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A Multiple Correspondence Analysis Study on Career Orientations of Aviation Management Students ¹

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Abstract

This study aims to understand the motivations of Aviation Management students in Turkey and their career trends after graduation. The study examines how the growth of the aviation industry and the demand for qualified labor force in this field affect students' major preferences and career planning. In the study, data were collected through a questionnaire developed for Aviation Management students and the data obtained were evaluated using Multiple Correspondence Analysis (MCA). This method offers the opportunity to analyze the relationships between categorical variables in depth. The findings will reveal the basic dynamics behind the demographic, socio-economic and individual factors affecting students' major preferences, as well as their sectoral tendencies. The results of the research are expected to contribute to the development of educational policies for the aviation sector and to the achievement of students' career goals.

Key Words: Career, Aviation Management, Multiple Correspondence Analysis (MCA), Education.

JEL Classification: I21, I26.

Havacılık Yönetimi Bölümü Öğrencilerinin Meslek Yönelimlerine İlişkin Çoklu Uyum Analizi Çalışması

Öz

Bu çalışma, Türkiye'deki Havacılık Yönetimi bölümü öğrencilerinin bölüm tercih nedenlerini ve mezuniyet sonrası kariyer eğilimlerini anlamayı amaçlamaktadır. Araştırma, havacılık sektörünün büyümesi ve bu alandaki nitelikli iş gücüne olan talebin öğrencilerin bölüm tercihlerini ve kariyer planlamalarını nasıl etkilediğini incelemektedir. Çalışmada, Havacılık Yönetimi bölümü öğrencilerine yönelik geliştirilen bir anket aracılığıyla veri toplanmış ve elde edilen veriler Çoklu Uyum Analizi (Multiple Correspondence Analysis-MCA) yöntemiyle değerlendirilmiştir. Bu yöntem, kategorik değişkenler arasındaki ilişkileri derinlemesine analiz etme imkânı sunmaktadır. Bulgular, öğrencilerin bölüm tercihlerini etkileyen demografik, sosyo-ekonomik ve bireysel faktörlerin yanı sıra, sektörel yönelimlerinin arkasındaki temel dinamikleri ortaya koyacaktır. Araştırma sonuçlarının, havacılık sektörüne yönelik eğitim politikalarının geliştirilmesine ve öğrencilerin kariyer hedeflerine ulaşmasına katkı sağlaması beklenmektedir.

Anahtar Kelimeler: Kariyer, Havacılık Yönetimi, Çoklu Uyum Analizi, Eğitim.

JEL Sınıflandırma: I21, I26.

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INTRODUCTION

Career can be defined as a series of positions achieved by employees throughout their lives, especially advancing in the same profession, receiving more and more monetary rewards and responsibilities. In other words, it can be seen as progressing in the same field of work over a large period of time (Bakioğlu, 1996: 10). From a developmental perspective, a career is the sum total of every event in an individual's professional journey throughout his/her life (Vondracek, 1998). Career is the field in which an individual will progress in public or private working life, pursued and worked to achieve success (Aytaç 1997: 17). The concept of career has organizational and individual dimensions. Career development of individuals in terms of the organization enables them to work in the organization as experts in their field and to produce solutions to problems, and this is important for the effectiveness of the organization. Career development for the individual will ensure the creation of a happy working environment in the organization and thus increase job satisfaction (Bakioğlu & İnandı, 2001: 514).

Career planning can be defined as a set of events, professional preferences and personal development processes that an individual encounters throughout life (Vondracek, 1998). This process is influenced by individuals' educational experiences, social environment and economic status. Sevinç (2010) states that career choices are shaped not only by individual characteristics but also by environmental factors such as family, friends and social pressures.

The aviation sector stands out as a strategic area that is growing rapidly on a global scale and contributes significantly to the economic development of countries. In countries like Türkiye, where the development of the aviation industry continues at a rapid pace, the need for qualified human resources is increasing (Kakşa & Soyca, 2022: 123; Ulufer Kansoy, 2023: 25). In this context, the role of higher education institutions providing education in the field of aviation has become quite critical. Aviation Management departments contribute to the development of the sector and enable individuals to realize their career goals by training individuals equipped with knowledge and skills in line with sectoral expectations (Bilkay, 2021). As of 2024, more than 35 universities in Türkiye offer undergraduate programs in Aviation Management, indicating the growing academic and sectoral interest in this field (YÖKATLAS, 2024). However, studies to understand the motivations of students studying in this field and their career intentions after graduation are quite limited (Şen, 2019; Kiracı & Bayrak, 2014; Durmuş & Tokyay, 2021).

In recent years, Türkiye has become an increasingly important country in the international arena by making significant progress in the field of aviation with the advantages of its geographical location. The long-term advancement of the civil aviation industry in Türkiye, characterized by rapid population growth and urbanization, significant tourism potential, and its emergence as a regional trade center, is of paramount importance (Bakır et al., 2017). A number of legal regulations and standards have been introduced for the development of the Turkish Civil Aviation Sector in the national and international arena and for the sector to be carried out in a safe, reliable, high quality, open and transparent manner. By introducing policies based on competition and safety in the airline transportation service, national

competitiveness has been increased and the country's economic and social development process has been accelerated (Battal et al., 2006).

Located at the intersection of Asia, Europe and Africa, Türkiye has managed to become an important hub between these continents and is taking important steps to sustain this with major investments such as Istanbul Airport and SMARTIST (Turkish Airlines Cargo Hub Project) (Aksoy & Dursun, 2018: 1061). In such a growing sector, companies want to close the personnel gap with educational institutions that provide qualified education in this field. This has led to an increase in the demand for aviation schools and especially the aviation management department, which is the most common department in this field. Students turn to this field with the desire to contribute to the rapid expansion of the sector (Durali & Özdamar, 2021).

This study investigates the reasons affecting the departmental preferences of Aviation Management students in Türkiye and their career goals after graduation. The study aims to analyze the socio-economic and demographic characteristics of the students and the effects of these characteristics on their preferences and orientations. The questionnaire used as a data collection tool includes questions to understand students' educational motivations, perceptions about the sector and career expectations. The collected data were analyzed using Multiple Correspondence Analysis (MCA). This method provides in-depth information about students' preferences and tendencies by analyzing the relationships between categorical variables in detail (Johnson & Wichern, 2007).

When the literature is examined, it is seen that there are many studies examining the career tendencies of students in different fields such as tourism, engineering and health, but research focusing on aviation management students is quite limited (Ilgaz & Güzel, 2019; Ateş, 2016; Daku, 2021; Ternavska et al., 2023; Costa et al., 2025; Ying, 2025). This study aims to fill this gap in the literature by providing a unique perspective on the educational and career preferences of students in the field of Aviation Management. It is anticipated that the findings of the study will contribute to the development of educational policies for the aviation sector and help students to direct their career goals more consciously.

In this context, the research is looking for answers to the following questions:

- RQ1: What are the factors that influence Aviation Management students to choose this department?
- RQ2: What are the factors that influence the sectoral tendencies of Aviation Management students?
- RQ3: What is the effect of external factors on aviation management students to continue to work in the aviation industry?

This study is one of the first comprehensive analyses to understand the educational and career preferences of Aviation Management students. In particular, a detailed examination of the factors affecting the preferences of students studying in a dynamic field such as Aviation Management will contribute to a better understanding of both individual and sectoral needs. The results of the research will not only shape the individual career planning

of the students, but also shed light on the development of strategies to create qualified human resources for the aviation sector. This research, which aims to fill the gap in the literature, is a valuable reference for reviewing aviation education policies and adopting student-centered approaches. The findings are expected to contribute to a sustainable understanding of education and career planning in the aviation sector.

1. THEORETICAL BACKGROUND

Education is recognized as one of the most fundamental tools for individuals to reach their career goals by improving their knowledge, skills and competencies. Especially higher education is a process in which individuals shape their professional preferences and prepare for the world of work. In this process, individuals' educational experiences, social environment and economic conditions have a direct impact on their career choices (İstanbullu Dinçer et al., 2013). Career planning involves individuals setting lifelong goals by evaluating their strengths and weaknesses and plays an important role in meeting sectoral needs as well as personal development. Walker and Gutteridge (1990) define career planning as the process of creating action plans in line with short, medium and long-term goals by analyzing individuals' competencies.

The selection of a career is a significant matter in the developmental journey of young individuals, as it is linked to both beneficial and adverse psychological, physical, and socio-economic disparities that extend beyond adolescence into adulthood (Robertson, 2014; Bubić & Ivanišević, 2016). When an individual is planning their career and determining the field they want to work in, it is important to assess in which sector or job position they can perform best based on their current skill set, educational background and experiences. To assess this, it may be useful to use a multiple correspondence analysis (MCA). Such an analysis can offer a data-driven approach to determining one's career path. MCA is associated with the development of statistical science and the evolution of regression analysis. In particular, statistics and regression analysis have been shaped over time by the work and contributions of statisticians such as Francis Galton, Karl Pearson, Ronald Fisher, Jerzy Neyman, Egon Pearson (Clausen, 1998; Suner & Çelikoğlu, 2008). While career planning helps an individual to determine a career path that is compatible with his/her goals, values and abilities, MCA allows him/her to evaluate the most suitable sectors or job positions to achieve these goals. In this way, one's career planning can be more knowledge-based and goal-oriented (Aytaç, 2005).

In the literature, the factors affecting career choices are generally considered in two main groups: individual and environmental. Individual factors include interests, personal competencies and the professional values that the individual assigns to himself/herself, while environmental factors include family, social environment, educational policies and economic conditions (Kaynak, 1996). Sevinç (2010) states that social norms, economic expectations and social environment have a strong influence on individuals' career choices. In a fast-growing field such as the aviation sector, understanding the factors affecting students' career planning is of great importance for sectoral sustainability.

Aviation Management is a discipline that aims to train qualified individuals to meet the various operational and managerial needs of aviation, a complex and dynamic sector.

Students studying in this department aim to specialize in areas that require technical knowledge such as air transportation, logistics management, safety and security. However, the high standards and sectoral expectations required by this education cause students to face various factors that affect their education process and career planning (Kozak, 2009). Factors such as limited internship opportunities, foreign language proficiency and financial difficulties can make it difficult for students to achieve their career goals after graduation (Richardson, 2008).

To further conceptualize the motivations behind such preferences, this study is grounded in Holland's Theory of Vocational Personalities and Work Environments. According to Holland (1997), individuals tend to select career paths that match their personality traits. The theory defines six personality types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (RIASEC). Aviation Management students often demonstrate "Enterprising" and "Realistic" characteristics due to the operational and decision-making nature of the industry. Those with an interest in administrative or support services may also reflect "Conventional" traits. Framing the analysis within this theoretical model enhances the understanding of students' department choices and career intentions.

In addition, Donald Super's (1990) Life-Span, Life-Space Theory views career development as a lifelong process shaped by evolving self-concepts and life stages. University students are typically in the "exploration stage," during which they begin to define their career goals and assess educational paths. Variables such as age, class level, and academic progression—used in this study—align with Super's model.

Lastly, Krumboltz et al. (1976) Social Learning Theory of Career Decision Making emphasizes that career choices are influenced by environmental factors, observational learning, and chance events. In the context of this research, elements such as family background in aviation, internship experience, and exposure to the industry can be seen as learned influences shaping students' career orientations. Integrating these three perspectives enables a deeper understanding of how personality, developmental stage, and experiential learning jointly impact career-related decisions

2. PREVIOUS STUDIES

There are studies on students' career orientations in different contexts. Some of these studies, including but not limited to these, are listed as follows:

Akış Roney and Öztin (2007) conducted research involving a sample of 450 Turkish university students in the field of tourism to examine their perceptions of careers in tourism. The results indicated that, overall, participants' perceptions were neutral. The findings indicated that the aspiration to pursue studies in tourism, the intention to engage in a tourism career post-graduation, and relevant work experience are significant elements influencing their perception of a career in tourism. Ünal and Baran (2012) conducted a study on pre-service teachers and found that the relationship between the satisfaction of pre-service teachers with their choice of profession and their desire to develop themselves professionally is regulated entirely by the efforts they plan to make professionally.

Akoğlan Kozak and Dalkıranoglu (2013) examined the career orientations of Anadolu University graduate students. The research data were analyzed with t-test and chi-square test. As a result of the research, it was revealed that the students were not adequately guided in their career preferences and made their preferences according to traditional patterns. In addition, another finding of the study was that financial concerns override career opportunities. Kiracı and Bayrak (2014) conducted their research on the employment and career status of civil aviation undergraduates with a survey model. In the study, it was concluded that ensuring the job satisfaction of employees in terms of wages will make significant contributions to aviation safety. In addition, the finding that a significant number of civil aviation graduates are employed in a job related to aviation is one of the other findings of the study.

Ateş (2016) examined the factors affecting the career start preferences of students studying in the field of aviation with the scale developed by Adıgüzel (2008). The effects of family members, relatives, legal factors, individual characteristics, economic and social expectations, occupational characteristics, economic and political environment on career plans were analyzed on average basis. As a result of the research, it was concluded that the mother has the most influence among the family members of higher education students studying in the field of civil aviation in Türkiye. Another result of the research is that teachers are the most important factor in the initial stage of career planning.

İlgaz and Güzel (2019) conducted a study on the career continuity of tourist guidance students. In the study, findings were obtained by MCA method about the desire of tourism guidance students who study tourism at undergraduate level to continue their careers. Küçüköğlü et al. (2020) conducted their research on the career and entrepreneurship orientations of vocational school students with a mixed method system in which qualitative and quantitative research methods were used together in order to determine the career preferences of Vocational School students taking entrepreneurship courses and the share of entrepreneurship career in these tendencies. As a result of the research, the highest rate of career preference among the students was determined as the private sector with 39.80% and it was concluded that Vocational School students consider factors such as working conditions, job security and regular income while choosing between the public sector and entrepreneurship. Durmuş and Tokyay (2021), in their research on the occupational preference tendencies of Aviation Management undergraduate students, included the measurement of preference tendencies and the analysis of the professions that students are interested in outside the department.

Daku (2021) conducted a study to examine the relationship between aviation students' happiness towards career guidance courses and its impact on career decision-making self-efficacy. The study found that academic satisfaction, future time perspective and clarity of career success criteria increased students' career decision-making self-efficacy, which in turn had a positive effect on happiness. In a similar vein, Ternavska et al. (2023) have highlighted the pivotal role of educational and professional motivations in shaping the career choices and academic preferences of future aviation professionals. Costa et al. (2025) examined the personal, cognitive and contextual factors that shape young people's interest in the aviation industry, using the Social Cognitive Career Theory (SCCT) to reveal how the interaction of

self-efficacy beliefs, outcome expectations and personal goals play a role in career choice. In her 2025 analysis of the factors affecting student happiness towards career guidance courses, Ying (2025) states that academic satisfaction and proactive personality are important factors that positively affect students' career decisions and happiness. The extant literature indicates that the factors influencing the career interests of young people in a specific field, such as the aviation sector, are shaped by a multidimensional interaction. Furthermore, educational and psychological factors supported from an early age appear to strengthen career choices.

The fact that there is not enough research on the vocational orientations of Aviation Management Department Students in the literature constitutes the motivation of the current study. On the other hand, it is seen that few studies in the field of aviation management have been evaluated through YÖK Atlas data. As a result of the detailed literature review, no MCA research study on vocational orientations of aviation management students was found. In addition to the foreseen scientific contributions, it is thought that the research will provide academic and sectoral contributions due to the methodology used and the characteristics of the targeted research audience. In addition to these, the fact that no research has been conducted on behalf of this department before will fill the gap in the literature. In order to provide a clearer overview of previous studies, a summary table is presented below. Table 1 outlines the methods, findings, and thematic focus areas of related research that support the context of this study.

Table 1. Summary of Previous Studies

Author(s) and Year	Scope	Method	Key Findings	Thematic Focus
Greenacre (2007)	Correspondence analysis in practice	MCA	MCA is effective for analyzing multi-dimensional categorical data	Method Justification
Pendergrass (2008)	Career choice factors and academic success	Mixed Methods	Interest, family influence, and academic performance affect choices	Career Planning
Wen & Chen (2011)	Mapping airline competition via MCA	MCA	MCA helps visualize competition between airlines using categorical data	Methodological Contribution
Steckel et al. (2018)	Career choice motivations in aviation science	Survey	Reputation and program quality influence student decisions	Institutional Motivation
Ilgaz and Güzel (2019)	Career tendencies of tourism undergraduate students	MCA	Demographic and socio-economic factors affect student preference	Career Planning
Küçükoğlu et al. (2020)	Career and entrepreneurship orientations of vocational school students	Mixed qualitative and quantitative methods	Working conditions, job security and regular income is important while choosing between the public sector and entrepreneurship	Career orientation
Durmuş & Tokyay (2021)	Career Preferences of Aviation	Survey	Socio-demographic variables affect program choices	Demographics, Preferences

	Management Students			
Yavaş et al. (2021)	Evaluation of Internship Experiences in Aviation Education	Survey& Observation	Internship satisfaction impacts career orientation	Practical Education
Daku (2021)	Career Aspirations of Collegiate Aviation Students	Survey and Interview	Students determine their career goals by prioritising the values of staying close to family and friends	To understand the factors that shape the career aspirations of university aviation students
Ternavska et al. (2023)	Educational and professional motivations of future aviation specialists	Literature review	Motivational factors play a decisive role in the educational and professional preferences of individuals in career choices	Theoretical study
Costa et al. (2025)	Analyse the career development processes	Literature review	Career interest is formed by the interaction of self-efficacy, expectations and goals	Conceptual Analysis
Ying (2025)	Modelling and analysing psychological and educational factors affecting student happiness towards career guidance courses	Survey	Academic satisfaction, future perspective and career success clarity increase self-efficacy	Career Guidance Course Happiness

3. METHODOLOGY

This study aims to explore the factors influencing Aviation Management students' selection of their department and their career aspirations post-graduation. The study aimed to identify the demographic characteristics of the students, their educational preferences, and the factors influencing their career aspirations. The study employs a quantitative research method, utilizing a questionnaire technique for data collection.

The study group of the research consists of students studying in the department of Aviation Management at different universities across Türkiye. The study group was determined by convenience sampling method. It can be said that accessibility to the research group and time constraints were effective in the selection of this method. Within the scope of the study, 1050 students enrolled in the 2024-2025 academic year were reached and 990 valid responses were obtained from these students.

The data collection tool to be used in the Multiple Correspondence Analysis of Aviation Management Department Students' Occupational Orientations is the questionnaire used in Ilgaz and Güzel's (2019) study on tourism students. The questionnaire form used in the study was adapted to the aviation management department and finalized by taking expert opinions.

The questions in the survey are; gender, age, family income level, city where the family

lives, place of residence, foreign language level, internship status, reason for choosing the department, grade, grade point average, preference status of this department if the exam is taken again, department preference order, traveling by plane before starting school, tendency to work in the field of aviation after graduation, whether there is an airport in the city where the family lives, evaluation of whether the courses taken are sufficient to work in the sector, whether the effects of epidemics such as covid-19 affect the perspective on the profession, whether there are enough businesses to work in the field of aviation.

The survey form consisted of multiple-choice questions. The data were analyzed using Multiple Correspondence Analysis (MCA). MCA extends Correspondence Analysis (CA) and facilitates the analysis of relationship patterns among multiple categorical dependent variables. This can be viewed as a generalization of principal components analysis for categorical variables instead of quantitative ones. MCA has been (re)discovered multiple times, leading to the identification of equivalent methods under various names, including optimal scaling, optimal or appropriate scoring, binary scaling, homogeneity analysis, scalogram analysis, and quantification method (Abdi & Valentin, 2007: 1).

MCA is employed to analyze a collection of observations characterized by nominal variables. Each nominal variable comprises multiple levels, with each level represented as a binary variable. Gender, categorized as male and female, represents a nominal variable with two distinct levels. For a male participant, the model would be represented as 0 1, while for a female participant, it would be represented as 1 0. The data table comprises binary columns, with each nominal variable represented by a single column assigned the value "1". MCA can accommodate quantitative variables by recoding them into categories. A score ranging from -5 to +5 can be categorized as a nominal variable with three levels: below 0, equal to 0, or above 0. In this scheme, the value 3 is represented by the pattern 0 0 1. The coding scheme for MCA indicates that each row maintains an identical sum, whereas for CA, each row possesses the same weight (Abdi & Valentin, 2007: 2).

CA and MCA are multivariate exploratory methods for exploring and visualizing categorical data. Dimensionality reduction techniques can be viewed as a generalization of principal component analysis for categorical variables. CA and MCA offer graphical depictions of the rows and columns in a contingency table (CA for two categorical variables) or a cross-table (MCA for multiple categorical variables) (Hsu, Wu & Chen, 2022: 4). Consequently, examining the typology of variables, categories, or individuals allows for the identification of relationships among variables or categories and similarities among individuals. MCA represents a particular application of CA to multivariate categorical data, which is encoded as an indicator matrix or Burt matrix (Nenadic & Greenacre, 2005).

The MCA used in this study is a method that allows a deeper understanding of individuals' preferences and orientations by analyzing the relationships between categorical variables. MCA visualizes the relationship between different variables, allowing for a clearer interpretation of the results. This method, which is frequently used in educational research, is an effective tool for understanding students' major preferences and career goals (Johnson & Wichern, 2007). The MCA method, which has been successfully applied in studies examining student trends in the tourism and health sectors, plays a critical role in

understanding the effects of demographic and socio-economic factors (İlgaz & Güzel, 2019; Ateş, 2016).

The use of Multiple Correspondence Analysis (MCA) in this study is justified by the nature of the variables, which are primarily categorical. MCA enables the simultaneous analysis and visual representation of the relationships between several categorical variables, making it a suitable method for uncovering patterns in educational and social science data (Greenacre, 2007).

While other methods such as chi-square tests or factor analysis could also be applied, they are limited in their capacity to provide a multidimensional view of associations among multiple categorical variables. For instance, chi-square tests focus only on pairwise relationships, and factor analysis is typically designed for continuous variables. In contrast, MCA offers both a statistical and graphical interpretation of the data, which is essential for understanding complex interactions such as those present in students' career preferences (van der Heijden et al., 1997). This methodological choice aligns with previous research that applied MCA in educational and career-related contexts.

The data collection process consisted of providing face-to-face questionnaires and online forms to students who consented to participate in the study. The study's purpose and scope have been disclosed to the students, and participant confidentiality was guaranteed. The data collection process lasted approximately four weeks. The data collected were analyzed utilizing the SPSS software. The analysis involved calculating frequency and percentage distributions of the participants' demographic characteristics using descriptive statistics. This method facilitated the visualization of the relationships among the reasons for selecting a major, demographic factors, and career objectives. The analysis results were interpreted to address the research questions and identify the factors influencing students' preferences. The findings are organized to facilitate both theoretical and practical implications.

4. FINDINGS

4.1.Descriptive Statistics

Within the scope of the study, 20 questions were asked to the students of aviation management department. A total of 990 questionnaires, including first class (247), second class (237), third class (279) and fourth class (227) students, were returned and the data were included. Within the scope of the study, firstly, frequency analysis of the survey data was performed. Then, multiple correspondence analysis was performed to determine the relationships between variables. Frequency analysis was conducted on the answers given by the participants to the survey questions. Percentage and frequency distributions of the data related to frequencies are given in Table 2.

Table 2. Descriptive Statistics

Variables	Items	Frequency	Percent
Gender	Male	392	39,6
	Female	598	60,4
Age	18-20	219	22,1
	21-22	491	49,6
	23-24	252	25,5
	+25	28	2,8
University	Dicle University	64	6,5
	Alanya Alaaddin Keykubat University	23	2,3
	Amasya University	43	4,3
	Balıkesir University	53	5,4
	Muğla Sıtkı Koçman University	27	2,7
	Erciyes University	57	5,8
	Erzincan Binali Yıldırım University	50	5,1
	Eskişehir Teknik University	19	1,9
	Gümüşhane University	46	4,6
	Iğdır University	24	2,4
	İskenderun Teknik University	115	11,6
	Kastamonu University	158	16,0
	Kocaeli University	90	9,1
	Malatya Turgut Özal University	20	2,0
	Necmettin Erbakan University	50	5,1
	Samsun University	13	1,3
	Selçuk University	106	10,7
	Isparta Süleyman Demirel University	32	3,2
Income (USD)	Below 350	202	20,4
	350-500	289	29,2
	351-650	182	18,4
	651-850	123	12,4
Airport Existence at Family City	Airport Exist	770	77,8
	No Airport	220	22,2
Current place of residence	City Center	546	55,2
	Suburb	31	3,1
	County	311	31,4
	Small town	23	2,3
	Village	79	8,0
Foreign Language Level	Poor	408	41,2
	Medium	484	48,9
	Good	91	9,2
	Very Good	7	0,7
Internship Status	Intern Done	280	28,3
	No Intern	710	71,7
Family working status in the aviation industry	Aviator Exist	103	10,4
	No Aviator	887	89,6
Selection Cause	Family	50	5,1
	Teacher	92	9,3
	Love Aviation	466	47,1
	Job Opportunity	247	24,9
	Randomly	135	13,6
Preference Order	First Choice	379	38,3
	2 - 5	343	34,6
	6 - 10	149	15,1
	11 - 23	91	9,2
	Last Choice	28	2,8
Travelling by plane	Travel Air Before	462	46,7

	Any Travel by Air	528	53,3
Repeated Choice	Choice Again	725	73,2
	Never Choice	265	26,8
Working in the aviation sector after graduation	Continue Aviation Career	838	84,6
	Undecided	126	12,7
	No Career	26	2,6
GPA (Grade Point Average)	Low	55	5,6
	Medium	580	58,6
	High	355	35,9
Class	1	247	24,9
	2	237	23,9
	3	279	28,2
	4	227	22,9
Sufficiency of courses	Courses Enough	412	41,6
	Undecided	258	26,1
	Courses Not Enough	320	32,3
Covid-19 etc. Effect	Covid19 etc effective	220	22,2
	Undecided	158	16,0
	Covid19 etc not effective	612	61,8
Firm Number Knowledge	Firms Enough	390	39,4
	No idea	212	21,4
	Not Enough Firms	388	39,2

Table 2 presents the frequency values of the survey conducted on the demographic characteristics, department preferences and career orientations of Aviation Management students in Türkiye. These data include information on various socio-economic factors such as age, gender, income level, and whether the students have a family member working in the aviation industry. In addition, information on students' reasons for choosing their program, whether they have done an internship or not, their foreign language proficiency level and their career goals after graduation are also presented.

Of the survey participants, 39.6% were male and 60.4% were female. This rate indicates that women are more interested in Aviation Management than men and that the gender balance in the industry may be changing. This finding may serve as a preliminary indicator for future studies on female representation in the sector. When we look at the age groups, 49.6% of the students are between the ages of 21-22. This shows that the Aviation Management department appeals to a young age group and career plans are largely shaped in this age range. In addition, since this age group is still in the early stages of their education process, it can be said that their expectations about the sector and their career goals can be shaped more.

Looking at the university distribution, 16.0% of the participants were from Kastamonu University, and there were participants from other universities with different rates. This shows that the Aviation Management department has become widespread throughout Türkiye and the interest in the sector has increased, while the fact that the participants come from various universities reveals that the demand for this department is spread over a wide geography. When we look at the distribution by income level, 29.2% of the students earn between 350-500 USD. This finding suggests that students' living expenses and education costs may be associated with their preferences. The distribution in other income groups reveals that the interest in aviation management is widespread in different socio-economic groups. The rate of individuals working in the aviation sector in the family is 10.4%. This

rate shows that students' ties with aviation are largely based on personal preferences and that their interest in the sector is shaped by individual preferences and passions rather than familial factors.

When the reasons for choosing the department are analyzed, 47.1% of the students chose this department because they like aviation. This reveals that personal interest and passion play a decisive role in their choice of department. The rate of internship remained at 28.3%, indicating that there is a lack of practical experience in the sector and that students need more practical experience. It was observed that most of the foreign language proficiency level (48.9%) was at intermediate level. This finding indicates that language knowledge plays an important role in the aviation industry, but students need to improve their language skills. In terms of career goals after graduation, 84.6% of the students stated that they plan to pursue a career in the aviation sector. This rate indicates a high interest in career opportunities in the aviation sector.

Finally, the fact that 22.2% of the students stated that their career perspectives were negatively affected by the effects of pandemic diseases such as Covid-19 on the sector reveals that the negative effects of the pandemic on the aviation sector have significantly shaped students' career plans and their perspectives on the sector. The data in Table 2 provides an important overview of the demographic structure of Aviation Management students, their reasons for choosing the department and their career orientations. This data will constitute an important resource in shaping educational policies related to the sector, making strategic decisions regarding the educational processes of students and developing strategies for the labor force needs in the sector.

4.2. Multiple Correspondence Analysis

Variables were grouped and MCA was performed in five groups. The variable of desire to continue a career after graduation, which constitutes the purpose of the study, was included in all five analyses. Information on the first analysis, the multiple fit analysis of the variables of desire to continue career, gender, age and income level, is given below.

Table 3. Discriminant Measures for Gender, Age, Income, Aviation Career and Current Place of Residence

Variables	Dimensions	
	1	2
Working in the aviation sector after graduation	,293	,040
Gender	,152	,011
Age	,315	,147
Income	,351	,525
Current place of residence	,209	,483
% of Variance	26,400	24,143

Table 3 presents the discriminant measures for the variables. The results obtained from the table show the effects of variables such as gender, age, income and career continuity on students' career choices. Income level has the highest variance explanation rates in both dimensions (35.1% and 52.5%). Residence status is the variable with the highest explanatory power in the second dimension. This indicates that socio-economic conditions are a determining factor, especially for students studying in a costly sector such as aviation. The

age variable has a strong effect on the first dimension (31.5%), but its effect on the second dimension is relatively lower (14.7%). This suggests that students' age plays an important role in understanding their career orientation, but may have a more limited effect than other factors. While the gender variable made a low contribution in the first dimension (15.2%), it was almost ineffective in the second dimension (1.1%). This suggests that gender is less determinant in career choices compared to other demographic factors. Career continuity has a significant contribution in the first dimension (29.3%), while its effect in the second dimension is quite low (4.0%). This finding indicates that students' career goals are strongly related to the variables represented in the first dimension (income and age). Following the presentation of the dimensions, Figure 1 shows the MCA analysis of the related variables.

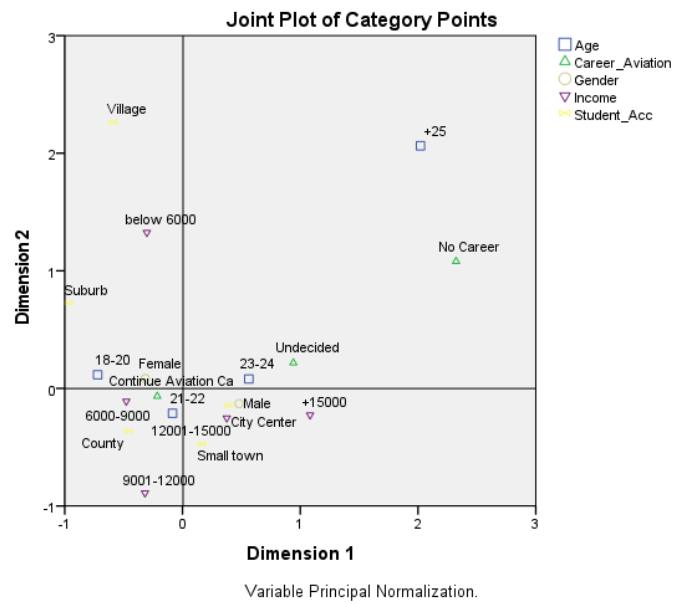


Figure 1. Cloud Map of First Group of Variables (Authors Evaluation)

According to the data obtained from the graph in Figure 1, the relationship between age, income level, gender and career tendencies of students is clearly demonstrated. In terms of age groups, it is seen that students in the 18-20 age group generally prefer to continue their careers, whereas individuals aged 25 and above mostly do not have career plans. In terms of income level, low-income individuals (below 350 USD) prefer to live in rural areas, while high-income individuals (+850 USD) generally prefer to live in urban centers. Regarding the gender variable, male students show a more pronounced tendency to pursue a career, while female students are more likely to be undecided or not favorable to career plans. Finally, when the type of residence is examined, it is found that individuals living in small cities and urban centers have higher income levels, whereas individuals living in rural areas are generally in the low-income group. These findings indicate that individual and environmental factors significantly affect students' career tendencies and preferences. Following this information, Table 4 presents the findings of the discrimination criteria related to the family status of the students.

Table 4. Discriminant Measures for Aviation Career, Family Residence, Existence of Airport, Family Working Status and Travelling by Plane

Variables	Dimensions	
	1	2
Working in the aviation sector after graduation	,030	,506
Existence of airport in the family place	,600	,001
Family Place of Residence	,506	,002
Family working status in the aviation industry	,002	,544
Travelling by plane	,181	,021
% of Variance	26,380	21,479

As a result of the analysis, it is seen that the variables are divided into two main dimensions. The first factor explains 26.38% of the total variance and shows the relationship between the environment where the individual lives and career continuity. The variables with the highest values in this dimension are “Existence of airport in the family place” and “Family Place of Residence”. This can be considered as a factor showing the connection between the geographical location of the individual and aviation. The second factor explains 21.479% of the total variance and stands out as a dimension related to the individual's family's relationship with aviation and future career plans. The variables with the highest values in this factor are “Working in aviation after graduation” and “Family working status in the aviation industry”. This shows how an individual's family background and career goals can affect his/her tendencies in the field of aviation. In addition, the variable “I traveled by plane before starting school” has a low relationship with both factors. This shows that the variable cannot be placed under a distinct dimension and can be considered as an independent variable within the scope of the research. Following the presentation of the discriminant measures, Figure 2 shows the results of the MCA between family status and career continuity.

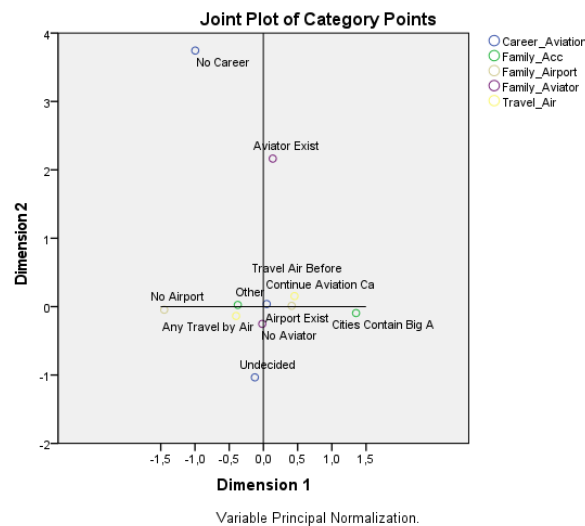


Figure 2. Cloud Map of Second Group of Variables (Authors Evaluation)

Figure 2 shows the distributions between students’ career continuation status in aviation management and their family background and travel experiences. The variable “Career Aviation” is associated with the other variables at an intermediate point. In particular, there

is a significant dissociation between “Family working status” (aviator in the family) and “Career Aviation”. This shows that the family history of aviation profession is poorly reflected in the career plans of the students. The variables “Family Airport” (having an airport in the area where the family lives) and “Travel Air Before” (having traveled by air before) show a stronger relationship with the option to continue an aviation career. This suggests that air travel experience or being close to an airport may affect students’ career choices. On the other hand, the fact that the “Undecided” category is far away from the other variables indicates that individuals in this group may have more independent preferences. In conclusion, the data in the graph and the table show the impact of different variables on students’ career planning in detail. Although career choices are influenced by family and environmental factors, it is understood that these interactions are weak in some cases. Table 5 presents the discrimination criteria of the analysis conducted to define the relationship between career continuity and the reason for, order of, and re-preference status of the department.

Table 5. Discriminant Measures for Aviation Career, Selection Cause, Preference Order and Repeated Choice

Variables	Dimensions	
	1	2
Working in the aviation sector after graduation	,514	,286
Selection Cause	,516	,477
Preference Order	,219	,380
Repeated Choice	,600	,009
% of Variance	46,249	28,790

According to the findings presented in Table 5, it is seen that the variables are grouped into two main dimensions. The first dimension explains 46.249% of the total variance and has a strong relationship with the variables related to individuals’ reasons for choosing the department and career plans after graduation. In this context, it is seen that the variable “If I were to take the exam again, I would choose this department again (Repeated Choice)” has the highest loading value of .600. This shows that individuals’ commitment to and satisfaction with their preferred department is strongly related to this factor. Similarly, the variable “Career Aviation” has a high value of ,514. This shows that individuals’ post-graduation career expectations and department preferences are significantly grouped under the same dimension. The second dimension explains 28.790% of the total variance and is related to individuals’ preference rankings and reasons for choosing the department. For example, the variable “Selection Cause” (What is your reason for choosing this department?) shows a strong connection with this factor with a load value of .477. This shows that the motivation of individuals in choosing a department can be considered as an independent factor. In addition, the variable “Preference Order” (Indicate your preference ranking) has a moderate relationship with the second factor with a value of .380. This indicates that individuals’ preference ranking is related to their reasons for choice but has a relatively low relationship with their direct career goals. Figure 3 shows the MCA conducted to define the relationship between career continuity and the reason, order and re-preference status.

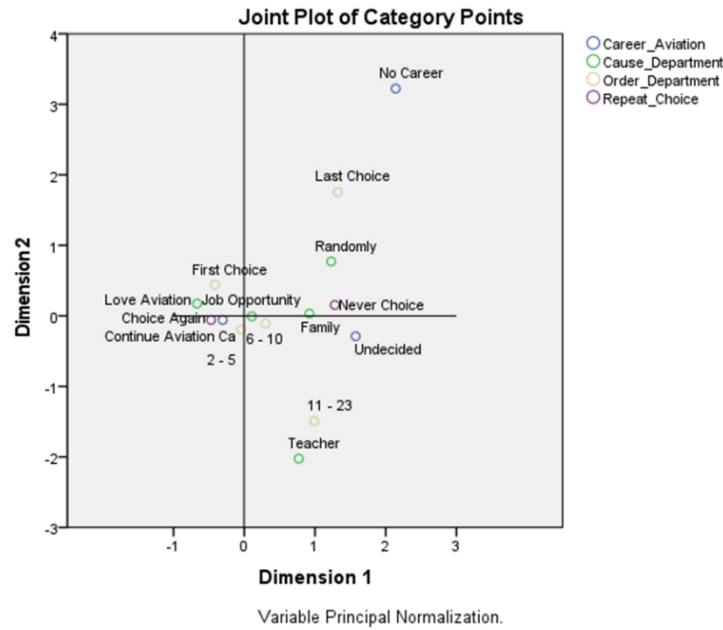


Figure 3. Cloud Map of Third Group of Variables (Authors Evaluation)

The graph shows the distribution of students' decision to pursue an aviation career and other categorical variables. The category “No Career” (not considering an aviation career) is located in a distant and independent position from the other variables. This shows that students who do not intend to pursue an aviation career exhibit a different profile. The “First Choice” and “Love Aviation” categories are located very close to the “Career Aviation” variable. This shows that the interest in aviation and the fact that the department is among the first choices have a strong influence on the decision to continue an aviation career. The fact that the variable “Repeat Choice” is close to the same region as “Career Aviation” supports the tendency of students with clear career plans to choose this department again. The categories “Randomly” and “Last Choice” are in the same area as “No Career”, indicating that these students have unclear career goals or limited interest in aviation. In conclusion, the findings show that decisions towards an aviation career are clearly related to interest, order of preference and propensity to choose again, whereas other factors such as family influence are less determinant. Table 6 presents the discrimination criteria of the analysis that presents the relationship between career persistence and variables indicating the academic status of the student in university life such as internship, foreign language level, grade point average.

Table 6. Discriminant Measures for Aviation Career, Class, Grade, Intern and Language

Variables	Dimensions	
	1	2
Working in the aviation sector after graduation	,085	,118
Internship	,687	,023
Grade	,310	,275
Class	,749	,388
Language	,027	,434
% of Variance	37,188	24,742

As a result of the analysis, it is seen that the variables are grouped in two main dimensions. The first dimension explains 37.188% of the total variance and has a strong relationship with internship, grade level and academic achievement. In particular, the “Grade” variable has the highest value in the first dimension with a factor load of .749. This shows that the grade level of the student has the strongest relationship with this factor compared to other variables. Similarly, the variable “Internship” has a very strong relationship with the first factor with a loading value of .687. This shows that the student’s grade level and internship status are significantly grouped under the same factor and that progress in the educational process is a determining factor. The variable “Grade Point Average (Grade)”, which represents academic achievement, shows a moderate relationship with the first factor with a loading value of .310, while it is also related to the second factor with a loading value of .275. This shows that academic achievement is related to both the educational process and other individual variables. The second dimension explains 24.742% of the total variance and shows a stronger relationship with students’ foreign language knowledge and academic goals. In particular, it is seen that the variable “Foreign Language Level (Language)” has a higher connection with the second factor with a loading value of .434. This shows that the foreign language level of the student can be considered as an independent factor from other academic and vocational variables. Figure 4 shows the MCA results of the relevant variables.

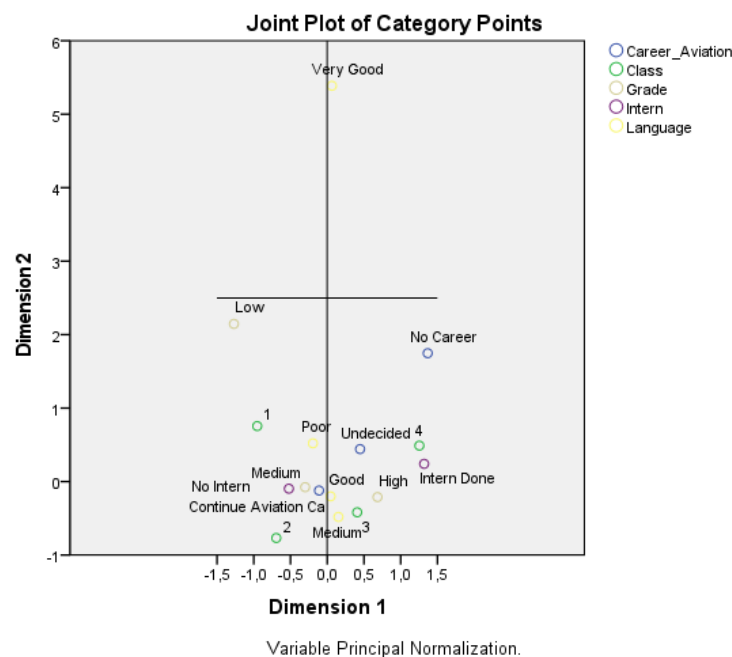


Figure 4. Cloud Map of Fourth Group of Variables (Authors Evaluation)

Figure 4 shows the categorical distribution of students according to various variables. According to the results of the MCA, students’ class level and internship status stand out as the most determining factors in the first dimension. Class level and internship status variables have high loadings in the first dimension, indicating that they are important indicators of students’ academic progress and their relationship with the sector. Language level is a more determinant variable in the second dimension. This indicates that it can be associated with students’ academic achievements or professional competencies. Academic

achievement level (Grade) has a moderate loading in both dimensions, indicating that students' overall academic performance is in a balanced relationship with different variables. Looking at the positions of the category dots, it is seen that students who have done an internship are generally in a similar position with students who have high academic achievement and are considering continuing their career in the aviation sector. The positioning of the "Intern Done" category in the positive first dimension suggests that students who have completed an internship are generally career-oriented individuals. However, the positive position of "No Career" in the first dimension indicates that students who do not consider a career are differentiated from other variables. The high position of the category "Very Good" in the second dimension, which includes students with high language proficiency, suggests that it may be directly related to academic achievement or professional competencies. On the other hand, students with low academic achievement and those with low grade level show a similar distribution with individuals who have not done an internship. The categories "Poor" and "Low" are positioned in the negative first dimension and low second dimension, suggesting that these students have limited academic achievement and sectoral experience. In conclusion, the results of the multiple correspondence analysis indicate that students who are considering a career in aviation are generally individuals who have high grade level, are academically successful and have internship experience. On the contrary, it is observed that students with low academic achievement, those who have not completed an internship and those who do not intend to pursue a career in the sector are in a different position. These findings reveal that students' academic and professional development processes have a strong relationship with each other. Table 7 presents the discrimination criteria for the relationship between career continuity and some external factors.

Table 7. Discriminant Measures for Aviation Career, Courses, Covid and Firm Number Knowledge

Variables	Dimensions	
	1	2
Working in the aviation sector after graduation	,346	,351
Sufficiency of courses	,445	,062
Covid-19 etc. Effect	,343	,400
Firm Number Knowledge	,407	,263
% of Variance	38,532	26,894

According to the results of the analysis, students' perceptions of the aviation sector and various factors related to the sector are addressed in two main dimensions. The first dimension explains 38.53% of the total variance, while the second dimension explains 26.89%. This shows that the first dimension is more determinative on issues such as students' future expectations and educational competence in the aviation sector. When the loadings of the variables to the dimensions are analyzed, it is seen that the statement "I plan to work in aviation after graduation" has moderate loadings in both dimensions (0.346 and 0.351). This shows that students' career plans can be associated with both general professional perception and sectoral opportunities. Students' views on whether the courses they have taken are sufficient for working in the sector (I think the courses I have taken are sufficient for working in the sector) has a high loading in the first dimension (0.445). This

situation reveals that students think that their education programs are a critical factor in terms of preparation for the sector. However, in the second dimension, the effect of this variable is quite low (0.062), meaning that this opinion is less related to other dimensions of professional perception.

The variable on whether infectious diseases such as Covid-19 negatively affect the perception towards the aviation profession (loadings of 0.343 and 0.400) has a significant effect on both the first and second dimensions. This finding suggests that the pandemic is an important factor shaping the perception towards the aviation sector and may affect students' career plans. Finally, the perception of whether there are enough businesses to work in aviation after graduation ("There are enough businesses to work in aviation") has a high loading especially in the first dimension (0.407). This shows that employment opportunities in the sector have a direct impact on students' professional expectations. In general, the analyzed variables reveal that external factors such as education quality, employment opportunities and pandemic play an important role in shaping students' professional perceptions towards the aviation sector. The fact that students find the courses they take sufficient and think that there are sufficient job opportunities in the sector stands out as an important source of motivation for their career plans. However, the negative impact of global crises such as Covid-19 on the perception of the profession brings along uncertainties about the future of the sector. Figure 5 shows the results of the MCA for these variables.

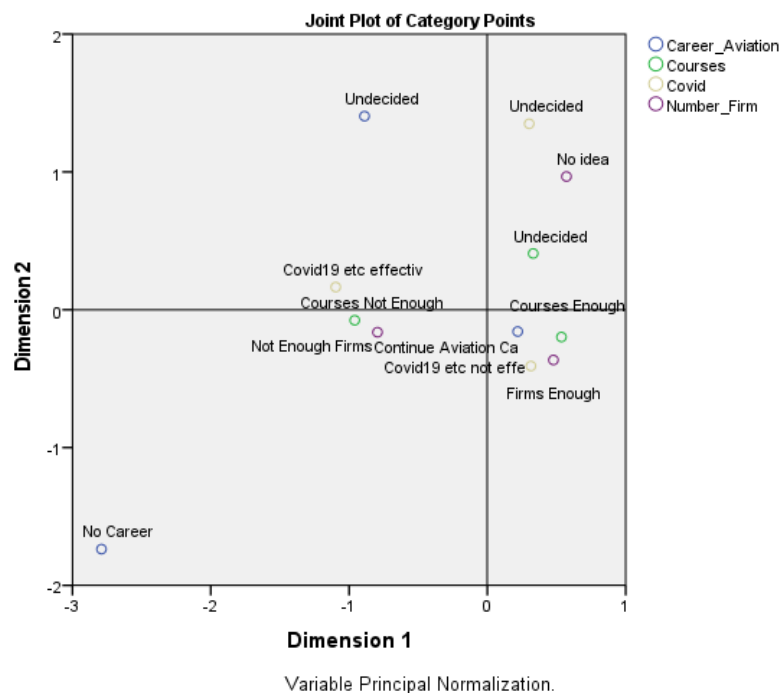


Figure 5. Cloud Map of Fifth Group of Variables (Authors Evaluation)

In the graph, students' views on career plans for the aviation sector, the adequacy of the courses they take, the impact of Covid-19 on professional perception and job opportunities in the sector are analyzed in two main dimensions. While the first dimension reflects the clarity and orientation of students' views, the second dimension reveals their approaches to uncertainty and variable factors. The graph shows that the category "No Career" has the

lowest position in the first dimension. This shows that students who do not intend to pursue a career in aviation are clearly differentiated from other variables and have a different perspective towards the profession. It is observed that the “Undecided” category is clustered at different points in both the first and second dimensions. This shows that students experience uncertainty about the sector and that different factors may be effective in their decision-making processes. In particular, it is seen that there are differentiations as “Courses Enough” and “Courses Not Enough” regarding the adequacy of the courses.

It is understood that students who find the courses sufficient have a clearer stance on finding a job in the sector and continuing their profession, while those who find them insufficient are more indecisive. It is noteworthy that students are divided into two regarding the impact of Covid-19. While the category “Covid19 effective” represents the students who think that the pandemic has negatively affected their perception of their profession, the category “Covid19 etc. not effective” shows the students who think that these effects are not important. The fact that students who find Covid-19 effective are more closely positioned with the “Courses Not Enough” and “Not Enough Firms” categories suggests that the pandemic may have increased concerns about the quality of education and employment opportunities. Students who think that there are enough businesses in the sector are clustered in the lower right region with the category “Firms Enough”, while those who think that there are not enough job opportunities are located further to the left. This reveals that the perception of job opportunities is directly related to students’ career expectations. In general, the graph shows that there are significant differences in students’ views on the aviation sector and that factors such as educational qualification, the effects of Covid-19 and job opportunities shape these perceptions. Undecided students are mostly located in the middle and upper regions, while those with clear views are generally located at the extremes of the graph. These findings reveal that sector-related uncertainties and individual experiences significantly affect the perception of the profession.

5. DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This study aims to examine the attitudes of Aviation Management students towards their profession and the factors affecting these attitudes. The aviation sector has a growing and changing structure both worldwide and in Türkiye (Gursoy & Chi, 2020). However, despite this growth, career opportunities in the sector carry various uncertainties, especially for new graduates. Analyses have shown that the main factors affecting students’ professional preferences and willingness to stay in the sector are related to academic experiences, internship opportunities, language proficiency and employment opportunities in the sector. It was found that students expressed different opinions on the adequacy of the courses taken. Students who found the courses insufficient generally expressed concerns about the industry and emphasized that academic programs should be more aligned with industry expectations. Similarly, a study conducted by Richardson (2008) revealed that students studying in the fields of tourism and aviation have difficulties in the sector due to the lack of practical training. Therefore, it is important for aviation education institutions to increase the opportunities for practical training. In addition, it has been observed that internship experience plays a critical role in the decision to stay in the sector. While students who did

not do an internship were more ambivalent about pursuing a career in the sector, students who had an internship experience had a clearer attitude about continuing in the sector. This finding is also observed in the research on the tourism sector conducted by Kozak (2009) and reveals that practical experiences in the sector are decisive on career choice. Similar results were reported by Yavaş et al. (2021), who emphasized the effect of internship on students' career orientation.

One of the main reasons for students not considering a career in the aviation sector is their perception that there are not enough employment opportunities in the sector. Previous studies have also shown that graduates' uncertainty about finding a job, especially in fields with volatile market conditions such as aviation and tourism, can negatively affect their professional motivation (İlgaz & Güzel, 2019). Therefore, the ties between industry representatives and educational institutions need to be strengthened and students need to be more aware of the industry. Finally, it was observed that the uncertainties created by global crises such as Covid-19 had an impact on students' career planning. The stoppages in the aviation and tourism sectors during the pandemic caused individuals planning to pursue a career in these fields to reconsider their decisions (Gursoy & Chi, 2020). Therefore, the impact of the crises experienced in the sector on long-term professional plans should be examined in more depth.

The findings of this study align with the theoretical framework discussed earlier. For example, the relationship between program preferences and variables such as gender, age, and internship experience support Holland's (1997) vocational personality theory, in which individuals choose environments that fit their personality types. Students drawn to aviation due to its operational and leadership characteristics may reflect "Enterprising" and "Realistic" types. Similarly, age and class level are variables closely related to Super's career development theory Super (1990), which views students in this age group as being in the "exploration" stage—assessing possibilities and shaping their professional identities. The observation that older students and those with more experience are more career-oriented reflects this model. Furthermore, Krumboltz's social learning theory helps interpret the impact of environmental and experiential factors Krumboltz et al. (1976) such as having a family member in the aviation sector, prior exposure to air travel, and internships. These experiences likely contribute to the formation of students' career decisions through observational learning and perceived reinforcement. Thus, the study's results are consistent with the multi-dimensional nature of career development as described in these theoretical approaches. All these findings suggest that the content of Aviation Management education should be more aligned with sectoral expectations. Educational institutions should develop closer relationships with industry stakeholders to facilitate students' adaptation to business life. In addition, students need to be better informed about job opportunities in the sector in order to reduce their perception of occupational uncertainty. Future studies should focus on strengthening the link between industry and education and identifying measures to help students make more informed career planning.

The limited information in the literature on the educational and career preferences of Aviation Management students increases the importance of this study. The rapidly increasing demand for qualified labor force in the aviation industry requires a more

conscious shaping of educational policies in this field. In this context, the findings of this study will provide a valuable resource to better understand the needs in the sector and support students in achieving their career goals. More effective planning of education processes and the development of student-oriented approaches can make significant contributions to sectoral sustainability. Since the data was collected solely from Turkish universities, generalization of the results to other cultural or institutional contexts should be approached with caution.

Significant findings were obtained in the context of the variables determined in the study. However, these findings need to be examined in detail with different methods. In particular, mixed studies using both qualitative and quantitative research methods can contribute to a deeper understanding of students' attitudes towards the sector. For example, the factors affecting students' decisions to pursue a career in the aviation industry can be elaborated in the context of gender. In previous studies, it has been revealed that the reasons why female students move away from some professions are related to factors such as the stress level of the profession, its social status and its impact on family life (Aloudat, 2017). Similarly, the factors affecting the career expectations of female students in the aviation sector can be examined. In addition, due to the impact of the Covid-19 pandemic on the aviation sector, students' perceptions of occupational uncertainty should be investigated in detail. For example, Gursoy and Chi (2020) stated in their study that the pandemic had negative effects on the career planning of individuals working in the tourism and aviation sectors. Similarly, long-term longitudinal studies can be conducted to understand students' attitudes towards the sector after Covid-19. Finally, the research can be repeated in the future with larger samples and the career expectations and perspectives of aviation management students from different universities can be examined comparatively.

The results of this study can inform several policy and educational practices. First, universities offering Aviation Management programs should consider strengthening career guidance services to support students in the exploration stage of their development. Personalized counseling may help students better understand their career profiles and match them with relevant industry roles. Second, the integration of practical training and mandatory internships into the curriculum can significantly enhance students' readiness for aviation careers. Institutions should collaborate with airlines and ground handling companies to offer structured, supervised internship experiences. Third, considering the importance of foreign language proficiency in the global aviation industry, universities should reinforce language training, especially English, within aviation programs. Lastly, sectoral stakeholders and civil aviation authorities may use these findings to better understand the future workforce and design initiatives (e.g., scholarship programs, mentorship opportunities, early talent recruitment) that align with students' expectations and motivations.

As with any research, this study also has some limitations. Due to time and resource constraints, the data of the study is limited to a specific sample group of aviation management students. Therefore, it should be cautious about the generalizability of the findings. Future studies can increase the comparability of the findings by including a larger sample of students from different universities. Similar limitations were also mentioned in

the study conducted by Alkan and Kahraman (2021). The researchers emphasize that studies conducted with students from a specific university may be insufficient to make generalizable inferences about the sector. Therefore, it is recommended that mixed-method studies that include the views of professionals working in the sector should be conducted in future research. In addition, the variables used in the study were limited to certain factors. Cultural, economic and personal factors that may affect students' professional attitudes can be addressed in a broader framework and contribute to future studies.

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