Information and Knowledge Management
ISSN 2224-5758 (Paper) ISSN 2224-896X (Online)
Vol.5, No.12, 2015

A Survey of Determinants of Decision-making by Managers in the Aviation Industry in Nigeria

Olaronke O. Fagbola[1] Sunday O. Popoola[2]
1. Learning Resources / Library, National Open University of Nigeria, Lagos, Nigeria
2. Department of Library, Archival and Information Studies, University of Ibadan

Abstract
This paper examined access to and use of information systems, personality traits and decision-making by managers in the aviation industry in Nigeria. The stratified random sampling technique, complemented with a questionnaire, was used to collect data from 1,238 managers in aviation parastatals in Nigeria. However, only 945 responded, giving a response rate of 76.3 percent. The study found that personality traits ($r = 0.330$, $P< 0.05$) and information systems access ($r = 0.170$, $P<0.05$) and use ($r = 0.350$, $P<0.05$) had significant relationships with decision-making of the respondents, when taken together, significantly determined decision-making of the respondents. Use of information systems was found to make the greatest relative contribution (32.0 percent) in determining the decision-making of managers in the aviation industry in Nigeria. Personality traits should be considered when recruiting managers for the aviation industry.
Keywords: information systems access, use, personality traits, decision-making, aviation industry

1. Introduction

The aviation industry is a collective term for the companies involved in air transport (Collins, 2015). The industry is one of the most information-and technology-intensive industries, and a key sector in any economy (Okorie, 2011). As the primary mode of long-distance transportation, it has become a crucial facilitator of economic activities in Nigeria and worldwide (Dowling College, 2008:1). The trend in the industry is toward a common-use environment, which draws on multiple sources of information to compile and display up-to-date data. These common-use systems are utilized through facilities such as ticketing, boarding pass, tagging of passengers' baggage, passengers' check-in and boarding equipment (Stocking *et al*., 2009). Managers in the aviation industry need accurate, current and reliable information to arrive at rational decisions. A number of operational activities in the industry depend on information and communication technologies. These include taking-off and landing information, radar control, tracking of incoming and outgoing flights, flight plan distribution, prediction / monitoring of air traffic, check-in, report generation, flight distribution patterns, weather forecasts, weather reports, load and balance calculations, passenger manifests for airport immigration and security authorities, aircraft maintenance checks, flight information (Buhalis, 2004).

In Nigeria, managers in the aviation industry are involved in diverse activities, like aviation safety, airport management, marketing, flight management, weather forecasting and information, air traffic controlling, investigation, maintenance checks, certification and security management. All these functions involve decision-making at one stage or another. The integrated information systems in the industry make invaluable information available for managers with which decisions are made. Access to and use of information systems result in higher quality decisions, reduction in the time required to authorize organisational actions and make decisions (Williams *et al*. 2007).

Personality traits exert some of the greatest influence on decision-making, sometimes to the extent of becoming behavioural challenges, because they encompass the preferences, content selectivity, habitual framing of problems and comfort zones of a person (Strategic Decision Group, 2007:2). The five-factor personality model delineates five broad traits: extraversion, neuroticism, agreeableness, openness and conscientiousness. These are important concepts in predicting workplace decision-making (Bernstein *et al*. 2008). Each of the traits gives rise to an average, overall dispositional tendency in an individual's thoughts, feelings and actions (Deniz, 2011). Extraverted individuals are social, lively, cheerful, enthusiastic, optimistic and energetic and are likely to take less time to make decisions than introverts. Neurotic individuals experience a variety of negative effects, such as anxiety, nervousness, embarrassment, personal insecurity, irritability, being tense, fear, worry and instability. People that exhibit this trait have harder time to make decisions than emotionally stable people do (Deinz, 2011; McCrae & John, 1992; Ranjbarian & Kiare, 2010).

Agreeableness is the tendency to be helpful, modest, forgiving, easy-going and merciful. Individuals with this trait are generous, forgiving, trusting and avoid conflict; they are more likely to forgive others when something negative happens and are more likely to give positive evaluations of people. Openness refers to being receptive to new ideas and approaches, and having a powerful imagination, intellectual curiosity and multi-dimensional thinking. Individuals that exhibit openness are more likely to take risks and are more open to change than people low in openness. Conscientiousness is the tendency to be responsible, ambitious, careful, disciplined and regular. Individuals that exhibit this trait tend to be hard working, dependable, organized, efficient and cautious.

Conscientious individuals are likely to spend time making decisions (Deniz, 2011; McCrae & John, 1992; Ranjbarian & Kiare, 2010).

In Nigeria, the industry is managed by five national/public organisations: Accident Investigation Bureau (AIB), Federal Airports Authority of Nigeria (FAAN), Nigerian Airspace Management Agency (NAMA), Nigerian Civil Aviation Authority (NCAA), and Nigerian Meteorological Agency (NIMET). The AIB is saddled with the task of investigating air disasters in Nigeria. The FAAN manages all the airports, including maintenance of runways, airport terminals and other facilities to load, refuel, repair planes and other ground facilities needed for air travel. The NAMA is into airspace management, while the NCAA regulates the industry operators and provides licenses. The NIMET manages weather forecast and information. The federal government has no airlines, but the local private and foreign airlines operate in the aviation industry. The managers therein the aforementioned five national public organisations perform the regulatory functions.

2. Statement of the problem

Decision-making is a fundamental aspect of human existence and one of the principal processes in organisations and is considered the main responsibility of managers in all levels. The emphasis given to decision-making varies from one manager to the other and is especially dependent upon the status of the manager in the organisation. However, as managers make decisions, they are faced with several obstacles, which can impact positively or negatively on their work. Thus, there is need to pay special attention to the decision-making adopted by managers, for, without decisions, the planning process of an organisation becomes a futile exercise.

There is limited descriptive research on information systems application in decision-making by aviation industry managers in developing countries such as Nigeria. There is also a dearth of studies in the field of library and information science that explore how access to, use of information systems and personality traits affect decision-making by managers in organisations, particularly in the aviation industry. It is in the light of this that this study investigated if access to and use of information systems and personality traits will significantly determine decision-making by managers in the aviation industry in Nigeria.

3. Objectives of the study

- find out the most prevalent personality traits exhibited by managers in the aviation industry in Nigeria;
- identify the types of information systems used for aviation operations in Nigeria;
- identify the various activities to which information systems are deployed in the aviation industry in Nigeria;
- find out the decision-making behaviours of managers in the aviation industry in Nigeria; and
- determine the degrees of relationships among personality traits, access to and use of information systems and decision-making by managers in the aviation industry in Nigeria.

4. Hypotheses

The following hypotheses guided the conduct of this study and they were tested at $\alpha = 0.05$ level of significance.

- There is no significant relationship between access to information systems and decision-making by managers in the aviation industry in Nigeria.
- There is no significant relationship between use of information systems and decision-making by managers in the aviation industry in Nigeria.
- There is no significant relationship between the personality traits and decision-making by managers in the aviation industry in Nigeria.
- Access to, use of information systems and personality traits will not significantly determine decision-making of managers in the aviation industry in Nigeria.
- There is no significant relationship between current designation and use of information systems by managers in the aviation industry in Nigeria.

5. Literature review

For technologies (information systems) to improve productivity, they must be accepted and used by employees in organisations (Venkatesh *et al*. 2003). Information has a great impact on decision-making and information systems support strategic decision-making by ensuring greater agility, information availability and security and interactivity (Borges *et al*. 2009). Chatzoglou & Diamatidis (2009) assert that the adoption, implementation, access, use and expansion of information systems have an important impact on the way business functions are organised within an organisation and particularly in the aviation industry. Information systems support decision-making in organisations and understanding the nature of decision-making can help in using information systems more effectively (Zandergen, 2014). Studies have shown that access to information systems is crucial for economic development and governance, as it helps to facilitate global markets, promote accountability, improve service delivery and enhance overall development and decision-making. It helps to improve an organisation's revenue, reliability, flexibility, performance, profitability and competitiveness (Agbonlahor, 2006; Gunasekaran *et al*. 2006).

The use of information systems is designed to reduce uncertainty in the decision-making process of managers (Clark Jr. *et al*. 2007). Access to and use of information systems by managers in organisations could foster the decision-making process. Hence the submission of O'Brien (2005) that the overall purpose of an information system is to help people in the organisation (aviation industry) gather and use information, communicate with other people within and outside the organisation and find and make effective decisions.

According to Popoola (2009), information is a valuable commodity that adds considerable value to the decision-making process of managers in organisations and it is needed in all spheres of life to facilitate decision-making and engender progress. However, managers at different levels in the organisation (aviation industry) need different types of information. The information systems in place in an organisation link all the organisation's components together and provide better operation and survival.

Despite the advantages that access to and the use of information systems confer on the organisation using them, O'Brien & Wilde (1996) warn that, while the success of using information systems for decision-making depends on the managers' ability to think creatively and communicate clearly, clear communication and creative thinking can be enhanced by the use of computerized information systems.

Beynon-Davies (2009) notes that the information provided by information systems drives decision-making and this leads to further action within the organisation. Olson *et al*. (2007) aver that managers in organisations process and interpret information from a variety of sources and then act on it before making decisions. The decision-making process is systematic and managers use information which has been processed into a meaningful form and is of absolute value to the recipient(s) (Oyewusi, 2008; Stair & Reynolds, 2003; Turban *et al*. 2005). According to Beynon-Davies (2009), decisions and decision-making are best understood as social representations that influence ways of understanding and behaving within the organisation.

Personality consists of the organisation of feelings, thoughts, cognitions and visible behaviour (Ashraf, 2014). Personalities tend to be innate, changeable and observable, playing a tremendous role in the processes and applications of decision-making (Strategic Decision Group, 2007:1). Personality is an important indicator in decision-making (Ranjbarian & Kiare, 2010). It is a package of tendencies that influence behaviour (Mackenzie, 2003).

Personality traits describe the habitual patterns and quality of behaviour of any individual as expressed by the attitudes, physical and mental activities and distinctive individual qualities of a person considered collectively (Al-Kalbani *et al*. 2011). Extensive research has provided evidence on how the 'big five' personality traits affect decision-making in organisations (Al-Kalbani *et al*. 2011; Bernstein, *et al*. 2008; Saihani *et al*. 2012; Zmud, 1979). Deniz (2011) observes that each of these traits gives rise to an average, overall dispositional tendency in an individual's thoughts, feelings and actions. Personality theorists have developed different models to explain the mechanism of personality functioning (Furnham *et al*., 2007). McCrea & Costa (1990) championed the already established Big Five Factor Model (BFFM), which according to Furnham *et al*. (2007), has been widely accepted as a universally generalized model in the area of personality structure.

Studies have demonstrated that personality traits are related to various aspects of job performance. For example, the Strategic Decision Group (2007:1) note that personality traits play a tremendous role in the processes and application of decision-making of managers in business organisations. Equally, the study by Meier *et al*. (2012) on how sweet taste preferences and experience predict prosocial inferences in personalities and behaviour of university students in North Dakota discovered that personality traits are consequential in predicting many outcomes, whether related to inter-personal issues, workplaces, or pathological symptoms and diagnosis.

Saihani *et al*. (2012) studied the effect of the big five personality traits in creative decision-making of managers in Malaysia. They found that personality traits variables have significant influence on the decision-making of managers. The study of Al-Kalbani *et al*. (2011) on adolescents in Malaysia revealed that personality traits can be a useful predictor of decision-making. Hasso's (2013) study in the Netherlands on the impact of CEO's personality traits and human resources management practices on innovation performance in SMEs discovered that personality traits have an impact on the decision-making process of the chief executive officers studied.

In an organisational setting, the direct relationship between decision-making and personality has been established (Riaz *et al.* 2012). The personality factors are extremely important in today's competitive organisational settings (Mkoji & Sikalieh, 2012). Zandbergen (2014) avers that the use of information systems can help managers make effective decisions to support ongoing operations within an organisation.

6. Research methodology

The research design adopted for this study was a survey of the correlational type. This research used the correlational technique to determine the degree of relationship between the dependent variable (decision-making) and independent variables (personality traits, access to and use of information systems) by managers in the aviation industry in Nigeria. In conducting similar research, Houtari & Wilson (2001) and Popoola (2009), among others, used the same approach. The study population comprised 2,063 managers on the staff list and websites of the regulatory organisations in the aviation industry in Nigeria. The stratified random sampling technique was adopted in selecting 1,238 out of 2,063 managers based on a 60% sampling fraction using the

probability proportionate to size method (Hansen *et al*. 1970). This was done to make the sample truly representative of the population and for valid generalizations to be made on the entire population (Yamane, 1976).

A questionnaire was used for data collection. The questionnaire, which consisted of both open and close ended questions, was divided into four parts. Part A dealt with personal information of the respondents, such as name of organisation, gender, age, salary scale level, educational/professional qualification, length of service. Part B focused on access to and use of information systems of the respondents for aviation operations. Based on the literature reviewed, Sub-section One was made up of 17 items / statements on accessibility of computer-based information systems. The items were measured on a 4-point scale: very readily accessible = 4; readily accessible = 3; occasionally accessible = 2; not accessible = 1. Sub-section Two was made up of 17 items / statements on the frequency use of computer-based information systems. The items were measured on a 5-point scale: daily = 5; weekly = 4; monthly = 3; quarterly = 2; and never = 1. Information systems access had a reliability coefficient α = 0.89, while information systems use had α = 0.80 using the Cronbach Alpha method. Part C measured personality traits of the respondents. The personality traits scale was constructed by McCrae & Costa (1992) and has 59 items / statements grouped under 5 headings (see Table 5a - e) and measured on a 5-point Likert scale: strongly agree = 5; agree = 4; neutral = 3; disagree = 2; strongly disagree = 1. The personality trait scale for extraversion had a reliability coefficient α = 0.62; neuroticism had a reliability coefficient α = 0.61; agreeableness had a reliability coefficient α = 0.87; openness to experience had a reliability coefficient α = 0.77; and conscientiousness had a reliability coefficient α = 0.64. The personality traits scale had overall reliability coefficient α = 0.85 using the Cronbach Alpha method. This was the reliability coefficient used to establish the content validity of the measuring instruments developed for data gathering. Part D dealt with decision-making of managers. It has a 20-items / statements measuring decision-making of the managers on a 4-point scale: very true of me = 4; true of me = 3; occasionally true of me = 2; not true of me = 1. It has a Cronbach's reliability coefficient of α = 0.94 using the Cronbach Alpha method. The scale was developed by Popoola (2006) (see Table 6).

A total of 1,238 copies of the developed questionnaire were administered by six research assistants to the respondents in the studied aviation organizations, namely: the Accident Investigation Bureau (AIB), the Federal Airports Authority of Nigeria (FAAN), the Nigerian Airspace Management Agency (NAMA), the Nigerian Civil Aviation Authority (NCAA) and the Nigerian Meteorological Agency (NIMET). Of the 1,238 distributed copies of the questionnaire, 1009 were returned, of which 945 were found usable for analysis. The overall response rate obtained was 76.3 percent, which is adequate for this kind of study. The standard and acceptable response rate for most surveys is 60 percent (Duller & Minishi-Majanja, 2011 citing Malaney, 2002; Evans *et al.* 2004). Details of the questionnaire administration and retrieval are shown in Table 1. Both descriptive and inferential statistical tools of analysis, such as mean and standard deviation, correlation and multiple regression analysis were employed in analyzing the data with the aid of the Statistical Package for Social Sciences (SPSS).

Table 1: Questionnaire administration and retrieval

Aviation Organisation	**Administered**	**Retrieved**	**Usable**	**Response rate %**
AIB	15	13	12	80
FAAN	480	440	425	88
NAMA	241	195	172	71
NCAA	249	221	211	85
NIMET	253	140	125	50
Total	**1,238**	**1,009**	**945**	

Keys:
AIB: Accident Investigation Bureau
FAAN: Federal Airport Authority of Nigeria
NAMA: Nigerian Airspace Management Authority
NCAA: Nigerian Civil Aviation Authority
NIMET: Nigerian Meteorological Agency

7. Findings

7.1. Profiles of the respondents

The demographic profiles of the respondents showed 67.4 percent (637) were male, while 32.6 percent (308) were female. Their ages ranged between 35 and 55 years, and working experience between 1 and 30 years, while 43.0 percent (406) had a bachelor's degree, 40.0 percent (382) had a masters' degree, and 16.6 percent (157) had

other academic qualifications. A total of 45.1 percent (426) had worked in the aviation industry from 1-10 years; 35.3 percent (334) from 11-20 years; 15.9 percent (150) from 21-30 years; and 3.7 percent (35) for more than 30 years. Based on the above data, age, academic qualifications and years of work experience show that managers in the aviation industry in Nigeria are young, vibrant, experienced and qualified, having more active years to spend in the service of their respective organisations.

7.2. Access to Information systems

Table 2: Mean and standard deviation scores of information systems accessible to the respondents

Information Systems	Mean ($\bar{x}$)	SD	Variance
Operations Control System.	3.05	1.06	1.12
Doppler Weather Radar System.	3.03	1.06	1.12
Monopulse Secondary Surveillance Radar System.	3.00	1.04	1.08
Airport Operations Management System.	2.99	1.07	1.14
The Internet.	2.99	1.09	1.19
Global Positioning System.	2.99	1.12	1.25
Primary Surveillance Radar System.	2.98	1.10	1.21
Cockpit Monitoring Camera System.	2.98	1.12	1.25
Flight Planning System.	2.93	1.07	1.14
Low Level Wind Alert System.	2.90	1.05	1.10
Computer Reservation System.	2.87	1.03	1.06
Maintenance Control System.	2.83	1.03	1.06
Integrated Flight Schedule Management System.	2.81	1.02	1.04
Air Traffic Management System.	2.77	1.03	1.06
Group Decision Support System.	2.75	1.04	1.08
Decision Support System.	2.64	1.02	1.04
Aviation Training Management System.	2.61	1.00	1.00

Table 2 shows the mean scores and standard deviations of information systems that are accessible to the respondents, ranked in descending order of accessibility. Based on the peculiarity and nature of aviation operations, the following information systems were very readily accessible to the respondents (aviation managers): Operations Control System, Doppler Weather Radar System, Monopulse Secondary Surveillance Radar System, the Internet, Global Positioning System, Airport Operations Management System, Primary Surveillance Radar System and Flight Planning System.

7.3. Current designation and use of information systems by the respondents

Table 3: Test of significant relationship between current designation and information systems use by the respondents

Organisation	Pearson (χ2) (Current Designation)	Degree of freedom	Sig.p
AIB	14.00	14	0.450
FAAN	.90	22	0.021
NAMA	32.85	18	0.017
NCAA	28.10	20	0.007
NIMET	19.96	16	0.022

Table 3 captures the test of significant relationship between current designation and information systems use of the respondents. It can be deduced that there was a significant relationship between current designation and information systems use of the respondents by their workplaces in the aviation industry in Nigeria. Current designation is peculiar to each of the organization in the aviation industry in Nigeria. Based on Pearson's Chi square, the result showed that there was a significant relationship between current designation and use of information systems, as follows: AIB (χ2 = 14.000, df =14; $p < 0.05$); FAAN (χ2 = 29.898, df = 22; $P < 0.05$); NAMA (χ2 = 32.849, df = 18; $P < 0.05$); NCAA (χ2 = 28.102, df = 20; $p<0.05$); and NIMET(χ2 = 19.959, df = 16; $p < 0.05$). Furthermore, the result of test of hypothesis five, based on the data gathered on use of information systems by managers, categorized into low, medium and high. This was cross-tabulated with the current designation of the managers (see Table 3).

7.4. Use of information systems

Table 4: Mean and standard deviation scores of information systems used by the Respondents

Information Systems	Mean ($\bar{x}$)	SD	Variance
Operations Control System.	3.05	1.06	1.12
Doppler Weather Radar System.	3.03	1.06	1.12
Monopulse Secondary Surveillance Radar System.	3.00	1.04	1.08
Airport Operations Management System.	2.99	1.07	1.14
The Internet.	2.99	1.09	1.19
Global Positioning System.	2.99	1.12	1.25
Primary Surveillance Radar System.	2.98	1.10	1.21
Cockpit Monitoring Camera System.	2.98	1.12	1.25
Flight Planning System.	2.93	1.07	1.14
Low Level Wind Alert System.	2.90	1.05	1.10
Computer Reservation System.	2.87	1.03	1.06
Maintenance Control System.	2.83	1.03	1.06
Integrated Flight Schedule Management System.	2.81	1.02	1.04
Air Traffic Management System.	2.77	1.03	1.06
Group Decision Support System.	2.75	1.04	1.08
Decision Support System.	2.64	1.02	1.04
Aviation Training Management System.	2.61	1.00	1.00

Table 4 shows the mean and standard deviation scores of information systems used by the respondents. The information systems mostly used were Operations Control System, Doppler Weather Radar System, Monopulse Secondary Surveillance Radar System, the Internet, Global Positioning System, Airport Operations Management System and Primary Surveillance Radar System.

7.5. Personality traits of managers

Table 5a: Mean and standard deviation scores of extraversion personality traits of the Respondents

S/N	Extraversion	Mean ($\bar{x}$)	SD	Variance
1	I like to have a lot of people around me.	3.91	0.90	0.81
2	I laugh easily.	3.81	0.99	0.98
3	I don't consider especially "light hearted".	3.81	1.07	1.15
4	I really enjoy talking to people.	3.79	1.06	1.12
5	I like to be where the action is.	3.59	1.00	1.00
6	I usually prefer to do things alone.	3.40	1.03	1.06
7	I often feel as if I'm bursting with energy.	3.33	1.17	1.37
8	I am not a cheerful, high-spirited person.	3.30	1.05	1.10
9	I am not a cheerful optimist.	3.15	1.12	1.25
10	My life is fast paced.	3.12	1.17	1.37
11	I am a very active person.	3.06	1.16	1.35
12	I would rather go my own than being a leader to others.	2.94	1.11	1.23
	Mean Perception Index	**3.43**		

Tables 5b: Mean and standard deviation scores of neuroticism personality traits of the Respondents

B	Neuroticism	Mean ($\bar{x}$)	SD	Variance
13	I am not a worrier.	3.56	1.15	1.32
14	I often fill inferior to others.	3.32	1.15	1.32
15	When I am under great deal of stress sometimes, I feel like I am going to pieces.	3.29	1.21	1.46
16	I rarely feel lonely.	3.23	1.08	1.17
17	I often feel tense and jittery.	3.19	1.09	1.19
18	Sometimes I feel completely worthless.	2.96	1.15	1.32
19	I rarely feel fearful or anxious.	2.83	1.13	1.19
20	I often get angry at the way people treat me.	2.83	1.27	1.61
21	Too often when things go wrong I get discouraged and feel bad.	2.80	1.27	1.61
22	I am seldom sad or depressed.	2.69	1.19	1.42
23	I often feel helpless and want someone else to solve my problem.	2.61	1.29	1.66
24	At times I have been so ashamed I just want to hide.	2.53	1.20	1.44
	Mean Perception Index	**2.98**		

5c: Mean and standard deviation scores of agreeableness personality traits of the Respondents

S/N	Agreeableness	Mean ($\bar{x}$)	SD	Variance
1	I try to be courteous to everyone I meet.	3.86	1.18	1.39
2	I often get into arguments with my family and co-workers.	3.69	1.07	1.15
3	I would rather co-operate with others than compete with them.	3.63	1.11	1.23
4	I tend to be cynical and skeptical of others' intentions.	3.58	1.05	1.10
5	I believe that most people will take advantage of you if you let them.	3.50	1.13	1.28
6	Most people I know like me.	3.41	1.17	1.37
7	Some people think of me as cold and calculating.	3.38	1.10	1.21
8	I am hard headed and tough-minded in my attitudes.	3.34	1.10	1.21
9	I generally try to be thoughtful and considerate.	3.27	1.06	1.12
10	If I don't like people, l let them know it.	3.26	1.02	1.04
11	If necessary, l am willing to manipulate people to get what l want.	3.17	1.21	1.46
12	I keep my belongings clean and neat.	2.90	1.17	1.37
	Mean Perception Index	**3.42**		

Table 5d: Mean and standard deviation scores of openness personality traits of the Respondents

S/N	Openness	Mean ($\bar{x}$)	SD	Variance
1	I don't like to waste my time day dreaming.	3.89	1.01	1.02
2	Once I find the right way to do something, I stick to it.	3.81	0.99	0.98
3	I am intrigued by the patterns I find in art and nature.	3.65	1.03	1.06
4	I believe letting students hear controversial speakers can only confuse and mislead them.	3.50	1.09	1.19
5	Poetry has little or no effect on me.	3.48	1.05	1.10
6	I often try new and foreign foods.	3.44	0.99	0.98
7	I seldom notice the moods or feeling that different environments produce.	3.43	1.12	1.25
8	I believe we should look to our religious authorities for decision on moral issues.	3.43	1.04	1.08
9	Sometimes when I am reading poetry or looking at a work of art l feel like a child or wave of excitement.	3.37	1.04	1.08
10	I have a little interest in speculating on the nature of the universe or the human condition.	3.34	1.08	1.17
11	I have a lot of intellectual curiosity.	3.14	1.10	1.21
12	I often enjoy playing with theories or abstract ideas.	2.97	1.13	1.28
	Mean Perception Index	**3.45**		

5e: Mean and standard deviation scores of conscientiousness personality traits of the Respondents

S/N	Conscientiousness	Mean ($\bar{x}$)	SD	Variance
1	I am pretty good about pacing myself so as to get things done on time.	3.75	1.04	1.08
2	I am not a very methodical person.	3.70	1.16	1.35
3	I try to perform all the tasks assigned to me conscientiously.	3.62	1.04	1.08
4	I have a clear set of goals and work towards man orderly	3.53	1.09	1.19
5	I waste a lot of time before setting down to work.	3.52	1.12	1.25
6	I work hard to accomplish my goals.	3.49	1.18	1.39
7	When I make a commitment, I can always be counted on to follow through.	3.47	1.33	1.77
8	Sometime, I am not dependable or reliable as should be.	3.34	1.02	1.04
9	I am a productive person who always gets the job done.	3.28	1.14	1.29
10	I never seem to be able to get organised.	3.11	1.23	1.51
11	I strive for excellence in everything I do.	2.96	1.18	1.39
	Mean Perception Index	**3.43**		

Tables' 5a- e captures the mean and standard deviation scores of different items measuring the personality traits of managers in the aviation industry in Nigeria. The managers were asked to indicate their degree of agreement with the personality traits items / statements on a 5-point Likert scale, i.e. strongly agree = 5, to strongly disagree = 1 (see Tables 5a - e). The results showed that the respondents tend to agree strongly with virtually all the item-statements in all the personality traits variables except on neuroticism. It must be noted that all negative items were reversed to arrive at the correct mean scores. The majority of the respondents indicated that they liked to have a lot of people around them ($\bar{x}$ = 3.91); didn't like to waste time day dreaming ($\bar{x}$ = 3.89); tried to be

courteous to people ($\bar{x}$ = 3.86); laughed easily ($\bar{x}$ = 3.81); and were pretty good about pacing so as to get things done ($\bar{x}$ = 3.75). Managers in the aviation industry in Nigeria exhibited extraverted behaviour (sensitivity to reward and energy of goal pursuit), followed by openness to experience (core tendency towards exploring and understanding the surrounding world), agreeableness (tendency to maintain social relations by minimizing conflict), conscientiousness (tendency to control behaviour in pursuit of goals).

The mean perception indices of personality traits of the respondents were as follows: extraversion = 3.43; agreeableness = 3.42; openness = 3.45 and conscientiousness = 3.43. These perception indices were close to 4, meaning that most of the respondents agreed that they were extraverted, agreeable, open and conscientious. Nevertheless, the mean perception index of the personality trait neuroticism = 2.98 which was quite close to 3, implying that most of the respondents claimed that they neither agreed nor disagree that they were of neurotic personality.

7.6. Decision-making of managers

Table 6: Mean and standard deviation scores of decision-making behaviour of the Respondents

Decision-making Statements	Mean ($\bar{x}$)	SD	Variance
Decision is reached based on current and timely information.	3.00	0.90	0.81
I hate taking a decision on guesswork, rule of thumb and sentiments.	2.96	0.92	0.85
Most frequently, l identify problems that need to be solved in my organization.	2.95	0.97	0.94
Reliable and sufficient information are collected and analyzed to consider the best among alternative courses of actions.	2.92	0.90	0.81
I usually prefer to base my decisions on information other than pressures or influences.	2.89	0.88	0.77
I give consideration to appropriateness, easy flow and access to information.	2.87	0.89	0.79
I use both intellectual and creative thinking strategies in making decision.	2.87	0.95	0.90
Previous decision outcome can be reviewed due to fresh, relevant and reliable information obtained by me.	2.84	0.91	0.83
I always consider the consequences of the decisions taken and implemented by me.	2.83	0.93	0.87
Criteria are set by which alternative courses of actions are evaluated.	2.82	0.93	0.87
The best option is chosen on the availability and utilization of information before making decision.	2.80	0.92	0.87
Before problem analysis, l always make the problem statement.	2.79	0.90	0.81
I always state clear objectives of solving the identified problem.	2.78	0.92	0.85
I realize that decision will vary depending on situation and various methods chosen.	2.77	0.85	0.72
Information relevant to a decision is always stored in anticipation of using it in future.	2.75	0.92	0.85
Information on decision made is always communicated appropriately and timely by me.	2.74	0.91	0.83
Bureaucracy is out of place when executing decisions reached by me.	2.71	0.92	0.85
I obtained a feedback on the effectiveness of the decisions implemented through the collection, analysis and interpretation of information.	2.71	0.97	0.94
I always ensure that monitoring and evaluation system is put in place when implementing decisions are reached in my organisation.	2.70	0.95	0.90
Material resources are always provided for effective execution of the decision reached.	2.70	0.92	0.85

Managers in the aviation industry in Nigeria exhibited good decision-making behaviour [Table 6]. This is premised on the validated decision-making behaviour instrument, with the 4-point response format: very true of me = 4; true of me = 3; occasionally true of me = 2; and not true of me =1 which was designed to determine whether the managers in the studied organizations followed good decision-making processes in taking rational decisions (see Table 6). Furthermore, this was based on the fact that the majority of the respondents upheld the following views: decision is reached based on current and timely information; I hate taking a decision on guess work, rule of thumb and sentiments; most frequently, I identify problems that need to be solved in my organization; reliable and sufficient information are collected and analyzed to consider the best among alternative courses of action; I usually prefer to base my decisions on information other than pressures or influences; I usually give consideration in appropriateness, easy flow and access to information; and I use both intellectual and creative thinking strategies at making decisions.

Table 7: Mean and standard deviation scores of types of decisions made by the Respondents.

Types of Decision (Aviation activities)	Organisations	Mean ($\bar{x}$)	SD	Variance
Loading of aircraft.	FAAN	4.18	1.37	1.88
Tracking of in-coming and out-going flights.	ALL	4.15	1.42	2.02
Lift passengers.	FAAN	4.09	1.42	2.02
Air surveillance.	NAMA	4.06	1.38	1.90
Taking off and landing of aircraft.	ALL	4.05	1.53	2.34
Information display.	ALL	4.03	1.45	2.10
Manage inventory.	ALL	4.02	1.17	
Streamlining and integrating airline and airports operation.	ALL	3.88	1.40	2.05
Flight data.	ALL	3.83	1.44	2.07
Radar control.	NCAA			
Flight distribution pattern.	ALL	3.83	1.43	2.04
Aircraft maintenance.	NCAA	3.76	1.43	2.04
Weather forecast.	NIMET	3.68	1.42	2.02
Obtain routine report.	ALL	3.67	1.48	2.19
Air traffic control.	NAMA	3.51	1.38	1.90
Computer schedule airline flight.	ALL	3.16	1.49	2.22
Improve service delivery to customers.	ALL	2.95	1.51	2.28
Passenger check-in.	FAAN	2.78	1.50	2.25
Fuelling/refuelling of air craft.	FAAN	2.75	1.45	2.10
Automatic calculations.	FAAN	2.67	1.31	1.72
Support airline planning.	ALL	2.45	1.20	1.44
Air navigation.	NAMA	2.42	1.42	2.02

NB: All means every organisation in the aviation industry in Nigeria.

Table 7 shows the mean and standard deviation scores of frequency and types of decisions made by the respondents and their respective organisations based on the 5-point scale: daily = 5; weekly = 4; monthly = 3; quarterly = 2; and never = 1.The types of decisions taken by the respondents were loading of aircraft; tracking of incoming and outgoing flights; lift passengers ; air surveillance; taking-off and landing of aircraft, information display; weather forecast; aircraft maintenance, obtain routine reports and so on. In addition, the job functions of the managers in the AIB are tracking of incoming and outgoing aircraft, taking-off and landing of aircraft, obtain routine reports, flight distribution pattern; in the FAAN are loading of aircraft, lift passengers, information display, fuelling of aircraft, passengers' check in, automatic calculation, obtain routine reports; in the NCAA are maintenance scheduling, maintenance checks on aircraft, obtain routine reports, control daily flight, control auto pilot, tracking incoming and outgoing flight, electronic flight plan distribution ; in the NAMA are radar control, air surveillance, plane navigation, electronic flight path, obtain routine report, detect and measure position of aircraft, tracking incoming and outgoing flight; and in the NIMET are weather forecast for aviation safety, weather report, flight data, electronic flight part, obtain routine report, tracking incoming and outgoing flight, taking off and landing of aircraft and so on.

7.7. Relationship between decision-making behaviour, access to, use of information systems and personality traits

The test of the second hypothesis also showed that there was a significant relationship between access to information systems and decision-making of managers in the aviation industry in Nigeria ($r = 0.170$, $p<0.05$). The overall mean score of use of information systems of the respondents was $\bar{x} = 64.24$; SD = 16.00 and that of their decision-making behaviour was $\bar{x} = 56.42$; SD = 12.00. The test of the third hypothesis showed that there was a significant relationship between use of information systems and decision-making of managers in the aviation industry in Nigeria ($r = 0.350$, $p<0.05$).

Table 8: Test of significant for relationship among decision-making, access to, and use of information systems and personality traits of the Respondents.

Variables	N	$\bar{x}$	SD	DM	Sig.P
Big Five Personality traits	945	197.25	26.7584	0.330	.000*
Extraversion		41.21	6.4203	0.206	.000
Neuroticism		35.84	7.6597	0.153	.000
Agreeableness		40.97	7.6888	0.252	.000
Openness		41.46	7.0560	0.342	.000
Conscientiousness		37.77	6.9166	0.286	.000
Access to information systems	945	34.60	8.6976	0.170	.000*
Use of information systems	945	64.25	15.9981	0.350	.000*
Decision-making	945	56.42	11.9976		

***Sig. at p <0.05. DM= Decision-making**

Table 8 indicates that the mean scores of personality traits of the respondents was $\bar{x}$ = 197.25, SD = 26.76 while the mean score of their decision-making behaviour was $\bar{x}$ = 56.42, SD = 12.00. The mean score of each of the personality traits is as shown in Table 5. The test of the first hypothesis revealed that there was a significant relationship between personality traits and decision-making behaviour of the managers in aviation industry in Nigeria (r = 0.330, p<0.05). However, the mean score of information systems access of the respondents was $\bar{x}$ = 34.60, while the mean score of decision-making was $\bar{x}$ = 56.42.

Table 9 shows the summary of the multiple regression analysis.

Table 9: Regression analysis on the relationship between access to, use of information systems and personality traits, on decision-making behaviours of the Respondents.

Source of variation	Sum of Squares	Df	Mean Square	F-ratio	Sig. P
Due to Regression	27923.54	7	3989.077	34.62	.000[a]
Due to Residual	107958.68	938	115.217		
Total	135882.22	945			

R = 0.640 **Standard Error of Estimate (SEE) = 10.73**
Adj R = 0.634 **DF = Degree of Freedom = 7**
R^2 = 0.409
Adj R^2 =4 .405

The results from the above analysis revealed that access to, use of information systems and personality traits of the respondents had significant multiple correlation with their decision-making (R = 0.634, p < 0.05). The test of the fourth hypothesis showed that access to, use of information systems and personality traits when taken together, will significantly determine the decision-making behaviour of the respondents ($F_{7; 938}$ = 34.62, p < 0.05). The independent variables, namely, access to information systems (β = - 0.105, df = 7; 938, t = - 2.058, p< 0.05); use of information systems (β = 0.237, df = 7; 938, t = 8.502, p < 0.05); and personality traits (extraversion β = 0.067; neuroticism β = 0.054, agreeableness β = 0.063, openness to experience β = 0.068 and conscientiousness β = 0.064) significantly determined the decision-making behaviour of managers in the aviation industry in Nigeria.

Table 10: Summary of test of significance of the relative contributions of access to, use of information systems and personality traits to the decision-making of the Respondents.

Variables	Unstandardized Regression Coefficient		Standardized Regression Coefficient	T	Sig.p
	B	Std. Error (B)	Betain		
(Constant)					
Personality Traits	20.359	2.637	-	7.176	0.000*
Extraversion	8.074E-02	0.067	0.043	1.203	0.229
Neuroticism	-5.852E-02	0.054	-0.004	-.108	0.914
Agreeableness	2.900E-02	0.063	0.019	0.457	0.648
Openness	0.341	0.068	0.201	5.051	0.000*
Conscientiousness	0.159	0.064	0.091	2.462	0.014*
Access to information systems	-0.105	0.051	-0.076	-2.058	0.040*
Use of information systems	0.237	0.028	0.316	8.502	0.000*

***Sig. at p<0.05**

Personality traits contributed 35.8 percent (Betain = 0.358), access to information systems contributed 7.6 percent (Betain = -0.076) and use of information systems contributed 31.6 percent (Betain = 0.316) to the determination of the decision-making of the respondents. The summary for test of significance of access to information systems, use of information systems and personality traits to the prediction of decision-making of the respondents is presented in Table 10.

8. **Discussion of findings**

One of the major findings of this study is that personality traits (extraversion, neuroticism, agreeableness, openness and conscientiousness) had a significant relationship with decision-making of the respondents. The finding is consistent with previous studies carried out in America, Iran and Malaysia (Al-Kalbani *et al*. 2011; Ranjbarian & Kiare, 2010; Saihani *et al*. 2012; Strategic Decision Group, 2007). They argue that personality traits play a significant role in the processes and application of decision-making; and that personality is an individual's disposition toward proactive behaviour; an important indicator and a useful predictor in the decision-making of an individual. Another finding of this study is that each of the personality traits of the managers in the aviation industry in Nigeria had significant relationships with decision-making. Furthermore, the study revealed that openness (core tendency towards exploring and understanding the surrounding world); conscientiousness (tendency to control behaviour in pursuit of goals); agreeableness (tendency to maintain social relations by minimizing conflict); extraversion (sensitivity to reward and energy of goal pursuit) and neuroticism (vulnerability to emotional turmoil) simultaneously and independently had a relationship with decision-making. This finding was in tandem with Bernstein *et al*. (2008) who note that agreeableness, conscientiousness and openness are positive predictors of open-minded decisions.

Similarly, Nov & Ye (2008) observe that the traits of openness was found to moderate the effect of computer-assisted communication on decision-making performance of a team. Laroche (1995) avers that decision-making processes are motivated by objectives, preferences, missions and interest. Mason (2012) claims that decision-makers who have varying degrees of risk aversion may undertake decision-making that can be affected not only by rational judgment, but also by non-rational factors, such as the personality of the decision- maker.

Technological advancement has greatly improved general access to information in the modern world. Also, information is an essential part of an organisation. Therefore, it is basic in decision-making. In the aviation industry, operations such as flights coordination into and out of the hub-and-spoke terminals, air traffic control, weather forecast, aircraft maintenance, air surveillance, scheduling flight crews and so on are assisted by the availability of latest information systems to managers. This may contribute to the speed with which problems are identified and decisions are made. This study established that there was significant relationship between access to, and use of information systems, and decision-making behaviour of the respondents. This means that there is a direct relationship between access to, and use of information systems, and decision-making behaviour of the respondents.

These findings agree with the view of Chatzoglou & Diamantidis (2009) and Beynon-Davies (2009) that information systems access and use help to simplify an organisation's function and improve its coordination ability. Information systems access and use will facilitate corporate-to-corporate exchange of business data, including structured data example, and electronic data interchange. Beckman & Quinin (2006) aver that the advancement in information systems use in organisations has enabled tremendous increase in the amount of information that can be accumulated, transmitted and utilized in decision processes. Information systems access and use were found to have significant positive relationship with decision-making of the respondents.

The study also found that information systems access, information systems use and personality traits significantly determined decision-making of the managers in the aviation industry in Nigeria. This could not have happened by chance because about 41.0 percent of the total variability in the decision-making of the respondents was accounted for by a linear combination of information systems access, information systems use and personality traits. Further investigation revealed that access to, use of information systems and personality traits individually determined the decision-making of the respondents. Use of information systems had the greatest percentage (31.6 percent) of the relative contribution to the determination of decision-making by the managers in the aviation industry in Nigeria than their personality traits, and information systems access. Laudon & Laudon (2010) assert that information systems are supporting tools; if available, accessible and used by managers; they can facilitate their achievement of operational excellence, developing new products and services, and improved decision-making.

9. Conclusion and Recommendations

Advancement in information systems use in organisations, especially in the aviation industry, has helped better coordination and management of aviation operations in diverse locations. These have enabled a tremendous increase in the amount of information that can be accumulated, transmitted and utilized in decision-making. Access to, use of information systems and personality traits were essential tools for enhancing decision-making of managers in Nigeria's aviation industry. Therefore, the aviation authorities should endeavour to make

information systems accessible to their managers and encourage them to use them for improved decision-making. In addition, policy makers and aviation administrators need to know that personality traits of openness and conscientiousness should be considered when recruiting personnel, particularly managers for the industry. Also, policy makers in the aviation industry in Nigeria should make available the latest technology for the use of managers, so as to bring the level of aviation operations in Nigeria up to par with world best practices.

10. Implications of the Study

The results of this study have raised some implications for the aviation industry in Nigeria and information systems designers worldwide. Information systems designers need to pay attention to the role of personality traits in information systems access and use. The administrators of the aviation industry should realise that personality traits of their managers are crucial to improving decision-making. Moreso, that neuroticism had a negative effect and could not independently determine decision-making of aviation managers in Nigeria.

The management of the aviation industry in Nigeria must ensure that the industry is equipped with latest technologies such as navigational aids, scanning machine, baggage loader, conveyor belt and so on. This would enhance service delivery in all areas and make the industry safe and be at par with best practices as obtained in the aviation industry in other countries of the world. The study also established that access to and use of information systems for aviation activities by aviations managers in Nigeria made it possible for them to access and use information in taking time-sensitive decisions.

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