

## Live Animal Air Transport Procedures for Aves and Mammals at Sultan Syarif Kasim II International Airport, Pekanbaru

Ade Irma Ramadita<sup>1</sup>, Wahyu Ardiansyah<sup>2</sup>, & Ardystia Maha Sari<sup>3\*</sup>

<sup>1,2,3</sup>Transportation, Sekolah Tinggi Maritim Yogyakarta

\*e-mail: ardystiamahasari07@gmail.com

### Abstract

The current era of globalization is rapid, driving increased mobility of goods and people. One of the existing goods shipments is the shipment of live animals by air. The International Air Transport Association (IATA) Live Animals Regulations (LAR) and the national regulation, Law No. 18 of 2009 concerning animal husbandry and animal health, have provided clear technical guidelines. Many cases that occur, one of which is the death and stress of animals during the expedition, still occur due to non-compliance with procedures and a lack of supervision. This study aims to analyze the suitability of the document-handling procedures and the operations for live animals (aves and mammals) at Sultan Syarif Kasim II International Airport, Pekanbaru. The research method used is a descriptive qualitative approach, based on field observations, interviews, and document analysis of shipping SOPs. The results of the analysis show that the shipment has followed existing procedures and regulations, from the sender submitting the animal along with personal data, to the preparation of SMU and PTI documents by the agent, to cargo inspection by the Regulated Agent (RA), to re-checking in the warehouse by the warehouse officers. Existing procedures are appropriate, but increased supervision and officer competency, as well as effective system management, are still needed to avoid technical errors and maintain animal welfare.

**Keywords:** Cargo, live animals, procedures

### Abstrak

Era globalisasi saat ini berlangsung dengan cepat, mendorong peningkatan mobilitas barang dan manusia. Salah satu pengiriman barang yang ada adalah pengiriman hewan hidup melalui udara. Peraturan Hewan Hidup (LAR) Asosiasi Transportasi Udara Internasional (IATA) dan peraturan nasional, Undang-Undang No. 18 Tahun 2009 tentang peternakan dan kesehatan hewan, telah memberikan pedoman teknis yang jelas. Banyak kasus yang terjadi, salah satunya adalah kematian dan stres hewan selama ekspedisi, masih terjadi karena ketidakpatuhan terhadap prosedur dan kurangnya pengawasan. Penelitian ini bertujuan untuk menganalisis kesesuaian prosedur penanganan dokumen dan operasi untuk hewan hidup (burung dan mamalia) di Bandara Internasional Sultan Syarif Kasim II, Pekanbaru. Metode penelitian yang digunakan adalah pendekatan kualitatif deskriptif, berdasarkan observasi lapangan, wawancara, dan analisis dokumen SOP pengiriman. Hasil analisis menunjukkan bahwa pengiriman telah mengikuti prosedur dan peraturan yang ada, mulai dari pengirim yang menyerahkan hewan beserta data pribadi, hingga persiapan dokumen SMU dan PTI oleh agen, hingga inspeksi kargo oleh Agen Teregulasi (RA), hingga pengecekan ulang di gudang oleh petugas gudang. Prosedur yang ada sudah tepat, tetapi peningkatan pengawasan dan kompetensi petugas, serta manajemen sistem yang efektif, masih diperlukan untuk menghindari kesalahan teknis dan menjaga kesejahteraan hewan.

**Kata kunci:** Kargo, hewan hidup, prosedur

### INTRODUCTION

Junaidi dkk, (2020). Transportation is a vital aspect of human life. The current era of globalization has led to rapid increases in the mobility of goods and people, making the need for safe, secure, fast, efficient, and integrated transportation crucial (Lailatul Jannah dkk.,

2022). Airplanes are a popular mode of air transportation because they can reach various regions in a relatively short time. However, cargo services for transporting live animals face operational challenges in Indonesia, including at Sultan Syarif Kasim II International Airport in Pekanbaru, which struggles to handle live animal shipments (birds and mammals). These challenges include errors in administrative procedures and human resources, as well as suboptimal service facilities for the safe distribution of live animals. One such case involved the deaths of 193 birds, a result of discrepancies between documents and physical evidence. The documents listed 87 birds in the container, but upon arrival, there were 322 birds.

The Live Animal Regulation (LAR) is a global standard issued by the International Air Transport Association (IATA). It outlines general regulations for the transportation of animals by air and the import and export of endangered animals. Previous research, such as that by Wibowo & Widiawati (2021), indicates that animal deaths during shipping are generally caused by non-compliance with standard operating procedures (SOPs), inadequate restrictions, and mishandling during transit. Despite regulations, there is a gap between the guidelines and field practice, particularly at regional airports with limited facilities and staff lacking competence in handling live animals (Asriati & Fajariana, 2021).

Junaidi et al. (2020). Transportation is a vital aspect of human life. The current era of globalization has led to rapid increases in the mobility of goods and people, underscoring the need for safe, secure, fast, efficient, and integrated transportation (Lailatul Jannah et al., 2022). Airplanes are a popular mode of air transportation because they can reach various regions in a relatively short time. However, cargo services for transporting live animals face operational challenges in Indonesia, including at Sultan Syarif Kasim II International Airport in Pekanbaru, which struggles to handle live animal shipments (birds and mammals). These challenges include errors in administrative procedures and human resources, as well as suboptimal service facilities for the safe distribution of live animals. One such case involved the deaths of 193 birds, a result of discrepancies between documents and physical evidence. The documents listed 87 birds in the container, but upon arrival, there were 322 birds. The Live Animal Regulation (LAR) is a global standard issued by the International Air Transport Association (IATA). It outlines general regulations for the transportation of animals by air and the import and export of endangered animals. Previous research, such as that by Wibowo & Widiawati (2021), indicates that animal deaths during shipping are generally caused by non-compliance with standard operating procedures (SOPs), inadequate restrictions, and mishandling during transit. Despite regulations, there is a gap between the guidelines and field practice, particularly at regional airports with limited facilities and staff lacking competence in handling live animals (Asriati & Fajariana, 2021).

Based on these findings and existing regulations, it can be assumed that the quality of handling and compliance with IATA LAR procedures at airports significantly determine the level of animal safety during shipping. This study hypothesizes that the better the implementation of live animal handling standards, from cage preparation and feeding and watering, document verification, to handling procedures in the event of delays, the lower the risk of stress, injury, or death during shipping. In other words, the success of the shipping process depends heavily on the synergy of staff competence, comprehensive regulations, and quality oversight.

This study aims to analyze the implementation of live animal handling procedures (for Aves and mammals) at Sultan Syarif Kasim II International Airport, Pekanbaru, in accordance with IATA LAR regulations and related national regulations. Specifically, this study aims to identify standard field procedures, identify obstacles in the shipping process, and provide recommendations to improve animal safety and welfare during air transportation. This study is

expected to serve as a reference for airlines, cargo officers, and related institutions in improving the live animal cargo handling system in Indonesia.

## **METHOD**

This research uses a qualitative approach, which, according to Creswell (2018), is a process for deeply understanding a social problem through intensive exploration. Hermawan & Hariyanto (2022) emphasize that qualitative research aims to comprehensively describe and reveal a phenomenon by collecting detailed, in-depth data. According to Moleong (2014), the research focuses on the main problem formulated based on the researcher's experience and theoretical studies from various scientific literature. The focus of the research is on the delivery of animals (aves and mammals) through airports, with shipping procedures established by Angkasa Pura Argo that user services must fulfill to expedite shipping from one area to another via air transportation. Collecting relevant data related to the delivery of animals (aves and mammals) that have the potential to affect service performance at Sultan Syarif Kasim II Airport, Pekanbaru, Riau Province. Sub-variables are then developed into indicators measured on an ordinal scale; these indicators are further developed into questions or statements to be used in creating a questionnaire. The indicators in this study understand the concepts studied and serve as the basis for the defined concepts. The sampling technique used in this study was purposive sampling, which involves selecting informants based on specific considerations consistent with the research objectives (Arikunto, 2006). Through this approach, researchers selected individuals deemed capable of providing in-depth information related to the research topic, as explained by Lodico, Spaulding, & Voegtle. A total of eight informants were recruited: two administrators, one porter, one checker, two JNT couriers, one service user, and one representative from PT Angkasa Pura Customs.

Data sources included primary and secondary data. Primary data was obtained through interviews and direct observation at PT Angkasa Pura Kargo Airport, Sultan Syarif Kasim II, Pekanbaru. Meanwhile, secondary data was collected from relevant institutions or parties in the form of documents related to the shipping process of live animals (Aves and mammals). Data collection was conducted using three techniques: observation, interviews, and documentation. The data obtained were then analyzed using a descriptive method, which, according to Narbuko dan Achmadi (2005), aims to describe visible information for later analytical interpretation. The analysis process followed six stages from Lodico, Spaulding & Voegtle (2010): organizing data, reviewing, coding, compiling detailed descriptions, developing themes, and presenting and interpreting the results. To ensure data validity, a credibility test was conducted using triangulation, namely comparing data from various sources, methods, and time periods (Sugiyono, 2017).

## **DISCUSSION**

### **Profile of Sultan Syarif Kasim II International Airport, Pekanbaru, Riau Province**

Sultan Syarif Kasim II Airport (SSK) is an international airport located in Pekanbaru City, Riau Province, covering 321.21 hectares and managed by PT Angkasa Pura II. The airport serves both domestic and international flights. Pekanbaru's population was 1,091,088 in 2017, spread across 12 districts, and is projected to increase to 1,167,000 in 2024, spread across 15 districts. The number of goods loaded and unloaded through Sultan Syarif Kasim II Airport in Pekanbaru is shown in Figure 1.

Bulan Month	Barang Cargo (kg)			
	Penerbangan Dalam Negeri Domestic Flight		Penerbangan Luar Negeri International Flight	
	Datang Arrive	Berangkat Depart	Transit Transit	Transfer Transfer
(1)	(6)	(7)	(8)	(9)
Januari/January	1.089.628	374.256	-	-
Februari/February	986.779	346.950	220	-
Maret/March	1.110.017	425.006	178	-
April/April	939.009	404.441	724	-
Mei/May	970.356	400.310	674	-
Juni/June	983.003	373.738	945	-
Juli/July	1.038.761	452.142	466	-
Agustus/August	1.106.435	456.111	537	-
September/September	1.269.605	450.251	1.125	194
Oktober/October	852.851	436.785	3.848	308
November/November	725.458	486.658	5.951	95
Desember/December	699.949	1.317.089	796	-
<b>2023</b>	<b>11.771.851</b>	<b>5.923.737</b>	<b>15.464</b>	<b>597</b>

Figure 1. Number of Goods Loaded and Unloaded Through Sultan Syarif Kasim II Airport, Pekanbaru

### Live Animal Shipment Process (Aves and Mammals) via Sultan Syarif Kasim II International Airport, Pekanbaru, Riau Province

Live animals (aves and mammals) are a type of cargo that require special procedures and handling standards, as the objects being shipped are live animals that require safety and welfare protection during transportation. Two main international regulations govern the transportation of animals by air: the IATA Live Animal Regulations (LAR), which provide guidelines regarding husbandry standards, health, and procedures for air transportation of animals; and the Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which governs the import and export of animals—particularly protected or endangered species. A list of live animal species shipped through Sultan Syarif Kasim II International Airport can be seen in Table 1.

Table 1. List of Live Animal Species at Sultan Syarif Kasim II International Airport

No	DMK Live animal Product
1	Wet Cargo
2	Pets atau Hewan Peliharaan
3	DOC (Day Old Chick)
4	Satwa liar atau hewan eksotis
5	Unggas
6	Reptile
7	Serangga dan Insect

Source: Results of interview data from the cargo administrator of Sultan Syarif Kasim II International Airport

As stipulated in the Live Animal (Aves and Mammals) regulations at Sultan Syarif Kasim II International Airport in Pekanbaru, Riau Province, shippers are required to prepare several supporting documents. The main documents required for shipping live animals by air include the air waybill, shipper's certification of live animals, CITES certificate, quarantine documents, veterinary certificate, fumigation certificate for the animal cage, and an export or import permit.

Operators are required to prioritize animal welfare (birds and mammals) and ensure that the animals are safe and protected from any factors that could cause discomfort or safety risks. Operators are not responsible for any loss, damage (including death), or costs arising from the actions of the animals themselves or interactions between animals, such as bites or fights. Furthermore, operators are not responsible for the condition of the animals if the flight route is changed. Standard operating procedures are shown in Table 2.

Table 2. Standard Operating Procedures for Shipping Live Animal Cargo (Aves and Mammals) at Sultan Syarif Kasim II International Airport

Procedure	Sub-Variables
Customer delivers live animal (birds and mammals) cargo to be shipped.	Speed
Customer Service checks the animals by recording their species.	Security
Customer Service provides a form for administrative purposes.	Speed
Payment and Outgoing Receipt are made.	
Customer Service issues a delivery note or SMU.	
Animals are at the consulate.	Punctuality
Animals are delivered to the airline.	
SKK II Airport Administration processes the required documents.	Speed
Live animal cargo (birds and mammals) is loaded into the Outbound warehouse by the Porter.	Punctuality
The Porter weighs and records the cargo on the cargo weigh slip.	Security
The Admin records and inputs data for the cargo to be shipped.	Speed
The Porter transfers the cargo to the baggage cart for transport to the aircraft.	Punctuality
Each animal must be accompanied by a companion during the journey for safety reasons.	
The cargo is unloaded from the aircraft at the warehouse entrance.	
The Checker matches the Manifest file with the incoming cargo.	Security
The Porter stores the cargo in the warehouse.	Punctuality
The Admin inputs data according to the incoming cargo into the Cargo Handover Report (BASTK) and the airline's information system.	Speed
The Porter searches for the cargo in the warehouse according to the customer's receipt and proceeds to the warehouse exit.	Punctuality
The animals and cages are removed from the warehouse.	
Re-inspection of live animals (birds and mammals)	
Contacting the customer.	Speed
The cargo is ready for pickup.	Punctuality

Sumber: Bandar Udara SKK II

### **Packaging Guidelines for Live Animals (Aves and Mammals) Sultan Syarif Kasim II International Airport, Pekanbaru, Riau Province**

The process of shipping pets (birds and mammals) ensures that the cage used is appropriate for the type of animal being shipped. Standard cage provisions are regulated by the International Air Transport Association (IATA) Live Animal Regulations (LAR), which specify the type of cage, the number of animals per cage, and ventilation requirements. There are general rules for packaging: two cats or two dogs can be in 1 cage if each animal weighs less than 20 lbs (10 kg) and is less than 6 months old. Animals to be shipped must be at least 8

months old, depending on the species and the airline's requirements. Meanwhile, animals less than 8 weeks old receive special treatment: they can be placed close together as long as they still meet the requirements.

### **Preparation Before Shipping**

The shipping process significantly impacts stress levels in animals (birds and mammals). Therefore, the cage or container used must meet the requirements of the IATA Live Animal Regulations (LAR) and Law No. 18 of 2009 concerning Animal Husbandry and Animal Health, to ensure comfort and safety during the journey. The requirements and preparations prior to shipping live animals (birds and mammals) are as follows:

1. Live animals shipped by air may be placed in the cabin, especially for companion dogs of passengers with disabilities, such as those who are blind or deaf, provided they include documents or a doctor's certificate.
2. Animal shipments by air must meet several requirements, namely:
  - a. Attach all official documents from the country of origin, transit, and destination.
  - b. Use a suitable and standardized cage for pets.
  - c. Ensure the animal to be flown is in good health.
3. Young female animals that have not yet entered the lactation period are not permitted to fly. Female animals that are in mating or ready to mate are not recommended for flight. Female animals that are about to give birth or are within 48 hours of giving birth will not be accepted for shipment.
4. Dogs and cats under 8 weeks (2 months) of age are not permitted for shipment. Shipments of dogs and cats can only be accepted up to 4 hours before the scheduled departure date. Dogs and cats must be at least 8 weeks old and have entered the lactation period at least 5 days before the flight date.

### **Packaging Requirements**

1. Cage Construction

Animal shipping cages must be constructed of sturdy materials such as hard plastic, metal, or wood, and equipped with a door. Screws must also be ensured not to protrude and potentially injure the animals (birds and mammals). An example of standard cage construction is shown in Figure 2.

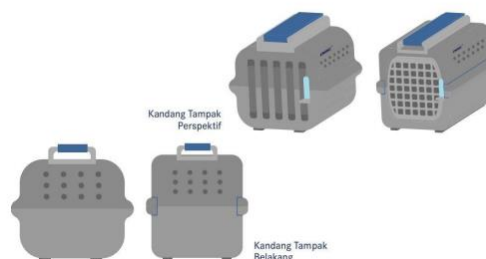


Figure 2. Cage Construction Standards

Source: IATA regulations, LAR Law No. 18 of 2009 concerning Animal Husbandry and Animal Health (Aves and Mammals) SKK II Airport

2. Materials

Cage materials for shipping live animals (birds and mammals) should include materials such as fiberglass, metal, solid plastic, solid wood, or polywood.

3. Cage Design Requirements

Cage design must comply with applicable standards. Cages made from completely welded materials or simply assembled using rope or cable are not recommended for air shipping.

4. Size

The cage must be large enough to allow the cat or dog to stand, sit, turn around, and lie down comfortably. The animal's head should not touch the top of the cage when standing upright.

5. Frame

For wooden cages or containers, the outer frame must be made of 2.5 cm x 7.5 cm (1 inch x 3 inch) wood.

6. Cage Sides

The side walls of the cage must be sturdy and comply with established ventilation requirements. The interior surface of the cage must be smooth.

7. Cage Roof

The cage roof must be made of strong material and have sufficient ventilation holes, without compromising overall sturdiness. For wooden cages, the minimum roof thickness is 12 mm.

8. Cage Door

The door must have a fastener because some regions or countries require the cage to be sealed. If the door is large, additional fasteners or hinges are required for security during shipping. The shipper must ensure all seals are locked and functioning properly.

9. Ventilation

Total ventilation in the cage must cover at least 16% of the total side area, with a minimum hole diameter of 2.5 cm.

10. Food and Drinking Containers

Cages must be equipped with water containers that can be filled from the outside, without opening the cage door, and food containers must be provided inside the cage.

11. Forklift Spacers

For animals weighing more than 60 kg, cages must be equipped with special spacers to allow a forklift to safely lift the cage.

12. SPF (Specific Pathogen Free) Animal Cages

SPF cages must be labeled "This Way Up." Ventilation must use a special filter, with a total hole area of at least 16% of the outside. SPF cages must have a viewing panel.

### ***Packaging Procedures***

1. Ensure the cage has adequate ventilation and is made of materials that meet applicable standards.
2. Prepare sufficient food for the animal's needs during shipping.
3. Ensure the cage is the correct size so the animal can move freely. Lock and seal the cage door securely.
4. Choose an early flight to anticipate any unforeseen circumstances. Ensure the flight route is safe from delays.

### ***Pre-Departure Preparation***

Several things must be done before shipping animals (birds and mammals):

1. Provide a light feed (approximately 75% of the usual portion) for dogs or cats two hours before shipping.
2. Drinking water must remain available in the cage. Ensure the water container is spill-proof.

Recommended :

1. Provide two empty containers (for food and water) that are tied inside the cage but can be filled from the outside without opening the cage door.
2. Feeding may only be done in case of delays, with light treats such as biscuits, meat, or canned food.
3. As a general rule:
  - a. Animals under 16 weeks old should be fed every 12 hours.
  - b. Animals over 16 weeks old should be fed every 24 hours.
  - c. Drinking water should be added during transit.
4. One-piece meals are permitted if divided into two compartments.

### **Sealing dan Labeling**

According to international standards, animal cages (dogs/cats) must be labeled as follows:

1. A 2.5 cm "LIVE ANIMAL (aves and mammals)" label must be affixed to one side of the cage.
2. A "THIS END UP" directional label with an upward arrow symbol must be affixed to at least two sides of the cage.
3. If the animal has a poisonous sting or bite, a 2.5 cm bold "Poisonous" label must be added to the top of the cage.
4. If the animal requires feeding during transit, include written instructions and provide food outside the cage, signed by a veterinarian.
5. A written statement must be provided that warm-blooded animals have been fed and watered within 4 hours before check-in. Feeding less than 4 hours before check-in is not recommended.
6. If the animal is sedated, include the drug information, animal data, dosage, route of administration (oral or injection), and time of anesthesia on the top of the cage. The required label positions are shown in Figure 3.

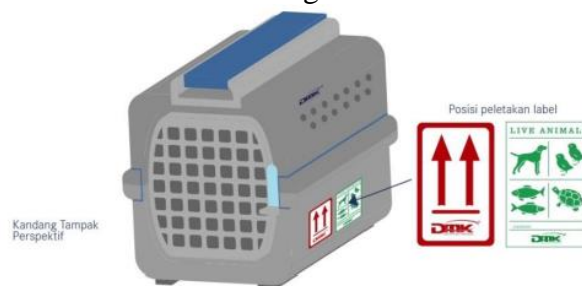


Figure 3. Mandatory labels and provisions for label placement on the cage (SKK II Airport Cargo Packaging Guide)

Shipping must use packaging that complies with the IATA Live Animal Regulations (LAR) and Law No. 18 of 2009 concerning Animal Husbandry and Animal Health. Every product to be shipped must be protected with protective materials such as bubble wrap, padding, or cork to reduce the risk of damage from impacts during shipping.

### **Document Preparation for Live Animal Cargo Shipments (Aves and Mammals) at Sultan Syarif Kasim II International Airport, Pekanbaru**

The documentation for shipping live animals via air cargo involves several important steps that must be completed by the sender as airport administrator. The document filing process can be seen in Table 3.

Table 3. Document Filing for Shipping Live Animals (Aves and Mammals) at Sultan Syarif Kasim II International Airport

No	Administrative Files	Description
1	Animal Health Certificate (SKKH)	This document must be signed and completed in accordance with IATA regulations, LAR Law No. 18 of 2009 concerning Livestock and Animal Health Regulations.
2	Shipping Checklist	Administrative and operational requirements must be met, including completing the document in accordance with applicable regulations.
3	Shipping and Receiving Documents	Documents for the administrative process of releasing the shipment. Acceptance of live animals is recommended to follow the procedures for handling arrivals to ensure the live animals (birds and mammals) are not physically impaired.
4	Shipper Declaration for Live Animals (Aves and Mammals)	Documents must be signed and completed in accordance with IATA regulations, LAR Law No. 18 of 2009 concerning Livestock and Animal Health Regulations.
5	Health Guarantee Letter	A health guarantee letter issued by a veterinarian for pregnant or recently given birth animals, to avoid the risk of giving birth during the journey.
6	Marking of Package	Labels must be fully visible, and all outdated labels or markings must be replaced.
7	Airway Bill	This document is specifically for domestic flights.
8	Air Way Bill (AWB)	This document is specifically for international flights.
9	Filling Out Live Animal Cargo Documents	This document must include appropriate information, such as the type of animal, number, weight, and volume.
10	Supervision of Live Animal Cargo Packaging Measurement	This document ensures that the packaging of live animals (birds and mammals) meets the required standards.
11	Receiving Supervision	Receipt documents must be prepared for the administrative process of releasing the shipment.

The above documents must be provided by the sender and reviewed by the airline and relevant authorities to ensure the animal's safety and health during the journey. Two international regulations have been issued regarding the transportation of animals by air: the IATA Live Animal Regulation (LAR), which governs the health and welfare of animals transported by air, and the Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which contains provisions regarding the international trade of protected or endangered animals (birds and mammals). These two regulations serve as an important basis for the process of shipping live animals. For airlines or air transport operators, the primary responsibility is to ensure the quality of service provided to customers. This is also in line with Article 7, letter D of the Air Transport Law, which stipulates that air transport operators must prioritize improving flight safety in all their operational activities.

## CONCLUSION

Based on the analysis of the live animal (birds and mammals) shipment process via cargo at Sultan Syarif Kasim II International Airport in Pekanbaru, the shipping procedures comply with established regulations, namely:

1. The shipper hands over the goods and provides personal information.
2. The agent prepares the SMU and PTI and submits the documents to the RA.
3. The RA inspects the cargo and takes the documents to the warehouse, where the line officer inspects the cargo and the manifest.
4. All cages are re-inspected and must meet the standards for live animals (birds and mammals) established by the International Air Transport Association (IATA).

Shipping live animal cargo (birds and mammals) follows different procedures and standards from other cargo classifications because the cargo is live animals.

## BIBLIOGRAPHY

- Arikunto. (2006). *Prosedur penelitian suatu pendekatan praktik*. Jakarta: Rineka Cipta.
- Asriati, S., & Fajariana, D. E. (2021). *Pengiriman Hewan Hidup Melalui Kargo Udara yang sesuai dengan Aturan Kesejahteraan Hewan Live Animal Regulation By Air Cargo To The Rules Of Animal Welfare*. 18(2), 120–134.
- Badan Karantina Pertanian. (2016). *Laporan Tahunan Badan Karantina Pertanian Tahun Anggaran 2015*. Jakarta.
- Creswel, J. W. (2018). *Research design Qualitative, Quantitative, and Mixed Methods Approaches*.
- Hermawan, S., & Hariyanto, W. (2022). *Buku Ajar Metode Penelitian Bisnis (Kuantitatif Dan Kualitatif)*. In *Buku Ajar Metode Penelitian Bisnis (Kuantitatif Dan Kualitatif)*.
- IATA, 2003. *The Air Cargo Tariff Rules (TACT)*. England: Speedhouse. Indonesia. Peraturan Menteri Perhubungan Nomor 90 Tahun Tahun 2023 Tentang Keselamatan Penerbangan Sipil Bagian 176 Tentang Pencarian Dan Pertolongan (Search And Rescue) Pada kecelakaan Pesawat Udara. Jakarta.
- International Air Transport Association (IATA). (2005, February). *IATA Cargo Strategy*
- Junaidi, J., Gani, I., & Noor, A. (2020). Analisis transportasi darat terhadap pertumbuhan ekonomi di provinsi kalimantan timur Analysis of land transportation on economic growth in the province of east kalimantan. *Jurnal Ekonomi*, 17(2), 264–269.
- Lailatul Jannah, R., Yermadona, H., & Dewi, S. (2022). ANALISIS KERUSAKAN PERKERASAN JALAN DENGAN METODA BINA MARGA DAN PAVEMENT CONDITION INDEX (PCI) (Studi kasus : Jl. Lintas Sumatera Km 203 - 213). *Ensiklopedia Research and Community Service Review*, 1(2), 114–122.
- Lodico, M. G., Spaulding, C. L., & Voegtle, K. H. (2010). *Metode penelitian pendidikan: dari perencanaan sampai laporan (Edisi 2)*. Jakarta: Kencana.
- Moleong, L. J. (2014). *Metodologi penelitian kualitatif (Edisi Revisi)*. Bandung: PT. Remaja Rosdakarya.
- Narbuko, C., & Achmadi, A. (2005). *Metodologi penelitian*. Jakarta: Bumi Aksara.
- Sugiyono. (2017). *Metode penelitian kuantitatif, kualitatif dan R&D*. Bandung: PT Alfabeta.
- Undang-Undang Republik Indonesia Nomor 18 Tahun 2009 Tentang Peternakan Dan Kesehatan Hewan
- Wibowo, U. Y., & Widiawati, N. (2021). *Analisis Kematian Satwa Dalam Sektor Ekspedisi di Indonesia*. 1(2), 18–27.