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Interest in an Aviation Career After COVID-19

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Abstract

We examine the impact of COVID-19 on the interest in a career in aviation. As countries close up borders to prevent further spreading, it has a negative impact such as reduced employment which can cause a lower interest in the aviation industry. Therefore, we are collecting surveys from academic institutions such as Junior College, Institute of Technical Education, Polytechnics, and Universities in Singapore. By utilizing the linear regression and Chi-square tests, we can examine how much COVID-19 affected the interest compared to other variables.

Introduction

The 2019 coronavirus, also known as COVID-19, has caused a global pandemic due to the widespread of a contagious disease. It is affecting the aviation and tourism industry in particular due to the worldwide implementation of travel restrictions. According to Sobiwealski (2020), travel restrictions have resulted in more than 7% of job loss in the airline workforce to date. Additionally, it has caused a negative impact on the employment of major airlines and maintenance, repair, and operations (MRO) companies (para.1). With fewer employment opportunities available, there is a surplus of retrenched working adults and fresh graduates fighting for the limited vacancy. As a result, working adults and fresh graduates have raised concerns about the pandemic lasting for more than a year that could cause irreparable damage to the industry. With the increase in competition for work, the high volatility of the aviation industry currently, as well as the dwindling demand for aviation since COVID-19, it is possible that future students who were once interested in a career in aviation will change their minds. If fewer students take up an aviation major now, it could result in a shortage of future aviation employees, similar to the pilot shortage situation before COVID-19. Therefore, the purpose of the research is to find out the interest in having a career in aviation after COVID-19 among students.

Literature Review

Although this paper is looking at the interest of students in an aviation career after COVID-19, past global events can also provide an insight into the current situation. A large literature exists on the effects of a global catastrophe on the aviation industry. Every few years, a “black swan” would induce turbulence for the industry. It is seen from the unfortunate events of 9/11 that the immediate impact of terrorism on the industry was that the entire civil aviation system of the United States of America (USA) was completely closed for two days, with people internationally choosing other modes of transport overflying (Chen et al., 2017; Blalock, Kadilia, & Simon, 2011). Unemployment in the USA for the industry dropped by as much as 11% (Drakos, 2002). The trust in the aviation industry plummeted worldwide, and passenger traffic in the USA decreased up to 30 per cent. However, the industry managed to bounce back, with the demand for air travel starting to recover after 2002 (ICAO, n.d.). 2003 was also another eventful year for the aviation industry. Still reeling from the 9/11 attacks, the Severe Acute Respiratory Syndrome (SARS) hit the industry. Although not as impactful as 9/11, it was still a bump on the road to recovery (ICAO, n.d.). Notwithstanding the challenge, by the end of 2003, the revenue per passenger kilometers (RPK) had recovered and doubled since the 1980s (ICAO, n.d.).

The next hurdle was the global financial crisis in 2009, with unemployment reaching a peak in the USA at 10% (Barro, Ursúa, & Weng, 2020). This is remarkably similar to the current COVID-19 trend. Unemployment reached unprecedented levels in the USA and worldwide, with many jobs being lost in tourism, aviation, and service industries. Barro et. al (2020) also noted that the volatility of the stock market and interest rates increased during the period.

As a result of these global events, the interests of students could change. For example, due to the global financial crisis and the high unemployment rates in certain industries, it could be a

dissuading factor for students choosing their majors in aviation. Montmarquette et al. (2002) remarked that students will choose a specific major based on the student's perceived chances of success in that major, their predicted earnings after graduation, and expected earnings if they fail to complete the program. If the industry is failing, it could be assumed that fewer students would study a major in the aviation industry as there are lesser job opportunities.

Even before the breakout of COVID-19, the growth of automation of jobs in the aviation industry could have also resulted in the lower interest of the industry as it would require lesser workers to have the same optimum output, meaning lesser employment opportunities. Spencer (2018) remarked that there is a growing use of robots and artificial intelligence in several industries. For aviation, automation is seen more on the production line of aircraft, as well as check-ins and booking sites. As a result, there may be limited full-time opportunities apart from coders, computer experts, data scientists and designers (Spencer, 2018).

As COVID-19 is a current topic and still relatively new, there is not much research, apart from unemployment rates as well as economic meltdowns. The paper will focus on whether students are still interested in having a career in aviation even after the COVID-19 situation disrupted the whole industry.

Research Question

The COVID-19 pandemic has caused uncertainty and crisis in the aviation industry. The aviation industry has seen a sharp decrease in passengers' demand. As a result, it triggered several bankruptcies of airline companies worldwide (Cornell University, 2020). We are going to survey our targeted audience in order to find out the interest in having a career in aviation after COVID-19. The proposal aims to find out if COVID-19 affects their decision or other reasons such as job prospects, difficulty in completing the course, or personal agenda.

Theoretical Framework

The dependent variable that has been identified is Interest. Interest, as defined by Cambridge, is the feeling of wanting to give your attention to something or of wanting to be involved with and to discover more about something (Cambridge Dictionary, 2020). By using a measurement scale that varies from 1 to 5, with 1 having no interest and 5 having most interest, the proposal will help to identify the interest level of the targeted audience. The key independent variable would be COVID-19. The measurement would be done by a survey to see if COVID-19 has changed the target audience view on the career. The independent variables are the difficulty to complete the course, job prospects and personal agenda. The measurement of these variables would be done by finding data for the number of dropouts and unemployment rate due to COVID-19 and surveys.

As it is not feasible to get input from all students everywhere, this survey would be primarily focused on Singapore, targeting Junior College (JC) students, as well as Polytechnic, Institute of Technical Education (ITE), and University aviation students. JC students are the crucial element to this survey as they have yet to choose their major. For Polytechnic, ITE, and University students, the focus is on the aviation students as they have already chosen their major and they would have an interest in the industry before COVID-19. The survey would reflect whether that interest has diminished due to recent events.

A sample size of 7,500 would be extracted from the population using stratified sampling as there are different student numbers in the institutes as it will ensure an adequate sample size for each institute in the population of interest to make meaningful subgroup inferences.

Hypotheses

The research null hypothesis is that there is no significant decrease in the interest in aviation careers due to COVID-19. The alternative hypothesis is that there is a significant decrease in interest in aviation careers due to COVID-19.

Study Design

The purpose of our research paper is to find out the interest in having a career in aviation after COVID-19 among aviation students. As countries have implemented travel restrictions to curb the infectious disease from spreading, it has caused uncertainty and crisis in the aviation industry. The aviation industry has seen a sharp decrease in passengers' demand. As a result, it triggered several bankruptcies of airline companies worldwide (Cornell University, 2020). Therefore, we will be asking the secondary school students in Singapore the question “Would you still be interested in a career in aviation post-COVID-19?”. The null hypothesis for this study is there is no significant decrease in interest in an aviation career due to COVID-19, while the alternative hypothesis is there is significant decrease in interest in an aviation career due to COVID-19.

We will be proposing in this report a quantitative study to find out the relationship of COVID-19 and interest in a career in aviation pre- and post-COVID-19. A link consisting of a set of survey questions will be emailed to the school's career advisors to assist in asking the students from Junior College, Institute of Technical Education (ITE), Polytechnic, and University in Singapore to complete the survey. Once the surveys have been returned, the Chi-square test will be conducted to find out the frequency of the survey answer. Finally, we will be using the linear regression analysis to determine which independent variable affects the interest in aviation.

Population and Sample

The population group that will be surveyed for the research are students in Singapore, aged between 13 years old to 25 years old. We will be looking into four different population groups: Polytechnic students majoring in aviation, Junior College (JC) students, Institute of Technical Education (ITE) students and University Students majoring in aviation. JC students and ITE students will act as the unbiased group in the sample as this group of students would have been placed in a general course of study prior to the survey compared to Polytechnic students and University students who might have chosen an aviation course prior to the survey. The sample size of our study would be 7,500 students, taking 5% form the population size, and it will provide the study with sufficient results to ensure that the data collected is unbiased and could be used in the research project (Government of Singapore, 2019). This data is obtained from data.gov.sg and serves as a credible source.

Variables and Measures

There are multiple types of variables that will be presented in the study. The key dependent variable would be the interest level which will be measured using the measurement scale of 1-5, with 1 being no interest and 5 being very interested. The key independent variable would be COVID-19. It would measure the change in interest of the students after COVID-19 and will be measured based on 'YES' or 'NO'; thus, it will allow us to see if their interest has changed after COVID-19. If 'YES', then we will ask a sub question about whether that interest has increased or decreased. If the frequency of 'YES' is high, we can infer that COVID-19 has changed the students to have more favorable view of career in aviation. If the frequency of 'Decreased' is high, we can infer that COVID-19 has changed the view negatively.

There are three independent variables in the study. The first independent variable is: Difficulty to complete the course. Supplementary data for this measurement will be the number of dropouts, the number of people who change the course and the GPA. The higher the number of dropouts and people who change course, it would mean that it is difficult to complete the course and the lower the GPA, it would mean that it is difficult to complete the course. The frequency of the number of people that thinks aviation related courses are hard will also be used as a measurement. The question would be based on a 'YES' and 'NO'.

The second independent variable is: Job Prospects. Supplementary data for this variable will be the unemployment rates due to COVID-19 and Unemployment rates due to SARS, 9-11 and Avian Flu will be used as measurement. However, measurement from unemployment rates due to SARS, 9-11 and Avian Flu will only be used as reference to gauge the impact of employment during a pandemic. The frequency of the data collected when asked if the students would join due to the stability of the job and due to the amount of job openings available will also be used as a measurement. The question would be based on a 'YES' and 'NO'.

The third independent variable is : Personal Agenda, which will be measured by the frequency of the reasons given that will be presented in the survey with 'Passion for the industry' being what we expect to be the highest among the categories.

Data Collection Methods

The data to be used will come from multiple locations. Our main data source will come from survey responses of students stated in the population. The survey will be distributed by email from the school's career advisors to the respondents to answer the questions regarding their interest and reasons of interest, as well as if COVID-19 affected it positively or negatively. Other referencing data will be scholarly articles and aviation related websites. These types of articles

and information would have been verified as accurate. These data will be data about industries affected during a global event for us to gain a reference as COVID-19 is still relatively new, for example, the global recession affecting jobs and interest in the banking industry. As we are more interested in the pre and post COVID-19 change of interest in aviation, we will be focusing primarily on the results of the surveys.

Data Analysis Methods

To get a better understanding between the variables, at the beginning of the study, we will conduct a correlation coefficient between them to identify any relationships. Although this method cannot be used for the main study, it will give us a better picture of what to expect in our results. We could also use the Chi-square test to know if the survey results are statistically different from our expectations. We expect that the overall interest of aviation to be lower compared to recent years.

For the main analysis method, we will be using linear regression to identify the major effects of interest in aviation. We will use the beta and p-value to identify which independent variables statistically have a large impact on the interest of the students. One reason why linear regression is used is because most of our survey questions are 'YES' or 'NO' questions which can be converted to dummy variables in Excel. As these variables are considered categorical data, linear regression can combine them together to analyze if any relationships are present (University of Southampton, n.d.). The regression equation is as follows:

$$\text{Interest} = a + \beta_1(\text{COVID-19}) + \beta_2 (\text{Higher or lower}) * + \beta_3(\text{Difficulty to complete course}) \\ + \beta_4(\text{Job prospects}) + \beta_5(\text{Personal agenda}) + \epsilon$$

*B₂ happens only if the frequency of 'YES' from B₁ is high. If 10% of the data says there is a positive change (higher), we will need to do 2 different analysis, 1 without the positive change (higher) data and 1 with. If not, we will assume it as an outlier.

The independent variable "COVID-19" will equal to one if the respondent selected COVID-19 did affect their interest in aviation in the equation or zero otherwise. We expect that the number of respondents selecting their interest changed to be high. For the "Higher or Lower" independent variable, we assume most of the respondents will answer that COVID-19 affected their interest negatively which makes the variable equal to one in the equation. If there are a number of respondents indicating that COVID-19 affected their interests positively, we will separate the two groups of respondents and run the regression model separately for each group. After that, we can compare the coefficients between these two groups. If the number of respondents indicating that COVID-19 has increased their interest in aviation is low, as we expect, we will treat those responses as an outlier. "Difficulty to complete course" will equal to one if the respondent answered "Yes" to "Do you think aviation-related courses are hard?" or zero otherwise. "Job prospects" will equal to one if the respondent answered, "Yes" to "Do you pick up aviation as a career because it is easy to go in/more job opening?" or zero otherwise. For "Personal agenda", the variable would equal to one if the respondent selected any of the options for "What makes you interested in joining the aviation industry?" and equal to zero if they selected none.

Conclusion

This research will help us find out whether there is a change of interest in a career in aviation as this pandemic has resulted in major disruptions in the industry. Knowing the results would benefit the aviation industry as it played a major role in the economy before the pandemic.

If interests are low, there might be a shortage of employees in the industry when things are back to normal. We hope that the results would be positive as we look forward to strengthening the aviation industry.

As the COVID-19 is recent and still ongoing, we found it challenging to find research reports to support our study. Furthermore, travel restrictions may prolong to 2021. As a result, interest in the industry may continue to drop even after we conduct the survey. Another limitation to our study is that interest is difficult to measure accurately. The survey is relying on the respondent's ability to perceive their own interest level. The survey also relies on the honesty of the respondents.

If it is found that interest is lower, it may result in a smaller talent pool in the future. Therefore, we propose to channel funds for promoting aviation careers. Current policies like the Singapore Air show or Republic of Singapore Air Force Open House may be ineffective due to social distancing rules. However, these organisations could promote themselves in public schools by doing talks or collaborating in school projects.

References

- Blalock, G., Kadiyali, V., & Simon, D. H. (2009). Driving fatalities after 9/11: a hidden cost of terrorism, *Applied Economics*, 41:14, 1717-1729, DOI: 10.1080/00036840601069757
- Cambridge Dictionary. (2020, August 21). *Interest*.
<https://dictionary.cambridge.org/dictionary/english/interest>
- Chen, Z., Rose, A. Z., Prager, F., & Chatterjee, S. (2017). Economic consequences of aviation system disruptions: A reduced-form computable general equilibrium analysis. *Transportation Research Part A: Policy and Practice*, 95, 207-226.
<https://doi.org/10.1016/j.tra.2016.09.027>
- Drakos, K. (2002). The financial and employment impact of 9/11: The case of the aviation industry. *Vortrag am DIW Berlin*, 14.
https://www.diw.de/documents/dokumentenarchiv/17/diw_01.c.39093.de/diw_ws_consequences200206_drakos.pdf
- Government of Singapore. (2019, November 8). *ITE - Intake, Enrolment and Graduates by Course*. Data.Gov.Sg. <https://data.gov.sg/dataset/ite-intake-enrolment-and-graduates-by-course>
- ICAO. (n.d.) *Facts and figures: World aviation and the world economy*.
https://www.icao.int/sustainability/Pages/Facts-Figures_WorldEconomyData.aspx
- Montmarquette, C., Cannings, K., & Mahseredjian, S. (2002). How do young people choose college majors? *Economics of Education Review*, 21(6), 543-556. doi:10.1016/s0272-7757(01)00054-1 <https://www-sciencedirect-com.ezproxy.libproxy.db.erau.edu/science/article/pii/S0272775701000541?via%3Dihub>

Sehl, K. (2020, June 18). *How the Airline Industry Survived 9/11, the Global Recession and More*. APEX. <https://apex.aero/2020/06/10/aftershocks-coronavirus-impact#:~:text=It%20took%20about%20six%20years,by%20more%20than%2030%20percent.>

Sobieralski, J. B. (2020). COVID-19 and airline employment: Insights from historical uncertainty shocks to the industry. *Transportation Research Interdisciplinary Perspectives*, 100123.
<https://www.sciencedirect.com/science/article/pii/S2590198220300348>

Spencer, D. A. (2018). Fear and hope in an age of mass automation: debating the future of work. *New Technology, Work and Employment*, 33(1),1-12.
https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=how+automation+reduce+job+opportunities&btnG=

University of Southampton. Simple Linear Regression - One Binary Categorical Independent Variable. Retrieved 6 September 2020, from
https://www.southampton.ac.uk/passs/confidence_in_the_police/multivariate_analysis/linear_regression.page

Ye, J., Ji, P., & Barthelemy, M. (2020). Scenarios for a post-COVID-19 world airline network. arXiv preprint arXiv:2007.02109.<https://arxiv.org/abs/2007.02109>

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Survey Questions

Appendix A

Cover Letter

Dear Participant,

We invite you to participate in a research project entitled: Would you still be interested in a career in aviation COVID-19? We are currently enrolled in the Aeronautics Degree Program at Embry-Riddle Aeronautical University Asia. The purpose of the research is to determine: the interest in having a career in aviation after COVID-19 among aviation students. The enclosed survey has been designed to collect information on: Has the COVID changed your interest in an aviation career, Do you think aviation-related courses are hard? , Did you pick up aviation as a career because it is easy to go in/more job openings? , and What makes you interested in joining the aviation industry? .

Your participation in this research project is voluntary and you may choose not to answer the questions in the survey that you do not wish to answer. The responses given will be kept confidential and anonymous. The people that will have access to the individual answers to the questionnaire will only be ourselves.

If you agree to participate in this project, please answer the questions on the survey to the best of your ability. It should take less than 5 minutes to complete.

Thank you for your assistance.

Sincerely yours,

Surfina's Group

Appendix B**Questionnaire/Survey/Interview Questions**

1. For the research grouping purposes, please state your age group as of the current year.
 - 13-16 years old
 - 17-19 years old
 - 20-25 years old
 - 26 years old and above

2. For research grouping purposes, please state your institute.
 - Institute of Technical Education (ITE)
 - Junior College (JC)
 - Polytechnic
 - University

3. Are you interested in a career in aviation? (please check answer)
 - No Interest
 - Little Interest
 - Neutral
 - Interested
 - Very Interested

4. Has the COVID changed your interest in an aviation career?
 - Yes
 - No

5. If yes, did it change for higher or lower?
 - Higher
 - Lower
6. Do you think aviation-related courses are hard?
 - Yes
 - No
7. Do you pick up aviation as a career because it is easy to go in/more job opening?
 - Yes
 - No
8. What makes you interested in joining the aviation industry?
 - High Salary
 - Join with friends
 - Passion for the industry
 - Family influence
 - Job Stability