Internship Report

On

Transportation Management of Day Old Chicks (DOC) in Kazi Farms Group

Submitted by:

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ID# EMBA2303030014

Program: EMBA (Major SCM)

Semester: Fall-2024

Submitted To:

Department of Business Administration

Sonargaon University (SU)

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Submitted for the partial fulfillment requirement of the degree of Bachelor of Business Administration.

Date of Submission: 28th December, 2024

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Letter of Transmittal

December 28, 2024

Shahnaz Sharmin
Lecturer
Department of Business Administration
Sonargaon University (SU)

Subject: Submission of Thesis Report on "Transportation Management of Day Old Chicks (DOC) in Kazi Farms Group.

Dear Madam,

Here is the internship report on the topic of "Transportation Management of Day Old Chicks (DOC) in **Kazi Farms Group'' (**Based on the study of EMBA Internship Program) that you permitted me to conduct on the basis of the given proposal.

Studying various theories, approaches, strategies and methods & applying them during the internship program at Kazi Farms Group enriched my knowledge as well as experience. I have come to know about the Transportation Supply Chain in Bangladesh, its prospect & strategies which will help me further in my study.

I appreciate your approval & its topic & procedure. If your need any further assistance in the overview of my internship report regarding any issue, please ask me.

Yours Sincerely

Uzzal Kumer Das

ID: EMBA2303030014

Program: Master of Business Administration
(MBA) Major: Supply Chain Management
Sonargaon University (SU)

Certificate of Supervisor

It is certified that the thesis entitled "Transportation Management of Day Old Chicks (DOC) for Kazi Farms Group" is a piece of research work done by Uzzal Kumer Das under my guidance and supervision for the degree of EMBA Major in Supply Chain Management to be awarded by Sonargoan University (SU), 147/I, Green Road, Panthapath, Dhaka, and that the candidate has put the attendance of more than 80% hrs with me.

Shahnaz Sharmin
Lecturer
Department of Business Administration
Sonargaon University (SU)

Student's Declaration

December 28, 2024

I, Uzzal Kumer Das, Student Id:EMBA2303030014, student of EMBA of Department of Business Administration, Sonargaon University, Green road, Dhaka, hereby declare that the internship report "Transportation Management of Day Old Chicks (DOC) for **Kazi Farms Group.''** submitted for the internship program as a part of the EMBA program is totally carried out by me. It not has been prepared from any other reports submitted as internship report or it is not copied from any published report.

Sincerely,

.....

Uzzal Kumer Das

Student Id: EMBA2303030014

Major: Supply Chain Management
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Letter of Authorization

I hereby confirm that the project report titled "Transportation Management of Vehicle Repair & maintenance for **Kazi Farms Group.''** is a genuine effort by Uzzal Kumer Das. The research was conducted under my guidance. I also affirm that, to the best of my knowledge, the content presented in this report has not been included in any other project report or dissertation that led to the award of a degree to any candidate earlier, whether in the same context or a different one.

Shahnaz Sharmin
Lecturer
Department of Business Administration
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Executive Summery

Transportation is one of the crucial element of logistics and supply chain management. As far as goods are concerned, these days, manufacturers can obtain both their raw materials and components from a variety of often quite remote source for use at their main production site. The very important characteristic of of the demand for transport that is always linked to other demands if the other demand drops, or rises the associated demand for transport is also similarly affected. In fact it is very important indeed to the economy and as per *Bangladesh Bureau of Statistics* GDP from Transport in Bangladesh increased to 2272407 BDT Million in 2023 from 2143986 BDT Million in 2022.

The importance of transport sector is essential for the economic growth of a country. The government of Bangladesh realize that transportation is the life line of economy of the country. In recent years, Bangladesh government has made breakthroughs in the communication system by implementing mega projects which are playing an important role in achieving the economic growth of the country.

Kazi Farms group has realized that there is no substitute for a for a modern transportation system in the development supply chain strategy as a poultry sector and introduced a large transport fleet management that ensure product safety, time bound and customer satisfaction. Kazi Farms long- term goal is to act as a role model in transport sector in Bangladesh and their slogan is **"Adopt Good Practice To Improve the Street."**

In Kazi Farms Group I had the opportunity to work, study, research and make report on this company in my study work program. This internship report provide some interesting insight into the activities of transport management, importance of transportation on supply chain, create customer awareness by branding on vehicles and lot about transport in a poultry sector.

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Chapter One

Introduction

1.1 Background of the Study :

The poultry industry plays a vital role in ensuring the global supply of affordable protein through eggs and chicken meat. At the heart of this industry is the production and distribution of **Day-Old Chicks (DOC)**, which serve as the foundation for commercial poultry farming. Day-Old Chicks are newly hatched chicks that are delivered to farms and hatcheries to be raised for egg production or meat production, depending on the breed and market demands.

The quality, health, and survival of these chicks during their initial stages are crucial for the success of poultry businesses.

The Importance of DOC in Poultry Farming

DOC are an essential component of the poultry supply chain. These chicks are produced in hatcheries, where fertilized eggs are incubated and hatched under controlled conditions. Once hatched, the chicks need to be distributed to various poultry farms for rearing. The quality of DOC significantly impacts the overall productivity of poultry farms. The survival rate, growth, and health of DOC depend on a variety of factors, including genetics, diet, vaccination, and most importantly, **transportation**.

Effective management of DOC transportation is therefore critical. Poor transportation practices can lead to increased chick mortality, reduced growth rates, and the spread of diseases, all of which negatively affect the profitability of poultry businesses.

Challenges in DOC Transportation

The transportation of DOC poses significant challenges, given the fragile nature of the chicks during the first few days of their life. Some of the major challenges in DOC transportation include:

1. **Fragility of Day-Old Chicks**: DOCs are highly sensitive to environmental conditions such as temperature, humidity, and handling. Inadequate management of these factors can lead to stress, dehydration, and even death.
2. **Temperature Sensitivity**: DOCs are highly vulnerable to temperature changes. Ideally, the transportation environment should be maintained at a constant temperature of around **30°C** (86°F) to ensure that the chicks do not suffer from heat

stress or hypothermia. This requires specialized vehicles equipped with temperature control systems.

3. **Handling and Packaging**: DOCs need to be handled with care during loading, unloading, and transport. Any rough handling or poor packaging can cause physical injuries to the chicks, leading to mortality or reduced health after delivery.

4. **Transportation Delays**: Delays during transportation, whether due to traffic, logistical inefficiencies, or other unforeseen circumstances, can result in poor chick health. Chicks must be delivered to farms as quickly as possible to minimize the risk of deterioration.

5. **Cost Efficiency**: The logistics of DOC transportation must strike a balance between cost-effectiveness and maintaining high standards of chick health. Poor transportation systems, while cost-saving in the short term, may result in higher losses due to chick mortality and customer dissatisfaction in the long term.

6. **Animal Welfare and Regulatory Compliance**: There are numerous regulations regarding the transportation of live animals. Compliance with these regulations is necessary to avoid legal issues and ensure the welfare of the animals during transport.

   This includes ensuring proper ventilation, adequate space for the chicks, and humane handling.

Kazi Farms Group and Its DOC Transportation Operations

Kazi Farms Group is one of the leading poultry producers in **Bangladesh**, known for its high- quality poultry products, including DOCs. The company has a strong presence in the poultry industry and operates a vertically integrated system that includes breeding, hatching, transportation, and distribution.

As part of its commitment to maintaining the quality of its DOCs, Kazi Farms Group places significant emphasis on the safe and efficient transportation of chicks from the hatcheries to farms across the country. The company owns a fleet of specialized vehicles designed to meet the specific needs of transporting DOCs. These vehicles are equipped with temperature and humidity control systems, ensuring that the chicks are transported under optimal conditions. In addition to this, the company employs strict protocols for

packaging, handling, and monitoring during the transportation process to minimize stress and ensure the highest survival rates.

1.2 Origin of the Study:

The origin of this study stems from the increasing demand for **Day-Old Chicks (DOCs)** in the poultry industry, as well as the evolving need to ensure high standards in transportation and logistics. The production and transportation of DOCs are critical steps in the poultry supply chain, and any inefficiency or disruption in this process can significantly impact the health of the chicks and the overall profitability of poultry businesses.

Global and Local Context of the Poultry Industry

The **poultry industry** has experienced rapid growth globally, driven by the increasing demand for protein-rich foods, particularly chicken meat and eggs. According to the Food and Agriculture Organization (FAO), poultry farming accounts for nearly **40% of global meat production**, with **poultry eggs** contributing significantly to the world's supply of affordable protein.

In Bangladesh, the poultry industry has also expanded considerably over the past few decades. The increasing urbanization, changes in dietary patterns, and growing population have contributed to higher consumption of poultry products. As one of the largest sectors in Bangladesh's **agriculture industry**, poultry farming plays an essential role in both the rural and urban economies.

In this rapidly growing industry, the **successful transportation of DOC** is paramount to maintaining the health and productivity of poultry farms. However, managing DOC transportation remains a complex challenge, requiring a delicate balance between efficiency, animal welfare, and cost-effectiveness. It is within this context that the study of **transportation management of DOC** becomes crucial for ensuring the sustainability and growth of poultry businesses like Kazi Farms Group.

One of the most critical aspects of Kazi Farms Group's operations is the **transportation of DOC** from its hatcheries to farms and other customers. Given the fragile nature of Day-Old Chicks, the company recognizes the importance of a well-structured, reliable, and safe transportation system. Despite the company's strong infrastructure, challenges in **DOC transportation** have continued to affect its operations, particularly in ensuring

chick survival rates and **customer satisfaction**.

Over the years, Kazi Farms Group has invested heavily in specialized transportation vehicles, temperature and humidity control systems, and strict management practices to address these challenges. However, with the growing scale of operations, new logistical complexities and environmental factors continue to put pressure on the transportation system.

This led to the origin of the study. The company wanted to gain a deeper understanding of the existing **transportation management system** for DOC, evaluate potential risks to chick health during transport, and identify areas for improvement. The study also sought to understand the impact of transportation practices on **chick mortality**, **cost efficiency**, and **customer satisfaction**, and to explore innovative solutions to overcome these challenges.

Need for the Study

The increasing scale of poultry production, growing competition, and rising consumer expectations necessitate that poultry companies such as Kazi Farms Group refine their **transportation management systems**. The company's leadership recognized that despite significant investments in infrastructure, there remained potential for improvements in transportation logistics, especially concerning:

- **Survival rates of DOC during transportation**: Minimizing chick mortality during transit is critical for the profitability of poultry farming. Identifying factors contributing to higher mortality rates can lead to improved management practices.
- **Cost optimization**: Transportation costs represent a significant portion of the overall operational expenses for a poultry business. By improving transportation practices, Kazi Farms Group aims to reduce waste and improve the financial sustainability of its operations.
- **Customer satisfaction**: Reliable delivery and the health of DOC are crucial for maintaining strong relationships with farms, hatcheries, and distributors. Improving transportation reliability is essential for maintaining trust and loyalty among customers.
- **Regulatory compliance and industry standards**: With increasing focus on animal welfare and regulatory standards in the transportation of live animals,

there is a need to ensure that Kazi Farms Group's transportation practices align with national and international regulations.

Evolution of the Study

Initially, the focus of the study was simply to evaluate the effectiveness of existing transportation methods for DOC. However, as the research progressed, it became clear that the issues surrounding transportation were multifaceted and intertwined with several aspects of Kazi Farms Group's operational structure.

The study thus evolved to encompass not only the logistical processes but also:

- **Environmental control systems** (temperature and humidity management)
- **Staff training and capacity building**
- **Technological advancements** (e.g., real-time monitoring of transportation conditions)
- **Cost-benefit analysis** of upgrading transportation infrastructure

1.3 Rationale of the Study:

The **transportation of Day-Old Chicks (DOC)** is a critical aspect of the poultry supply chain that significantly influences both the economic success and the operational efficiency of companies like **Kazi Farms Group**. As one of Bangladesh's leading poultry producers, Kazi Farms Group is committed to maintaining high standards in the production and distribution of DOC However, ensuring the health, survival, and timely delivery of DOC from hatcheries to farms presents a unique set of challenges. These challenges must be addressed to optimize operational costs, improve customer satisfaction, ensure regulatory compliance, and enhance long-term sustainability.

The **rationale** for this study is grounded in the following key factors:

- **Temperature Sensitivity**: DOC are particularly susceptible to extreme temperatures, which can cause heat stress or hypothermia, leading to death or poor health upon arrival. Maintaining the correct temperature during transport is crucial for their survival and well-being.
- **Stress and Injury**: Improper handling, overcrowding, or inadequate ventilation can lead to physical injury or stress, both of which can reduce the health and

growth potential of the chicks. Stress during transport also weakens their immune system, increasing susceptibility to disease.

- **Losses due to Mortality**: The death of DOCs during transit leads to direct economic losses, as the cost of breeding, hatching, and transporting the chicks is wasted. In addition, the purchasing farms may require restocking, which can create supply chain delays and further costs.
- **Operational Costs**: The cost of maintaining specialized transportation vehicles, fuel, labor, and other logistical resources is substantial. Inefficiencies in route planning, fleet management, or vehicle maintenance can further add to these expenses, making transportation one of the largest cost centers in the poultry operation.
- **Timely Delivery**: Delays in the delivery of DOCs can disrupt the receiving farm's operations, affecting production schedules and farm efficiency. If the transport system fails to meet agreed timelines, it can lead to dissatisfaction and a loss of business trust.
- **Quality Assurance**: The health of DOC upon delivery is a direct reflection of the company's standards. If chicks arrive in poor condition—whether due to injury, disease, or stress—it can damage the company's reputation and result in loss of future contracts or customers.

1.4 Objectives of the Study: Transportation Management of Day-Old Chicks (DOC) in Kazi Farms Group

The primary aim of this study is to evaluate and improve the **transportation management system** for **Day-Old Chicks (DOC)** in **Kazi Farms Group**, ensuring that the transportation process is efficient, cost-effective, and compliant with industry standards while safeguarding the health and well-being of the chicks. The specific objectives of the study are as follows:

1. To Assess the Current Transportation Practices of DOC at Kazi Farms Group

- **Evaluate Existing Practices**: Investigate the current methods, tools, and

procedures used by Kazi Farms Group to transport DOC, including the types of vehicles, temperature control mechanisms, packaging, and handling techniques.

- **Identify Challenges**: Identify the key challenges and inefficiencies within the current transportation system, such as issues related to vehicle maintenance, handling, temperature control, route planning, and delivery schedules.
- **Evaluate Health and Mortality Rates**: Analyze the health and survival rates of DOC during transit to determine the impact of the current transportation practices on chick mortality and health upon arrival at farms.
- **Analyze Environmental Factors**: Assess how environmental factors during transportation (e.g., temperature, humidity, vehicle vibration) affect the survival rates and overall health of DOC.
- **Evaluate Stress and Injury Factors**: Investigate the role of handling, overcrowding, and transport time in causing physical injury or stress to the chicks.
- **Identify Risk Factors**: Pinpoint specific risk factors associated with the transportation process that may contribute to high mortality rates or poor health outcomes for DOC.
- **Cost Analysis**: Conduct a cost-benefit analysis of the current transportation system to identify areas where inefficiencies lead to higher operational costs, such as increased fuel consumption, vehicle maintenance, or labor costs.
- **Impact of Mortality and Delays**: Evaluate the economic implications of high DOC mortality rates and delays in transportation, focusing on both the financial losses to Kazi Farms Group and the additional costs incurred by receiving farms due to resupply and delayed operations.
- **Resource Utilization**: Investigate how transportation resources (e.g., vehicles, labor, fuel) are currently utilized and whether there are opportunities for better resource optimization.
- **Optimization Strategies**: Develop strategies to improve transportation practices, focusing on reducing mortality rates, minimizing transportation time, and enhancing overall efficiency in the system.
- **Operational Recommendations**: Provide specific recommendations for

improving resource allocation, fleet management, and scheduling to optimize DOC transportation.

- **Sustainability Measures**: Propose sustainable practices for the transportation of DOC, including reducing carbon footprints, improving fuel efficiency, and adopting environmentally friendly technologies.
- **Long-Term Cost Savings**: Assess how the proposed improvements in transportation can lead to long-term cost savings and increased operational efficiency, contributing to the financial sustainability of Kazi Farms Group.
- **Scalability and Growth**: Examine how optimizing the transportation system can support the company's expansion, both in terms of increasing production capacity and entering new markets, including export opportunities.
- **Environmental and Social Impact**: Investigate the broader environmental and social impact of improving transportation practices, such as reduced environmental footprint, better animal welfare, and stronger community relationships.

1.5 Limitations of the Study:

While the study aims to comprehensively analyze the transportation management of **Day-Old Chicks (DOC)** at **Kazi Farms Group**, several limitations exist that may affect the depth of the research and the scope of its findings. These limitations must be acknowledged to provide a clearer understanding of the potential constraints faced during the study.

1. Data Availability and Accuracy

- **Limited Access to Internal Data**: The study heavily relies on accessing detailed data regarding the current transportation practices, costs, mortality rates, and customer feedback from Kazi Farms Group. However, there may be restrictions in obtaining complete and accurate internal data due to confidentiality concerns or proprietary business information.
- **Inaccurate or Inconsistent Data**: There may be inconsistencies in the data available, especially related to historical transport performance, mortality rates, or

customer complaints. Inaccurate or incomplete data could affect the quality of the analysis and the reliability of the recommendations.

2. Scope of the Study

- **Focus on One Company**: The study primarily focuses on **Kazi Farms Group** and its transportation system. As such, the findings and recommendations may not be directly applicable to other companies in the poultry industry, especially those with different operational scales, transportation networks, or regulatory environments.
- **Limited Geographic Scope**: The study may be limited to the domestic transportation system within Bangladesh, where external factors such as road infrastructure, climate conditions, and regulatory differences may affect the transportation practices of DOCs. The insights may not necessarily apply to international transportation systems or markets.

3. Availability of Stakeholder Feedback

- **Reluctance to Participate**: Gathering insights from stakeholders such as farm managers, drivers, and other employees involved in the transportation process may be hindered by a reluctance to share honest feedback. Some participants may be unwilling to discuss inefficiencies or problems in the system for fear of criticism or repercussions.
- **Survey Bias**: If surveys or interviews are used to collect feedback from customers (i.e., receiving farms), there is a possibility of **response bias**. Customers may either exaggerate their satisfaction or dissatisfaction due to personal experiences, or they might provide socially desirable answers instead of candid feedback.

4. External Factors and Market Conditions

- **Unforeseen Market Changes**: External factors, such as fluctuating fuel prices, government regulations, or economic downturns, may influence the transportation operations and cost structures during the study period. These factors could limit the ability to draw conclusions that remain valid in the long term or after external shifts in the market.

- **Weather Conditions**: Since the transportation of DOCs is highly sensitive to weather conditions (especially temperature and humidity), unpredictable weather events (e.g., storms, heatwaves) may complicate the analysis of transportation efficiency and DOC health. The study may not fully account for such variables, which can impact transportation performance on a day-to-day basis.

5. Financial and Resource Constraints

- **Budget Limitations**: Financial limitations may restrict the scope of the study, particularly in terms of collecting primary data, conducting in-depth surveys, or implementing pilot projects to test recommendations. Budget constraints might also prevent the acquisition of specialized technology or third-party expertise to support the research.
- **Limited Resources for Pilot Implementation**: While the study may propose new strategies for improving transportation efficiency, there may be insufficient resources or company willingness to implement large-scale changes within the study period. This could limit the ability to test the proposed solutions in real-time and evaluate their impact.

6. Human Resources and Expertise

- **Limited Expertise in Transportation Logistics**: While the study aims to provide recommendations for improving transportation practices, it may be constrained by the lack of access to experts in transportation logistics or animal welfare practices. Expertise in areas such as **supply chain optimization**, **vehicle maintenance**, and **advanced monitoring systems** may be limited, which could affect the depth of the analysis.
- **Dependence on Existing Staff**: The research may rely on the staff within Kazi Farms Group for insights and data. Their familiarity with internal systems may not always provide an unbiased perspective, and their time availability may be limited, leading to potential gaps in data collection.

Chapter Two
Literature Review

2.1 Literature Review

Based on Montero (2015), the economic development measured by the increase in Gross Domestic Product (GDP) in the long-term can reduce poor rates and improves education, health, transportation and housing conditions. The principal indicator is the Human Development Index (HDI), which calculates the relationship between quality of life and economic development.

For this reason, the tripod of sustainability – social, economic and environmental – has become the subject of great questions in different areas, including the transportation of cargo. The social and environmental criteria are gaining rel- evince in this scenario over the years. The quantification of economic benefits from transportation are usually observed in long-term periods. It is made from the knowledge of costs to direct users and their externalities (Rabello Quadros et Nassi, 2015).

2.2 Relationship between the influence of infrastructure and regional sustainable development

Many studies indicate the relationship between the regional development and transport infrastructures under economic, social and environmental aspects. The more regions are served and the better the design of a route, the better the consequences for that environment. In Brazil some researchers seek to prove this relationship through significant variables (Sehn, 2009; Silva et Netto, 2010; Lis- boa, 2014; Campos, 2015; Montero, 2015).

According to Montero (2015) the Brazilian railroads continue collaborating for the development of the country. In this study, state GDP and operating income of the company are correlated during the year. On the other hand, trying to understand the influence that a new railroad can have on municipality, Campos (2015) analyzes the impacts on four variables: income, tax collection in the municipalities involved, employment, and product. The projections are calculated from the variables of municipality GDP per capita, municipality service tax (ISSQN), average income of the worker and formal employment.

Lisbon (2014) identifies some benefits to the region that receives subway stations: the economic development, real estate valuation for the region, the reduction of traffic in the

adjacent road system and urban development centered on public transport. A highlight for this study was the identification of stakeholders in an infrastructure project: private and public actors.

For Silva et Netto (2010), a more qualitative multi-criteria method is important to relate the increase of infrastructure
efficiency in the country and sustainable development. In this context, thirty stakeholders evaluated different projects under seven criteria: job creation, intertidal connection, environmental impact, social welfare (HDI), costs and benefits, recovery of environmental liabilities, and project execution period. On the other hand, Sehn (2009) adopts a more economic methodology that uses NPV, IRR and B/C (benefits and costs) indicators. The study proposes that only financial success is enough to make a project viable.
According to Montero (2015) the Brazilian railroads continue collaborating for the development of the country. In this study, state GDP and operating income of the company are correlated during the year. On the other hand, trying to understand the influence that a new railroad can have on municipality, Campos (2015) analyzes the impacts on four variables: income, tax collection in the municipalities involved, employment, and product. The projections are calculated from the variables of municipality GDP per cap- ita, municipality service tax (ISSQN), average income of the worker and formal employment.

Barefoot Soleure (2015) conducted a study that considers cost-benefit analysis (CBA) at the Danish Ministry of Transportation. The VPL is calculated by the difference between the benefits and costs throughout the project. The primary variables are: environmental disturbance in the construction period, construction and maintenance cost, travel time reduction, work completion cost, taxes, and local pollution.

Another study that considered many variables to analyze the potential impact of transport infrastructure is consolidated through sixteen criteria: travel time, distance, traffic, average speed, age group, number of local inhabitants, family income, CO2 emissions, land occupation rate, births and deaths, GDP, distance between accommodation and work, number of vehicles in the region, and number of migrations and marriages (Noguéset González González, 2014).

However, according to Yu et Liu (2012) the analysis is more focused on highway safety, which is a social, environmental and economic criterion at the same time. For this evaluation

are considered: investment, daily average traffic, reduction of fatal accidents, reduction of total accidents, percentage of growth, and project continuity period.

2.3 Models for evaluating transport infrastructure projects

Infrastructure project evaluation models has the objective to compare two or more alternatives, or even to justify investments from long-term viability. However, a model may also have references in qualitative methods when it is necessary to consider the opinion of the people involved or if it is not possible to give it real values.

Chen *et al.* (2015) analyze the energetic efficiency of 29 regions in China through a quantitative and qualitative mod- el. The variables of the model are: air quality level, energy consumption, employment, capital invested in assets, CO2 emissions, and GDP.

The use of Activity-Based Costing (ABC) is widely used for many applications, including transportation. For transport infrastructure, this analysis is also used, since it considers the trade-off between benefits and costs generated by high- ways, helping the decision maker in the choice of invest in an alternative.

Eco-Mobility (EM) model considers, besides the ABC, the risk analysis (Monte Carlo simulation) and the multi criteria complementary analysis of decision. Eco-Mobility evaluates alternatives from the sustainability perspective, adopting variables, such as visual impact on cities, economic impact on the region, improved number of users of public transport, and impact on logistics flexibility (Barefoot Selling, 2015).

The Micro Ben Cost model was developed in the 1990s by the Texas Transportation Institute and is still used nowadays. It helps to evaluate track safety and the increased transport capacity on a highway. The benedicts are the reduction: in the number of accidents, of travel time, and of vehicle operating cost (McFarland *et al.*, 1993).

HDM-4 is a model developed and used by the World Bank. It proposes an evaluation of the performance with regard to four technical criteria: type of pavement, traffic volume, maintenance standards, and regional characters- tics. Benefits are identified from three groups. The first one is economic: travel time, reductions in operating costs, and number of accidents. The second one is environmental: environmental impacts (air pollution and energy efficiency). The last one is social: social benefits, and traffic jam (Kerali, 2000).

From the HDM-4 model they also constructed a multi criteria analysis model to optimize

necessary investments in highways (Odoki et al., 2015). The criteria present different weights and are classified within the sustainability tripod: traffic jam, energy efficiency, accessibility to schools, hospitals and commerce, number of accidents, atmospheric emissions, and comfort to users. Computational General Equilibrium (CGE) is another model that contributes to estimating only economic impacts: truck operating costs, and travel time (Wang et al., 2013).

The choice of transport projects is also based on the ABC in the European Union. It considers nine factors: operation and maintenance costs, travel time, air pollution, investments in the road, noise, road toll revenue, accidents, climate change, and vehicle operating cost. All data are mon-

2.4 Transportation management :

Transportation management refers to the process of planning, executing, and optimizing the movement of goods and materials from one location to another. It is a key component of logistics management and involves overseeing transportation activities to ensure efficiency, cost-effectiveness, and timely delivery. Transportation management is crucial for businesses involved in supply chains, distribution, and retail, as it directly impacts operational costs, customer satisfaction, and overall business performance.

Key Elements of Transportation Management:

1. Transportation Planning:
   - Route Planning: Identifying the most efficient routes for delivering goods, considering factors like distance, traffic patterns, delivery windows, fuel costs, and road conditions. Route optimization reduces costs and ensures timely delivery.
   - Mode Selection: Choosing the appropriate transportation mode (road, rail, air, sea, or multimodal) based on factors like speed, cost, capacity, and type of goods being transported. For example, perishable goods may require air freight, while heavy machinery might be better suited for rail transport.
   - Capacity Planning: Ensuring that the right amount of transportation capacity is available to meet demand. This involves forecasting transportation needs and adjusting schedules and routes accordingly.
2. Carrier Management:
   - Carrier Selection: Identifying and selecting carriers (truck companies, shipping lines, air

cargo providers, etc.) based on their service reliability, cost-effectiveness, and capacity. Businesses may use a variety of carriers to meet their transportation needs.

- Contract Management: Negotiating and managing contracts with carriers to ensure favorable rates, service level agreements (SLAs), and terms. Long-term relationships with carriers can help improve cost control and reliability.
- Carrier Performance Monitoring: Tracking the performance of carriers to ensure they meet agreed-upon delivery times, service quality, and other key performance indicators (KPIs). This includes monitoring delays, damages, or any other issues related to carrier service.

3. Transportation Execution:

- Shipment Execution: Coordinating the dispatch and movement of goods. This includes creating shipping instructions, scheduling deliveries, and ensuring proper documentation (e.g., bills of lading, customs documents).
- Tracking and Visibility: Implementing systems that provide real-time tracking of shipments, allowing businesses to monitor the status of deliveries. Tracking tools provide customers and supply chain managers with information about the location and expected arrival times of shipments.
- Delivery Management: Ensuring that deliveries are made on time and according to the customer's requirements. This may involve adjusting schedules based on delays or disruptions.

4. Transportation Optimization:

- Route Optimization: Using software tools and algorithms to determine the best routes based on factors like distance, fuel consumption, and delivery windows. The goal is to reduce transportation costs, improve fuel efficiency, and shorten delivery times.
- Freight Consolidation: Combining multiple smaller shipments into larger, full-load shipments to reduce transportation costs and improve efficiency. This is particularly relevant for companies with small or irregularly sized shipments.
- Load Optimization: Maximizing the use of space in transportation vehicles (trucks, containers, etc.) to reduce the number of trips required and improve the cost-efficiency of each shipment.

5. Cost Management:

- Freight Cost Control: Monitoring and controlling transportation costs, including fuel, labor, and carrier fees. Businesses need to balance the need for speed with cost-

efficiency.

- Cost Allocation: Determining how transportation costs are allocated within the organization, such as to specific departments or products. This ensures that transportation expenses are properly tracked and budgeted.
- Invoice Auditing: Verifying that transportation invoices are accurate and match the agreed-upon rates and terms. This helps prevent overcharging and ensures cost control.

6. Regulatory Compliance:

- Customs and Import/Export Compliance: Ensuring that shipments comply with international trade regulations, including customs documentation and tariffs. This is especially important for businesses involved in cross-border transportation.
- Safety and Environmental Regulations: Adhering to safety standards, including vehicle maintenance, driver training, and hazardous materials handling. Compliance with environmental regulations (e.g., emissions standards) is also increasingly important.

7. Technology and Software:

- Transportation Management Systems (TMS): Software tools designed to streamline transportation planning, execution, and optimization. TMS solutions provide real-time visibility, automate key processes, and integrate with other supply chain systems such as warehouse management and inventory control.
- GPS and Telematics: These technologies are used for route optimization, real-time tracking of shipments, and fleet management. Telematics provides data on vehicle performance (e.g., fuel consumption, maintenance needs) to improve efficiency.
- Artificial Intelligence and Machine Learning: AI and ML algorithms are increasingly used for demand forecasting, route optimization, predictive maintenance, and to identify potential disruptions before they occur.

Benefits of Effective Transportation Management:

1. Cost Savings:
    - Optimizing routes, consolidating shipments, and selecting the most cost-effective carriers can significantly reduce transportation costs. Proper management also helps businesses avoid overpaying for freight and reduce fuel costs.
2. Improved Customer Satisfaction:
    - Timely deliveries, accurate tracking, and reliable service contribute to a positive customer experience. Meeting delivery deadlines and providing real-time visibility into shipments enhances customer satisfaction and loyalty.

3. Operational Efficiency:
    - Effective transportation management reduces inefficiencies by streamlining processes, improving route planning, and optimizing load utilization. This leads to a smoother supply chain and fewer delays.
4. Greater Visibility and Control:
    - Real-time tracking and advanced analytics give businesses greater visibility into their transportation operations. This allows for proactive decision-making and better management of disruptions.
5. Compliance and Risk Management:
    - Ensuring that shipments comply with regulations (e.g., safety, environmental, customs) helps reduce the risk of fines, delays, or legal issues. Proper documentation and risk management practices prevent supply chain disruptions.
6. Scalability:
    - With effective transportation management, businesses can more easily scale their operations. Whether expanding to new regions or handling higher volumes, a robust transportation strategy can adapt to changing needs.

Challenges in Transportation Management:

1. Rising Fuel Prices:
    - Fuel costs are a major part of transportation expenses, and fluctuations in fuel prices can significantly impact the bottom line. Businesses must find ways to mitigate these costs through efficient route planning and other strategies.
2. Global Supply Chain Complexity:
    - Managing transportation in a global context can be complex, involving cross-border logistics, varying regulations, customs processes, and diverse transportation modes. This can make international transportation more difficult to manage.
3. Capacity Constraints:
    - Transportation networks can face capacity shortages, especially during peak seasons or in areas with limited transportation infrastructure. Companies may struggle to secure sufficient carrier capacity to meet demand.
4. Environmental Sustainability:
    - As environmental concerns grow, businesses must address the carbon footprint of their transportation operations. Transitioning to more sustainable practices (e.g., using electric vehicles or reducing emissions) requires investment and careful

planning.

5. Supply Chain Disruptions:
    - External factors such as weather conditions, natural disasters, labor strikes, or geopolitical events can disrupt transportation operations. Having contingency plans in place and building flexibility into transportation strategies is essential.

Trends in Transportation Management:

1. Automation and AI:
    - Automation in transportation planning, route optimization, and fleet management is becoming more common. AI is being used to predict demand, optimize routes, and improve decision-making in real-time.
2. Sustainability:
    - ◦ There's a growing focus on reducing the environmental impact of transportation. Companies are investing in electric or hybrid vehicles, optimizing delivery routes for fuel efficiency, and exploring alternative fuels.
3. Last-Mile Delivery Innovation:
    - The rise of e-commerce has led to innovations in last-mile delivery, including drones, electric bikes, and autonomous vehicles to improve delivery speed and reduce environmental impact.
4. Block chain Technology:
    - Block chain is being explored for improving transparency and security in supply chain transactions, particularly for cross-border logistics. It helps track goods from origin to destination with greater accuracy and security.
5. Real-time Data and Analytics:
    - Real-time data collection and advanced analytics tools are helping businesses make better decisions and improve operational efficiency. These tools also provide better visibility into the entire transportation process.

Chapter 3

Methodology

3.1 Scientific research

Scientific research helps in the diffusion of the knowledge generated by other authors and in the investigation of the state of the art for each model to be applied. This study fol- lows classic classification criteria (Gil, 2010) for evaluation of the road infrastructure projects around the world.

The approach of the research is qualitative because there are a lot of analysis made from the selection of the variables, such as categorization, classification, interpretation and con- elusions. No quantitative study is necessary, similar to Cazeri *et al.* (2017) in a green supply chain management literature review.

The overall objective is considered as exploratory, in or- der to bring the researcher closer to the theme and justify the problem to become more explicit. Finally, the research is classified as biometric because material is published in scientific papers of high impact for the academic society and no laboratory or documents are consulted.

3.2 Research method

The literature review is the method used in an effort to identify models for evaluating new and existing road infra- structure projects, highlighting the main variables adopted, the gaps of these models and, consequently, opportunities for the development of future studies. From the transport infrastructure model (TIM), the key words used for data col- lection were “strategic planning”, “road transport”, “freight transport”, “stakeholders”, “sustainability”, “decision making”, and “highway evaluation”. A keyword tree was delve- oped to reach the aim of this paper, Figure 1. It used the boolean logic, which means that a combination with “OR” or “AND” were adopted to make the search.

As a result of this search, 43 papers matched the field of the present study. The list of the major journals related with these papers are on Figure 1

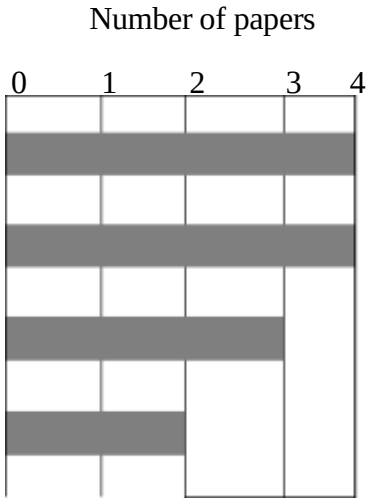


Figure 2. Major journals related

Source: The authors themselves.

The major journals are: Transportation Research Part D: Transport and Environment and Transport Policy (4 papers), followed by Transportation Research Part A: Poli- cy and Practice (3 papers), Transportation and Energy Pol- icy (both with 2 papers). Other journals have only one pa- per associated with each one, so they are not in the figure. Moreover, other sources of search were used here, so it is possible that a document found is not in this database.

Previous analysis occurred to base the indicators that will be found in this study. As previously mentioned, it is expect- ed that these variables are spited in three categories: social, environmental, and economic. Then, a sustainable index could be developed to assess the value of the highway ac- cording to the triple bottom line approach,

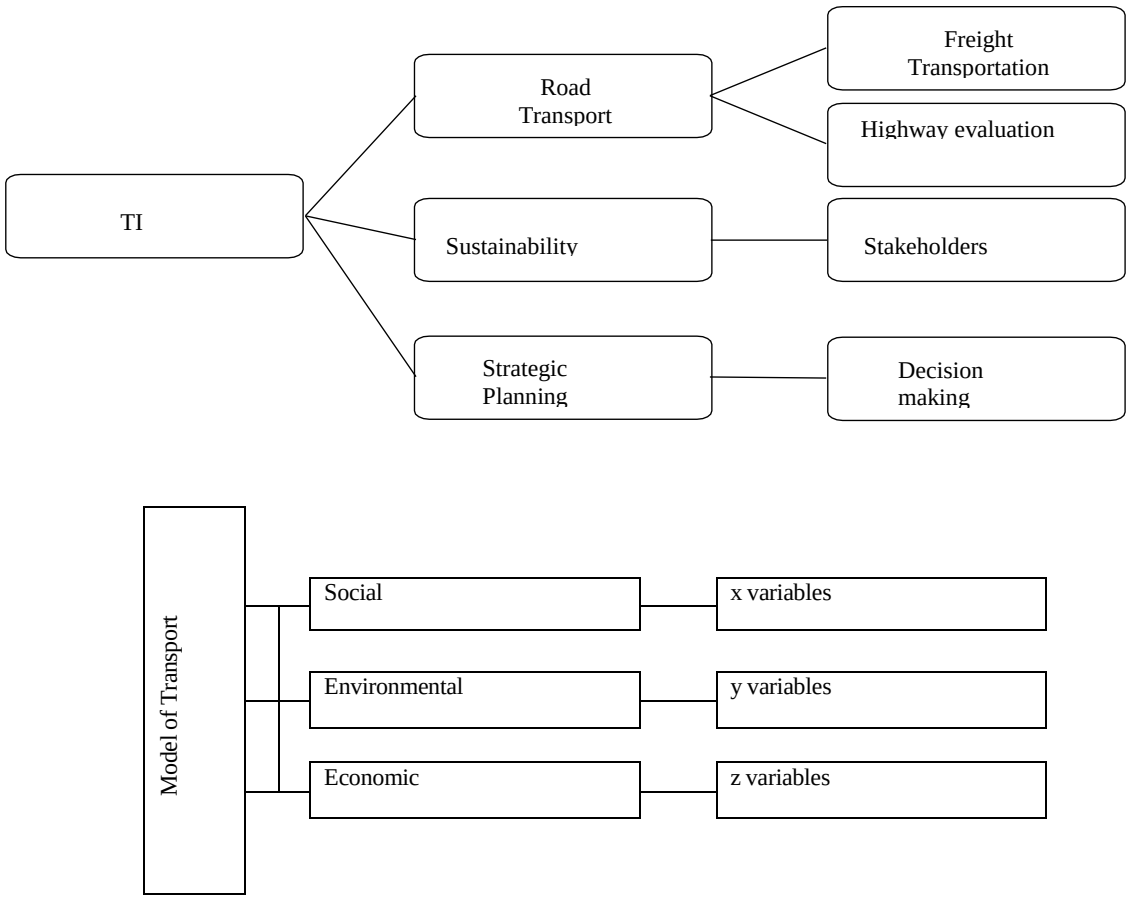


Figure 1. Keyword tree

Source: The authors themselves.

The research was made from November 2016 to February 2017, specifically on scientific basis, giving preference to best ranking journals around the world without time specification. In a second round, the investigation was emphasized on material published in the last six (6) years, from 2012. The scientific bases searched were: the journals Capes, Web of Science, Scopus, Wiley, Emerald and SciELO.

1. Preparation Stage

Primary Data Collection

- **Health and Welfare of Chicks**:
  - **Pre-Transport Health Checks**: Kazi Farms Limited would conduct health assessments on the chicks before transport, recording vital health indicators such as their size, weight, and signs of illness or distress.
  - **Vaccination Records**: Document vaccinations administered to the chicks before transport. This ensures they are healthy and protected during transit.
  - **Feed and Water Provision**: Record whether chicks are provided with appropriate feed and water prior to departure to ensure they are hydrated and nourished.
- **Packaging Details**:
  - **Box and Crate Information**: Data on the number of chicks per box (usually 50-100 chicks per box) and the type of packaging used (ventilated boxes, bedding material like shredded paper or sawdust). This data helps ensure proper space and comfort for the chicks.
  - **Box Size**: Data on the size of the chick boxes to ensure that they are appropriately sized and well-ventilated.
- **Temperature Settings**:
  - **Pre-Transport Environmental Monitoring**: Data from temperature sensors inside the hatchery or packing area to ensure optimal conditions before transport. Ideal temperature for day-old chicks is usually between 32°C - 35°C (90°F - 95°F).

Secondary Data Collection

- **Industry Standards**:
  - **Regulatory Compliance**: Secondary data from government agencies or industry standards (e.g., **FAO**, **OIE**) to ensure Kazi Farms adheres to regulations concerning transport times, box ventilation, and chick welfare.
  - **Transport Guidelines**: Reference to guidelines on optimal transport durations, temperature limits, and acceptable mortality rates for day-old chicks. This helps in establishing benchmarks for operations.
- **Local Weather Data**:
  - **Forecasting**: Collect weather forecasts for the transport route to anticipate temperature or humidity challenges and adjust transport plans accordingly.

2. Transport Execution Stage

Primary Data Collection

- **Real-Time Vehicle Data**:

- **Vehicle Condition**: Monitoring and recording data about the transport vehicle, including its temperature control system, ventilation, and suspension quality. Transport vehicles should ideally have climate control to maintain constant temperature and humidity.
- **Journey Time and Route Data**: Real-time tracking data to record the journey's duration and route taken, ensuring that the transport remains as efficient and stress-free as possible.

- **Temperature and Humidity Monitoring**:
  - **In-Transit Conditions**: Using in-transit sensors (such as temperature and humidity loggers) to monitor environmental conditions during transportation. This is critical for ensuring the chicks are not exposed to temperature extremes or poor ventilation, which could result in health problems.
  - **Emergency Alerts**: Setting up real-time alerts if the temperature or humidity levels deviate from the optimal range. Data on any adjustments made (e.g., increasing air conditioning, using heat packs) would be recorded.

Secondary Data Collection

- **Historical Data on Transport**:
  - **Mortality and Stress Rates**: Kazi Farms can analyze previous transport data to assess trends in mortality rates and identify potential issues such as temperature fluctuations, vehicle breakdowns, or long journey times that could cause chick stress or health problems.
  - **Transport Time Optimization**: Using historical data on the average transport time and mortality rates to optimize travel routes and reduce overall transport time.
- **External Benchmarking Data**:
  - **Best Practices**: Gathering insights from other farms, transport companies, or industry reports regarding best practices for handling day-old chicks during transit, including packaging, temperature, and timing.

3. Post-Arrival Stage

Primary Data Collection

- **Health Checks at Destination**:
  - **Post-Arrival Mortality Data**: Recording the number of chicks that arrive dead or show signs of severe stress. This includes measuring the health status and recovery of chicks post-arrival (e.g., dehydration, weakness).
  - **Environmental Adjustments**: Data on the environmental conditions at the receiving farm or hatchery (e.g., temperature, humidity) to ensure the chicks transition smoothly from transport to their new environment.
- **Hydration and Feed Data**:

- **First Water Intake**: Data on how quickly the chicks begin drinking water after arrival. Dehydration is a common issue for chicks post-transport, so tracking their first intake helps assess their condition.
- **Feeding Records**: Recording the time of first feeding after arrival to ensure proper nutrition is provided immediately to help chicks recover.

Secondary Data Collection

- **Mortality and Stress Data from Previous Deliveries**:
  - **Post-Arrival Analysis**: Historical data on the mortality and stress rates of previous deliveries at Kazi Farms. This helps in analyzing whether certain transport routes, conditions, or times of year cause higher-than-average mortality rates.
  - **Chick Recovery Times**: Secondary data on the average time chicks take to recover from transport-related stress, which helps in adjusting future transport protocols (e.g., reducing journey time, improving vehicle conditions).
- **Industry Reports and Case Studies**:
  - **Post-Transport Best Practices**: Leveraging industry reports or case studies that analyze the recovery process for day-old chicks post-transport. This secondary data can suggest improved practices, such as better hydration solutions or acclimatization procedures post-arrival.

Using Primary & Secondary Data for Continuous Improvement

1. **Performance Tracking and Data Analysis**:
   - Kazi Farms can aggregate primary and secondary data (e.g., transport conditions, mortality rates, recovery times) to develop key performance indicators (KPIs) for their transport operations. Analyzing this data allows the company to refine processes and improve chick welfare.
2. **Predictive Analytics**:
   - Using historical data (secondary) and real-time transport data (primary), Kazi Farms can implement predictive models to foresee potential transport disruptions or health issues and make proactive adjustments, such as altering transport routes or changing packaging methods.
3. **Feedback Loop**:
   - Post-arrival health check data, mortality rates, and feedback from the receiving farm (primary data) can be compared with external benchmarks and industry reports (secondary data). This feedback loop helps Kazi Farms assess the effectiveness of their transport methodology and make necessary improvements.
4. **Optimizing Costs and Resources**:
   - **Cost Data**: By tracking transportation costs (e.g., fuel,

maintenance, insurance), Kazi Farms can assess the financial impact of different transport conditions and explore ways to reduce costs while maintaining high chick welfare standards.

5. **Regulatory Compliance**:

Compliance Tracking: Both primary and secondary data can be used to ensure that all transport activities at Kazi Farms comply with national and international animal welfare regulations and industry standards.

Chapter 4

Organizational Overview

4.1 Background of the Organization

Kazi Farms Group is one of the biggest businesses the poultry industry in Bangladesh. Kazi Zahedul Hasan, the Managing Director, was awarded Business Person Of The Year for 2004 in Bangladesh. Kazi Farms Group is the main financial donor of Central Womens University (www.cwu.edu.bd), the first private University established in Bangladesh for women only.Kazi Farms Group also contributes to the operation of Kazi Zahural Huq College in Mary Gopinathpur, Gopalganj.

Kazi Farms Limited was established in 1996 as a hatchery for imported eggs; the following year it started its own parent farms. In 2004 production started in our grand-parent (GP) farms. which was responsible for Bangladesh's first exports of hatching eggs and day-old chicks in 2004. In that year, our Managing Director, Kazi Zahedul Hasan, was named Businessperson of the Year by the Daily Star/DHL Business Awards.



4.2 Products Information

Broiler parent chicks and broiler chicks- Kazi Farms Group is the Bangladesh Grand- Parent franchisee of Avenge Indian River and Cobb-Van tress, acknowledged to be the best broiler breeds in the world. The broiler chicks of Kazi Farms Group are considered to be the best performing chicks in the domestic market, and are sold at a premium over other broiler breeds.

Layer chicks and table eggs- Kazi Farms Group is also the distributor for Hay-line brown and white layers in Bangladesh. Hay-line International is the oldest poultry breeding company of the world, and is the leading breeders of layers. Kazi Farms' own commercial layer farms make it the largest producer of commercial table eggs in Bangladesh.

Feed- Kazi Farms Group expanded its operation into poultry feed manufacture in 2006. Within a very short period it has become recognized as a market leader in both quality and volume. In order to ensure feed quality, Kazi Farms Group received technical assistance from Cargill USA and Butler Switzerland to set up its commercial feed mill operation. The Gajaria feed mill uses state-of-the-art sanitizing pellet mills from Butler of Switzerland, manufacturer of the world's best feed equipment. By eliminating any possible bacterial contamination from the feed, the Butler sanitizing pellet mills ensure that poultry farmers experience fewer disease outbreaks and see better results.

Kazi Jaibo Sar- KFG representing organic fertilizer in Bangladesh which is completely Eco-friendly & fully compatible with our environment. As organic fertilizers break down, they improve the structure of the soil and increase its ability to hold water and nutrients The company is using Japanese and Korean technology for Organic Fertilizer production in its own plants.

Food- Kazi Food Industries Limited is a recent venture of the Kazi Farms Group. Located in Beron, Ashulia, KFIL produces and sells premium dairy ice cream with minimum 10% milk fat (as per international standard) under the brand name Bellissimo. Another line of ice creams and ice lollies is produced and sold under the brand name ZaNZee. A range of frozen food products are sold under the brand name Kazi Farms Kitchen. These are all guaranteed to not contain any antibiotic residues, as chickens are not fed any antibiotics within 7 days of slaughter, as per international practice. The meat is also guaranteed to be produced from chickens raised on feed not containing MBM (meat and bone meal) as per European standards. The meat products are also guaranteed to be MSG and nitrate-free, as we do not use any of these chemicals during food preparation.

Kazi Media Limited- Deepto TV, which is a private cable & satellite television channel in Bangladesh. Its commercial transmission started from 18 November 2015 and as a sister concern of Kazi Farms Group.

4.3 Management Profile

Mr. Kazi Zahedul Hasan, is the founder and Managing Director of Kazi Farms. He is an architect/engineer, obtained his M. Arch. degree from Harvard University in the USA. He was a professor of the Department of the Architecture at Bangladesh University of Engineering and Technology (BUET), Dhaka and the School of Environmental Design, King Abdul Aziz University, Jeddah, Saudi Arabia. Mr. Hasan is a member of the American Institute of Architects as well as the member of the Royal Institute of British Architects.

Dr. Perween Hasan, wife of Mr. Kazi Zahedul Hasan, an obtained M.A. in English from Dhaka University, and another M.A. and a Ph.D. (History of Fine Arts) from Harvard University. USA. Presently, she is a professor at Dhaka University. She is a Director of all sister concern of Kazi Farms Group.

Mr. Kazi Zeeshan Hasan is a Director of Kazi Farms Limited and its sister companies and he is directly involved in management of sales and raw materials purchase. He received training in feed milling and raw materials evaluation from Cargill Indonesia. He completed his B.A. in Economics from Oberlin College, USA, and his M. Theological Studies from Harvard University, USA, and also his M.Sc. from the London School of Economics,

Mr. Kazi Zahin Hasan is also a Director of Kazi Farms Limited & its sister companies. He is responsible for the production operations of Kazi Farms Group. He completed his B.A. in Economics from Oberlin College, USA, and also his Master of Public Administration degree from Columbia University, USA. He acquired knowledge of training in poultry in the U.S.A. and Thailand.

4.4 Vision

Our overarching goal is to establish ourselves as a role model to be followed among transport and logistics service providers in Bangladesh, we will achieve this through

- Efficient fleet management,
- Creative and effective action plans and
- Through trusted and quality customer service

4.5 Mission

Our aim is to introduce a transport system that ensures :

- Product safety.
- On time delivery.
- Affordability.

4.6 Core Values

- Sell Development
- Transparent and Competitive Environmental
- Teams Works
- Integrity
- Innovation

Chapter 5

Analysis of Transportation Management of Day Old chicks delivery in Kazi Farms Group.

The transportation management of day-old chicks involves, typically focusing on maintaining a temperature range of 24-25°C (75-77°F), appropriate ventilation, and limiting travel time to minimize stress and mortality rates; this includes proper loading and unloading procedures, regular monitoring of conditions during transport, and ensuring the chicks are placed in suitable chick boxes with appropriate space per bird.

Key aspects of day-old chick transportation management:

5.1 Temperature control:

- Ideal temperature range: 24-25°C (75-77°F)
- Monitoring temperature continuously using temperature sensors within the transport container.
- Adjusting temperature based on ambient conditions.

Humidity control:

- Aim for a relative humidity around 65%
- Monitor humidity levels and adjust ventilation as needed

Ventilation:

- Adequate airflow to prevent overheating and maintain proper oxygen levels
- Consider container design with proper ventilation openings

Container selection:

- Use specialized chick boxes designed for proper ventilation and temperature regulation
- Ensure appropriate space per chick (around 21-25 cm^2)
- Check for proper stacking capabilities if needed

Handling practices:

- Gentle handling of chicks during loading and unloading
- Avoid overcrowding the containers
- Proper securing of boxes to prevent movement during transport
- **Transportation duration:**
- Minimize travel time as much as possible
- Consider the impact of long transport durations on chick welfare

Pre-transport preparation:

- Ensure chicks are properly vaccinated and sorted before transport
- Provide access to clean water and feed if necessary, depending on transport duration

Documentation and compliance:

- Adhere to local and international regulations regarding live animal transport
- Maintain proper documentation regarding chick origin, health status, and transport conditions
- Potential challenges in chick transport:
  Temperature fluctuations due to environmental changes, Inadequate ventilation causing stress and discomfort, Rough handling during loading and unloading, Overcrowding in the transport container, and Extended transport durations.

Important considerations:

- **Animal welfare:**
  Prioritize minimizing stress and discomfort for the chicks throughout the transportation process.
- **Monitoring and feedback:**
- Regularly monitor temperature, humidity, and chick behavior during transport to make adjustments as needed.
- **Training of personnel:**
  Ensure all individuals involved in chick transport are properly trained in handling and care procedures.

5.2 Supervisor's Information

Name: Uzzal Kumer Das

Designation: Assitant Manager (Transport)

Email:uzzal.kumer@kazifarms.com

Contact-No: 01787-682712

Kazi Farms Limited,

Beron, Sarker Market, Ashulia, Savar, Dhaka

5.3 Key Responsible area:

- Fleet Management by Data Analysis.
- Legal Practices of KFG Transport Employees
- Product Safety, Vehicle Safety and Cost Optimization.
- Transport Unit Management
- Smooth Day Old Chicks delivery.

- **Fleet Management by Data Analysis:**

Monthly Reporting to supervisor on following issues with data analysis, Findings & Comments /Suggestions:

1. Vehicle Trip Expenses,
2. Driver Expenses,
3. Fuel Expenses
4. Vehicle capacity utilization
5. Comparison of Organization(Vehicle) wise Utilization Report
6. Driver Duty Hour Calculation Reports
7. Driver and Helper 8 hours duty policy maintain
8. Monitor Vehicle Tracking System (VTS) Report

- **Legal Practice:**

1. Vehicle Documents updated properly
2. No Police case issued for Vehicle Document Failure
3. Driver Duty Scheduling strongly followed 8 hours policy
4. Driver and helper leave maintain as Per KFG practices

- **Product safety, Vehicle Safety and Cost Optimization:**

1. Ensure the proper delivery of product by maintaining timeline without damages of product by taking necessary steep of Product safety, Timely Delivery & Communication with the stake-holders (Producer, Customer- Primary, Customer-Secondary etc.)
2. Ensure vehicle runs without any crash/ damages of vehicle
3. Increase the efficiency of the existing process either new ideas generated for save the cost of KFG or Increase the profitability or any development works like SOP, Guidelines, Flow-chart etc.

- **Transport Unit Management**

1. Training for Drivers/ Stake-holders on skill development and awareness Build up by Training Status:This is an assessment conducted by any external parties to evaluate how effectively training plan is implemented (conduction of training as per calendar, Trainer performance, Presentation style, evaluation of Trainees, record maintaining of individual performance in ERP, hard copy preservation, etc.)

2. Implementation of Total Vehicle Servicing (TVS) Module (Ensure the presence of tools, Knowledge of Drivers to Perform, Practically maintaining & record keeping in Register Book/ File)

3. Physically conduct the assessment of vehicle operation status, Driver rest facilities and compliance management

5.4 Internship Experience Reflections on Learning & Growth:

Transportation as a part of logistics and supply chain management and a key element of business activities of a industry. Effective transportation able to keep the supply chain moving and keeping inventory lean and it also able to impact warehouse efficiency, lead time reduce and cost minimize.

5.5 Personal and Professional Growth:

In my study I have learn so many thing about transportation on supply chain management both personal and professionally developed my theoritical and technical knowledge such as-

Self Improvement:

Here at Kazi Farms Transport key target to create and maintain a transportation system which ensures product safety, time bound and cost effectiveness. Our customers will view the Transportation Department as a reliable service provider in terms of quality, safety and excellent cooperation. At kazi farms 481 unit vehicles moving different location in Bangladesh I am the active member of a large fleet. It's help to learn to fleet management, manpower utilization, manpower development, cost optimization to achieve the company goal.

Professional Experience:

Fleet Management: We execute our fleet very efficiently basically we transport very sencitive product like- Hatching eggs, Table eggs, Day old chicks(DOC) all the produtcs are very careful transportation with proper maintain biosecurity. Here this transportation seamless running by taking some major steeps by efficient manpower recruitment, proper training and better work environment. We experience how a large company like poultry industry as a Kazi Farms growing continuously by maintaining proper supply chain process.

Development of self confidence:

Kazi Farms is a market leader of poultry sector here we learn how maintain a large fleet of transportation which maintained whole supply chain processes. Kazi Farms most of the products are very much sensitive this product we transport to whole country within our time limit, safety of product with a cost efficient way that developed my confident level to work with challenge.

Leadership development:

Total 67 employee work under my supervision and here separately distributed their individual task. Every one job responsibly, accountability & performance evaluated within a structure. Guided my team to achieve a certain goal through correct direction and motivation. Here learn how encourage others to take the actions need to succeed. To learn the ability of an individual or a group of stuff to influence and guide to the members of an organization.

Improved Time Management:

Time management include the ability to set goals, organize, focus, prioritize and delegate. At Kazi Farms transport very much active on time management every work procedure done by proper time schedule it is help to achieve organization goal. Here my work station I have gather knowledge how time should be manage according to achieve organization objective.

Developed Communication Skill:

In my study I learn how to communicate with the different stakeholder firstly listen or understand well what message to be communicate that is lead to good communicator. It lesson to me be present and available with the message. How a take notes help to success to a communication and create a positive organization culture.

Improve job performances:

I have learn how to create an effective plan ahead prioritize work on my own time management. It help to learn try to best new ways of better working use of necessary tools to simplify and automate. The study help to set the right expectation, trim out to-do list and create milestones and goals.

Increased duties and responsibilities:

In my study I have learn the first step to talking on more at work progress. Take proper initiative to what would be done within time frame. Learn new skill and get the timing right for better performance and ready to take on greater responsibilities. This study help to owning action, gain confidence and accountability.

Skill development:

I have learn how a training is more effective for an individual skill development. In my job place enough opportunity to attend lots of training almost every month one or two training conducted for skill development to the employee for contribute to company. Corporate culture practice on organization also develop employee skills. Proper feedback in necessary for the work place it creates more positive and productive relationship between organization employees and it how to reach goals and drive business value.

5.6 Significant accomplishment:

Manpower Save by setup In house Filling station:

Kazi Farms Transport Ashulia unit here we started a in house Filling station for own transport fleet in previous we use out site filling station the most important thing is this filling station is self service operated no operator assign to operate the pump. This diesel pump services 24/7 hours and our vehicle driver takes their own service. We save 3/4 operator service and also save residence please for operator.

Cost Save by In house Filling station:

Due to in house filling station we are financially saving in two ways one is the manpower salary save per liter diesel cost save. Last three month cost save details on following table:

Month wise per liter diesel consumption purpose financial benefit:

Sl No	Month Name	Fuel consumption	Purchase Rate per Liter (Tk)	Market price per litter (Tk)	Per Liter save (Tk)	Total Save (Tk)	Expense (Tk)	Total Benefit (Tk)
1	June - 2023	228495.65	105.43	109.00	3.57	815,729.00	153317.00	661412.00
2	July - 2023	188629.09				673405.00	147176.00	526230.00
3	August -2023	232080.32				821564.00	193574.00	634953.00
Last Three Month Total Financial Benefit (Tk)								18,23,595.00

Table 1

[

Kazi farms setup a inhouse filling station for its own vehicle fleet fuel consumption previously purchase from out side filling station after feasibility analysis setup inhouse filling station and company benefited monthly about seven lac taka per month.

5.7 Ethics in a workplace to improve upon

The study learn about the different ways of ethics within a workplace that improve upon professionalism such as-

- Clear goal and Objective: Clear goal and objective ensure excellent customer service with a taking necessary steeps in achieving the main goal.
- Discipline : Discipline not only complete the task within a time frame but also execute all the task very well. It is extremely important to ensure all the assignment and projects are delivered and execute with a timely manner.
- Proper Mentoring: In a organization a mentor influence, guidance, or direction to his subordinates and also influences the personal and professional growth of a mentee.

- Create the right Work Environmental: Workplaces there is trust, cooperation, encourage, risk-taking support, equity and positive work environment.
- Professionalism: Showing respect, helping and supporting for all team members remaining flexible, open to change and communicating to resolve problems.

5.8 Good Leader or A Team Player:

The study learned about a good team leader or a team player possesses a combination of qualities, such as

- Cooperation and Communication skills: These skills are help me able to exchange ideas, information, feedback and work together for a common goal.
- Strong ethics: The study help me to maintain the ethical issues such as being punctual, showing accountability, taking initiative and maintaining a positive attitude.
- Technical expertise: I have learn the ability for the role and the depth of knowledge in my chosen field.
- Responsible: As a team leader responsibities are the functions that help to perform to succeed in my position.
- Build trust within the team: Building trust among the team is a key component that success at work. High trust in the organization get satisfaction and have a less tress.

5.9 Worksite new skill development New skills development at my worksite such as-

- Time Management: Time management is the key learning point of me it help me to proper planning, prioritizing, goal setting, evaluating urgent task and improving workflows.
- Problem solving: This skills help me to determine the source problem and how is the best solution on it and grow ability to plan, prioritize and execute strategies.
- Planning and Organising: This skills give me the ability to work done in a more structure way and also help me to more control over the task with the time line that consistent in set the goal.

- Self-Management: The study learn about how to developed self-management skills that include a personal goal setting and focused me to long term objective.
- Confidence: Confidence help me to speak concisely and with clarity and effective commuunicate get confidence that important for career advancement.
- Interpersonal skills: In my worksite give me opportunity to develop my interpersonal skills that enhance my self-confidence to problem solving.

5.10 Internship Experience and expect from supervisor:

According to my study I expect my supervisor to cooperative and provide clear direction on what expected of me. A good supervisor evaluate me and provide clear meaningful feedback regularly and direct with his subordinate about company challenges and its objectives. I also expect my supervisor to be open and honest with me and help to know if anything I could improve upon and help to do my work differently.

5.11 Internship Experience shaped career interest and goals:

In my study I have grown my professional and technical development by increasing my strategizing, troubleshooting and networking skills. I like to taking challenges and pushing the limits to innovative methods of solving problems. The creation and implementation of the plan that will be able to replicate to some level at any other career.

5.12 Action and Activities:



Fig 1: Vehicle at customer point for product delivery

Here at Kazi Farm we operate our transport department with a vision that reflects our customers will view the Transportation Department as a reliable service provider in terms of

quality, safety and excellent cooperation. Kazi Farms vehicle branding also create a brand image. In poultry sector Kazi Farms controls 34% of Bangladesh's broiler grandparents market as the market leader according to report of Business Inspection BD Feb 1, 2022.

Market Share Percentage of per Broiler Grand Parents Company

Company	Market share(%)
Kazi	34
C.P.	17
Nourish	10
Paragon	10

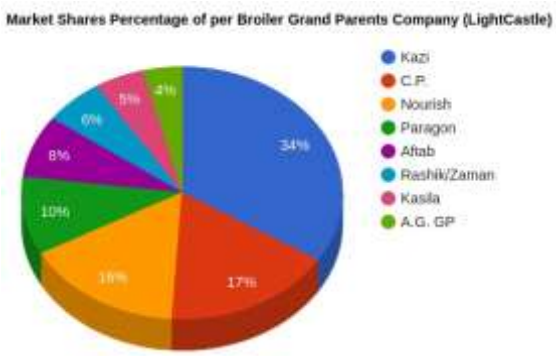


Table 2

Information source: Business Inspection Feb 1, 2022

Major Objectives of Kazi Farms Transport Division:

- Customer satisfaction
- Product Safety
- Timely Delivery
- Vehicle/Road/Human safety
- Employee Skill development
- Cost Optimization
- ERP integration in every phases of operational work

Discuss about our action and activities as follows:

i) **8 hours duty policy implementation:**

In a transport management driver & helper per day 8 hours duty maintain its very difficult and now present government of Bangladesh realizing it to reduce road accident and government take some steep on it. Kazi farms 8 hours duty policy continuation of this transport operation by implementing transit system. Basically Kazi Farms company their production farms are mostly in north bengal region and hatcheries , sales centre and dealer points are located different parts of the Bangladesh for product safety and road crash

minimize setup three transit are Thakurgoan, Sirajgonj and Ashulia and every and different Kazi Farms unit arrange enough rest facilities for driver & helper rest. This policy continuously help to achieve our company goal by product safety and road crash minimizing.

Product safety developing report

Sl No	Year	Total Egg Transportation (pcs)	Total Breakage	Breakage Percentage
1	2020	243123255	1002635	0.41%
2	2021	227113026	740447	0.33%
3	2022	239929837	655035	0.27%

Table 3 Source: KFG internal report

Employee Skill development:

Road safety and product safety where create a effective training schedule which ensure every driver & helper gets a training per month and we also for better training send them to Nitol Motors and BRAC training centre. After training their performance are evaluated through exam test.



Fig 2: Skill development Training for drivers & helpers

iii) Improving road safety in the private sector

Here at Kazi Farms Group which is the largest poultry industry in the country. Our core business is producing eggs in poultry farms in North Bengal and transporting them to locations all over Bangladesh by truck. These involve many trucks traveling the length of Bangladesh every day. We have taken a number of initiatives for transport safety which I would like to share.

The first things of safety is having properly trained drivers. We ensure all our drivers have to have a valid driving license. Unfortunately, it's not enough to get a copy of each driver's license; due to the proliferation of false licenses, we verify all drivers' licenses with BRTA. Also, the date of expiry of all driver's licenses is stored in the HR module of our Kazi Farms company Enterprise Resource Planning (ERP) software. So each month, the drivers whose licenses are expiring can be identified and sent to renew them.

The second element of safety is controlling driving time. Bangladesh law prohibits drivers from driving more than 8 hours a day. This is a common-sense law, as after 8 hours of driving anyone will become too tired to safely control a vehicle. Since our organization requires very long trips transporting eggs from Panchagarh in the north to Chittagong and Barisal in the south, we have established transport offices in mid-way points that drivers can be changed before they become too tired.

The third element of safety is monitoring vehicles while driving. This is accomplished by fitting each vehicle with Global Positioning System (GPS) tracking systems. This enables a vehicle control centre in Dhaka, which is staffed 24 hours in 3 shifts, to check the current location and speed of each truck continuously. The GPS sensors in the truck can trigger an alarm whenever the driver goes too fast. However, the driver can possibly ignore the alarm if they are in a hurry.

All the above increase safety, but they do cost money. Licensed drivers demand higher salaries than unlicensed drivers. Paying 2 drivers to divide a long trip into short segments is more expensive than paying a single driver for the same trip. GPS systems and trip monitoring staff also cost money. However, for a business like Kazi Farms which is transporting even a small improvement in driving brings less broken eggs and saves money. Controlling and monitoring transport with GPS also helps prevent corruption and theft of fuel. We have measured each of our vehicle trips and establishing a standard "kilometres per litre" for each trip; our company ERP software records the actual fuel consumed by each trip and each driver. The standard function of ERP software is to provide reports of standard costs versus actual costs for different operations such as manufacturing and transport.

More relevant to the rest of the country is the fact that these practices also save lives. My hope is that other Bangladeshi companies will also adopt practices similar to the above to improve road safety and reduce accidents. The fact is that as Bangladesh grows and the private sector is also going to become an increasing fraction of all economic activity.



Fig 3: NITA class room



Fig 4: NITA Driving Track

iii) **Efficient service system:**

Kazi farms establish a effective service system for uninterrupted customer service. Service team 24 hours ready for their service that help to ensure product reach to customers end within the time frame.



Major Role of Service Center:

1) Ensure periodic maintenance
2) Trouble shooting of any technical failures
3) On-site support if a vehicle is stopped at road
4) Arrange spare parts (advance and on demand)
5) Ensure proper working tools
6) Work safety and workshop cleanliness
7) Skill development of mechanics
8) Awareness build up on vehicle maintenance to Driver

This strategy is now paying dividend to KFG as an excellent supply chain network has already formed at Bangladeshi market.



Fig 5: Training workshop for service team

5.13 Key Learning on Internship:

Key learning of the study is to developed my knowledge about effective Transport Fleet Management. Kazi Farms has a large transportation system total 481 vehicles which ensure product safety, time bound and cost effective operation process with customer satisfaction. This tranportatiom of supply chain is the life line and progress of Kazi Farms industries. Customer satisfaction and operational excellence is achieved through an environment that

- fosters an atmosphere of cooperation, dedication, honesty, creativity and trust;
- ensures our employees have opportunities for professional development by embracing new concepts and technologies;
- Strives to assure integrity and accountability in every actions and stages.

5.14 Internship learning and value add:

This study has provided me with a wonderful opportunity to acquire practical knowledge, cooperation & communication skills and also technical skills. I am confident to improve myself in future. I have explored a few reasons that is important for professional growth in future.

Real life exposure: An internship enable me to gain first-hand exposure to real-world work. That knowledge of experience of trying something new is extremely beneficial.

Building a professional network: Networking is one of crucial of succeeding. Technology is one of the easiest sources of research, there are different apps that connect me professionally, such as Linkedin, Facebook Group, Clubhouse. Most people use Linkedin to

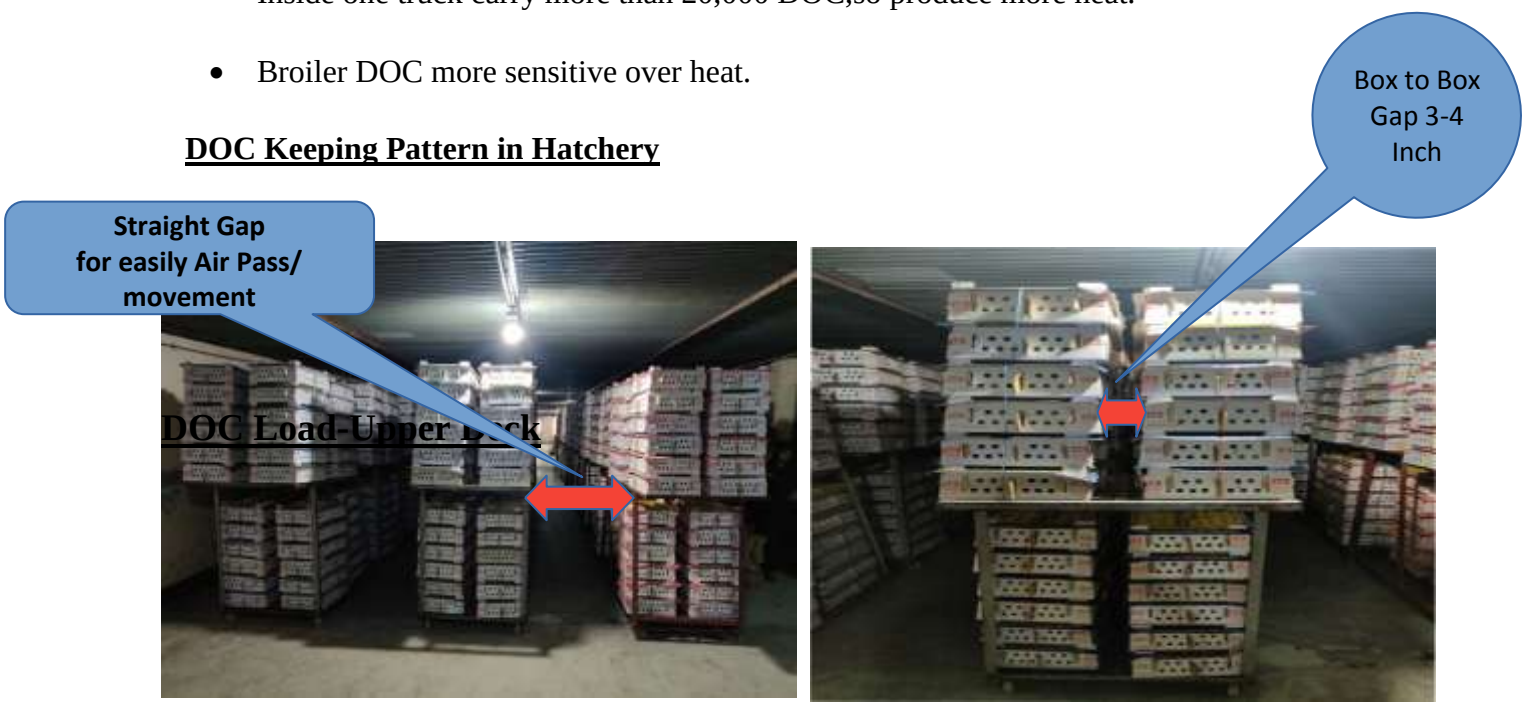
connect professionally.

Improve time management and communication skills: Time is the magic ingredient of success. It help to prioritize work and it also helps to my goal faster. Proper time management boosts my confidence and help to improve career opportunities. It help me to define and prioritize my tasks and break my task into smaller tasks.

Day Old Chicks Need

- Our target to release heat and provide sufficient oxygen.
- For this purpose we have keep free space around the chick box at least 4-6 inch.
- Line should be straight from first to last to pass air easily.
- During loading Running all Fan and during road jam,parking,delivery also run fans.
- Before load truck must be clean and active all fan.
- Room temperature-26-28 0 C.
- Bird receive Oxygen(O2).
- Bird release Carbon dioxide(CO2).
- Chicks body temperature-40 0 C. Inside One box-40 DOC.
- Inside one truck carry more than 20,000 DOC,so produce more heat.
- Broiler DOC more sensitive over heat.

DOC Keeping Pattern in Hatchery



DOC Load-Upper Deck







Sliding Door

Emergence Door for load Unloading







Summer-Open Ventilator

Winter & Rainy-Close

Delivery Limitation

- Vehicle prechecking before DOC loading & Alterneting.
- Vehicle ventilation system check.
- All fan are running in good condition.
- Overall vehicle general check to avoid on road vehicle uneven break down.
- All ventilation system & back door to be open & all fan are running condition time of DOC loading & alternating period.

2. Giving instruct driver to DOC delivery with healthy condition:

- Counseling drivers & helpers in schedule basis.
- In traffic jam, fan must be in running and rearrange the chicks carton for better air circulation.
- In hot & humid condition, driver must open the side door of vehicle in running situation.
- Vehicle speed limit **(60km/hours)** maintain as per road condition and our company chicks carrying policy.
- Collect receiving Challan from party after chicks delivery.
- Any unexpected issue like-traffic jam, vehicle problem,road problem then inform immediately transport & Call center person.

3. Initiatives for encourage driver to reduce DOC mortality:

- When needed vehicle running with speed for remain fresh of DOC we considerate extra fuel.
- IF we find out real cause of DOC mortality is because of Driver's / Helper's fault, we will take Disciplinary Action against them.
- In case of traffic jam or waiting for party receive driver should ensure all fans are running and also inform to vehicle monitoring unit and this situation vehicle engine running with idle speed and as per management decision for every one hour engine running allocate 1 liter diesel for (Eicher PRO 11.12)

4. Special attention:(Operation in-charge & Call center)

In the time of traffic jam & waiting for ferry on ferry ghat crossing driver & helper name & mobile number with vehicle number share to call center due to ensure & monitoring vehicle air circulation system.(Like- all fan starting position and ventilation system are also open) **Call Center Mobile Number-01713-239229.**

5. Support need for sales department:

- Avoid to unexpected long distance vehicle's movement for DOC mortality reduce purpose.
- In current conditions by completing the DOC delivery at overnight as much as possible to unexpected chicks mortality can be prevented.

Note: After completing proper counseling and knowledge sharing concern with drivers and helpers and ensure maintain on every trip.

6. DOC delivery comparison of 2023-2024

Duration	Month	Vehicle Quantity	Total Hatchery	Total Distance	Total DOC Carrying PCS	Total DOC carrying cost	Per DOC carrying cost	Per KM cost	Remarks
January to December-2023	12	57	16	4988580	188768686	98898954	0.52	19.83	
January to December-2024	12	68	16	5615969	232763392	112874840	0.48	20.10	

Chapter Six

Analysis and Findings

6.1 Frequency Analysis:

Frequency Analysis is a statistical tool used to summarize and analyze the distribution of data points in a dataset. It refers to the process of counting the number of occurrences (frequencies) of each unique value or category within a variable, and it is particularly useful in understanding patterns, trends, and distributions of the data.

In the context of a **thesis report** like the one on **"Transportation Management of Day-Old Chicks (DOC) in Kazi Farms Group"**, **frequency analysis** could be applied to survey data or any other form of collected information related to transportation operations.

Importance of Frequency Analysis

- **Identifies Patterns**: It allows the researcher to easily spot trends and patterns in the data.
- **Helps in Data Summarization**: It helps in summarizing large datasets, making it easier to interpret.
- **Supports Decision Making**: It assists in identifying key areas that may need improvement (e.g., delays in delivery, transport vehicle issues, etc.).
- **Improves Visual Representation**: Helps in creating tables, histograms, and bar charts that make it easier to present findings to readers.

Types of Frequency Analysis

1. Univariate Frequency Analysis

This type of frequency analysis involves a single variable. For instance:

- **Frequency Distribution**: How many times each value occurs in the dataset.
- **Relative Frequency**: The percentage representation of each category in relation to the total number of observations.
- **Cumulative Frequency**: The running total of frequencies as the data points accumulate.

2. Bivariate Frequency Analysis

This involves the analysis of the relationship between two variables. For example:

- **Cross-tabulation**: This method shows the frequency of different combinations of two variables (e.g., transport issues versus delivery times).
- **Contingency Tables**: Used for categorizing data and showing the relationships between two variables.

3. Categorical Frequency Analysis

This involves analyzing categorical variables (e.g., transportation modes, delivery delays, transport routes).

- **Nominal data** (like types of vehicles or regions) can be counted.
- **Ordinal data** (like rating scales on customer satisfaction) can be measured in terms of how often each rating appears.

Category	Frequency	Relative Frequen	Cumulative
0-1 hour	50	25%	25%
1-2 hours	100	50%	75%
2-3 hours	30	15%	90%
>3 hours	20	10%	100%
Total	200	100%	

Step 4: Visualization

- **Bar Charts** or **Pie Charts**: Use these for visualizing the frequency distribution of categorical variables.
- **Histograms**: If dealing with continuous data (e.g., transport times, distances), histograms can be useful to show the frequency distribution of numerical variables.

Step 5: Analyze the Data

- Look for patterns and insights. For instance, if 50% of deliveries have a **1-2 hour delay**, this may indicate inefficiencies in the transport route or logistics planning.

Step 6: Interpretation and Conclusion

- Use the insights from the frequency analysis to draw conclusions and provide recommendations in your research report. For example, you might conclude that there is a consistent delay in transport, which could be due to specific regions or

types of transport vehicles.

Example of Frequency Analysis for DOC Transportation Operation

Let's assume you conducted a survey with transport coordinators and drivers, asking about the most common causes of delays in the transportation of DOCs. The questions might include issues like **vehicle breakdowns**, **route inefficiencies**, **weather conditions**, and **staffing problems**.

Sample Frequency Table for Causes of Delays

Cause of Delay	Frequency	Relative Frequen	Cumulative Frequency
Vehicle breakdowns	80	32%	32%
Route inefficiencies	120	48%	80%
Weather conditions	40	16%	96%
Staffing issues	10	4%	100%
Total	250	100%	

- **Interpretation**: The most frequent cause of delays in DOC transportation is **route inefficiencies** (48%), followed by **vehicle breakdowns** (32%). This suggests that improving route planning or upgrading vehicles could reduce delays.

Sample Frequency Table for Transport Vehicle Conditions

Vehicle	Frequency	Relative Frequenc	Cumulative
Excellent	30	15%	15%
Good	120	60%	75%
Fair	40	20%	95%
Poor	10	5%	100%
Total	200	100%	

- **Interpretation**: Most vehicles are in **good condition** (60%), but 5% of vehicles are in **poor condition**, which may indicate a need for better maintenance or fleet replacement.

6.2 Regression Analysis:

Regression analysis is a statistical technique used to examine the relationship between one or more independent variables (predictors) and a dependent variable (outcome). It helps to understand the strength, direction, and nature of the relationship between variables, and is widely used for predictive modeling, forecasting, and trend analysis.

In the context of your research on the **transportation management of Day-Old Chicks (DOC)** in **Kazi Farms Group**, regression analysis can be used to investigate factors that impact the transportation process, such as the relationship between transportation delays and factors like distance, vehicle type, or weather conditions.

Types of Regression Analysis

1. **Simple Linear Regression**:
    - Examines the relationship between **two variables**: one independent variable (X) and one dependent variable (Y).
    - The relationship is modeled using a **straight line**.

2. **Multiple Linear Regression**:
    - Examines the relationship between **one dependent variable** and **multiple independent variables**.
3. **Logistic Regression**:
    - Used when the dependent variable is **binary** (e.g., success/failure, yes/no).
    - Commonly used for classification problems rather than continuous prediction.
4. **Polynomial Regression**:
    - A form of regression where the relationship between the independent and dependent variables is modeled as an nth degree polynomial. This is useful when the data shows a **curved relationship**.

Example: Multiple Regression Analysis for DOC Transportation

Let's say you're interested in predicting **the delivery time of DOCs** based on **distance, vehicle type, and weather conditions**.

Data Sample:

- **Dependent Variable** : Delivery Time (in hours)
- **Independent Variables** :
    - Distance (in kilometers)
    - Vehicle Type (1 for refrigerated truck, 0 for standard truck)
    - Weather (1 for rainy, 0 for clear)

Delivery	Distance (km)	Vehicle Type	Weather
2.5	50	1	0
3.0	80	0	1
1.8	60	1	0
2.3	70	0	0

Delivery	Distance (km)	Vehicle Type	Weather
3.5	100	1	1

6.3 Correlation Analysis:

Correlation analysis is a statistical method used to evaluate the strength and direction of the linear relationship between two or more variables. The primary objective is to understand whether, and to what degree, changes in one variable are associated with changes in another.

In the context of your study on **Transportation Management of Day-Old Chicks (DOC)** at **Kazi Farms Group**, correlation analysis can be used to examine the relationships between various factors (such as **distance, delivery time, vehicle type, weather conditions**, etc.) to determine how they are associated with each other.

Types of Correlation

5. **Positive Correlation**: When two variables move in the same direction. As one variable increases, the other also increases (or vice versa).
    - Example: **Distance** and **Delivery Time**—as the distance increases,

the delivery time also increases.

6. **Negative Correlation**: When two variables move in opposite directions. As one variable increases, the other decreases.
    - Example: **Vehicle Maintenance** and **Breakdowns**—as vehicle maintenance increases, breakdowns decrease.
7. **No Correlation**: When there is no predictable pattern between the two variables.
    - Example: **Time of Day** and **Delivery Time**—there may be no correlation between the time of day and how long it takes to deliver the DOCs.

The findings section of your study is where you present the results of your data analysis. This section provides a detailed examination of the outcomes based on the various methodologies applied, including **regression analysis**, **correlation analysis**, **frequency analysis**, etc. The findings should be presented logically and clearly to make it easy for readers to understand the implications of your research.

Below are the potential findings based on hypothetical results from a study on the transportation management of **Day-Old Chicks (DOC)** at **Kazi Farms Group**.

1. Findings from Descriptive Statistics

- **Delivery Time Distribution**: The average delivery time for DOCs is found to be **3.2 hours**, with a **standard deviation of 1.2 hours**. This indicates a moderate variation in delivery time across different transport routes.
- **Distance**: The average distance for DOC transportation was recorded as **75 km**, with the longest distance being **120 km** and the shortest being **50 km**.
- **Vehicle Type**: **60%** of the deliveries are made using **refrigerated trucks**, while the remaining **40%** are made using **standard trucks**.
- **Weather Conditions**: **35%** of the deliveries were made during **rainy weather** conditions, and the rest during **clear weather**.
- **Route Characteristics**: On average, each transportation route involved **2 stops**.

Chapter Seven

Conclusions & Recommendations

7.1 Conclusions:

The study on **Transportation Management of Day-Old Chicks (DOC)** at **Kazi Farms Group** aimed to evaluate and analyze the various factors influencing the efficiency and effectiveness of transporting DOCs from hatcheries to distributors. Based on the findings from the statistical analyses, we can draw several key conclusions:

1. Strong Relationship Between Distance and Delivery Time
2. Vehicle Type Has a Limited Impact on Delivery Time
3. Weather Conditions Contribute to Delivery Delays
4. Potential for Operational Improvements in Transportation Management
5. Recommendations for Future Research
6. Overall Impact on Kazi Farms Group's Operations

7.2 Recommendations:

Based on the findings of the study, several key recommendations can be made to enhance the efficiency, reliability, and effectiveness of the transportation management system for **Day- Old Chicks (DOCs)** at **Kazi Farms Group**. These recommendations focus on optimizing the transportation process, reducing delays, and ensuring the quality and safety of the chicks during transit.

1. Optimize Route Planning and Distance Management
2. Weather-Responsive Scheduling and Planning
3. Improve Vehicle Utilization and Maintenance
4. Enhance Training and Awareness Programs for Drivers
5. Implement Real-Time Tracking and Monitoring Systems
6. Enhance Coordination with Distributors and Hatcheries
7. Explore Alternative Transportation Methods

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