Enhancing Profitability through Effective Supply Chain Management in Duck Farming Business in Bangladesh

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ARTICLE INFO

Keywords:
Effective supply chain management, Duck farm, Bangladesh livestock industry. Supply Chain Management, Department of Livestock Services, Bangladesh

RECEIVED
29 July 2024

ACCEPTED
28 July 2025

PUBLISHED
31 August 2025

DOI
https://doi.org/10.5281/zenodo.17243400

ABSTRACT

Bangladesh's livestock sector has become the most essential part of economic development. The poultry industry is one of the major revenue-generating sectors in Bangladesh. During the 1990's the primary source of chicken meat and eggs was collected from backyard processing in Bangladesh. However, with the advent of commercial broiler and layer farming in the nation, these commercial farms have become the primary source of chicken meat and eggs since the mid-1990s. There was strong evidence of a significant animal protein shortage in Bangladesh, and the country's present production of animal proteins is sufficient these days to meet demand, as per the information by the Department of Livestock Services, Bangladesh. Among all company categories in Asia, livestock-related businesses are expanding at the quickest rate. The pace at which milk, meat, and eggs are consumed is rising daily. Since all these products are perishable, the makers primarily adhere to a high standard of food security up until the point at which the consumers consume the product. Businesses that focus on livestock mostly sell raw meat, eggs, milk, and items manufactured from milk. One of the most popular poultry species with a big economic impact is the duck. In Bangladesh, duck farming to produce meat and eggs has a bright future. In rural places, duck farming is still primarily done using traditional farming methods without the use of modern technology. In this study, the researcher worked on how rural area farms can benefit from rearing ducks and how effectively the supply chain process will help them enhance their profitability in the market.

Introduction

Globally, businesses are changing day by day with the fastest technology and support of artificial intelligence. To purchase, produce, transfer, or sell the correct products in the proper numbers and locations, supply chains cannot be instantly repositioned. Instead, the market is now characterized by fierce rivalry, cost measurement, micro-marketing, and changeable consumption patterns (Wu, Haoyan, Zhijie Li, Brian King, Zina Ben Miled, John Wassick, and Jeffrey Tazelaar, 2017). Consequently, a supply chain must be envisioned where materials, processes, and organizations can be easily modified in response to changing conditions. Thus, to effectively handle the growing problems, supply networks must become more intelligent. (Wu, Ing-Long, Chuang, Cheng-Hung, Hsu, Chien-Hua, 2014). The terms "the smart supply chain," "the digital supply chain," and "the intelligent supply chain" are only a few of the terms used in literature to characterize supply chain management. In those papers, the terms "the digital supply chain" and "the smart supply chain management" are used simultaneously. A new digital era brought forth by the fourth industrial revolution has given rise to a supply chain (Ardito, L., Petruzzelli, A. M., Panniello, U., & Garavelli, A. C., 2019).

Livestock is one of the fastest-growing industries in Bangladesh, contributing about 16.52% of GDP from the livestock and agricultural sector. As per the livestock economy by the Department of Livestock Services mentioned that in 2022-2023, around 87.10 Lac metric tons of meat and 2337.63 crore eggs were produced. The contribution by the livestock sector to Bangladesh's GDP in 2021-22 has increased at an average rate of 5.39% over the previous five years, which shows a significant production of livestock meat and eggs in the country. In Bangladesh, duck farming is not segregated from chicken or any other bird rearing. This framing is jointly counted as poultry rearing. The help of the Bangladesh government and non-government organizations, which are known as NGOs, supports these farmers to rear the ducks and provide medical care with artificial insemination to increase production. By using this technology, more farmers are investing in duck rearing farms. Duck farming plays a vital role in North Bengal areas where most of the rivers and channels are located.

Churchil, R.R., and Jalaludeen A. (2022) mentioned in their studies that Local human population growth happened mostly around rivers in the early civilizations. The domestication of these poultry species began in China in the first century BC as a result of frequent human interactions with waterfowl, particularly ducks. Duck production is a significant part of agriculture in Asian nations. Ducks have a number of benefits, including flock behavior, exceptional wetland grazing capacity, and disease tolerance. In paddy farming, ducks serve as both natural fertilizer producers and bug hunters. Ducks help to increase rice yield and profitability overall by

lowering weed populations and enhancing the physical characteristics of the soil. The primary barriers, on the other hand, are the following: the reduction of water bodies, contamination of pastures, challenges in gathering inputs such as feed, medicine, and birds, difficulties in marketing, and the emergence of diseases such as avian influenza epizootics. To guarantee the availability of essential inputs such as the preservation of duck genetic resources, birds, feed, biology, medicine, veterinary services, finance and training, establishment of farmer-producer groups, and marketing support, local governments must develop comprehensive action plans and policies. Standardized grading and criteria are necessary to safeguard the interests of the community that farms ducks (Churchil, R.R., Jalaludeen, A., 2022).

Literature Review

A vertical integration mode of supply chain exists in livestock production. Where completely owned by the company. From the purchasing of the raw material to final production the cost of those production processes is internalized by the company. Another Supply chain mode is advanced supply chain management where the company maintains the flow of the supply chain like a Company with a Farmer. These two kinds of supply chain modes exist in livestock supply chain management (YuXun and Li Cuixia, 2012). Demand and supply are one of the major issues in the economy where the demand for a product and the supply of the product should be equal. But in the livestock sector, the demand for the product is high, and the price of that product is also high, but the demand couldn't be fulfilled because of the supply. In that case, the purchasing power is dependent on only high-income groups in developing countries. (Steven J. Staal, 2015).

Literature review on duck farming is not available. Few of the research studies have been conducted on that. Jowel Debnath, Debajyoti Sarkar, and Tapan Kumar Das (2020) mentioned in their studies that Desi ducks are better acclimated and resistant to disease than foreign duck breeds. For the duck rearing system to yield the best possible return on investment in terms of eggs and meat, housing, nutritional management, the ability for hatching percentage, general health management, and care and management of ducklings are all significant. This review study included information on duck-rearing procedures, the socioeconomic status of duck rears, production performance, disease incidence, and health management of Indigenous ducks in India, all while considering the current duck-rearing situation (Jowel Debnath, Debajyoti Sarkar, and Tapan Kumar Das, 2020). In 2022, Sarker. S, and Singh. P has mentioned in research that a sustainable supply chain needs a strong chain of command where suppliers to distributors can easily track the products and they can share the feedback with the companies that manufacture livestock products (Sarker, S. & Singh, P., 2022). The market's supply chain for duck meat consists of

two different kinds of distribution networks. The duck farmer and supplier, the restaurant that sold duck meat, and the consumer market were the origins of Channel One. Conversely, channel two began with the duck farmer, then moved on to the distributor, supplier, and restaurant owners selling duck meat to customers. In the duck meat supply chain, duck farmers in channel one achieved the highest added value ratio, while those in channel two obtained the highest profit ratio. Distribution channel one is favored in the duck meat supply chain due to its shorter chain and subsequently reduced pricing.(Nanang Febrianto, Budi Hartono and Alditya Putri Yulinarsari, 2021).

Research Gaps

1. There is limited empirical evidence on the direct relationship between Supply Chain Efficiency (SCE) and profitability in the context of duck farming in Bangladesh. Further research is needed to assess the impact of supply chain practices on financial performance.
2. The specific effects of Technological Adoption (TECH) on profitability in the duck farming sector have not been extensively studied. More research is required to identify the most effective technologies and their contributions to profitability.
3. While input availability is known to be crucial for farming operations, its precise impact on the profitability of duck farming in Bangladesh is underexplored. Research should focus on how input availability affects productivity and financial outcomes.
4. There is a lack of comprehensive studies examining the role of Market Access (MA) in influencing the profitability of duck farming businesses. Investigating how market dynamics and distribution networks affect profitability could provide valuable insights.

Objectives of the Study

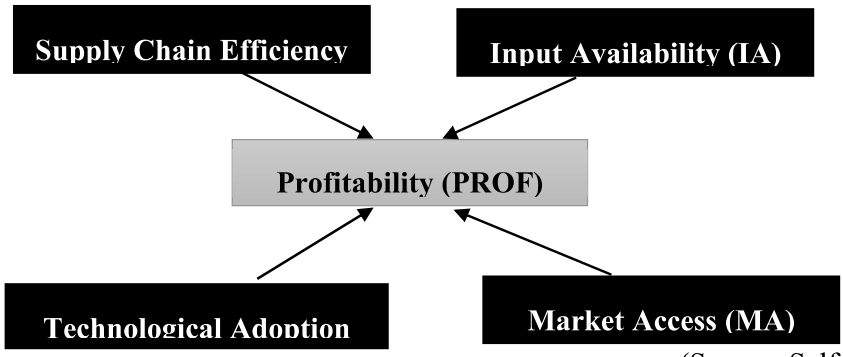
Objective 1: To examine the impact of Supply Chain Efficiency (SCE) on the profitability of duck farming businesses in Bangladesh. This objective aims to determine how improvements in supply chain processes can enhance financial outcomes.
Objective 2: To assess the role of Technological Adoption (TECH) in improving the profitability of duck farming businesses in Bangladesh. This objective focuses on identifying the benefits of integrating modern technologies in farming operations.

Objective 3: To evaluate the influence of Input Availability (IA) on the profitability of duck farming businesses in Bangladesh. This objective seeks to understand the importance of having reliable access to essential farming inputs.
Objective 4: To analyze the effect of Market Access (MA) on the profitability of duck farming businesses in Bangladesh. This objective explores how efficient market reach and distribution contribute to financial success.

Hypotheses of the Study

H_1: Supply Chain Efficiency (SCE) positively influences Profitability (PROF) in duck farming businesses in Bangladesh. This hypothesis suggests that improvements in the efficiency of supply chain operations, such as reducing costs and enhancing service delivery, will lead to increased profitability.
H_2: Technological Adoption (TECH) positively affects Profitability (PROF) in duck farming businesses in Bangladesh. This hypothesis posits that the integration of modern technologies and digital tools in farming operations will enhance productivity and profitability.
H_3: Input Availability (IA) has a positive impact on Profitability (PROF) in duck farming businesses in Bangladesh. This hypothesis indicates that reliable access to essential inputs like feed, medicine, and ducklings will result in higher profitability by maintaining farm productivity.
H_4: Market Access (MA) positively influences Profitability (PROF) in duck farming businesses in Bangladesh. This hypothesis asserts that effective market access, characterized by efficient distribution and market reach, will increase the profitability of duck farming operations.

Conceptual Framework



(Source: Self-created)

Figure 1: Theoretical Framework

Supply Chain Efficiency (SCE): This variable represents the effectiveness with which the supply chain operates, focusing on the seamless flow of materials, information, and products from suppliers to end consumers. High supply chain efficiency is crucial in reducing costs and improving service delivery, which can significantly impact the profitability of duck farming businesses (Wu et al., 2017).

Technological Adoption (TECH): Technological adoption refers to the extent to which modern technologies and digital tools are integrated into duck farming operations. This includes the use of automated systems, data analytics, and other innovations that enhance production efficiency and decision-making processes. Embracing technology is essential for optimizing supply chain operations and boosting productivity in the duck farming sector (Ardito et al., 2019).

Input Availability (IA): Input availability denotes the accessibility and reliability of essential resources such as feed, medicine, and ducklings. Consistent and timely access to these inputs is critical for maintaining the health and productivity of duck farms. Challenges in obtaining necessary inputs can hinder production and profitability (Churchil & Jalaludeen, 2022).

Market Access (MA): Market access involves the ability of duck farmers to reach and sell their products in local and national markets. It includes factors like transportation infrastructure, market information, and the presence of intermediaries. Effective market access ensures that farmers can distribute their products efficiently, which is vital for sustaining profitability (Febrianto et al., 2021).

Profitability (PROF): Profitability is the dependent variable representing the financial gain or return on investment from duck farming operations. It is measured by calculating revenue minus expenses. Profitability serves as a key performance indicator for assessing the success of supply chain strategies and other operational decisions within the industry (Sarker & Singh, 2020).

Methodology

The methodology of this study adopted a quantitative research approach to examine the factors influencing the profitability of duck farming businesses in Bangladesh. The target population included individuals and organizations directly involved in the duck farming sector, such as farm owners. The sample consisted of 100 respondents who were actively engaged in duck farming in Bangladesh. The study used stratified random sampling to ensure representation from each stakeholder group and to enhance the generalizability of the findings. Data was collected through face-to-face interviews, and then the results were input into Google Forms. This combination was selected to ensure broad coverage and to accommodate varying levels of accessibility among participants.

Each variable was measured using five Likert scale items, where 1 indicated strong disagreement and 5 indicated strong agreement. The variables included supply chain efficiency, technological adoption, input availability, market access, and profitability. The questionnaire was designed to capture the respondents' direct experiences and perceptions related to these variables.

Structural Equation Modeling (SEM) was selected as the analytical technique because it allows for the simultaneous estimation of multiple relationships among observed and latent variables. SEM was conducted using Smart Partial Least Squares 4 (Smart PLS 4). This tool was appropriate for the study due to its suitability for small sample sizes, its ability to handle complex models with multiple constructs, and its effectiveness in exploring causal relationships.

This methodological framework enabled a detailed analysis of the interconnected factors that affect profitability in the duck farming sector of Bangladesh. The structured design and analytical strategy ensured clarity, accuracy, and relevance in understanding the dynamics of the industry.

Table 1: Presentation of variables

Variable	Questions	Reference
Supply Chain Efficiency (SCE)	1. Our supply chain processes are highly efficient in reducing costs.	Wu et al., 2017
	2. We consistently achieve timely delivery of products to the market.	
	3. Our supply chain operations are well-coordinated and streamlined.	
	4. We effectively manage supply chain risks and disruptions.	
	5. Our supply chain efficiency contributes significantly to our profitability.	
Technological Adoption (TECH)	1. We have integrated modern technologies into our farming operations.	Ardito et al., 2019
	2. The use of technology has improved our production efficiency.	
	3. We rely on digital tools for decision-making in our farm management.	
	4. Technological adoption has positively impacted our profitability.	
	5. We actively invest in new technologies to enhance our farming processes.	
Input Availability	1. We have consistent access to high-quality feed for our ducks.	Churchil & Jalaludeen,

(IA)	2. The availability of veterinary services is reliable and timely.	2022
	3. We can easily procure necessary inputs such as medicine and ducklings.	
	4. Input availability has a direct impact on our farm's profitability.	
	5. We face minimal challenges in obtaining essential resources for our operations.	
Market Access (MA)	1. We have effective access to local and national markets for our products.	Febrianto et al., 2021
	2. Our transportation infrastructure supports efficient distribution.	
	3. We have sufficient market information to make informed decisions.	
	4. Our market access contributes positively to our profitability.	
	5. We face minimal barriers in reaching our target markets.	
Profitability (PROF)	1. Our business consistently generates profits from duck farming.	Sarker & Singh, 2020
	2. We have experienced growth in profitability over the past few years.	
	3. Our financial performance is stable and predictable.	
	4. Profitability is a key measure of our business success.	
	5. We regularly assess and improve factors influencing our profitability.	

(Source: Self-Created)

Analysis and Discussions

Table 2: Factors Loading with Communality and Redundancy, Convergent Validity and Average Variance Extracted (AVE)

Construct	Item	Factor Loading	Communality	Redundancy (P-value)	Average variance Extracted (AVE)
PROF					0.65803
	PROF1	0.735	0.643	0.026	
	PROF2	0.731	0.6143	0.056	
	PROF3	0.759	0.686	0.0157	
	PROF4	0.742	0.679	0.0345	
	PROF5	0.812	0.609	0.00254	
SCE					0.6285
	SCE1	0.862	0.577474	0.0052	
	SCE2	0.728	0.698415	0.000218	
	SCE3	0.863	0.56611	0.00745	
	SCE4	0.831	0.633379	0.000278	
	SCE5	0.706	0.65957	0.000365	
TECH					0.61634
	TECH1	0.746	0.651085	0.000381	
	TECH2	0.868	0.589462	0.000518	
	TECH3	0.757	0.534159	0.000137	
	TECH4	0.775	0.634754	0.00641	
	TECH5	0.805	0.651845	0.003178	
IA					0.62315
	IA1	0.738	0.68413	0.00614	
	IA5	0.823	0.598418	0.008469	
	IA3	0.782	0.698513	0.00354	
	IA4	0.787	0.574563	0.00841	
	IA5	0.734	0.631478	0.003585	
MA					0.639457
	MA1	0.818	0.549836	0.006328	
	MA2	0.787	0.639741	0.002315	
	MA3	0.743	0.65847	0.002319	
	MA4	0.812	0.543982	0.01036	
	MA5	0.792	0.639745	0.01132	

(Source: Smart Partial Least Squares output)

- ✓ Communality values above 0.5 indicate inclusion in factor analysis. All values exceed 0.5.

- ✓ Factor loadings >0.7 indicate sufficient variance extraction. All factor loading scores are >0.7.
- ✓ P-values <0.05 indicate statistical significance. All p-values are <0.05.
- ✓ AVE scores >0.5 ensure adequate convergence. All AVE scores exceed 0.5.

Table 3: Reliability and convergent validity

Item	Cronbach's α	Composite Reliability rho(A)	Composite Reliability rho(C)	VIF
PROF	0.751	0.747	0.818	1.91
SCE	0.713	0.764	0.834	1.46
TECH	0.739	0.835	0.751	1.09
IA	0.788	0.854	0.769	1.21
MA	0.860	0.745	0.772	1.9
Optimum Values	>.7	>.7	>.7	<5

(Source: Smart Partial Least Squares output)

Table 3 shows that all variables meet the criteria: Cronbach's α, Composite Reliability rho(A), and rho(C) are all >0.7, and VIF is less than 5. VIF values below 5 indicate no significant multicollinearity.

Table 4: Outer model –Discriminant Validity (Fornell-Larcker Criterion: Correlation matrix of Constructs and Square Root of AVE (in Bold).

	PROF	SCE	TECH	IA	MA
PROF	0.781	-	-		
SCE	0.684	0.7885	-		
TECH	0.346	0.384	0.782		
IA	0.527	0.610	0.219	0.753	
MA	0.368	0.413	0.285	0.189	0.587

(Source: Smart Partial Least Squares output)

The Fornell-Larcker criterion checks discriminant validity by ensuring the square root of a construct's average variance extracted (AVE) is greater than its correlation with

any other construct. In this study, all constructions meet this criterion, confirming discriminant validity.

Table 5: Cross-loading analysis

	PROF	SCE	TECH	IA	MA
PROF1	0.766	0.585	0.089	0.030	0.084
PROF2	0.765	0.598	0.088	0.130	0.327
PROF3	0.815	0.581	0.128	0.234	0.169
PROF4	0.659	0.491	0.324	0.167	0.152
PROF5	0.623	0.326	0.137	0.189	0.418
SCE1	0.599	0.894	0.257	0.256	0.237
SCE2	0.469	0.745	0.047	0.351	0.149
SCE3	0.525	0.802	0.011	0.452	0.238
SCE4	0.406	0.686	0.014	0.306	0.328
SCE5	0.365	0.752	0.032	0.195	0.543
TECH1	0.258	0.493	0.623	0.203	0.208
TECH2	0.143	0.579	0.740	0.136	0.162
TECH3	0.079	0.045	0.713	0.319	0.008
TECH4	0.07	0.048	0.881	0.247	0.113
TECH5	0.093	0.062	0.831	0.308	0.480
IA1	0.038	0.051	0.564	0.658	0.327
IA2	0.046	0.033	0.227	0.849	0.179
IA3	0.318	0.456	0.219	0.742	0.308
IA4	0.235	0.413	0.226	0.763	0.179
IA5	0.354	0.328	0.336	0.892	0.234
MA1	0.157	0.327	0.028	0.452	0.862
MA2	0.218	0.564	0.057	0.321	0.785
MA3	0.167	0.346	0.310	0.018	0.694
MA4	0.256	0.103	0.276	0.304	0.604
MA5	0.341	0.302	0.143	0.179	0.808

(Source: Smart Partial Least Squares output)

Gefen and Straub (2005) state that discriminant validity is achieved when items correlate weakly with other constructs, except their own. Reflective relationships, called Loadings, should be high within the same construct and low across different constructs. Table 3 confirms high within-construct loadings and weak cross-construct correlations, validating the outer model for cross-loading analysis.

Table 6: Outer model –Discriminant Validity (HTMT Ratio), Threshold: HTMT<0.9

	PROF	SCE	TECH	IA	MA
PROF				-	-
SCE	0.5655				-
TECH	0.052	0.534			
IA	0.148	0.187	0.479		
MA	0.117	0.1479	0.652	0.202	

(Source: Smart Partial Least Squares output)

Accordance with Franke & Sarstedt (2019) if the HTMT value is significantly below the critical value of 0.9 to establish discriminant validity. Here we can see that the value is below 0.9. So, it can be said that the model is valid and established.

Table 7: Inner model; Path Coefficients of tested model & Hypothesis Testing and Structural Model Evaluation

Hyp	**Relationship**	**B**	**Mean**	**Std. Dev**	**R2**	**Q2**	**f2**	**t-statistic**	**sig.**
H1	SCE→PROF	0.387	0.916	0.1	0.42	0.0012	0.74	0.725	0.031**
H2	TECH→PROF	0.264	0.955	0.05	0.51	0.0352	0.68	0.824	0.0076**
H3	IA→PROF	0.213	0.948	0.01	0.535	0.026	0.57	0.766	0.0042**
H4	MA→PROF	0.299	0.981	0.02	0.537	0.0046	0.369	0.759	0.000625***

(Source: Smart Partial Least Squares output)

Note: *p<0.05; **p<0.01, ***p<0.001; n.s= not significant; (two-tailed test). R = Rejected; (A) = Accepted.

- ✓ Beta coefficients (B) estimate path relationships in the structural model, indicating consistency across items. The cutoff value for B is >0.20, and all values in Table 6 meet this threshold.

- ✓ R Square (R2) explains variance in endogenous variables due to exogenous variables. Values of 0.42, 0.51, 0.535, and 0.537 are moderate, aligning with Cohen's and Chin's benchmarks.

- ✓ Q-square (Q2) measures predictive relevance, with all values above zero indicating good model fit.

- ✓ F-Square (f2) Assess the effect size when removing an exogenous variable. Values of 0.74, 0.68, 0.57, and 0.369 indicate a large effect, per Cohen's benchmarks.

Table 8: Inner Model (parameters)

Assessment	Name of Index	Guideline	Source
Collinearity	VIF (Variance Inflator Factor)	Multi-Collinearity occurs in model when for specific indicators VIF values are 5 and above	García-Carbonell, Martín-Alcázar and Sánchez-Gardey (2015)
Path Coefficient	Path Coefficient	t value ≥ 2.33 (one-tailed), p value < 0.05	Hair et al. (2017)
R-square	Coefficient of Determination	0.26 - Substantial0.13 - Moderate0.02 - Weak	Cohen (1988)
f-square	Effect Size	0.35 - Large0.15 - Medium0.02 - Small	Cohen (1988)

(Source: Inner Model Parameters)

Table 9: Goodness-of-fit indicators

Fit indices	Structural model value	Recommended value	References
Gfi	0.987	> .90	Hair et al. (2010)

Agfi	0.920	> .80	Hu and Bentler (1999)
Nfi	0.964	> .90	Hu and Bentler (1999)
Cfi	0.985	> .90	Bentler and Bonett (1980)
Rmsea	0.031	< .08	Hu and Bentler (1999)
Srmr	0.046	< .07	Hu and Bentler'(1999)

(Source: Smart Partial Least Squares output)

Goodness-of-Fit Measures for the Structural Model (Table 8):

- ✓ *Goodness-of-Fit Index (GFI):* The Value 0.987, which is higher than the suggested value of 0.90, indicates a strong fit between the model and observed data.
- ✓ *Adjusted Goodness-of-Fit Index (AGFI)* Value 0.920 is higher than the suggested value of 0.80. Reflects a good fit, considering adjustments for the number of parameters.
- ✓ *Normed Fit Index (NFI)* Value 0.964 shows the Higher than the suggested value of 0.90, indicating a high level of fit between the model and data.
- ✓ *Comparative Fit Index (CFI)* Value is 0.985, Greater than the recommended value of 0.90, suggesting a reasonable fit between the model and the observed data.
- ✓ *Root Mean Square Error of Approximation (RMSEA)* Value 0.031 is under the advised value of 0.08, demonstrating a satisfactory match between the model and data.
- ✓ *Standardized Root Mean Square Residual (SRMR)* Value is 0.046 meets the suggested value of 0.07, and indicates a good fit for the structural model.

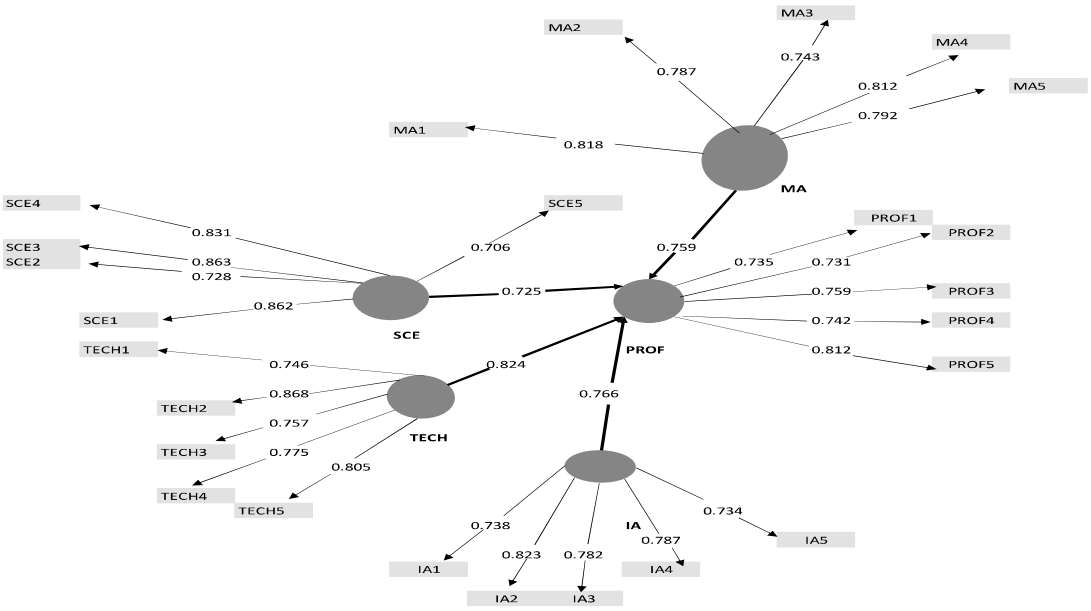


Fig 2: Bootstrapped model

(Source: Smart Partial Least Squares output)

Findings

An efficient supply chain brings lower production efficiency costs for farming business. It also improves how products are delivered. When operations run smoothly, farms save money. They also use resources better. This directly helps duck farms earn more profit. So, better supply chain efficiency means better financial results. Using new technology helps farms grow faster. It improves productivity. It also brings new ways of working. These changes help farms work smarter. This saves time and money. As a result, farms earn more. So, adopting technology gives a strong push to profitability. Farms need a steady supply of feed, water, and veterinary care. If these inputs are easy to get, farms can work without delay. This avoids losses. It keeps production levels stable. In the end, this supports long-term profit. Farms must reach the market on time. If they can sell their products easily, they get better prices. More buyers mean more sales. This boosts income. So, market access has a direct link to profit. Managers must make supply chains simple and fast. They should reduce costs and speed up delivery. Using good systems for transport and stock will help. This will cut waste and increase farm profit. Managers should bring in helpful

tools like automatic feeders or data tracking. Training workers is also important. If they use tools well, work becomes easier. This brings better results and higher profit. Farm owners must ensure that food, water, and vet care are always there. They should work closely with suppliers. They must also look for other supply sources. This reduces the chance of delays. Smooth input flow means steady profit. Managers should find new ways to sell. They can partner with shops or sell online. Reaching more customers helps us to sell faster and at better prices. This improves business income. They should review every part of the process often. Checking supply chains, tech use, input supply, and markets will help. This lets them make good decisions. It also helps farms grow and stay profitable.

Conclusion

The significant factors influencing profitability in the duck farming sector in Bangladesh were focused on in some studies. The research underscores the critical role of supply chain efficiency, technological adoption, input availability, and market access in enhancing profitability. Efficient supply chain management is crucial for reducing costs and improving delivery times, directly impacting profitability. By streamlining logistics and inventory processes, duck farming businesses can achieve better resource utilization and cost savings. Technological adoption is equally important, as it modernizes farming practices and enhances productivity. The implementation of new technologies requires investment in both equipment and training, ensuring farm workers are equipped to leverage these tools effectively. Furthermore, securing consistent input availability is vital for maintaining production levels and avoiding disruptions. Establishing strong relationships with suppliers and exploring alternative sources can help mitigate risks associated with input shortages. Market access is another critical area, where strategic partnerships and the use of digital platforms can expand customer reach and improve product pricing. Overall, the study emphasizes the need for strategic planning and continuous improvement across all operational areas to enhance profitability. Managers in the duck farming industry can utilize these insights to develop targeted strategies that align with business goals and ensure long-term success. The findings contribute valuable knowledge to the field of agricultural business management, offering practical implications for boosting profitability in a competitive market.

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