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BUILDING AIRPORT COLLABORATION MODEL BASED ON DYNAMIC CAPABILITY AND ENVIRONMENTAL DYNAMISM

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Abstract: In the airport industry, improvement of services and added value can be achieved through collaboration, which means the relationship between service and business units at the airport and related stakeholders to establish a prevalent strategy, achieve a competitive edge, and give value to the company and passengers. This research discusses the airport collaboration about the airport management capabilities in adapting to environmental dynamism and dynamic capability factors. In this research, the analysis unit is airports in Indonesia, and management of airports as the observation unit. The samples were 50 airports in Indonesia. This research uses Partial Least Square for causality analysis. This research concludes that the dynamic capability of airport managers tends to contribute more to the success of collaborating at airports and is followed by the ability to adapt to ever-changing environmental conditions (environmental dynamism) contributing to an influence on airport collaboration. It was also found that the ever-changing environmental factors (environmental dynamism) also contribute to a direct influence on building dynamic capability.

Keywords: dynamic capability, environmental dynamism, airport collaboration

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1. INTRODUCTION

The air transportation system is a large and complex unified system, involving the movement of people and goods both domestic (within a country) and international (between countries). In the air transportation system, the movement of people and goods is relatively fast and efficient. It makes the aviation industry a potential industry in accelerating national and regional economic growth.

According to Annex 14 from the International Civil Aviation Organization (ICAO), an airport is defined as an aerodrome with various supporting facilities and infrastructure, which are used for the purposes of flight activities, for example the arrival, departure, and traffic places for airplane.

With large airports, the metropolitan sub region concept, with its land use, infrastructure, and economy centered at the airport is called the Aerotropolis concept. Most large airports have developed into major nodes in global productivity and systems, which is done by offering speed, agility, and connectivity. Large airports are good engines of local economic development attracting aviation-related businesses into airport environments such as “time” sensitive manufacturing and distribution facilities [1].

Moreover, the aviation industry is considerably affected by external factors, including economic, environmental, and geopolitical factors. The Iraq War, September 11 attacks, and the Severe Acute Respiratory Syndrome (SARS) epidemic followed by the global economic slowdown in the early 2000s represent the examples of the three years of declining air traffic demand and structural changes in the aviation industry.

Furthermore, the 2008 recession also affected the decline in the airline industry. Currently, the aviation industry and its associated industries have experienced a decline due to the Covid-19 pandemic. The decline was triggered by the cessation of commercial flights in almost all countries. When commercial flights have stopped, of course, the supporting industries such as ground handling, airport tenants, tour & travel, and tourism have experienced a deep downturn.

The vulnerability of the decline in the aviation industry indicates that it is necessary to establish a reliable, integrated, and targeted air transportation system. One of the aspects needing to be considered to support the air transportation system is the airport system, including airport operations and services related to customer experience.

Airport transformation is currently moving towards an integrated smart technology airport

(Smart Connected Airport). The airport transformation is accompanied by a growing trend in the movement of aircraft, passengers, and cargo. Smart Connected Airport emphasizes the aspects of speed, agility, and connectivity. Building a Smart Connected Airport requires integration and collaboration with various parties in and around the airport area.

In terms of the measurement of passenger facilities and comfort, Airport Council International (ACI) has the Airport Service Quality (ASQ). ASQ is an assessment and comparison of the quality of service provided by airports around the world. ACI also has an Airport Customer Experience Accreditation Program to assess airport practices in providing the best customer experience. Aspects of accreditation assessment include strategy measurement, customer understanding, operational improvement, airport culture, governance, service design/innovation, and airport community collaboration [2]. The ranking of airports and airlines is also carried out by the SKYTRAX Agency every year.

The explanation above shows that the aviation industry is directly related to various stakeholders; hence, a decline in the aviation industry will also have an impact on related stakeholders. In Indonesia, air transportation contributes 1.63% to the national Gross Domestic Product. From 2013 to 2017, the total aircraft movements in Indonesia experienced an average growth of 5%. The growth in air transportation can be marked as a major potential for business actors and the government.

The transformation towards the Smart Connected Airport and the development of services provided by the airport to customers involve various agencies or parties as well as complex management processes. Therefore, it is substantial for an airport to focus on implementing and increasing airport collaboration. Collaboration, in this case, is a form of cooperation carried out with stakeholders, including vertical collaboration (relationships with suppliers and customers) and horizontal collaboration (lateral and internal collaboration) [3].

In aviation industry, Airport Collaborative Decision Making (A-CDM) is a concept implemented to improve the ATC flight plan at airports by decreasing delays, increasing predictability, and optimizing resource usage. The application of A-CDM will affect the operational efficiency of airport partners and allow them to optimize their judgments in their partnership with other airport partners and to know the preferences and the constraints, as well as situation on the ground and forecasts.

However, related to the concept of airport collaboration, problems were observed. One of the

problems is the collaboration between airport managers and related stakeholders (airlines, aircraft ground handling management companies, and government agencies) have not been optimal which is also related to the non-optimal implementation of a scheme fee in supporting the companies in the airport area.

Based on literature review and observations, strengthened by input from airport practitioners and the results of in-depth interviews, several aspects were found related to airport collaboration. They are environmental dynamism and dynamic capability.

The environment of a company is all physical and social factors considered during independent decision-making behavior within an organization. The environment is divided into four dimensions, namely: (1) stability vs. dynamism, (2) simplicity vs. complexity, (3) friendliness vs. hostility, and (4) integrated markets vs. diverse markets. In addition, dynamism is defined as the level of change and innovation in an industry and also the uncertainty of actions by customers [4]. Political conditions and economic stability have impacts on the rise and fall of the number of air transportation users, thus affect the airport business. The environment is very competitive so that companies must be sensitive to various uncertainties. Moreover, the development of dynamic capability requires companies to have a lot of information about resources, to conduct in-depth analysis, to formulate timely decisions. and to execute them accordingly [5][6].

To adapt into dynamically developing industrial environment, companies require dynamic capability, so that existing developments can be anticipated and handled. The dynamic capability has a framework divided into three capacities, namely (1) to identify and build chances and risks, (2) to seize opportunities, and (3) to sustain competitiveness through enhancement, merger, protection, and, if needed, reconfiguration of the tangible and intangible assets of the company's business [7][8].

Optimization to recognize advantages and vice versa, the ability to seize advantages and maintain competitiveness related to asset reconfiguration, and the ability to improve the quality of human resources and organizational capabilities are required by airport managers. Dynamic capability is needed to adapt to customer demands, technological developments, or the environment.

According to the aforementioned elaboration, this research seeks to explain the influence of environmental dynamism and dynamic capability on airport collaboration in the airport industry in Indonesia. The research results can be considered by airport management in increasing airport

collaboration.

2. PRELIMINARIES

2.1 Environmental Dynamism

In a dynamic environment, companies must expand their perception of changes such as making adjustments to customer demand. Adjustments must be made promptly and applied dynamically as the environment changes. Companies are also forced to rapidly make changes to the opportunities and threats that always exist [4].

The increase of environmental dynamism will encourage companies to grow their dynamic capability. The leading environmental factors needing to be considered are the environmental impact of the industry, competitor behavior, technological advances, and customer demand [4]. Environmental effects and community responses have hindered the development of many airports, particularly in Europe, and tended to limit further flights [9].

The external environment of the company has a greater influence on strategy selection than the internal elements of the company such as resources, capabilities, and company competencies [10]. The external environment includes the general, industry, and competitor [11]. The general environment includes economic, political, socio-cultural, technological, global, demographic, and physical environments. The industry environment includes the threats of new competitors and additional products, the power of suppliers and buyers, and the intensity of rivalry.

Based on the aforementioned explanation, environmental dynamism in the airport industry can be measured by the dimensions of the micro environment (customers, regulators, intermediaries, local governments, and suppliers) and the dimensions of the macro environment (political, economic, social, cultural, technological developments, and demographics).

2.2 Dynamic Capability

Capability is the resource’s capacity to produce tasks in an integrative way. The dynamic capability is indicated by the company's capabilities in adapting, readjusting, and integrating the organization's internal and external expertise, resources, and functional competencies as an effort to update competencies to contend with rapid environmental changes. Dynamic capability is also expressed as the company's capability in integrating, developing, updating, and readjusting internal and external competencies to quickly keep up with environmental changes, so that they are aligned

with changes in the environment of business by adjusting, assimilating, and readjusting internal and external organizational expertise, resources, and functional competencies [12]. In an operational environment, dynamic capability encourages the development of renewal strategies for long-term success.

Dynamic capability is categorized into three capacities namely recognizing capability, seizing capability, and reconstructing capability [13]. Sensing capacity is the ability to recognize advantages and vice versa by observing market needs and practices in the Research and Development process which will increase recent knowledge to further produce technological transformations and so on. Seizing capacity is the ability to seize existing opportunities supported by activities to compile innovations, select business models and product architectures, invest in appropriate technology, design decision-making, and identify target customers. Reconfiguring capacity means the ability to remerge and readjusting the resource base to face differences and opportunities in the company environment.

According to the aforementioned explanation, the concept of dynamic capability in this research refers to [7], [8], and [13]. Therefore, dynamic capability can be measured by the dimensions of sensing, seizing, and reconfiguring capacities.

2.3 Airport Collaboration

Companies try to develop innovations in terms of their knowledge, technology, and competencies. Lack of innovation resources becomes an obstacle to company innovation and development. Hence, external resources to promote the innovation and development of the company have become complementary to the company's internal knowledge base, and also an important strategic setting. It offers chances for the company to collect information, knowledge, and technology to increase the internal base of key resources. External knowledge sources also raise the effect of organizational ambidexterity on firm performance. As a result, collaborative innovation has developed into a primary issue in the circles of academic and business fields. Collaborative innovation has turned into a widely researched topic in the fields of innovation management, strategic management, and supply chain management [14].

Collaborative innovation denotes the working process with other organizations having complementary groundbreaking resources and enhancing innovation performance through the combination of resources and distributed capabilities. It can increase an organization’s

effectiveness, efficiency and competitiveness through trust, sustainability, and expandable development. Collaboration can reduce uncertainty by understanding rapid changes and constructing shared expectations and approaches as response to innovation challenges. Based on the economic theory from a resource-based view, the goal of establishing cooperative relationships between firms and organizations is to acquire complimentary resources, namely technical capacity, financial capital management capabilities, and product innovation capabilities. From a knowledge management perspective, the collaborative innovation process is a knowledge innovation process, known as a process of knowledge acquisition and application of knowledge and, ultimately, knowledge excellence formation [14].

Collaboration can be interpreted as a strategic alliance formed through a cooperation agreement between two or more parties based on trust, equality, comprehension, and responsibility, which combines thought and resources for the company's success [15]. One of the objectives of building collaboration is understanding change rapidly to reduce uncertainty, build a common approach to innovation challenges, get complementary resources, and improve performance through resource integration [16][14].

More specifically, collaboration in the airport industry is defined as the relationship between the service and business units at the airport and the related stakeholders to create a prevalent strategy, achieve a competitive edge, and give value to the company and passengers [17]. The scheme of the relationship between the airport and local and national stakeholders is described in ‘The Star Scheme’. The complexity and dynamics of the local/global system can be comprehended in a clearer way by schematically analyzing the situation [17]. Institutions represent partners for companies managing the airports. In addition, commercial partnerships, territorial marketing policies, and investment strategies are often left to local public offices as activity coordinators to assist both parties in exploiting the financial results. The correlation between public institutions and regional airports is also greatly enhanced by the contribution of private commercial partners in managing additional services for incoming and outgoing passengers.

The commercial centers, coffee bars, shops, restaurants, and leisure activities in the airport area (or nearby) complement to the hub's visibility by attracting visitors and tourists and triggering increased demand for aviation services as well as interest in local territorial resources. The anticipated incomes and returns cyclically stimulate new investment which contributes gradually to the economic and social development of the airport and its surrounding area.

According to the aforementioned comparison of dimensions and the research analysis unit, the suitable dimensions for assessing collaboration strategies are institutions, regional airports, private stakeholders, airlines, tour operators, logistics and transportation sectors, and other airports [17].

Figure 1. The Star Scheme

Source: Nucciarelli & Gastaldi (2009:564) [17]

2.4 Research Hypothesis

The dynamism of the external environment determines the actions a company can take. The increase of environmental dynamism will encourage companies to grow their dynamic capability. Companies with environmental turbulence experience a reduction in the competitive position and the potential value of existing capabilities. Hence, it forces the companies to transform rapidly and with high complexity, so that dynamic capabilities is able to get a more significant role [4].

Companies with peaceful external environments tend to require less partnership. Whereas, companies that are in dynamic environments require more partnerships [18]. For instance, changes in the environmental business have increased the demand for trained entry-level internal auditors [19]. The environmental demands that can come from customers, the regulatory environment, and the competitive environment have an important role in deciding the company's collaboration strategy [20].

Strategic groups often efficiently create processes and products that are excellent in quality and innovation by reorganizing their existing resources. It is performed to develop collaborative new product partnerships [9]. Collaboration facilitates change. Moreover, through collaboration, companies can re-examine their strategic and operational capabilities by restructuring their asset resources and capabilities [21].

Based on the theories obtained from previous research, the following conceptual model was developed:

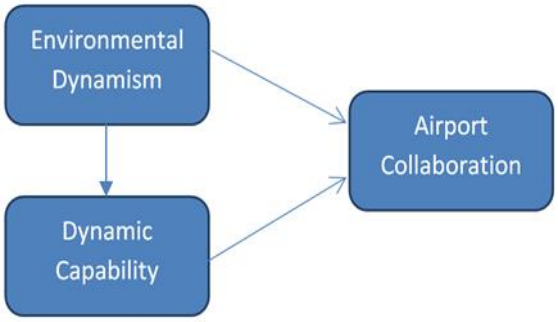

Figure 2. The Conceptual Model

The research hypotheses formed based on the conceptual model are:

H01: Environmental dynamism affects dynamic capability

H02: Environmental dynamism affects airport collaboration

H03: Dynamic capability affects airport collaboration.

2.5 Research Methods

The research design used was a quantitative research approach. The quantitative approach is an analytical technique using measurable data and statistical calculations to analyze a phenomenon. The quantitative approach does not focus on several cases but relies on data obtained from participants. This type of research is a verification research aiming at proving an existing hypothesis or theory based on research data obtained in the field.

In this research, airports in Indonesia were the analysis units, while airport managements in Indonesia were the observation units. The data employed were primary data obtained from direct research in the field. The data type used was cross-section data, namely empirical data at a certain time collected directly. The data were collected through an exploratory survey with a measuring instrument, namely a questionnaire, using a Likert scale with a total class of 5.

The survey involved the population and sample. A population is an element combination that has similar characteristics. A sample is a sub-element of the population selected to participate in the study [22]. Based on the aforementioned definition, the population in this research was all commercial airports in Indonesia, and 50 airports were taken randomly as the sample.

The analysis was conducted using the Structural Equation Modeling (SEM) with the estimation method of Partial Least Square (PLS) parameters. SEM is a multivariate analysis technique used to measure the cause-and-effect relationship (causality) between several latent variables. The latent variables in this research were environmental dynamism, dynamic capability, and airport collaboration.

3. MAIN RESULT

3.1 Outer Model Evaluation

The outer model, also known as the measurement model, connects latent variables with their indicator or manifest variables. The outer model evaluation includes an evaluation of validity and reliability. The results of parameter estimation and t-statistics value from the calculation process using SmartPLS 3.0 are shown in the figure below:

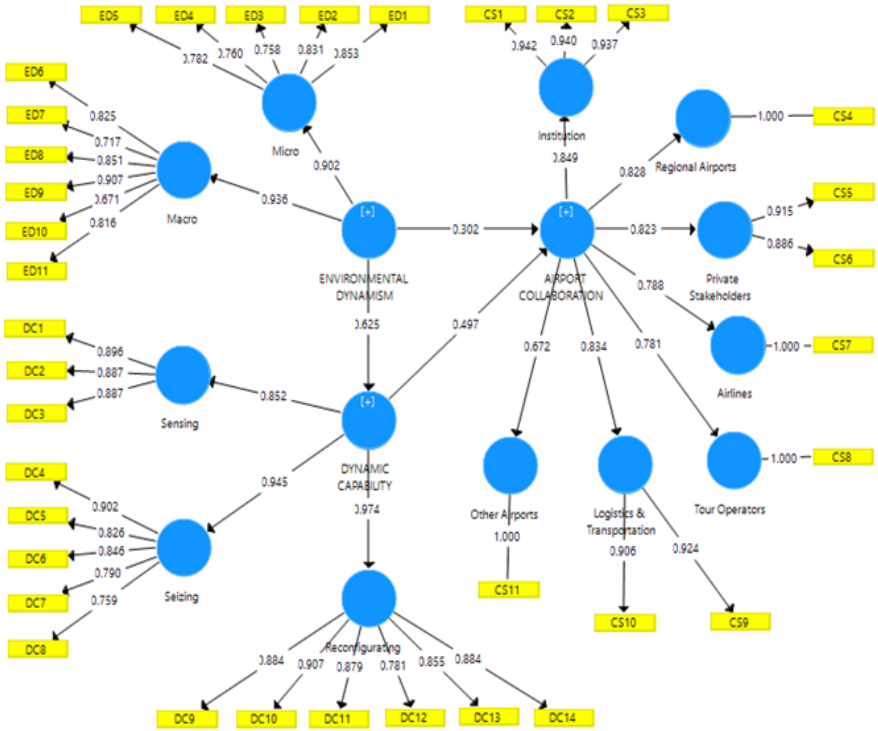

Figure 3. The Parameter Estimation (Path Coefficient and Loading Factor)

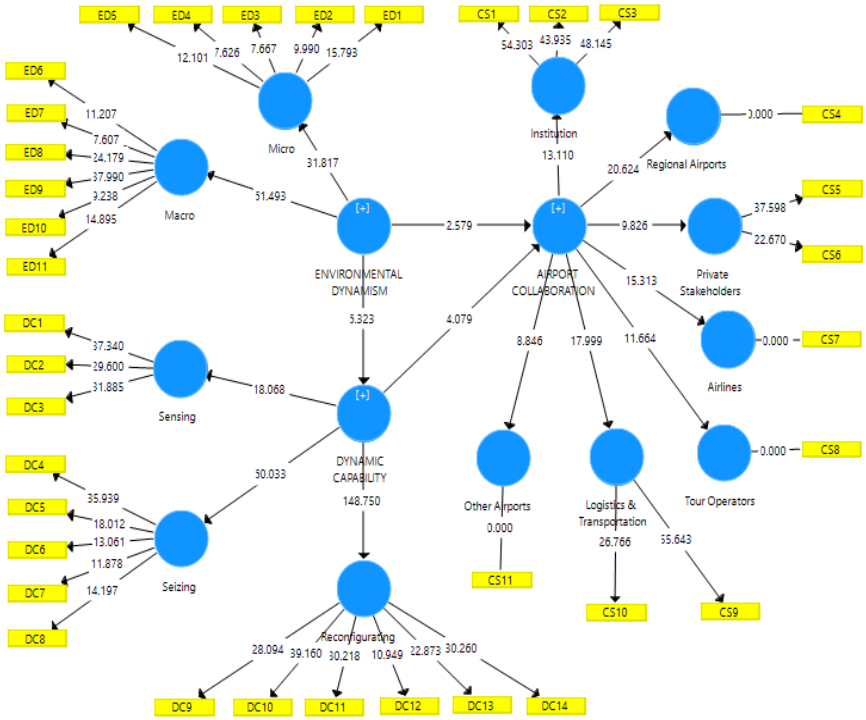

Figure 4. The Value of T-Statistic

Evaluation of Validity

Validity evaluation was carried out using the convergent validity in the reflective model by analyzing at the loading factor value for each indicator. An indicator is considered valid if the loading factor value is greater than 0.5. The loading factors for each indicator are shown in Table 1 below:

Table 1. Evaluation of Convergent Validity

Construct	Dimension - Indicator	Loading Factor	Standard Error (SE)	t-stat
Airport Collaboration	Institution -> Collaboration with the government in terms of territorial marketing policies	0.942	0.0173	54.303
	Institution -> Collaboration with the government in terms of commercial partnerships	0.94	0.0214	43.935
	Institution -> Collaboration with the government in terms of investment strategy	0.937	0.0195	48.145
	Regional Airport -> Internal collaboration in airport management companies	1	-	-
	Private Stakeholders -> Collaboration with airport commercial centers	0.915	0.0243	37.598
	Private Stakeholders -> Collaboration with recreational activity managers in the airport area (or its surrounding area)	0.886	0.0391	22.67
	Airlines -> Collaboration with airlines	1	-	-

Table 2. Evaluation of Convergent Validity (extended)

Airport Collaboration	Tour Operators -> Collaboration with tour service operators	1	-	-
	Logistics & Transportations -> Collaboration with airport logistics providers	0.924	0.0166	55.643
	Logistics & Transportations -> Collaboration with supporting transportation mode companies	0.906	0.0338	26.766
	Other Airports -> Collaboration with other airports	1	-	-
Dynamic Capability	Sensing -> Observation activities for discoveries or exploring market needs	0.896	0.024	37.34
	Sensing -> Practices in the R&D process allowing the creation of new knowledge enhancements	0.887	0.03	29.6
	Sensing -> Activities resulting in understanding the technological transformation	0.887	0.0278	31.885
	Seizing -> Organizing organizational innovation	0.902	0.0251	35.939
	Seizing -> Selecting a business model and product architecture	0.826	0.0459	18.012
	Seizing -> Investing in appropriate technology.	0.846	0.0648	13.061
	Seizing -> Capacity to design organizational procedures and structures enhancing decision making	0.79	0.0665	11.878

Table 3. Evaluation of Convergent Validity (extended)

Dynamic Capability	Seizing -> Recognizing the target customer	0.759	0.0535	14.197
	Reconfiguring -> Merging and combining resources	0.884	0.0315	28.094
	Reconfiguring -> Renewing resources	0.907	0.0232	39.16
	Reconfiguring -> Managing resources	0.879	0.0291	30.218
	Reconfiguring -> Learning new skills	0.781	0.0713	10.949
	Reconfiguring -> Developing and adopting new processes and organizational structures	0.855	0.0374	22.873
	Reconfiguring -> Implementing knowledge management activities	0.884	0.0292	30.26
Environmental Dynamism	Micro -> Customer	0.853	0.054	15.793
	Micro -> Regulator	0.831	0.0832	9.99
	Micro -> Intermediary institutions	0.758	0.0989	7.667
	Micro -> Regional government	0.76	0.0997	7.626
	Macro -> Supplier	0.782	0.0646	12.101
	Macro -> Political	0.825	0.0736	11.207
	Macro -> Economic	0.717	0.0943	7.607
	Macro -> Social	0.851	0.0352	24.179
	Macro -> Culture	0.907	0.0239	37.99
	Macro -> Technological development	0.671	0.0726	9.238
	Macro -> Demographic	0.816	0.0548	14.895

The calculation results show that all loading factor values are greater than 0.5, meaning that all indicators are valid and can be used in the model.

Evaluation of Reliability

The reliability evaluation of each variable can be seen through Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach Alpha values. A variable meets reliability if the values of AVE>0.5, CR>0.7, and Cronbach Alpha>0.7 (sufficient reliability). The AVE, CR, and Cronbach Alpha values are shown in the table below:

Table 2. Evaluation of Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach Alpha

Variable	AVE	CR	Cronbach Alpha
Airport Collaboration	0.594	0.941	0.931
Dynamic Capability	0.645	0.962	0.957
Environmental Dynamism	0.540	0.927	0.912

From the calculation results, the environmental dynamism, dynamic capability, and airport collaboration variables meet all reliability criteria. All variables have a Cronbach Alpha value of >0.9, meaning that the measurement instrument has strong reliability.

3.2 Inner Model Evaluation

The inner model, also known as the structural model, explains the relationship between latent variables (construct variables). The inner model was tested by calculating the R-square, Q-square, and Goodness of Fit (GoF). R-Square value of over 0.67 is categorized as strong, over 0.33 is medium, and over 0.19 is weak [23]. GoF is used to validate the suitability of the overall model (measurement and structural models), where the criteria are 0-0.25 is categorized as small, 0.25-0.36 as medium, and >0.36 as large [23]. Q-Square, also known as relevance prediction determines the predictive ability of a model. Q-Square is obtained by a blindfolding procedure. The Q-Square criteria are 0.35 is categorized as large, 0.15 as medium, and 0.02 as small. The table below describes the co-efficiency in endogenous constructs:

Table 3. Evaluation of R-Square, Q-Square, and GoF

Constructs	R-Square	Q-square	Goodness of Fit (GoF) Index
Environmental Dynamism	-	0	0.573
Dynamic Capability	0.391	0.249	
Airport Collaboration	0.526	0.293	

From the calculation results, it is found that R-Square belongs to the medium category; GoF belongs to the large category; and Q-Square belongs to the medium category. It means that the model formed has a good fit (model fit).

3.3 Hypothesis testing

The table below shows the results of the parameter estimates for the structural model:

Table 4. Hypothesis Testing

Structural Model	Path Coefficients	SE	t- Statistics	Conclusion
Environmental Dynamism > Dynamic Capability	0.625	0.117	5.323	Significant
Environmental Dynamism > Airport Collaboration	0.302	0.117	2.579	Significant
Dynamic Capability > Airport Collaboration	0.497	0.122	4.079	Significant

Table 4 presents that environmental dynamism had a positive and significant effect on dynamic capability, with a direct effect of 0.625; dynamic capability also had a positive and significant effect on airport collaboration, with a direct effect of 0.497; and environmental dynamism has a positive and significant effect on airport collaboration, with a direct effect of 0.302 and a total effect of 0.613. From these results, it appears that direct airport collaboration is dominantly built by dynamic capability and supported by environmental dynamism. However, the first aspect that needs to be considered in airport collaboration is the adaptability to environmental dynamism because this ability can build dynamic capability which then builds airport collaboration.

The dimensions of the environmental dynamism variable having the highest influence are the macro environment (0.936), followed by the micro environment (0.902). For the dynamic capability variable, the dimension having the highest influence is reconfiguring capacity (0.974), followed by seizing capacity (0.945), and sensing capacity (0.852).

The results of the hypothesis testing showed that environmental dynamism had a positive effect on dynamic capability. It supports the theory that environmental turbulence forces companies to change rapidly and with high complexity so that dynamic capabilities are able to get a more significant role [4]. Moreover, the changes in the external environment also force companies to cultivate dynamic capabilities. This hypothesis also supports the opinion of [25] stating that dynamic capability is the ability to renew competencies to achieve harmony in a changing (dynamic) business environment, and "capability" is a strategy of adapting, integrating, configuring the organization's internal and external expertise, resources, and functional competence.

Furthermore, the hypothesis testing result showed that environmental dynamism had a positive effect on airport collaboration support the opinion of [18]. The results are also in line with theory in [20] stating that environmental demands can come from customers, the regulatory environment, and the competitive environment having an important role in developing the company's collaboration strategy. Furthermore, environmental demands can come from micro and macro environments.

The test results are also in line with [26] suggesting that environmental dynamism has a contingency effect and indicates variability in some elements of the external environment, such as customers, competitors, and technology. Environmental dynamism also had a positive effect on the contribution of dynamic capability OF company performance [27].

In addition, the need for environmental dynamism adaptation is related to a very competitive environment, where companies must keep a close watch on various uncertainties such as technological innovation, threats from new entrants, and the risk of default from suppliers. Companies must obtain more data to utilize suitable resources, execute more complicated and sophisticated analysis, and carry out timely decisions and its implementations to develop dynamic capabilities [5][6].

The results also show that dynamic capability affects airport collaboration. Based on the coefficient, it is perceived that dynamic capability has a greater effect than environmental

dynamism on airport collaboration. The results of hypothesis testing stating that dynamic capability has a positive effect on airport collaboration are in agreement with theory in [9] stating that strategic groups often efficiently create processes and products that are excellent in quality and innovation by reorganizing their existing resources. It is carried out in an effort development of collaborative new product partnerships. By developing collaboration, companies can re-characterize their strategic and operational capabilities by reconfiguring their asset resources and capabilities [21]. This finding supports the research results from [26] showing that dynamic capability contributes to increasing relative company performance.

Airports need to develop an effective collaboration considering that airport operations involve many parties. Customers at the airport are divided into three groups, namely aviation trades, individuals, and commercial trades. Each group is divided into slices of airport services package: consisting of infrastructure & aeronautical services, retail & non-aeronautical services, activities & events, real estate development, transport networks, and consulting & managerial services [28]. Hence, to accommodate the needs of the parties in the airport operation, effective cooperation is required.

Airports can consider collaboration to improve performance and comparisons across functions related to their economy and resources. In the aviation industry, airport collaborative decision-making (A-CDM) aims at increasing air traffic flow and capacity management at the airports by minimizing delays, increasing predictability, and optimizing resource utilization [29].

The A-CDM application acknowledges airport partners to optimize their decisions to collaborate with other airport partners, and to know preferences and constraints, as well as predicted and actual situations. Decision-makings by airport partners are assisted by accurate and timely information and a tailored mechanism. Collaborative airport decision-making will affect the operational efficiency of airport partners, and may ultimately impact to reducing buffer time for resource planning and flight times due to increased predictability.

The research results offer a suggestion that airport management must increase airport collaboration. The first aspect that must be developed to improve airport collaboration is an adaptation of environmental dynamism, especially in terms of the macro environment and then the micro environment. The aspects belonging to the dynamism of the macro environment include suppliers, politics, economy, social, culture, technological developments and, demographics. Concurrently, the dynamism of the microenvironment includes aspects of customers, regulators,

intermediary institutions, and local governments. Furthermore, environmental dynamism will enhance dynamic capability.

Airport collaboration can be improved by developing dynamic capability, especially in terms of reconfiguring capacity, followed by seizing capacity and sensing capacity. Reconfiguring capability which is a priority includes the ability to combine and combine resources, renew resources, manage resources, learn new abilities, develop and adopt new processes and organizational structures, and implement activities related to knowledge management. The development of airport collaboration begins with developing environmental dynamism which will then build dynamic capability. Environmental dynamism can, directly and indirectly, improve airport collaboration. Simultaneously, the dynamic capability has a more dominant direct influence in increasing airport collaboration.

4. CONCLUSIONS AND SUGGESTIONS

This study aims at explaining the effect of environmental dynamism and dynamic capability on airport collaboration in the airport industry in Indonesia. Three hypotheses are proposed, namely: 1) Environmental dynamism had an effect on dynamic had, 2) Environmental dynamism has an effect on airport collaboration, and 3) Dynamic capability had an effect on airport collaboration. The results of hypothesis testing showed support for the hypotheses; environmental dynamism had a positive and significant effect on dynamic capability; dynamic capability had a positive and significant effect on airport had; and environmental dynamism has a positive and significant effect on airport collaboration.

Therefore, based on the aforementioned research results, it was found that the ability of airport managers to adapt to environmental dynamism can affect the application of airport collaboration. Meanwhile, the dynamic capability of airport managers directly has a more dominant influence in increasing service and business collaboration at the airport with relevant stakeholders to create joint strategies, achieve a competitive edge, and give value to companies and passengers (airport collaboration). Hence, the concept of airport collaboration is implemented to improve the ATC flight plan at airports by decreasing delays, increasing predictability, and optimizing resource usage.

Based on the research results, the suggestions for the airport management are as follows:

1. To increase airport collaboration, the ability to improve adaptation to environmental dynamism is the first to be considered, especially in terms of the macro environment, namely the ability level to adapt to aspects of suppliers, the ability to adapt to political aspects, the ability to adapt to economic aspects, the ability to adapt to social aspects, the ability to adapt to cultural aspects, the ability to adapt aspects of technological development, and the ability to adapt to the demographic aspects of an airport. Then, for the microenvironment, what must be considered are the ability level to adapt to customer requirements, ability to adapt to regulations from regulators, ability to adapt from the aspect of intermediation institutions, and ability to adapt to the interests of local governments. Furthermore, environmental dynamism will enhance dynamic capability.
2. **Airport collaboration** can be enhanced by the way airport managers develop dynamic capability, especially in terms of the development **reconfiguring capacity**, namely learning and adopting new skills, developing and adopting new processes and organizational structures, and effectively implementing activities related to knowledge management, followed by **seizing capacity**, namely the ability to seize opportunities, being active in acting, investing in the renewal process towards the goals to be achieved. Seizing capacity is also supported by activities like structuring organizational innovation, choosing business models and product architectures, and making investment in appropriate technology. Moreover, this capacity discusses the capacity to make decisions such as organizational procedures and structures enhancing decision-making. Furthermore, developing **sensing capacity**, namely the ability to perceive and classify opportunities and threats in the environment, is done by observation, creation, learning, and interpretative activities. Organizations must always be aware of faint signals of upcoming opportunities and developments (target segments, new technologies, shifting customer needs, new innovations, etc.). Organizations must also improve core capabilities including human resource quality capabilities and organizational capabilities.

CONFLICT OF INTEREST

The author(s) declare that there is no conflict of interests

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