A Study of College Level Academic Courses for Airport Management Personnel

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Abstract

The purpose of this research was to determine and compare the responses of public use airport managers in Arizona, New York, North Carolina, and Ohio to an opinionaire developed for the study. Specific areas investigated were academic courses most desirable for a future airport manager, if a college degree was important, and should the airport manager have experience as a pilot or mechanic.

A review of the related literature indicated that post-secondary education in aviation and airport management was important to practitioners. It was also found that colleges and universities are becoming more involved in aviation education.

The 298 public use airport managers selected for the study included 108 members of the American Association of Airport Executives (AAAE) and 109 non-AAAE members. Each potential respondent received a survey packet which included the opinionaire and supporting documents.

A total of 103 of the 298 potential respondents returned their opinionaire. The respondents had an average age of 44.2 years, were 91% male, had been in their present position an average of 8.1 years, and had been in airport management an average of 11.5 years. Additional information from the respondents included their highest academic degree, their major, and the aviation activity and the Federal Aviation Administration facilities at the airport that they were responsible for managing.

The study revealed that there was agreement among the sample as to whether many of the suggested academic courses should be included in the collegiate preparation of future airport managers. A suggested academic major could include Airport Operation, Airport Internship, Airport Planning, Aviation Law, Aviation Safety, Management, Finance, Economics, Accounting, and Labor Relations. Additional courses that could be considered as a minor or support area include Marketing, Air Transportation, Computer Operation, Business Law, Passenger Operations, Aeronautics, Insurance, Air Traffic Control, Statistics, National Airspace, Air Cargo Handling, Air Carrier Operations, and Aviation Insurance.

The importance of a college degree and a recommended college major of business or aviation was determined. The respondents indicated that it was important that the airport manager had experience as a pilot.

Introduction

The history of aviation has been full of invention and innovation. The very act of man attempting to fly has served as a basis for technological developments that spanned centuries. As a result of the first flight and the developments that were to follow, a method of transportation has been born that is like no other in modern history. "Aviation...has achieved a transportation significance not even its pioneers dreamed possible" (Serling, 1983, p. 247).

The dramatic expansion of air travel in recent years has presented the aviation community with numerous problems. One specific challenge is that airports, an extremely important cog in the transportation infrastructure, have developed from grass covered fields "on the edge of town" into small cities that serve thousands of passengers as well as tons of air freight every day.

Today's airport has grown from the first two-passenger "terminal," a grass runway, a hangar housing a one man airplane, and one small shovel to what can best be called self contained cities. In 1903, airport management was easy; in the 1980's, as part of an industry built on challenge, it has become the most demanding of the new professions (Smith, Odegard, & Shea, 1984). The operation of these airports requires management that is cognizant of good business practices and informed about aviation as well. The words of Frederick (1949) that "...it is well for the airport manager to be a flyer, but it is even more important

that he (sic.) be a businessman" (p. 138) are more significant than ever before in the history of aviation.

Statement of the Problem

Many colleges or universities have students enrolled in two year (Associate degree) and four year (Bachelor's degree) aviation and airport management academic programs. It is the intent of those students to prepare themselves to meet the future workplace demands and challenges of an airport manager by obtaining a post-secondary education. There is little evidence, however, that current courses of study for collegiate aviation and airport management programs have been based on a traditional curriculum model. Some educators are concerned as to whether there is a specific major or course of study that should constitute the academic preparation for future managers of airports in the United States.

Academic preparation as defined by this study included any post-secondary education in aviation management and academic support areas. Specific courses consisted of a composite of higher education academic courses as recommended by collegiate, industry, and government sources as being appropriate for persons wishing to pursue post-secondary majors in aviation management in general and airport management/operation in particular. This study sought to establish whether there was congruence between those courses and the academic preparation as recommended by individuals currently employed as managers of public use airports.

Significance

The significance of this study is threefold. First, by identifying a validated curriculum model for persons wishing to be future airport managers, a more relevant and effective educational experience is possible. Secondly, colleges and universities that wish to offer academic course work in airport management/operation will have evidence to assist in the development of future programs. Finally, boards of control with airport management positions may find the results of this study helpful in the screening of potential candidates.

The opportunity for academic advisors at both secondary and higher education levels to provide students with a more realistic picture of the academic requirements associated with pursuing a career in airport management/operation may also be helped by the results of this study. There is also a possibility that persons currently employed in aviation management positions may be encouraged by the findings of this study to pursue additional study.

Little data are available from persons in aviation management/operation as to the academic preparation needed to meet the challenges that are routinely encountered in the workplace. By more accurately defining the necessary academic qualifications required of professionals in the field, persons entering this labor force may more realistically plan their academic preparation prior to entering the job market.

Design of the Study

Research Questions

Is there a specific academic curriculum that should be required of students enrolling in higher education airport management programs? How important do airport managers think it is that they are/were pilots and/or mechanics? How important is a college degree to an airport manager? If a college degree is important, what should be the academic major?

Subjects

Subjects for this study were managers of public use airports in Arizona, New York, North Carolina, and Ohio. The selection of these states was based upon the desire to solicit responses from states located in different geographic sections of the United States but yet containing a significant proportion of the nation's airmen, airplanes, and airports. The aviation community of these states represented 8% of the public use airports, 11% of the airplanes, and 11% of the certified airmen of the total United States population (National Association of State Aviation Officials, 1983).

There were two subgroups within the sample. One group of airport managers were members of the American Association of Airport Executives (AAAE) and the other subgroup were not members of the AAAE.

Sample Selection

The NASAO Databank '83 (National Association of State Aviation Officials, 1983) stated that there are 12,937 airports

in the United States of which are publicly owned. To determine the necessary sample size for the study the following formula was utilized (Tuckman, 1978).

$$N = (z/e)^2 (p) (1 - p)$$

N is the necessary sample size, z is the standard score corresponding to a given level, e is the proportion of the sampling error in a given situation, and p is the estimated proportion of cases in the population. In this study, the confidence level was set at 955 (.05) or 1.96z, the proportion of sampling error set at 10% (.10), and the proportion of public use airports in the population determined to be 35% (.35). The following sample size was calculated.

$$N = (1.96/.10)^2 (.35)(.65)$$

$$N = 87$$

It was determined that a sample containing 275-300 public use airports would reduce sampling error and add to the stability of the findings according to Tuckman (1978). Arizona, New York, North Carolina, and Ohio contained 375 public use airports and represented 8% of the population. The selection of potential respondents and the development of a mailing list utilized Who's Who in Airport Management (American Association of Airport Executives, 1985), the Airport Managers List (Arizona Aeronautics Division, 1985), the New York Airport Directory (New York Aviation Bureau, 1984), Airport Managers (North Carolina Department of Transportation, 1985), and the Ohio Airport Directory (Ohio Division of Aviation, 1984).

Instrument

An opinionaire was developed and tested in Indiana and served as the data gathering instrument for the study. The instrument contained three parts.

The first part, Section A, contained thirty-one academic courses that a student could enroll in to prepare for a position as an airport manager or aviation supervisor. These courses were a composite of course offerings from the aviation management curriculum of several institutions of higher learning (Bowling Green State University, 1983, Florida Institute of Technology, 1984, Georgia State University, 1985, and Indiana State University, 1984) and the Airway Science Curriculum Demonstration Project (Office of Personnel Management, 1983b). A Likert scale of 1, 2, or 3 (1- Of Little Value, 2 - Of Some Value, and 3 - Should be Required) was utilized for responses.

The second part, Section B, consisted of questions relative to the importance of a college degree, whether the manager should be/have been a pilot or mechanic, and what academic major is important. A Likert scale of 1, 2, 3, 4, or 5 (1 - Of No Value, 2 - Little Value, 3 - Some Value, 4 - Great Value, and 5 - A Must) was utilized for responses. The third part, Section C, included demographic questions about each respondent's airport.

Procedure

A survey packet containing a cover letter, the opinionaire, a stamped return envelope, and a return postcard were sent to

each potential respondent. The recipient was encouraged to complete the opinionaire as quickly as possible and return it and the postcard immediately. The postcard contained a code number that indicated that the respondent had returned their survey instrument without specifically identifying their opinionaire. Each potential respondent who had not returned their opinionaire within 14 days was sent a reminder postcard.

The Data

Responses from the returned opinionaire were entered on a microcomputer. Statistical analysis was accomplished with Statistics with Finesse (Bolding, 1984).

Section A and Section B were analyzed by sample sub-group (AAAE and non-AAAE) and as a whole. The analysis included the number of responses to each academic course and the percentage of those responses. Section B analysis additionally includes specific cross-tabulations by various sub-groups. Section C includes tallies and percentages with respect to age, gender, academic degree, years in aviation management, and years in present position. The activity and facilities at the respondent's airport was also included in the analysis.

Respondents

A total of 103 or 34% of the opinionaires was returned. Sixteen or 25% were returned from Arizona, 32 or 36% from New York, 20 or 31% from North Carolina, and 28 or 34% from Ohio.

Seven or 7% of the opinionaires were returned without the coded postcards being mailed. The number in parenthesis in all tables indicate percentages.

Table 1

Opinionaire Returns

State	Total			AAAE			Non-AAAE		
	Sent	Return		Sent	Return		Sent	Return	
	N	N	%	N	N	%	N	N	%
Arizona	63	16	(25)	31	13	(43)	32	3	(09)
New York	89	13	(36)	37	20	(54)	52	12	(24)
North Carolina	64	20	(31)	19	12	(63)	45	8	(18)
Ohio	82	28	(34)	21	9	(42)	61	19	(32)
Unknown		7	(07)		1	(02)		6	(12)
Totals	298	103	(34)	108	55	(50)	190	48	(25)

The total population of the study contained two groups, 108 airport managers who were members of the American Association of Airport Executives (AAAE) and 190 who were not members of the organization. Of the 108 AAAE members, 55 or 50% returned their opinionaires. By state, 13 or 43% of the AAAE members in Arizona, 20 or 54% in New York, 12 or 63% in North Carolina, and 9 or 42% in Ohio responded. One survey packet in Arizona was undeliverable.

The returned opinionaires for non-AAAE respondents totaled 48 or 25%. By state, 3 or 9% of the non-AAAE members from Arizona responded, 12 or 24% responded from New York, 8 or 18% responded from North Carolina, and 19 or 32% of the potential

respondents in Ohio returned their opinionaires. Two packets were undeliverable.

The demographic information from the sample provided data on each respondent's gender and age, years in airport management, years in present position, and academic degrees and majors. The gender of the respondents, as indicated in Table 2, was 94 or 91% male, while 8 or 8% of the respondents were female.

Table 2

Gender and Age of Respondents

	AAAE		Non-AAAE		Total	
	N	%	N	%	N	%
Male	50	(91)	44	(91)	94	(91)
Female	4	(07)	4	(08)	8	(01)
Unknown	1	(02)	0	(00)	1	(01)
Years						
Under 29	4	(07)	4	(09)	8	(08)
30 to 39	16	(30)	13	(28)	29	(28)
40 to 49	19	(35)	12	(26)	31	(31)
50 to 59	11	(20)	12	(26)	23	(23)
Over 59	4	(07)	6	(13)	10	(09)
Unknown	1	(02)	1	(02)	2	(02)
Average	43.6		45.1		44.3	

Note. The mid-point age for the respondents under 29 years of age and over 59 years of age was arbitrarily set at 24.5 years and 64.5 years.

Eight or 8% of the respondents were under 29 years of age, 29 or 28% were between 30 and 39, 31 or 31% were between 40 and 49, 23 or 23% between 50 and 59, and 10 or 9% were over age of 59. The average age of the respondents was 44.2 years.

Table 3 contains the data relative to the respondents' years in airport management and in their present position. In the portion of the table that pertains to the respondents' years in airport management, one AAAE and three non-AAAE respondents did not respond.

Table 3

Respondent's Years in Airport Management and Present Position

Years	Airport Management						Present Position					
	AAAE		Non-AAAE		Total		AAAE		Non-AAAE		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Under 5	7	(13)	15	(34)	22	(22)	24	(45)	15	(34)	39	(40)
5 to 10	17	(31)	11	(25)	28	(22)	18	(34)	13	(30)	31	(32)
11 to 15	15	(28)	8	(18)	23	(23)	7	(13)	9	(20)	16	(16)
16 to 20	6	(11)	3	(07)	9	(16)	2	(04)	2	(05)	4	(04)
Over 20	9	(17)	7	(16)	16	(16)	2	(04)	5	(11)	7	(07)
Unknown	1	(02)	3	(07)	4	(03)	2	(04)	3	(07)	5	(05)
Average	12.5		10.3		11.5		7.0		9.4		8.1	

Note. The mid-point for respondents with over 20 years in a category was arbitrarily set at 25 years and with under 5 years at 2.5 years.

Seven or 13% of the AAAE members had less than 5 years of airport management experience while 15 or 34% of the non-AAAE respondents had been in airport management for a similar period. The AAAE respondents had an average experience level in airport management of 12.5 years, the non-AAAE respondents of 10.3 years, and the total respondents had an average of 11.5 years of experience.

The years of experience of the respondents in their present position are also contained in Table 3. A total of five or 5% did not respond. The AAAE respondents had an average experience level in their present position of 7.0 years, the non-AAAE respondents of 9.4 years, and the total respondents had an average of 8.1 years. Forty-two or 78% of the AAAE members had been in their present position for 10 years of less while 28 or 64% of the non-AAAE respondents had held their present position for a similar period.

The highest academic degree of the respondents is reported in Table 4. All AAAE members had at least a two year degree while 11 or 23% of the non-AAAE members had no post-secondary degree. Fifty-two or 49% of the respondents had a Bachelor's degree and 16 or 29% of the AAAE respondents had a Master's degree. One AAAE respondent had a doctorate.

Table 4

Highest Academic Degree of Respondents

	AAAE		Non-AAAE		Total	
	N	%	N	%	N	%
High School	0	(00)	11	(23)	11	(10)
Two Year	10	(18)	8	(17)	18	(17)
Bachelor's	28	(51)	24	(50)	52	(49)
Master's	16	(29)	4	(09)	29	(18)
Doctorate	1	(02)	0	(00)	1	(01)
Unknown	0	(00)	1	(02)	1	(04)

Academic Course Analysis

The data in Table 5 show the responses to the questions that were contained in Section A of the opinionaire. A three point Likert Scale (1 - Of Little Value, 2 - Of Some Value, and 3 - Should be Required) was utilized and respondents were asked to indicate whether they thought a specific academic course should be included in the major or support area of a future airport manager's academic preparation. Information in this table reports the percentage of the total response in each category.

The academic courses that are reported as "should be required" by more than 50% of the total respondents include Management (96%), Airport Operation (93%), Airport Internship (87%), Finance (84%), Airport Planning (82%), Aviation Law (79%), Aviation Safety (63%), Economics (56%), Accounting (54%), and Labor Relations (52%). The AAAE respondents, in addition to the academic courses previously mentioned, indicated that Air Transportation (58%) "should be required." The non-AAAE respondents indicated that Aeronautics (54%) "should be required."

Academic courses that were indicated as "of little value" by over 50% of the respondents include Electronics in Aviation (52%) and Man and Technology (56%). The AAAE respondents, in addition to the academic courses previously mentioned, indicated that Instrument Flight (59%) was "of little value," while non-AAAE respondents stated that Aviation History (65%) and Travel and Tourism (60%) were "of little value" to a future airport manager.

Table 5

Ranking of Academic Courses by Percentage of Responses

Course	AAAE (N = 55)			Non-AAAE (N = 48)			Total (N = 103)		
	1	2	3	1	2	3	1	2	3
Management	00	02	98	02	04	94	01	03	96
Airport Operation	00	05	95	02	07	91	01	05	93
Airport Internship	00	10	90	02	13	85	01	12	87
Finance	00	10	90	02	17	81	01	15	84
Airport Planning	00	13	87	02	24	74	01	17	82
Aviation Law	00	15	85	06	23	71	03	18	79
Aviation Safety	14	31	55	06	21	73	11	26	63
Economics	05	33	62	17	33	50	11	34	56
Accounting	09	31	60	06	48	46	08	38	54
Labor Relations	04	31	65	04	58	38	04	44	52
Business Law	13	24	63	17	52	31	14	38	48*
Air Transportation	06	36	58	15	52	33	10	43	47*
Aeronautics	20	48	32	12	33	54	17	41	43*
Insurance	17	54	29	17	35	48	16	45	38*
Passenger Operations	14	44	42	13	61	26	14	51	35*
Computer Operations	04	49	47	20	63	17	11	55	34*
Air Traffic Control	18	53	29	16	44	40	18	49	34*
Aviation Insurance	31	40	29	20	40	40	26	41	34*
Marketing	04	65	31	13	54	33	08	59	33*
National Air Space	20	47	33	25	44	31	21	47	32*
Air Carrier Operation	22	51	27	21	48	31	24	47	29*
Statistics	05	62	33	29	52	19	17	57	26*
Meteorology	41	52	07	26	43	31	33	48	19
Air Cargo Handling	20	67	13	26	55	19	23	62	16*
Aviation Weather Services	38	51	11	24	59	17	31	55	14
Air Carrier Economics	18	67	15	39	50	11	28	60	12
Travel and Tourism	29	58	13	60	31	09	43	46	11
Instrument Flight	59	39	02	37	46	17	49	41	10
Man and Technology	48	41	11	64	33	03	56	37	07
Electronics in Aviation	59	40	01	44	48	08	52	43	05

Note. * indicates that the combined total of columns 2 and 3 is equal to or greater than 75%.

The asterisk in Table 5 is used to show the academic courses that 75% or more of the respondents indicated were "of some value" or greater to a future airport manager. These courses and the percent of such response include Marketing (92%), Air Transportation (90%), Computer Operations (89%), Business Law (86%), Passenger Operations (86%), Aeronautics (84%), Insurance (83%), Air Traffic Control (83%), Statistics (83%), National Airspace (79%), Air Cargo Handling (78%), Air Carrier Operations (76%), and Aviation Insurance (75%).

Supplementary Information

Table 6 contains the data relative to the responses to the question of the importance of a college degree to a future airport manager. Sixty-nine or 71% of the respondents indicated that a college degree is of "great value" or "a must." This

Table 6

Responses to the Importance of a College Degree

Degree	Of No Value		Little Value		Some Value		Great Value		A Must	
	N	%	N	%	N	%	N	%	N	%
A Degree	3	(03)	2	(02)	25	(25)	31	(32)	38	(39)
Associate	5	(05)	19	(20)	51	(52)	13	(13)	9	(09)
Bachelor's	4	(04)	2	(02)	26	(25)	35	(34)	34	(34)
Master's	12	(12)	23	(23)	37	(37)	26	(26)	2	(02)
Doctorate	36	(36)	36	(36)	16	(16)	12	(12)	0	(00)

average came from 44 or 85% of the AAAE and 25 or 53% of the non-AAAE members indicating this response. None of the AAAE members indicated that a college degree would be "of no value" or of "little value" while 5 or 10% of the non-AAAE participants indicated either a "no value" or "little value" response.

The responses to the question of the recommended college major for an airport manager are shown in Table 7. Forty-five respondents reported that business was the recommended major. A major in aviation was recommended by 25 respondents. No percentages are reported in Table 7 because numerous opinionaires either included no response or more than one response to this question.

Table 7

Responses to Recommended Academic Major

Major	AAAE	Non-AAAE	Total
Business	29	16	45
Aviation	19	6	25
Engineering	3	3	6
Not Important	4	2	6
Psychology	1	1	2
Natural Science	0	1	1

The importance of the airport manager having experience as a pilot or a mechanic is reported in Table 8. Fifteen or 28% of the AAAE members indicated that being a pilot was of "great value" or "a must" while 25 or 50% of the non-AAAE members indicated a similar response. Whether the airport manager should

have experience as a mechanic was indicated as being "of no value" or of "little value" by 68 or 66% of the total.

Table 8

Responses to the Importance of Being a Pilot or Mechanic

	Of No Value		Little Value		Some Value		Great Value		A Must	
	N	%	N	%	N	%	N	%	N	%
AAAE										
A Pilot	7	(13)	13	(24)	20	(36)	12	(22)	3	(06)
A Mechanic	14	(26)	28	(51)	11	(20)	2	(03)	0	(00)
Non-AAAE										
A Pilot	3	(06)	2	(04)	19	(40)	18	(38)	6	(12)
A Mechanic	6	(12)	20	(42)	17	(35)	4	(08)	1	(02)
Total										
A Pilot	10	(10)	15	(14)	39	(38)	30	(29)	9	(09)
A Mechanic	20	(20)	48	(46)	28	(26)	6	(06)	1	(02)

Conclusions

This research is an initial effort in determining an academic curriculum for future airport managers. Due to the small number of opinionaire returns, an extensive statistical analysis would be both non-productive and possibly misrepresentative of the population. The reader must, accordingly, use caution in the interpretation of any information. The conclusions that follow are based upon the findings from specific questions contained in the opinionaire

developed for this study and upon what limited literature was available. The following conclusions were drawn:

1. A college degree for a future airport manager may become more important. There was strong support (71%) of the respondents indicated that a college degree was "of great value" or "a must") for a college degree among the sample respondents.

2. A Bachelor's degree is perhaps the minimum degree necessary or desirable for an airport manager. Sixty-nine or 68% of the respondents indicated that a Bachelor's degree was of "great value" or "a must." A combination of aviation and business appeared to constitute the best academic major.

3. The content of the following academic courses was recommended by respondents for the major in an airport management curriculum. Academic courses that received more than 50% group response indicating that each "should be required" for a future airport manager may have enough support to be considered as a major. These courses included Management (96%), Airport Operations (93%), Airport Internship (79%), Aviation Safety (63%), Economics (56%), Accounting (54%), and Labor Relations (52%).

4. A number of academic courses could be considered as a minor or support area so as to broaden the field of emphasis for a future airport manager. These courses were rated as of "some value" or "should be required" by over 75% of the respondents. The courses included in this group are Marketing (92%), Air

Transportation (90%), Computer Operation (89%), Business Law (86%), Passenger Operations (86%), Aeronautics (84%), Insurance (83%), Air Traffic Control (83%), Statistics (83%), National Airspace (79%), Air Cargo Handling (78%), Air Carrier Operation (76%), and Aviation Insurance (75%).

5. The airport manager should have experience as a pilot. Seventy-eight percent of the respondents indicated that being a pilot was "of some value" or greater in the background of an airport manager.

6. The airport manager does not need to be or have been a mechanic according to the respondents of this study. There was little support for this among participants.

Recommendations

1. The University Aviation Association should consider the findings of this research as a starting point for further study of collegiate airport management programs.

2. The American Association of Airport Executives might disseminate the findings of this study to the membership of the organization.

3. The Federal Aviation Administration could undertake a study to determine the number of positions that are actually available for graduates of aviation management programs.

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