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RESEARCH

Assessment of airport security culture in Nigeria

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Abstract

The increase in technology and other parameters for security does not guarantee the expected secured airports without the appropriate behaviour, attitude, and customs of stakeholders. This study examines the airport security culture practices in Nigeria. The study adopted the Airports Council International (ACI 2021) survey instrument developed to assess security culture at airports. The instrument was designed as a questionnaire that presents eight dimensions of security culture with twenty-six (26) indicators using a 5-point Likert scale in order of agreement. The questionnaire was administered randomly to airport stakeholders, and a total response of 472 was recorded for data analysis. The data was subjected to exploratory factor analysis (EFA) to summarise and reduce the items to a few orthogonal ones representing Nigeria's common airport security culture practices. The study found that three (3) indicators relating to leadership roles do not significantly contribute to the factors serving as common security practices at airports in Nigeria. However, eight (8) common security practices were identified to be significant at airports in Nigeria. Strikingly, the study found that corporate security practices were not significant at Nigeria's airports. The study highlights the need for airport managers to enhance security culture by adopting security as their corporate culture.

Keywords Security culture · Airport security · Corporate culture · Nigeria airports

Introduction

Culture has been defined as a set of norms, beliefs, values, attitudes, and assumptions that are inherent in the daily operation of an organisation and are reflected by the actions and behaviours of all entities and personnel within the organisation (Lefoyer 2020). Following what culture is, security culture has also been defined by the International Civil Aviation Organisation (ICAO) as a "set of security-related norms,

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values, attitudes, and assumptions inherent in an organisation's daily operation and is reflected by the actions and behaviours of all entities and personnel within the organisation". Carpenter (2021) referred to security culture as the ideas, customs and social behaviour of an organisation that influence security. The definitions indicate that security culture is behavioural and requires every employee to be responsible for its course. Therefore, airport security culture can be taken as the attitudes and behaviour of employees of all aspects of airport services to guarantee security. So, airport security culture can be related to the subconsciousness of every personnel to undertake all parameters that guarantee security intuitively.

Airports are air transport terminals with massive facilities for passenger processing and safe aircraft landing and take-off. The two sides of an airport (airside and landside) are usually provided with equipment and facilities to facilitate the safe transhipment of goods and passengers from one airport to another. Airport equipment and facilities function to tackle any unwholesome act that can compromise safe operations for increased passenger patronage. Hence, security is important for airports to enjoy airline and passenger patronage. Notwithstanding, equipment and facilities cannot, on their own, ensure security without human beings developing the right culture for security outcomes through effective equipment handling. So, Yoo and Choi (2006) found human resources to be the major factor for effective passenger screening over airport equipment and facilities. Malcolmson (2009) expressed that no matter the sophistication of screening technology, security outcomes are significantly influenced by personnel attitudes and behaviour. In emphasising the importance of human beings in aviation security, Malcolmson (2009) stated that culture is of interest to security outcomes. Security culture at airports reduces the risks of incidents with all stakeholders' conscious thinking and actions against breaches (ICAO 2021, 2022). Effective security culture benefits the airport upon the consequent least risk with increased revenue through patronage.

Globally, the campaign for airport security culture has been massive following the records of several incidents in the past. So, ICAO declared 2021 as the year of security culture globally. Despite the global campaign to promote a positive security culture, the threats against safe air transport continue to evolve (Lefoyer 2020). Following the mandate of ICAO to promote a positive security culture, Nigeria embarked on massive investment in security infrastructure and personnel training and employment (Okafor 2022) to curb airport security incidents. Despite the investment and training, over 1,000 security breaches were recorded in 2022 (Okafor 2022). Eze (2023) reported continuous cases of Nigerians hiding in the wheel well or other parts of aircraft to fly out of the country and expressed grave concern for the weak airport security culture in the country. Oyebade (2023) referred to Lagos Airport as the epicentre of security breaches while reporting the recent theft of airfield lighting units.

The incessant and increasing security incidents at airports in Nigeria call for concern over the level of security culture practices. It is dumbfounding that with the ongoing global campaign for the promotion of security culture, the acquisition of security equipment and facilities, and the training and employment of security personnel in Nigeria, incidents of security cases still abound at airports. This accounts for the level of airport security culture in Nigeria, emphasising the importance of humans in

mitigating security incidents. It supports the claim of ACI (2021) that, at the moment, there are lots of areas in airport security where infrastructure and technologies cannot replace humans. It implies that humans must complement technological infrastructure to combat airport security threats. Therefore, if there is a massive investment in security infrastructure, employment, and training, then, with increasing security incidents, what aspect of security culture dimensions and indices are the common practices at airports in Nigeria? The answer to the question is important since security culture is the responsibility of all stakeholders to improve attitudes towards well-secured airports.

The study aims to assess stakeholders' perspectives of airport security culture in Nigeria. The objective is to emphasise the need for security culture measures that are commonly practised to enhance security at airports. The study contributes to knowledge by promoting security culture to improve the security level at airports in Nigeria. The study adopted the survey instrument of the Airport Council International – ACI (2021) to assess the maturity of security culture at airports and subject the data to exploratory factor analysis to identify the common security culture practises for appropriate policy decisions to address security concerns in Nigeria. It also identify the neglected airport security culture practices in Nigeria. The ACI's eight (8) dimensions with twenty-six (26) indices for assessing airport security culture were used for this study. The instrument was to identify the common and neglected security culture practices among the eight dimensions and their indices.

The paper is divided into six (6) sections, including this introductory section. "Literature review" section provides the literature review on the subject. "Data and methodology" section presents the methodology adopted for the conduct of the research. The fourth section presents the results of the analysis while "Discussion of results" section discusses the results, and the last section "Conclusion and policy recommendations" concludes the study.

Literature review

As a concept, airport security culture emphasises human responsibility to ensure a secure airport environment. The airport environment requires a security measure that protects lives and properties and prevents untoward events leading to loss and damage. To effectively achieve the goal of wholesome security at airports requires appropriate attitudes, behaviour, ideas, and customs referred to as culture among all stakeholders. The literature search for this study revealed that very few studies have been conducted on airport security culture. This supports the claim of Malcolmson (2009) that specific research on airport security culture has been limited. Notwithstanding, few existing studies on airport security culture, organisational behaviour, security culture, human resources serve as empirical background for this study.

Airport security culture and organisational behaviour

A major means to address the aviation industry's security issues is acquiring equipment with technological applications for screening and monitoring. In addition,

scholars such as Karimbocus (2015) and Malcolmson (2009) have established the importance of security culture and organisational behaviour to airport security. Remawi et al. (2011) examined the relationship between organisational safety management systems (SMS) and employees' attitudes towards safety issues at airports in the United Arab Emirates (UAE). The study concluded that Sharjah Airport SMS positively influenced employees' attitudes toward communication, safety regulations, supportive work environment, personal risk appreciation, and involvement.

The study of Karimbocus (2015) focussed on organisational behaviour and the aviation supply chain system. The study was established on assessing the sustainability of the standard safety screening system at airports by integrating internal culture to security concerns. The author recommended that constructive security culture should be embedded in the organisation's culture. Malcolmson (2009) stated that airport stakeholders are interested in enhancing security with organisational culture because personnel attitudes and behaviour can influence technological security systems. The study concluded by highlighting the indices for developing survey tools for assessing security culture at airports subject to employees' attitudes required to protect the airports effectively.

Security culture and human resources

Human resources are a significant asset in promoting security culture in any airport environment. Yoo and Choi (2006) showed that the three major aspects of passenger security practices are human resources, equipment and facilities, and procedures and responsibility structures. Two factors, human resources and procedure and responsibility structures, are human-centred and require a positive culture to facilitate adequate airport security. Also, Yoo (2009) examined human tasks, such as passenger security screening, baggage security control, access control to restricted areas, cargo and mail security, and crisis management, for appropriate assignment to the major parties responsible for airport security. Of the scarce literature on airport security culture, Malcolmson (2009) attempted to differentiate between security culture and organisation to emphasise the importance of human resources to aviation security. Arcurio et al. (2020) found fundamental elements in human factors that were associated with security culture and negatively influenced passenger screening performance in Brazillian airports. Hauland et al. (2007) explored the combination of human behaviour and culture change approaches to improve safety and security at airports in Norway. Eng and Sullivan (2018) argued that airports must reimagine security culture as an organisational culture within which senior leadership sets the examples for values and facilitates their propagation at airports.

Other studies on airport security with human resources focussed on risk and human resource management (Yimaz and Flouris 2017), security performance indicators (Milbredt and Deutschmann 2016), employees' attitudes (Remawi et al. 2011), and risks and ethics (O'Malley 2011). The literature review has revealed a lack of specific research on assessing security culture at airports. This accounts for a knowledge gap that needs to be filled for effective security, which appropriate human attitudes and behaviours at airports can majorly achieve. Also, the literature

has shown a need to focus on airport-based security culture assessment to promote a positive culture that enhances security at airports. This study fills the existing knowledge gap by assessing the airport security culture practices in Nigeria.

The aviation security system

The main goal of the global authority in the aviation industry is to ensure safe air travel in the airspace and at airports. The authority under the management of the International Civil Aviation Organisation (ICAO) established rules and regulations to guide air transportation for safe operations. The goal has caught the research attention of many scholars with findings to address aviation security issues from passenger and cargo safety. For example, Satish et al. (2023) examined the airport security system focusing on passenger profiling and screening checks using the Computer–Assisted Passenger Pre-Screening Technology II (CAPPS II). The need to address the problems with laser-induced injuries prompted the research of Yimga (2023), which found an indirect relationship between altitude and the frequency of laser-induced accidents. Apart from passenger safety, scholars have researched cargo security issues. Issues such as cargo theft were the focus of Aransiola et al. (2023). Park et al. (2023) found that improving security measures increases air cargo prices, which may lead to a reduction in price. To improve the cargo security system, Cordova (2022) examined screening technologies for raising alarms against suspicious cargo items in baggage.

The studies reviewed provided significant empirical evidence that researchers have made valuable efforts to address airport security concerns about passengers and cargo using technologies. However, the question of how technology and equipment will function efficiently without adequate corroboration of human behaviour, ideas, and customs to achieve a well-secured airport remains. Hence, there is a need for further research on security culture at airports. This study provides insight into the common security culture practices at airports in Nigeria.

Nigeria's aviation industry is a major air transportation hub in West Africa and across Africa. The air traffic of Nigeria surpasses that of most countries in Africa. According to ACI (2022), two airports in Nigeria rank among the ten (10) African airports in terms of passenger traffic. The Murtala Muhammed International Airport ranked 8th, and Nnamdi Azikiwe Internal Airport ranked 10th. This indicates high air passenger patronage at airports in Nigeria. It implies a need to ensure effective security at airports in Nigeria. The traffic volume reflects the population and economic size of Nigeria.

Data and methodology

The study adopts a survey research design to collect data for quantitative analysis for informed policy decisions to improve the security culture at airports in Nigeria. The survey design was used to understand airport stakeholders' perspectives concerning security culture in Nigeria. The research adopts a positivist philosophical approach

to data collection and interpretation to achieve the objective of the study. The philosophical approach was adopted for its capacity to express trustworthy factual knowledge gained through observation. The approach supports collecting primary data with a structured questionnaire for quantitative analysis.

The data for the study was collected from various stakeholders at the Murtala Muhammed International Airport (MMIA), Lagos, Nigeria. The airport serves as the study area for the research. MMIA was purposely selected because it is the major international airport with the most cases of security breaches. This is why Oyewole (2023) described the airport as the epicentre of security breaches in Nigeria. MMIA also dominates local and international air traffic volume in Nigeria. The population of the stakeholders comprises the staff of the Federal Airport Authority of Nigeria (FAAN), Nigerian Airspace Management Agency (NAMA), Nigeria Civil Aviation Authority (NCAA), cargo handling companies (NAHCo Aviance and SAHCOL), airlines, and security personnel. The successful survey produced 472 samples with valid responses for analysis out of 700 copies of the questionnaire, which accounted for a 67.4% success rate.

As presented in Table 1, a total of 472 respondents with valid responses were surveyed for this research. The sample comprises staff of FAAN (121; 25.6%), NAMA (78; 16.5%), NAMA (93; 19.7%), Handling Co (81; 17.2%), airlines (41; 8.7%), and Security (58; 12.3%) such as AVSEC, Police and others.

The study adopted a survey research method to collect data using a well-structured questionnaire. The questionnaire designed by the Airport Council International—ACI (2021) to assess the security culture of airports was adopted for the study. The questionnaire was administered using a random sampling technique. The technique provides an equal chance for the stakeholders to be sampled for the study. Random numbers from 1 to 700 were generated using Excel MS Word and assigned to the questionnaire before administration. The ACI questionnaire was prepared in two (2) parts. Part 1 focused on the general background information of the respondents, and part 2 presented statements to assess airport security culture. The questionnaire was designed on a 5-point Likert scale with option 1 representing strongly disagree, 2 – disagree, 3 – no option, 4 – agree, and 5 – strongly agree. The questionnaire has 26 items/variables in statement form to assess airport security culture

Table 1 Distribution of respondents for the study

Respondents	No of response	Per cent
FAAN staff	121	25.6
NAMA staff	78	16.5
NCAA staff	93	19.7
Handling Co (NAHCo Aviance; SAHCOL)	81	17.2
Airlines staff	41	8.7
Security (i.e., AVSEC, police, others)	58	12.3
	472	100.0

Source: author's field survey, 2023

and was classified under eight (8) categories, including general perception, personal ownership, leadership and commitment, security awareness, communication, reporting, training, and corporate security (See Appendix).

The data collected were analysed using exploratory factor analysis (EFA) to achieve the study's objective. The technique aims to identify the common security culture practices that have formed the attitudes and values of all airport stakeholders in Nigeria. The technique functions to reduce the 26 items to a few orthogonal ones that explain the common security culture practices at airports in Nigeria. The tests for the suitability of the data for EFA follow some procedures that guarantee the acceptability of its analysis output for interpretation. The procedures adopted in this study are;

1. Kaiser-Meyer-Oklin (KMO) and bartlett tests,
2. Communalities before and after extraction,
3. Total variance with an eigenvalue greater than one,
4. Extraction using principal axis factoring; and
5. Factor rotation with the varimax technique

The procedural tests have conditions that must be met to accept the results. The KMO values should be greater than 0.600, and the Chi-square value of the Bartlett test must be significant at $P < 0.005$. The communalities values of each item must be greater than 0.400 for it to contribute to the final output. The total variance of the variables with eigenvalues greater than one was adopted to determine the number of common factors to which the analysis will reduce the variables. The principal axis factoring (PFA) was selected as a technique for extraction. The results of the analysis were suppressed to 0.500 such that items with values less than the threshold would not have an indicated load factor. The output was also arranged according to their load factors, so variables are listed in the highest order of their values.

Results

The KMO test of sampling adequacy shows 0.642, indicating that the data is 64.2% adequate for the exploratory factor analysis. According to Beratung and Miljko (2020), a suitable factor analysis should have a KMO test value greater than 0.5 with a significant Bartlett test at $p < 0.05$. Bartlett's test of sphericity with an appropriate chi-square value of 5156.064, which is significant at $p < 0.001$, indicates that the data is suitable for the analysis. Table 2 implies that the data meets the condition for KMO and Bartlett's tests for adequacy and suitability of data for EFA. It indicates that the output of the analysis is reliable for conclusions on the security culture at airports in Nigeria.

The communalities estimate of the data in Table 3 indicates the variance of the items suitable to be attached to the common factors that explain the security culture at airports in Nigeria. The communalities are the sum of the squared loadings of the initial and the extracted values of the variance of each variable. At

Table 2 KMO and bartlett's test of data adequacy and suitability

Kaiser–Meyer–Olkin measure of sampling adequacy		0.642
Bartlett's test of sphericity	Approx. chi-square	5156.064
	Df	325
	Sig	0.000

Source: SPSS computation, 2023

extraction, in Table 3, three (3) items with values less than 0.500 do not have an acceptable variance to explain the airport security culture. The items are coded L&C2, Comm2 and Train3. It implies that these items would not significantly contribute to the common factors explaining Nigeria's airport security culture. The result implies that, for item 9, supervisors do not always lead and demonstrate good security behaviour, security issues are not regular points of discussion at meetings/briefings, and refresher training on security matters is not regular in Nigeria.

The effort to identify the number of common factors that form the major security culture practices at airports in Nigeria was carried out by determining the total variance explained for the variables that make airport security culture (See Table 4). The analysis shows that there are eight (8) of the twenty-six (26) variables with total initial eigenvalues greater than one (1). It indicates that the common factors that serve as the airport security culture at airports in Nigeria are eight. After extraction, the cumulative percentage of the common security cultural practice at airports accounted for 68.8 per cent in Nigeria (Table 4). The percentage threshold is suitable for making assumptions and generalisations from the results.

To identify the common security culture practices, the analysis carried out extraction using principal axis factoring with varimax rotation. The rotation was done to arrange the variables by the sizes of their loading factors and suppressed variables with loading factors less than 0.500 thresholds. Table 5 indicates eight (8) common security cultural practices at airports in Nigeria. The final output of the analysis, the rotated factor matrix (Table 5), presents an understanding of the proportions in the variance in the practices that serve as the major airport security culture in Nigeria. The items are well-loaded on each extracted common factor with values greater than 0.500. It is noted that items whose communalities are less than the specified threshold (0.500) did not load on common factors. Also, some items with a load factor less than 0.500 did not load on any of the common factors. These items are coded SecAware3, Comm1, L&C2, Comm2, and Train3. It implies that the items did not contribute to the common security culture practices at airports in Nigeria.

The critical goal of the study was achieved by the output of the analysis identifying the common security culture practices at airports in Nigeria. The analysis successfully identified eight (8) practices that serve as security culture at airports in Nigeria. The eight (8) practices were categorised under Factors 1 – 8. Factor 1 has four (4) items coded as GP4, Report2, GP3, and Report1. Factor 2 has SecAware1, CorpSec2,

Table 3 Communalities of items for airport security culture

S/N	Code	Culture practices	Initial	Extraction
		General perception		
1	GP1	There is enough staffing and resources put into security at the airport	0.764	0.764
2	GP2	The security measures/procedures of the airport are well implemented	0.681	0.540
3	GP3	The security facilities/equipment at the airport are well maintained	0.811	0.670
4	GP4	The airport provides a work environment which drives and facilitates good security practices and behaviours	0.878	0.752
		Personal ownership		
5	PO1	I have a role to play in ensuring security at the airport	0.884	0.788
6	PO2	I am aware of what security behaviours are expected of me	0.889	0.952
7	PO3	I am confident enough to challenge those not complying with security policies/procedures	0.788	0.641
		Leadership and commitment		
8	L&C1	The senior management within my organisation sees security as a top priority	0.818	0.626
9	L&C2	My immediate supervisors always lead by example by demonstrating good security behaviours	0.790	0.438
10	L&C3	My co-workers generally recognise the importance of security and demonstrate appropriate security behaviours	0.846	0.926
		Security awareness		
11	SecAware1	I understand the type of security threats and risks that my airport is facing	0.824	0.834
12	SecAware2	I understand well the consequences of breaching security rules	0.690	0.635
13	SecAware3	I pay attention to the surroundings at the airport and know what unusual or suspicious behaviour looks like	0.620	0.521
		Communication		
14	Comm1	Security information is effectively shared among staff members at my levels in my organisation	0.681	0.630
15	Comm2	Security issues at the airport are discussed in my team meetings/briefings regularly	0.464	0.290
16	Comm3	I am promptly informed about any security incidents at the airport and respective “lessons learned”	0.761	0.610
17	Comm4	Security awareness materials, policies and/or procedures are easily accessible for me to read and understand	0.688	0.714
		Reporting		
18	Report1	The security incident reporting system of the airport is well-established and effective	0.832	0.735
19	Report2	I know how and who to contact in the event of a security incident	0.894	0.665

Table 3 (continued)

S/N	Code	Culture practices	Initial	Extraction
20	Report3	I feel that my organisation's staff are generally proactive and willing to report suspicious activities or security incidents	0.862	0.755
21	Report4	My organisation provides an environment that allows security concerns or wrongdoings to be reported and discussed in an open, "blame-free" environment	0.883	0.824
		Training		
22	Train1	The security training that I have received is sufficient and practical for my work	0.800	0.696
23	Train2	I have understood my organisation's security policies and regulations through the security training offered	0.843	0.945
24	Train3	I am provided with regular refresher training to keep me updated on the development of security matters (e.g., changes in security policies and procedures, lessons learned from recent security incidents and more)	0.808	0.433
		Corporate security		
25	CorpSec1	Sensitive information is disposed or filed appropriately in my organisation	0.817	0.783
26	CorpSec2	I normally lock my computer or electronic devices when leaving them unattended	0.781	0.730

Extraction method: principal axis factoring

Table 4 Total variance explained for airport security culture

Factor	Initial Eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.468	28.724	28.724	7.174	27.592	27.592	2.785	10.713	10.713
2	3.195	12.290	41.013	2.910	11.191	38.782	2.671	10.272	20.985
3	2.399	9.225	50.238	2.141	8.234	47.016	2.641	10.160	31.145
4	1.910	7.345	57.583	1.632	6.275	53.291	2.517	9.680	40.824
5	1.703	6.552	64.135	1.388	5.337	58.628	2.025	7.789	48.613
6	1.267	4.872	69.007	1.061	4.081	62.709	1.908	7.337	55.950
7	1.180	4.537	73.544	0.861	3.313	66.022	1.738	6.684	62.634
8	1.084	4.170	77.715	0.732	2.816	68.838	1.613	6.204	68.838
9	0.958	3.684	81.398						
10	0.810	3.115	84.513						
11	0.639	2.457	86.970						
12	0.582	2.238	89.208						
13	0.517	1.987	91.196						
14	0.461	1.772	92.967						
15	0.392	1.508	94.475						
16	0.261	1.003	95.478						
17	0.236	0.908	96.386						
18	0.207	0.798	97.184						
19	0.166	0.639	97.823						
20	0.136	0.524	98.347						
21	0.125	0.480	98.827						
22	0.087	0.333	99.160						
23	0.079	0.303	99.464						
24	0.056	0.217	99.680						

Table 4 (continued)

Factor	Initial Eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
25	0.046	0.176	99.856						
26	0.037	0.144	100.000						

Extraction method: principal axis factoring

Table 5 Rotated factor matrix airport security cultural practices

	Factor							
	1	2	3	4	5	6	7	8
GP4	0.836							
Report2	0.705							
GP3	0.669							
Report1	0.520							
SecAware1		0.846						
CorpSec2		0.801						
PO3		0.747						
Train1		0.642						
Report3			0.785					
PO1			0.781					
SecAware2			0.503					
SecAware3								
Comm1								
L&C3				0.923				
CorpSec1				0.845				
L&C2								
PO2					0.908			
Report4					0.833			
Train2						0.874		
L&C1						0.612		
Comm2								
Comm4							0.819	
GP2							0.552	
Train3								
GP1								0.841
Comm3								0.710

Extraction method: principal axis factoring

Rotation method: varimax with kaiser normalization

Rotation converged in 9 iterations

PO3, and Train1. Factor 3 has Report3, PO1, and Aware2. Factor 4 has L&C3 and CorpSec1. Factor 5 has PO2 and Report4, while Train2 and L&C1 load on Factor 6. Factor 7 has Comm4 and GP2, while Factor 8 loads on GP1 and Comm3.

A critical effort to identify the common airport security cultural practices considered the highest loading item on each common factor. The statement with the highest loading factor was chosen to represent each factor as the common airport security culture in Nigeria. Table 6 presents the eight (8) common airport security cultural practices with their loading factor. Table 6 indicates that the airport management and other organisations provide a work environment which drives and facilitates good security practices and behaviours of staff. Factor 2 implies that workers

understand the type of security threats and risks that face the airports in Nigeria. It is expected that workers understanding the security types and risks should promote a culture to prevent security risks at airports.

Regarding Factor 3, there is a feeling that airport staff are proactive and willing to report suspicious activities. Factor 4 indicates that workers generally recognise the importance of security with appropriate security behaviours. Factor 5 shows that the respondents are aware of their expected security behaviour. The effect of training was highlighted by Factor 6, accounting for understanding the existing security policies and regulations at airports. Factor 7 indicates the accessibility of materials and policy documents to study for proper security awareness at airports. The last factor, 8, indicates the adequacy of staff and resources for security at airports in Nigeria. Although the analysis identified eight (8) factors, which are airport common security culture practices, seven (7) security culture dimensions are practised at airports in Nigeria. This is because two (2) indicators that measure "General Practice" were identified as Factor 1 and Factor 8.

A further look at Table 6 shows that seven (7) of the eight dimensions of assessing airport security culture developed by ACI (2021) have a highly significant statement to them. The only dimension of airport security culture assessment that is not part of the common security culture at airports in Nigeria is corporate security. It implies that the indices of corporate security are not considered as priorities for promoting security at airports in Nigeria. It also indicates that security issues are not taken as entirely corporate responsibilities at airports in Nigeria.

Discussion of results

The importance of security to the wellness of an airport cannot be overemphasised because the perceived security level of an airport determines the patronage of passengers and airlines (Nwankwo and Ozuomba 2020). So, airport authorities prioritise global security and safety standards to avoid unforeseen events that will lead to less patronage. However, the effectiveness of implementing security standards depends on the attitudes and behaviour of all categories of staff at airports. This makes the consideration and implementation of security culture important to airports. Thus, this study assessed the airport security culture at airports in Nigeria.

The goal of the study to identify the common airport security culture practice(s) and neglected aspects of security culture practice and the dimensions required to make airport security a wholesome responsibility of all airport stakeholders was achieved with three key findings. Firstly, the assessment of security culture at airports in Nigeria shows in Table 4 that practices such as supervisors always leading and demonstrating good security behaviour, security issues being regular points of discussion at meetings/briefings, and regularity of refresher training on security matters are not common security culture practices at airports in Nigeria. The results opposed the principles of security culture that leadership should be responsible for facilitating, propagating, and implementing security culture at airports (Eng and Sullivan 2018; ICAO 2021). It indicates that the persistent security cases at airports in Nigeria result from the poor attitude of the leaders to promote security culture by demonstrating good behaviour, discussing security issues regularly and organising security training regularly.

Table 6 Common airport security culture practices in Nigeria

Factor	Factor codes	Culture dimensions	EFA load factor	Culture practices
Factor 1	GP4	General Practice	0.836	The airport provides a work environment which drives and facilitates good security practices and behaviours
Factor 2	SecAware1	Security Awareness	0.846	I understand the type of security threats and risks that my airport is facing
Factor 3	Report3	Reporting	0.785	I feel that my organisation's staff are generally proactive and willing to report suspicious activities or security incidents
Factor 4	L&C3	Leadership and Commitment	0.923	My co-workers generally recognise the importance of security and demonstrate appropriate security behaviours
Factor 5	PO2	Personal Ownership	0.908	I am aware of what security behaviours are expected of me
Factor 6	Train2	Training	0.874	I have understood my organisation's security policies and regulations through the security training offered
Factor 7	Comm4	Communication	0.819	Security awareness materials, policies and/or procedures are easily accessible for me to read and understand
Factor 8	GP1	General Practice	0.841	There is enough staffing and resources put into security at the airport

Secondly, Table 6 identifies the eight (8) common airport security culture practices and seven (7) airport security culture dimensions in Nigeria. The practices are focusing on the work environment, understanding security risks and threats, willingness to report suspicious activities, recognising security importance and demonstrating appropriate behaviour, awareness of expected security behaviour, organising training on security policies and regulations, providing accessibility to security awareness materials, and providing adequate security staff and resources. Thirdly, Table 6 further indicates that corporate security as an airport security culture dimension does not have a common practice in Nigeria. It shows that the security culture practices engaged at airports in Nigeria do not embrace the corporate relevance of security culture. The poor security situation probably prevails because airport stakeholders in Nigeria do not believe in the importance of corporate culture to security. In line with ECA (2023), focus on safety culture tends to make airport stakeholders forget about corporate security culture in the aviation industry. ECA (2023) further stated their belief that the many security challenges at airports result from the lack of attention given to corporate security culture in the aviation industry. The ECA believe aligns with the security situation at airports in Nigeria since airport management pays little attention to corporate security culture in addressing security problems. This study's result contradicts the finding of Fu and Chan (2014) that Taipei Songshan airport management believes in safety indices to promote corporate security culture. Corporate culture should form the hub of other security culture dimensions as it depicts organisational culture for security measures that conform with leadership and individual values in promoting airport security culture (Bal and Kucuk Yılmaz 2019). Similarly, Eng and Sullivan (2018) argued for the re-imagination of security culture as a corporate culture where senior leadership willingly takes up the responsibility of facilitating security consciousness among staff.

Corporate security refers to the measures and strategies put in place by a company to protect its assets, employees, customers, and information from internal and external threats. The primary objective of corporate security is to mitigate risks and ensure the safety and integrity of the organisation. This includes safeguarding physical assets, such as buildings, offices, and equipment, as well as intellectual property, trade secrets, and confidential information. Corporate security may encompass various functions and practices, such as access control, surveillance, security systems and protocols, emergency preparedness, crisis management, fraud detection and prevention, cybersecurity, and employee training and awareness programs. The key components of corporate security may include physical security, information security, personnel security, incident response and crisis management, and vendor and supplier security.

Conclusion and policy recommendations

Security issues have remained a big concern for airport stakeholders worldwide. It depicts that the importance of security to airport operations cannot be overemphasised. Efforts to ensure secured airports have driven the acquisition and application of technological equipment to provide adequate security. Despite this, the role of human beings in achieving efficient security at airports cannot be replaced by equipment and machines because they need human beings to operate them to

achieve the purpose of their acquisition. So, all airport stakeholders are expected to develop a sound and uniform culture towards security. This study assesses the security culture at airports using the ACI's (2021) survey instrument with eight (8) dimensions to identify the common security practices at airports in Nigeria. The data for the study were collected using a questionnaire administered to stakeholders at airports in Nigeria. The study adopted the questionnaire designed by ACI (2021) to assess airport security culture in Nigeria. The questionnaire was designed such that respondents attach a level of significance to their agreement to twenty-six (26) sets of statements serving as indicators and categorised under eight dimensions to measure the overall maturity of security culture at airports. The data were analysed using exploratory factor analysis (EFA) to summarise the indicators into a few orthogonal ones to identify the common airport security culture factors.

The study found that three (3) indicators relating to leadership roles do not significantly contribute to the factors serving as common security practices at airports in Nigeria. However, eight (8) common security practices were identified to be significant at airports in Nigeria. Strikingly, the study found that corporate security practices were not significant at Nigeria's airports. The finding implies that airport management does not promote the sense of developing measures and strategies that guarantee airport security from internal and external threats. The goal of corporate security is to mitigate risks against airport physical assets. Therefore, this study achieves its objectives by highlighting Nigeria's common and non-common airport security culture practices. The findings imply the importance of human behaviour, customs, and ideas toward effective security at airports. It shows the need to enhance the security culture practices with corporate culture at airports in Nigeria. It further highlights that leaders are highly responsible for promoting a security culture at airports.

The following policy recommendations are derived from the findings of the study.

1. Leaders in Nigeria's aviation industry should brace up their responsibility to build a strong security culture by strategically demonstrating their roles at airports.
2. Airport stakeholders should be encouraged to imbibe all security culture indicators in their day-to-day activities.
3. Finally, airport management and other organisations within the aviation industry should endeavour to design, adopt, and implement security as their corporate culture.

In conclusion, this study assesses the security culture practices at airports and persuades all stakeholders to bear the responsibility of effective security at airports with an attitude that security is for all. The study's outcome is relevant to airports in both developing and developed nations since aviation security issues are global. The study contributed to knowledge by highlighting the importance of human beings in effective security through security culture practices. The study is limited to stakeholders' behaviour towards security issues at airports in Nigeria. Future research can adopt the same method to assess security culture at airports in other countries. Also, further studies will need to examine the role of corporate security at airports.

Appendix

Questionnaire
Security Culture at Airports in Nigeria

This Questionnaire is purely designed for academic purposes. Kindly provide your responses, as all information shall be treated with the utmost confidentiality.

Airport where you work: _____ Organization: _____

Part 1 - General Personal Details

Please indicate the core business which best describes your organization:

□	Airline	□	Airport operator
□	Regulator	□	Ground handling
□	Navigation service provider	□	Custom/immigration/quarantine
□	Police/law enforcement	□	Cargo handling
□	Commercial tenants	□	Other

Please indicate the ranking or seniority of your position at your organization:

□	Senior management	□	Middle management	□	Junior Employee

Please indicate if your work is directly related to aviation security:

□	Yes, related	□	No, not related

Please indicate where the majority of your work is taken place at the airport:

□	Landside	□	Airside

Please indicate your age range:

□	<=29	□	30-39	□	40-49	□	>=50

Please indicate your gender:

□	Male	□	Female

Please indicate your work schedule:

□	Day time	□	Night time	□	Day/night shift

Please indicate your years of experience at your organization:

□	<2 years	2-5 years	□	6-10 years	□	11-15 years	□	>=16 years

Please indicate your contract type:

□	Full time	□	Part time	□	Contract staff

Part 2 – Security Culture

S/N	Items	Strongly Disagree-1	Disagree - 2	No Option – 3	Agree - 4	Strongly Agree - 5
	General Perception					
1	There is enough staffing and resources put into security at the airport.					
2	The security measures/procedures of the airport are well implemented.					
3	The security facilities/equipment at the airport are well maintained.					
4	The airport provides a work environment which drives and facilitates good security					

	practices and behaviours.					
	Personal Ownership					
5	I have a role to play in ensuring security at the airport.					
6	I am aware of what security behaviours are expected of me.					
7	I am confident enough to challenge those not complying with security policies/procedures.					
	Leadership and Commitment					
8	The senior management within my organisation sees security as a top priority.					
9	My immediate supervisors always lead by example by demonstrating good security behaviours.					
10	My co-workers generally recognise the importance of security and demonstrate appropriate security behaviours.					
	Security Awareness					
11	I understand the type of security threats and risks that my airport is facing.					
12	I understand well the consequences of breaching security rules.					
13	I pay attention to the surroundings at the airport and know what unusual or suspicious behaviour looks like					
	Communication					
14	Security information is effectively shared among staff members at my levels in my organisation					
15	Security issues at the airport are discussed in my team meetings/briefings regularly.					
16	I am promptly informed about any security incidents at the airport and respective "lessons learned".					
17	Security awareness materials, policies and/or procedures are easily accessible for me to read and understand					
	Reporting					
18	The security incident reporting system of the airport is well-established and effective.					
19	I know how and who to contact in the event of a security incident.					
20	I feel that my organisation's staff are generally proactive and willing to report suspicious activities or security incidents.					
21	My organisation provides an environment that allows security concerns or wrongdoings to be reported and discussed in an open, "blame-free" environment.					
	Training					
22	The security training that I have received is sufficient and practical for my work.					
23	I have understood my organisation's security policies and regulations through the security training offered.					
24	I am provided with regular refresher training to keep me updated on the development of security matters (e.g., changes in security policies and procedures, lessons learned from recent security incidents and more).					
	Corporate Security					
25	Sensitive information is disposed or filed appropriately in my organisation.					
26	I normally lock my computer or electronic devices when leaving them unattended.					

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Data availability Data for this study shall be made available upon request.

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