-RESEARCH ARTICLE-

EMPLOYEES' OPINIONS ON INCREASING AIRPORT NON-AERONAUTICAL REVENUE EVIDENCE IN THAILAND

Kulwadee Lim-u-sanno

Faculty of Management Sciences, Prince of Songkla University,
Songkhla 90112, Thailand
Email: kulwadee.l@psu.ac.th
Orcid: https://orcid.org/0000-0003-2378-4680

Sirinya Wiroonrath

Faculty of Business Administration, Rajamangala University of Technology Thanyaburi,
Bangkok 12110, Thailand
Email: sirinya.wiroonrath@gmail.com
Orcid: https://orcid.org/0000-0002-0920-1429

Banpot Wiroonratch

Faculty of Management Sciences, Prince of Songkla University,
Songkhla 90112, Thailand
Email: banpot.buu@gmail.com
Orcid: https://orcid.org/0000-0002-8454-6080

Janjira Jamjanta

Faculty of Management Sciences, Prince of Songkla University,
Songkhla 90112, Thailand
Email: janjira.jjt@gmail.com
Orcid: https://orcid.org/ 0009-0005-5875-4539

─Abstract─

This article presents a study of the perspectives of 228 airport employees regarding the strategies for increasing non-aviation revenue and the administration of commercial space influencing the increase of non-aviation revenue at a Thai airport. The research

reveals that (1) opinions on the management strategies for non-aviation revenues emphasize the need for clear communication of airport policies leading to the alignment of airport operation mission, operational planning, management systemization, and responsibility allocation. Moreover, monitoring, supervision, and reporting operational outcomes should be transparent for commercial activities to increase revenue. However, the study did not identify statistically significant factors associated with spatial management strategies that influence the growth of non-aviation revenue at the airport under study. The relationship between indicators related to revenue management, space allocation, business suitability, benefit, rent collection, and the promotion of commercial activities for interested parties was only observed as a trend. (2) According to opinions on personnel management to support the increase in non-aviation revenue for the airport, it is necessary to recruit knowledgeable and capable personnel to improve or introduce new activity models, as well as to develop the skills, knowledge, and abilities of airport employees in commercial activities. (3) No statistically significant results were observed for variables associated with commercial space control and the inspection of commercial activities. This is likely because control and inspection activities do not generate revenue. No statistically significant findings were observed regarding the organization of technology and information systems and commercial space systems. However, a negative trend was observed, indicating that the increase in non-aviation revenue was affected. Both variables may contribute to the rising costs of management.

**Keywords:** Airport Revenue, Non-aviation revenue, Aviation Business.

INTRODUCTION

It cannot be denied that the COVID-19 pandemic has had a significant impact on the aviation industry, particularly on air travel. Over two-thirds of global flights were grounded, and operations were suspended following the initial outbreak. According to airport data, air passenger volume has decreased by 70–95%, resulting in numerous airlines' demise. This negative trend has negatively impacted the operational performance of aviation businesses, particularly airports, resulting in a continuous and automatic decline in aeronautical and non-aviation revenue at airports. Financially, airports must discover survival ways (Štimac, Pivac, Bračić, & Drljača, 2021). Non-aviation revenue has become one of the targeted instruments for airports around the world to manage and compensate for risks in the economic, political, and continuous change contexts that impact airport revenue (Akoodie & Cloete, 2020; Uzule & Kuzmina-Merlino, 2022). This specifically included the diminution of the airport's primary aviation revenue sources, including Landing fees, Charges for air traffic control services, Aircraft parking, Passenger charges, Cargo charges, and Charges for aircraft handling (Akoodie & Cloete, 2020). Since 1999, the importance and study of airport revenue structures have led to a consistent increase in the proportion of non-aviation revenue in many airports, with non-aviation revenue surpassing revenue from aviation

activities (Akoodie & Cloete, 2020; Battal & Bakir, 2017; Uzule & Kuzmina-Merlino, 2022). Non-aviation revenue comprises various activities in the airport area, where management and structural development guarantee airports' operational performance and long-term growth. Important non-aviation revenue sources include retail sales, income from real estate, parking fees, and property management by airport operators (Akoodie & Cloete, 2020; Uzule & Kuzmina-Merlino, 2022). The past results of restructuring airport revenue, focusing more on non-aviation revenue, and implementing commercial management and passenger spending stimulation strategies at the airport have impacted the management of retail operations in passenger terminals, the improvement of passenger terminal design, and the importance of managing targeted passenger groups to maximize retail potential in the terminal (Uzule & Kuzmina-Merlino, 2022; Wu & Chen, 2019). Accordingly, this affected terminal retail management, terminal renovation management, and a concentration on target passenger management to maximize the terminal's retail potential (Wu & Chen, 2019).

Based on the Thailand case study context as reported by Airports of Thailand Public Company Limited (AOT), the performance of non-aviation revenue from 2018 to 2022 was affected by crises and significantly impacted the decline of airport revenue, as shown in Figure 1.

Figure 1. AOT Non-aeronautical revenue 2018-2022 (Annual AOT report)
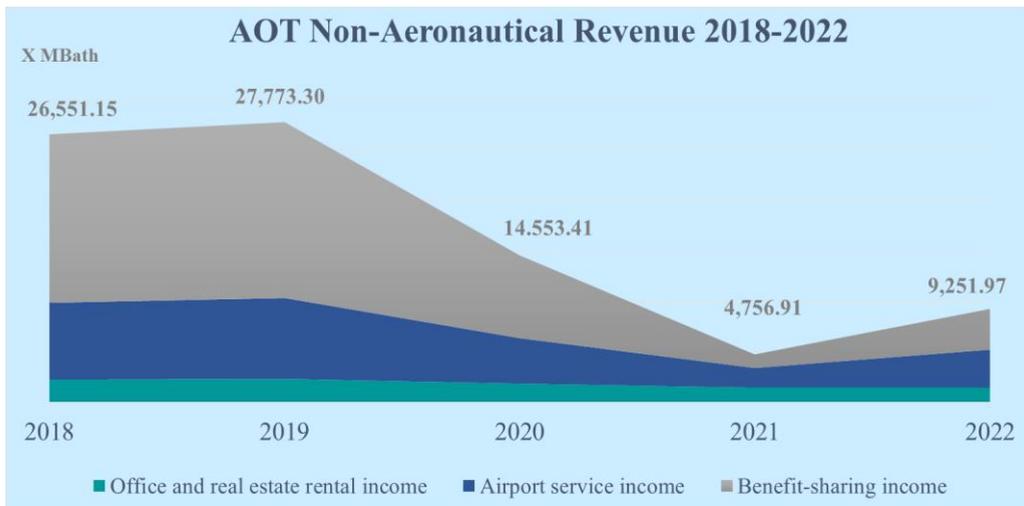
In 2021, the value of non-aeronautical revenues was 4,756,91,000,000 baht, a decrease of 82.9% compared to 2019's value of 27,773,00,000,000 baht, as shown in Figure. AOT's commercial operations generated the majority of its non-aeronautical revenues, including (1) office and real estate rental income, (2) airport service income, and (3) benefit-sharing income. AOT operates six airports, including Suvarnabhumi Airport, Don Mueang Airport, Chiang Mai Airport, Phuket Airport, Mae Fah Luang-Chiang Rai International Airport, and

Hat Yai Airport, under the form of a public limited corporation. In addition, AOT collaborates with external operators such as Thai Airways International Public Company Limited and Worldwide Flight Services on various aviation support activities. Bangkok Aviation Fuel Services Public Company Limited provides aircraft refueling services, retail services, and duty-free shops, among others. These proprietors are required to pay concession fees, rental fees, and service fees. AOT has devised a strategy and direction for operating as an "Aerotropolis." The objectives are to pilot the development of Suvarnabhumi Airport, beginning with the development of seven business center projects, including a large international conference and exhibition center, a community product exhibition center, an international trade and export center, office buildings to support airport business operations of both public and private agencies and companies in the nearby industrial estate, a comprehensive entertainment complex located with a community product exhibition center, and a comprehensive entertainment complex located with a community product exhibition center. In addition, AOT has planned the development of the airport's maximum potential to accommodate the future growth of travel and tourism businesses and to become an airport city (Vetwittaya Klang, Weerayangkun, & Phoom Bo Plub, 2019).

The COVID-19 crisis significantly affected the global economy, particularly the air travel and airport sectors, as flights were nearly suspended, leading to a decline in both aviation and non-aviation revenues for airports. This has become a challenge for airport operations, which must adapt and seek to increase commercial revenue through non-aviation revenue-generating activities. Diverse strategies are employed to increase airport non-aeronautical revenue, including policies implemented by airport management and communicated to airport personnel who are operators. Understanding the airport's ever-changing orientations is crucial to successfully implementing the policy. It is crucial to investigate the views of personnel regarding the administration of commercial areas that influence the growth of airport non-aviation revenues. This study seeks to investigate methods to increase non-aviation revenues from commercial areas, increase revenue-sharing ratios, ensure the success of plans, and provide direction for future commercial activities' future restructuring and management. Airport commercial area management can be improved by studying various factors, such as technological and information system organization factors, commercial area operational policy factors, commercial area system organization factors, commercial area control factors, store activity management factors, and revenue management factors.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Non-Aeronautical Revenue

Aeronautical revenue used to be the primary source of revenue for airport operations, including airport taxes, landing fees, airport utilization fees, and aircraft landings (Shin & Roh, 2021). Non-aeronautical revenue can be considered significant besides the

airport's primary revenue stream. It is a hub for air transportation and traffic, providing passengers with a comfortable, secure, and swift journey. Non-aeronautical revenue comprised a portion of the past's concession revenue, office and real property rentals, and service revenue. In many airports, it is a significant and growing proportion of the current revenue (Akoodie & Cloete, 2020; Uzule & Kuzmina-Merlino, 2022). Non-aeronautical revenues, such as rental revenues, are subject to AOT's mandatory service charge rates. AOT's Revenue Review Committee and the Civil Aviation Board (CAF) review and approve service revenues, concession revenues, and other AOT business-supporting activities operated or conceded by outsourced operators, including retail services, passenger services under airport operating licenses, shuttle bus rentals, storage facilities, parking services, and other types of facilities such as hotel operations or ground services (Thai Airways Public Company Limited, 2022).

Guideline for increasing airport's non-aeronautical revenues

According to the trend of airport revenue structure, there has been a significant increase in non-aeronautical revenues, especially during air travel crises (Uzule & Kuzmina-Merlino, 2022; Wu & Chen, 2019; Yapakhai, 2017). Increasing non-aeronautical revenues in airports frequently emphasizes commercial management and stimulating passenger expenditure while at the airport. This has led to various commerce and service initiatives that prioritize enhancing passenger satisfaction at the airport. This is accomplished by selecting diverse activities and tools to promote sales and enhance airport facilities to provide better passenger services in the aircraft, thereby increasing airport revenue (Ricardianto et al., 2022; Wu & Chen, 2019). The key principle of non-aeronautical revenue is to increase passenger expenditure by providing management services that transform the airport into more than just an airport (Ricardianto et al., 2022; Wu & Chen, 2019). The strategies for increasing non-aeronautical revenues at airports (Y) are as follows: (1) adjusting management policies to adapt and stay current with the era; (2) promoting increased spending during the passenger journey; (3) providing cargo services; (4) adding various activities that support commercial airport operations and local goods; (5) establishing cooperation centers in various areas to support operations; and (6) increasing the availability of reputable products.

Management of commercial space at airports

The impact of the pandemic has resulted in the emergence of the 'New Normal' in the airport business, resulting in modifications to the administration of airport spaces. Passenger terminal structures require additional planning and design to ensure health control measures, including establishing traffic routes within the terminals (Štimac et al., 2021). In particular, the role and significance of airline passengers have transformed them into direct customers of airports, creating attraction and making them the center of airport management's attention. This has resulted in a shift in perspective and increased operational pressure to ensure that the airport can efficiently accommodate airline business customers and passengers (Kalakou & Moura,

2021). Due to alterations in aviation and airport operations, there has been a shift in the administration of commercial space at airports as a means to increase non-aviation-related revenue (Wu & Chen, 2019; Yapakhai, 2017). Therefore, accommodating passengers and managing service times within the passenger terminal building necessitates allocating significant and diverse activities both before and after security checkpoints and providing convenient amenities for non-aviation activities. (1) food and beverage outlets and convenience stores catering to passenger needs; (2) duty-free shops offering gifts and specialty items catering to passenger preferences; and (3) special activities at select airports, including casinos, cinemas, golf courses, spas, and wellness centers, among others. It is estimated that these non-aeronautical activities account for up to 40 percent of the airport's total revenue and that this proportion has remained relatively stable over the past few years. Retail activities generate the most non-aeronautical revenue (approximately 33%), followed by parking facilities (approximately 23%) and vehicle rental services (approximately 8%) as the third largest revenue generator. The above numbers indicate that these anticipated revenues affect airport environmental management. This calls for efficient and aesthetically appealing airport environmental designs that enhance the passenger experience and boost airport revenue (Kalakou & Moura, 2021). By examining exemplary airports such as Singapore Changi Airport, widely regarded as the world's best airport and a global aviation hub, it is possible to determine that they feature high-end luxury shops, cinemas, restaurants, playgrounds, and even the world's largest indoor waterfall, in addition to relaxation areas (Wongwisetpaiboon, 2022). Singapore Changi Airport provides over 500 retail stores, 260 food and beverage outlets, duty-free shops, cutting-edge technology, and fully automated self-service processes, contributing significantly to non-aeronautical revenue generation (Nalisa, 2020).

Organizing the Information Technology (IT) system for increasing non-aeronautical revenues

The development of IT capabilities has emerged as a competitive advantage, particularly in the non-aviation sector of airports (Serrano & Kazda, 2020; Štimac et al., 2021; Tale, 2023). Managing airport city areas with distinctive multimedia and information technology to provide passengers and business partners operating at the airport with convenient information is crucial (Vetwittaya Klang et al., 2019). Regarding the growth of non-aeronautical revenues at airports, it is a result of targeted marketing management, such as 1) incorporating IT to generate revenue for stores, including information about store locations and airport discounts, as well as new payment methods; 2) airports utilizing platforms or applications to facilitate speed and variety for stores, such as online shopping and off-site product delivery; and 3) airports utilizing technology systems to communicate dairies to passengers. In this context, organizing the information technology system is essential for current business management, serving as an investment to maximize the efficiency of limited resources and optimize the management of commercial airport spaces (Phacharoen, Pinthapataya, Boonyasopon, & Teerawatchai, 2017; Serrano & Kazda, 2020; Tale, 2023). This can be demonstrated with the Hypothesis (H1) that follows.

H1: *Factors related to organizing the information technology and information system influence the increase of non-aviation revenue for airports.*

Policy for Enhancing Non-Aviation Revenue of Airports

The most important factor in determining the quality of an airport is the efficient and effective implementation of operations under conditions that consider the employees' ability to function (Paraschi, Georgopoulos, & Kaldis, 2019). Leadership plays a crucial role in providing policies, guidelines, setting objectives, and supporting various aspects to accomplish operational goals. Therefore, the implementation of policies to increase airports' non-aviation revenue must be defined by the organization's policy (Phacharoen et al., 2017; Tale, 2023), and airport management must be aligned with policies covering infrastructure management, zoning, and supporting related business ventures (Tale, 2023). The primary strategy entails managing the airport's infrastructure to facilitate activities or transactions that generate increased revenue and benefits (Akoodie & Cloete, 2020), such as optimizing the commercial performance of the airport and attracting investor interest (Akoodie & Cloete, 2020; Phacharoen et al., 2017). The Airport of Thailand (AOT) has established policies to guarantee the "sustainable growth" of airport operations by adhering to the tenets of convenience, efficiency, safety, and passenger satisfaction. These policies can be described using the next hypothesis (H2):

H2: *Factors in commercial operations policies influence the increase of airport non-aviation revenue.*

Airport space for increasing non-aeronautical revenues

When an airport terminal becomes a service facility and activities related to the preparation of passengers for air travel, it becomes the goal of the operation to maximize passenger comfort and satisfaction and encourage passengers to spend leisure time in the terminal (Kalakou & Moura, 2021). This is why airports select revenue-generating activities and allocate the resulting benefits to maximize their value. The customer base is segmented with the concept of transforming the airport into a commercial tourist destination, and various retail facilities are provided. The allocation of more service and retail areas allows airports to generate more revenue (Bæringsdóttir, 2010). Vetwittaya Klang et al. (2019) and Wu and Chen (2019) state that the limited space of airports necessitates a systematic approach to area management to provide efficient services for a variety of activities that generate more income. In addition to planning and assembling stores in commercial spaces, the organization of commercial spaces requires excellent organization to increase sales for operators (Phacharoen et al., 2017; Vetwittaya Klang et al., 2019). Airport cities should have adequate service infrastructure systems. The following Airport Hypothesis (H3) can present the issues mentioned above.

H3: *Factors related to commercial space management influence the increase of non-aviation revenue for airports.*

Controlling commercial space and monitoring the activities of shops in the airport area

The most significant sources of non-aviation revenue are retail sales, real estate, and parking fees generated by the management and supervision of commercial space and area control to support appropriate commercial management (Akoodie & Cloete, 2020). Each zone has designated boundaries, specified types of suitable activities, and pricing based on the zone. In addition, the tangible characteristics of the environment must be managed to encourage passenger spending when allocating space in the airport area for commercial management. This includes tangible characteristics, the environment (smell and sound), and the layout of the storefronts. Based on the notion that an airport is more than just an airport, these activities must encourage passenger expenditure (Ricardianto et al., 2022). For operators to perform business operations effectively, there must be efficient control and supervision (Phacharoen et al., 2017). According to ACI's (2019) data, airport retail revenue is a significant source of non-aviation revenue, accounting for more than 30.2% of airport revenue. This has prompted airports to make strategic efforts to devise strategies. Akoodie and Cloete (2020) and Phacharoen et al. (2017) state that airports must conduct inspections to increase revenue and the future growth of retail trade (Akoodie & Cloete, 2020; Phacharoen et al., 2017). The operations of the airport can be described by the following hypotheses (H4 and H5).

H4: *Factors related to commercial space control influence the increase of non-aviation revenue for airports.*

H5: *Factors related to monitoring shop activities influence the increase of non-aviation revenue for airports.*

Management strategies for increasing non-aeronautical revenues

The management of non-aviation revenue entails activities and the identification of commercial activities in various services to accommodate the time passengers spend at the airport and steadily increase airport revenue (Akoodie & Cloete, 2020). From a management standpoint, revenue allocation involves establishing policies, operational plans, objectives, resource planning, and support in advance and supervising plan implementation. The non-aviation revenue management plan includes planning for commercial space rental rates based on the types of shops and predetermined periods, determining and verifying revenue sharing from sales agreements between shops and airports, and managing commercial space lease agreements that are aligned with the airport's non-aviation operations and revenue from other commercial areas (Phacharoen et al., 2017). Based on the study's findings, the following hypothesis (H6) can be presented.

H6: *Factors of revenue management influence the increase of non-aviation revenue for airports.*

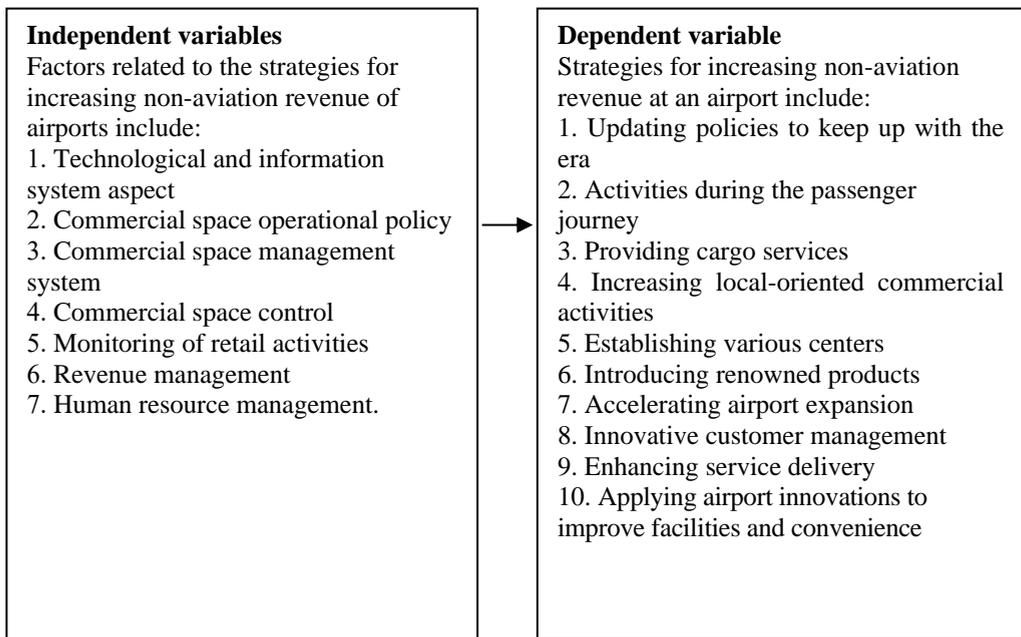## Management of personnel with non-aviation revenue

(Sunsawat, Phoom Bo Plub, & Weerayangkun, 2020) Personnel management is related to the need for well-trained employees to conduct coordinated operations. According to Phacharoen et al. (2017), operational activities to accomplish strategic direction and management policies for increasing non-aviation revenue at the functional level are crucial. Consequently, the administration of personnel readiness in service operations is a significant variable affecting operational activities. This can be accomplished through the support, recruitment, and development of personnel in service-related areas, the improvement of work performance or the implementation of new activity formats, the enhancement of technological capabilities and information systems, and the development of knowledge in commercial activities and other relevant areas that contribute to the airport's non-aviation revenue growth (Yapakhai, 2017). It is possible to propose the following Hypothesis (H7):

H7: *Factors of effective personnel management influence the increase of non-aviation revenue for airports.*

Research Framework

From the literature and Research Hypotheses, the conceptual framework can be formulated for the study as follows:

Figure1: Research Framework

Independent variables	Dependent variable
Factors related to the strategies for increasing non-aviation revenue of airports include: 1. Technological and information system aspect 2. Commercial space operational policy 3. Commercial space management system 4. Commercial space control 5. Monitoring of retail activities 6. Revenue management 7. Human resource management.	Strategies for increasing non-aviation revenue at an airport include: 1. Updating policies to keep up with the era 2. Activities during the passenger journey 3. Providing cargo services 4. Increasing local-oriented commercial activities 5. Establishing various centers 6. Introducing renowned products 7. Accelerating airport expansion 8. Innovative customer management 9. Enhancing service delivery 10. Applying airport innovations to improve facilities and convenience

RESEARCH METHOD

Population and Sample

The study was characterized by a Finite population and used nonprobability sampling by interrogating the total workforce of an airport of 228 employees.

Data collection

A research questionnaire Likert Scale 5 of 21 items examines the indicators for ways to increase revenue from activities outside the airport's aviation business, and 10 items examine the indicators of guidelines for increasing non-aeronautical revenues of airports, acquisition and quality validation of the tool via Content Validity and Index of Item-Objective Congruence (IOC) > 0.67, Reliability test >0.75. Cronbach's Alpha applies to all indicators and summaries.

Data analysis

Statistical software analysis applies descriptive statistics, frequency, percentage, mean and standard deviation, and hypothesis testing with inferential statistics. The approach factors that cause the revenue increase are analyzed using the Multiple Regression Analysis with the following equations:

Equation in the form of population $\qquad Y = \beta_0 + \beta_1 X1 + \beta_2 X2 + \ldots + \beta_k X_k + \varepsilon$
Equation in the form of an example $\qquad y = b_0 + b_1 X1 + b_2 X2 + \ldots + b_k x_k + e$
Prediction equation $\qquad \hat{y} = b_0 + b_1 X1 + b_2 X2 + \ldots + b_k x_k$
and the variables: $\qquad$ X1 is the factor in the organization of technology and information systems.

X2 is the policy factor for commercial space operation
X3 is the factor of the commercial space organization.
X4 is the commercial space control factor.
X5 is the store activity monitoring factor.
X6 is the revenue management factor.
X7 is the personnel management factor.
Y is the airport's non-aeronautical revenue increase approach.
k is the number of independent variables in the regression equation.
β_0 is the constant of the equation
β_i is the Regression Coefficient of each independent variable X_i.
ε is the Error or Residual between the Y value and $\hat{y}$ value.

RESEARCH RESULT

Sample data of airport employees

The majority of the sample, or 92 individuals (63.4%), were men, as determined by the demographics of the respondents. 80 were married (55.2%), while 62 were unmarried (42.8%). 68 (46.9%) were between the ages of 26 and 33. There were 36 persons between 34 and 41 (24.8%). 81 individuals (55.9%) held a bachelor's degree, followed by 39 individuals (26.9%) with less than a bachelor's degree. Most of the 99 had 3 to 15 years of work experience (78.2%)—approximately 84 (57.9%) of the samples labor in operations and maintenance. Are 49 individuals employed in business support (33.8%) and 8.3% in airport management.

Table 1 Mean and Standard Deviation (S.D.) of opinions on factors related to the approaches to increase revenues from non-aircraft activities of the airports and the approaches to increase revenues from activities apart from the airport's aviation business

Variables	Mean	S.D.	Result
Independent variables			
Factors related to the approaches to increase revenues from non-aircraft activities of the airports			
Information and technology system management (X1)	3.88	0.82	High
Policy on commercial space operations (X2)	4.06	0.58	High
Organization of commercial space (X3)	4.02	0.70	High
Commercial space control (X4)	4.22	0.63	Highest
Store activity monitoring (X5)	4.14	0.65	High
Revenue Management (X6)	4.16	0.63	High
Personnel Management (X7)	4.16	0.63	High
Dependent variables			
Approaches to increase revenues from non-aircraft activities of the airports (Y)	4.12	0.315	High

In Table 1, opinions regarding various factors related to approaches to increase airport revenue from non-aviation activities and approaches to increase airport revenue from non-aviation activities are presented. The approaches for increasing the airport's non-aeronautical revenue (Y) had Mean = 4.12 (Standard Deviation = 0.315) for the dependent variables from the smallest portion, respectively. This is followed by information and technology system management (X1) (Mean = 3.88, S.D. = 0.82), commercial space management (X3) (Mean = 4.02, S.D. = 0.70), commercial space operation policy (X2) (Mean = 4.06, S.D. = 0.58), shop activity monitoring (X5) (Mean = 4.14, S.D. = 0.65), revenue management (X6) and personnel management (X7) (Mean = 4.16).

Table 2 shows the Pearson's Correlation test.

Variables	X2	X3	X4	X5	X6	X7	Y
X1	.595**	.681**	.443**	.604**	.590**	.366**	.296**
X2		.760**	.713**	.698**	.754**	.457**	.499**
X3			.750**	.708**	.697**	.391**	.438**
X4				.728**	.702**	.534**	.568**
X5					.797**	.543**	.556**
X6						.695**	.677**
X7							.631**
VIF	3.351	4.146	3.558	3.597	4.986	2.191	

Note **significance level of 0.01, *significance level of 0.05

From Table 2, it was found that the factors positively correlated with the airport's non-aviation revenue growth approaches at a statistically significant level of 0.01. There was a correlation between the store activity inspection variable (X5) and revenue management (X6) the most for 0.797** (>0.75 requires explanation and reference before using VIF). However, the study of *** can be used to consider the Variance Inflation Factor (VIF) between 2.19 and 4.99 (<10), which can explain that the independent variable is not related to the independent variable. Therefore, it does not cause a problem of Multicollinearity (Cohen, Cohen, West, & Aiken, 1983; Saipatana & Piyapimolsit, 2016).

Table 3 shows the results of the Multiple Regression Analysis.

Variables	Beta	t	Sig.
(Constant)	1.419	5.189	0.000
Information and technology system management (X1)	-0.094	-1.577	0.117*
Policy on commercial space operations (X2)	0.004	0.039	0.969
Organization of commercial space (X3)	-0.038	-0.395	0.693
Commercial space control (X4)	0.158	1.604	0.111*
Store activity monitoring (X5)	0.036	0.384	0.701
Revenue Management (X6)	0.394	3.408	0.001**
Personnel Management (X7)	0.256	3.223	0.002**
R Square			0.535
Adjusted R Square			0.511
F-value (Sig) 22.381 (.000**)			

Note **significance level **of** 0.01, *significance level **of** 0.05

From Table 3, the results of the study showed that the F-value (Sig) = 22.381 (.000**) could be explained for 51.1% (Adjusted R Square). The revenue management factor was (X6) ($\beta = 0.394$, t = 3.408, p-value = 0.001), and personnel management was (X7) ($\beta = 0.256$, t = 3.223, p-value = 0.002) with statistical significance on the effect of increasing non-aviation revenue of the airports. Meanwhile, the policy on commercial space operations (X2), commercial space controls (X4), and retail activity monitoring (X5) had a positive influence. The organization of information technology (X1) and the organization of the commercial space (X3) resulted in a negative trend but could not conclude the statistical implications. The following hypothesis test results can be summarized.

Table 4 Hypothesis test results of factors influencing the non-aviation revenue increase of the airports

Hypotheses	Result	Conclusion
H1: The organization of information technology and information system influence the increase of non-aviation revenue.	Rejected	-
H2: The commercial operations policies influence the increase of non-aviation revenue.	Rejected	-
H3: The commercial space organization influences the increase of non-aviation revenue.	Rejected	-
H4: The commercial space control influence the increase of non-aviation revenue.	Rejected	-
H5: The store activity monitoring influence the increase of non-aviation revenue.	Rejected	-
H6: Revenue management influences the increase of non-aviation revenue.	Accepted	Beta = 0.394
H7: The management of personnel influences the increase of non-aviation revenue.	Accepted	Beta = 0.256

The test results for hypotheses H6: revenue management influences the growth of non-aviation revenue, and H7: personnel management influences non-aviation revenue growth, were accepted. Other hypotheses lack sufficient evidence to derive the same conclusions as the accepted hypothesis. The conclusion can be found in the following equation.

Airport non-aviation revenue increase = 1.419 + 0.394 non-aviation revenue (X6) + 0.256 personnel management (X7)

CONCLUSION AND DISCUSSION

This is one of the studies on the effects of the COVID-19 crisis on air travel and terminals, which resulted in a decline in both aviation and non-aviation airport revenues. The airport's crisis posed a management challenge that necessitated adjusting the airport's operations for revenue growth and to contend with the crisis. This study examines the modification of operational guidelines for airport field operations. It concentrates on increasing airport non-aeronautical revenue through management approaches implemented as policies and passed on to airport operators for policy transformation. The study of employee opinions on the influence of commercial space management on increasing the airport's non-aviation revenue is intended for the program's success and can be used to plan future commercial and administrative activities. The study's objective is to determine the impact of commercial space management on increasing the airport's non-aviation revenue. The preliminary hypotheses were analyzed using information technology system management factors, commercial space operation policy factors, commercial space system management factors, commercial space control factors, shop activities monitoring factors, and income management factors that can be studied as a guide to improving the efficiency of commercial space management at airports. The study's findings can be summarized as follows.

In confirming the results of a statistical hypothesis test of employee feedback on "H6 finding positive revenue management influencing the increase in aviation non-aviation revenue" by Akoodie and Cloete (2020), it was discovered that the management of non-airline revenue has consistently engaged in a wide range of commercial activities at airports. In the context of the crisis, this reduces aviation's impact and increases the airport's non-aeronautical revenue by concentrating on administering the airport's commercial operations and encouraging passengers to spend more at the airport. This task must be accomplished through revenue management (Uzule & Kuzmina-Merlino, 2022; Wu & Chen, 2019; Yapakhai, 2017). In terms of management, the performance must be executed by establishing operational plans and supervising and executing the plan following the management guidelines (Phacharoen et al., 2017). Due to the statistical significance of the hypothesis test "H2: The commercial operations policies influence the increase of non-aviation revenue," which represents employee perspectives on the policy and guidelines, there may be a lack of explicit management and communication. Setting a mission for each airport will be the most crucial success factor for efficiently accomplishing operational results (Paraschi et al., 2019; Phacharoen et al., 2017; Tale, 2023). Infrastructure management and operations supporting airport operations must be included in implementing airport policies and mandates. Managing the area must generate more revenue and increase the efficiency of airport commercial operations to pique the operators' investment interests (Akoodie & Cloete, 2020; Tale, 2023). Phacharoen et al. (2017) also suggested that diverse

actions should focus on the service and contentment of airport users, as well as the recruitment of new commercial activities to consistently increase revenues, as well as transparency in regulatory measures and comprehensive reporting of results. This was related to the acceptance of the "H7 hypothesis test finding that personnel management has a positive influence on increasing non-aviation revenue" following the study of Phacharoen et al. (2017). It was discovered that management must have assigned responsible persons and responsibilities to support the management of resources and personnel involved in the results of such performance. This is consistent with Phacharoen et al.'s (2017) finding that management must define accountable individuals and responsibilities stemming from the support of resource management and results-related personnel.

According to the study, employees with the skills, knowledge, and ability to conduct effective commercial activities also contribute to achieving positive objectives. If employees lack preparedness, personnel skills should be enhanced to acquire more knowledge (Sunsawat et al., 2020). However, the development of employees to support the growth of non-aviation revenue should be based on a specific understanding of various commercial activities, information system capabilities, and strategies to increase non-aviation revenue as outlined in the functional strategy. The emphasis is on enhancing and developing services and introducing exceptional service standards, enhancing or introducing new activities, and/or recruiting personnel with the knowledge and skills to assume particular responsibilities (Yapakhai, 2017).

In contrast, the study's findings are based on the opinions of airport employees. There are insufficient statistical data to deduce "H4: Controlling commercial space influences the increase in non-aviation revenue" and "H5: Monitoring store activity influences the increase in non-aviation revenue." (1) defining area boundaries and prices; (2) limiting spaces according to specific activities; (3) supervising and inspecting the orderliness of areas and business operations of entrepreneurs; (4) supervising and inspecting the store's quality, price, and service; (5) monitoring the store's promotional activities and increase sales; and (6) recruiting and performing employee evaluations. Akoodie & Cloete's (2020) research supports the implementation of controls and audits that regulate revenues from pre-earning or non-earning activities. This is done solely to maximize space utilization, not to create value through inspection and control activities. Nonetheless, the significance of effective control and monitoring can result in the emergence of various vulnerabilities, such as space allocation and airport environment management (Akoodie & Cloete, 2020; Ricardianto et al., 2022). The purpose of conducting an operational audit of operators is to determine how to develop and implement strategies for revenue growth and expansion of the airport commerce and services sector. This includes recommending recruiting new activities to replace companies that cannot fulfill the contract (Phacharoen et al., 2017).

Regarding the absence of statistical data that can be accepted conclusively, the hypotheses "H1: IT and information technology arrangements influence the increase of non-aviation revenue" and "H3: Commercial space arrangements influence the increase of non-aviation revenue" cannot be accepted conclusively. Employee feedback on these two factors also harms the airport's non-aviation revenue growth. This implies a rise in revenue and an increase in expenses or costs. It increases business expenses. Phacharoen et al. (2017) discovered that the importance of implementing IT systems to increase operational efficacy has cost and revenue implications. Organizing additional technology and information system activities, such as investing in technology to help generate revenue for stores, utilizing platforms or applications to create speed and diversity for stores, and bringing technology systems to assist in communicating with service users. The organization of commercial space includes the selection and allocation of revenue-generating activities and the organization of a system to increase sales for entrepreneurs and generate more revenue. Various studies on the use of IT systems for operational efficiencies, such as Tale (2023), Serrano and Kazda (2020), and Štimac et al. (2021), have found that IT has become a crucial factor in creating a competitive advantage and in airport ground operations. According to Vetwittaya Klang et al. (2019), the primary goal of using IT in airport space management is to facilitate passengers' and business partners' airport operations. Even though the IT system incurs operating expenses, it is regarded as an essential element of business management that can improve the airport's commercial space management (Phacharoen et al., 2017; Serrano & Kazda, 2020; Tale, 2023).

SUGGESTIONS FOR FUTURE RESEARCH

This study examined the perceptions of airport personnel implementing airport management's policies. In light of the COVID-19 crisis, which has had a significant impact on airport revenue, the study focused on the issues of identifying non-aviation revenue and commercial area management guidelines that influence the growth of non-aviation revenue at airports. The study reveals, however, that additional research is necessary: – a study of the airport's non-aviation revenue management model, defining and implementing policies that lead to successful implementation, the importance of IT systems in influencing airport revenues, or additional research in terms of a variety of other examples, such as other airport employees or management groups, etc.

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