew base, as well as identified motivation and hourly pay. Weaker, statistically significant, positive correlations were found between intrinsic motivation and friend recommendation, intrinsic motivation and crew base, introjected motivation and campus visits, external motivation and time to upgrade, amotivation and pathway program, and external motivation and crew base. Additionally, there were statistically significant negative correlations between amotivation and crew base, amotivation and hourly pay, and amotivation and friend recommendation.

Discussion

Motivation to Complete an Aviation Degree

Students who complete an aviation degree program typically do so because they believe that an aviation degree will provide the best outcome in their career.

They are willing to accept the high price of tuition and tedious work to improve their chances of attaining their career goal.

It is common for a graduate of an aviation degree program to indicate that they have always wanted to fly from a very young age or that they are willing to fly for little monetary remuneration. These students want to learn everything there is to learn about the field of aviation before they begin working with an airline. These students would certainly make up the intrinsically motivated group. It is not a surprise to see this motivation style being measured the second highest by the motivation scale.

Amotivated students typically never complete the aviation degree program. According to Bjerke and Healy (2010), it is common to see students begin the aviation degree program but leave in their first semester of the program where 8.2% of students leave or after the first year where 17.4% of students leave the program. An aviation degree program has a steep learning curve in the first semester and students who are not motivated will have significant difficulty in successfully completing the first year of the program. For this reason, it is not a surprise to see the amotivation measured well below all of the other motivation styles measured by this scale.

Impact of Student Motivation on Choice of Regional Airline

Students who successfully complete an aviation degree program often have a clear idea of what they want to attain in their career. Each student has a somewhat different plan for how they will achieve their career goals. In choosing a regional airline, there are some practical concerns that apply to nearly all graduates: making enough money to meet their immediate financial obligations, being able to live in a location that is near family or friends, and attaining the ultimate career goal of reaching a major airline. Along with these practical requirements, graduates of aviation degree programs often have preferences that direct their decision in choosing a regional airline.

Graduates who demonstrated extrinsic – identified motivation style were significantly more likely to choose a regional airline that had a higher hourly pay and a favorable crew base. These graduates are making their practical needs (financial obligations in this case) their primary concern. They may have a particular regional airline that they would love to fly for, but they are choosing a regional airline that will provide enough hourly pay to cover student loan debt and other financial obligations. Also, they are hoping for crew bases that are in a

location that offers affordable housing or friends and family nearby with whom they may live.

Graduates who were intrinsically motivated during their degree program also shared similar practical preferences in a regional airline, but the strongest correlation between the intrinsic motivation scale was with the recommendation of a friend item. Students who are intrinsically motivated during the completion of their degree program chose a regional airline based upon the recommendation of a friend who currently works at the company. These graduates are seeking a place that is enjoyable, and supportive of their career aspirations. In short, they want to enjoy the journey as they work towards the completion of their career aspirations.

Graduates who were amotivated had a weak correlation with the pathway program preference. The amotivated group is a very small minority of the entire population measured. The pathway program may be the one reason that an amotivated student would complete an aviation degree program. A pathway program offers a direct connection between the aviation student and their career goal. If a student is only completing the aviation degree program in order to be a part of the pathway program, they will demonstrate amotivation towards their degree program as merely a means to an end. To these students, there is little value in the degree program itself, other than providing them a quicker method of achieving their career goals.

Implications and Future Research

This research gives some clarity on how aviation degree program graduates are motivated during the completion of their degree program and when choosing a particular regional airline. There are implications for the recruiting practices of regional airlines. Additionally, current and future aviation degree students can benefit from seeing the type of motivation style that is most common to successful graduates of the program.

Regional airlines could benefit by appealing to the motivation styles that best suit their workplace. A determination of motivation style should be done early in the student's educational experience. It is possible that both the student and airline would benefit from a standard biographical questionnaire that a soon-to-be graduate would complete. This questionnaire could measure the motivation style of a student, and pair them with a particular regional airline which offers a workplace that best suits their career aspiration and needs.

Regional airlines have little control over some aspects of career preferences. Airline crew labor is unionized making crew base, hourly pay, captain upgrade time, and favorable contracts all difficult to change. Additionally, crew base preferences will vary among graduates. For this reason, it may be valuable to identify graduate preferences early in the recruitment process to direct them to a regional airline that fits their preferences.

Limitations

Given the exploratory nature of this study, there are some limitations that should be noted. One such limitation is the limited sample of current students and graduates. Future research in this area should include a sampling of multiple aviation degree programs as well as regional airline pilots who have not completed an aviation degree program. It would also be valuable to get a larger sample from current students of an aviation degree program. By getting a more diverse sample, the findings could be generalized to a broader population.

Another limitation of this study lies in the variable nature of employee preferences, especially as the new hire pay improves. In recent months, some regional airlines have started offering starting pay that may mitigate some of the cost of living concerns for new hire pilots (Airline Pilot Central, 2016). As salaries and benefits improve overall, the reasons that pilots will choose a particular regional airline to work for may also change.

Conclusion

This research provides a first-look at the transition between an aviation degree program and the regional airline. This is a relatively new area of research and offers plenty of opportunity for future research. In future research efforts, it would be valuable to measure the core needs of an aviation degree graduate and compare these results with motivation styles and regional airline preferences. It would also be valuable to measure newly hired regional airline pilots who have not completed an aviation degree to compare these results with the findings of this research.

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Appendix

Table 1. Results table.

| Measures | N | Mean (Mode) | SD | Minimum | Maximum | Skewness | Kurtosis | α |
|----------------------------------|-----|----------------|--------|---------|---------|----------|----------|----------|
| Demographic scale | | | | | | | | |
| Age | 126 | 25.51 | 3.17 | 20 | 38 | .21 | .22 | |
| Total Time | 124 | 1570.48 | 682.25 | 222 | 4000 | .56 | .32 | |
| Cross Country | 127 | 794.43 | 214.96 | 60 | 3500 | 1.31 | 2.12 | |
| Second In Command | 116 | 578.13 | 550.72 | 0 | 2400 | .94 | .31 | |
| Dual Given | 126 | 665.78 | 272.36 | 0 | 1300 | -.40 | .29 | |
| Choosing a Regional Scale | | | | | | | | |
| Crew base | 121 | 4.98 (7) | 2.03 | 1 | 7 | -.69 | -.78 | |
| Hourly pay | 122 | 4.98 (6) | 1.74 | 1 | 7 | -.88 | -.03 | |
| Bonus | 121 | 3.78 (1) | 2.05 | 1 | 7 | .08 | -1.19 | |
| Aircraft type | 122 | 3.93 (6) | 1.94 | 1 | 7 | -.02 | -1.19 | |
| Upgrade time | 123 | 4.63 (5) | 1.74 | 1 | 7 | -.33 | -.59 | |
| Recommendation (friend) | 123 | 4.51 (5) | 1.75 | 1 | 7 | -.56 | -.60 | |
| Flow to major | 122 | 3.73 (1) | 2.18 | 1 | 7 | .11 | -1.40 | |
| Contract | 122 | 3.73 (1) | 1.91 | 1 | 7 | -.06 | -1.16 | |
| Pathway program | 122 | 3.09 (1) | 2.21 | 1 | 7 | .56 | -1.18 | |
| Campus visit | 121 | 3.54 (1) | 1.99 | 1 | 7 | .15 | -1.20 | |
| Motivation Scales | | | | | | | | |
| Intrinsic | 112 | 4.64 | 1.61 | 1 | 7 | -.54 | -.89 | .92 |
| Extrinsic – External Reg. | 112 | 4.59 | 1.61 | 1 | 7 | -.60 | -.38 | .81 |
| Extrinsic – Introjected | 111 | 4.07 | 1.63 | 1 | 7 | -.20 | -1.06 | .87 |
| Extrinsic – Identified | 112 | 4.91 | 1.65 | 1 | 7 | -.89 | -.09 | .89 |
| Amotivation | 110 | 2.60 | 2.00 | 1 | 7 | 1.12 | -.14 | .96 |

Table 2. Factor Analysis

| Items | Amotivation/ Extrinsic Identified | Introjected | Intrinsic | External |
|-------------|---|-------------|-----------|----------|
| AMot_1 | .88 | | | |
| AMot_2 | .90 | | | |
| AMot_3 | .96 | | | |
| AMot_4 | .95 | | | |
| ExtMotInt_1 | | .73 | | |
| ExtMotInt_2 | | .66 | | |
| ExtMotInt_3 | | .97 | | |
| ExtMotInt_4 | | .87 | | |
| IntrinMot_1 | | | -.61 | |
| IntrinMot_2 | | | -.90 | |
| IntrinMot_3 | | | -.91 | |
| IntrinMot_4 | | | -.70 | |
| ExtMotExt_1 | | | | .31 |
| ExtMotExt_2 | | | | .48 |
| ExtMotExt_3 | | | | .56 |
| ExtMotExt_4 | | | | .59 |
| Eigenvalues | 7.29 | 2.87 | 1.48 | 1.05 |
| % Variation | 45.6 | 18.0 | 9.2 | 6.5 |
| α | .96 | .87 | .92 | .81 |