

Market
competitiveness in
the malaysian poultry
supply chain
economics essay



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The structure of the Malaysian poultry industry is different from the one that existed in the nineties, due largely to vertical coordination and integration. Independent and self-operated activities that once dominated the production system have been replaced by contracts and outright ownership and operation of the production by integrators. By this many individual poultry processing companies own almost all aspects of production-breeding farms, multiplication farms, hatcheries, feed mills, some broiler growing farms, and processing plants. The structure therefore, involve an aspect of integrated production-marketing systems which involves a single firm owning and operating every aspect of production from importing parent stock to marketing packaged chicken-meats in company owned outlets. For instance the ex-farm level has been dominated by the integrators because there are only four (4) companies controlling 100% share of the importation of the breeder birds. The four integrated companies are Ayamas breeder Farm Sdn Bhd, CAB breeding Farm Sdn Bhd, Charoen Pokphand Farm sdn Bhd and Leong Hup Poultry Farm Sdn Bhd. There are ninety two (92) Parent stock (multiplication) farms owned by twenty five (25) separate companies. According to DVS (2012) report ten (10) of these multiplication companies are owned and operated by integrators. There are fifty three (53) hatcheries in Peninsular Malaysia, thirty one or more than 58% of the hatcheries owned and operated by integrators. The total day-old chicks (DOC) production in 2011 by the industry was estimated at 653, 006, 812 million chicks, and the integrators contributed 70. 75% of the total (DVS, 2011). The Department of Statistics (DOS) Malaysia report on the census of agricultural establishments shows there are only 292 poultry farming establishments registered in Malaysia as against more than 3, 500 reported by DVS suggesting that <https://assignbuster.com/market-competitiveness-in-the-malaysian-poultry-supply-chain-economics-essay/>

integrators are likely to own and operate multiple farms and that a number of independent operated farms are not formally registered. Report from DVS, (2011) have shown that Malaysian broiler-chicken industry control 62.56% of the total chicken meat supply in the Peninsular Malaysia and non-integrators control 21.4% share of the supply.

Problem statement

Although the integrating production system allows the firm to achieve economies of scale, decrease transactions costs, as well as the ability to closely monitor product quality at every stage of production by controlling all inputs and processes at every level. However, on the other hand the traditional structure-conduct-performance paradigm hypothesized that the level of concentration in a particular market will influence the degree of competition among firms in that market. Markets that are highly concentrated (few large firms dominating the market) are less competitive than markets where concentration is low. As such, according to the hypothesis, firms in less competitive environment charge higher prices and reap monopolistic profits. A higher price above marginal cost implies inefficient allocation of resources and the resulting implication is production inefficiency. A concentrated industry structure could therefore weaken the efficiency and effectiveness of market performance. In view of this, the study is aimed to evaluate the indicators of competition in the supply chain of the Malaysian poultry industry.

Objective of the Study

In broad sense the objective of the study is to evaluate the indicators of competitiveness of the Malaysian poultry industry supply chain; specifically <https://assignbuster.com/market-competitiveness-in-the-malaysian-poultry-supply-chain-economics-essay/>

To assess the structure, conduct and market performance of the Malaysian poultry supply chain

To determine the strategic behaviours of the firms and relationship among supply chain participants of the industry.

To describe the farm-retail-wholesale price spread along the supply chain to observe symmetry or otherwise in the price transmission process within the industry as an indicator of price setter and taker

Theoretical Framework and Methodology

The concept of S-C-P which emanated from industrial organization studies primarily to analyze the competitive conditions in industries by examining how the industry structure relates to market conduct and its performance was explored in this study. The S-C-P framework postulates that as market structure deviates from the ideal perfect competition, the extent of competitiveness of the market will decrease and consequently a decline in market efficiency (Scarborough and Kydd, 1992).

The S-C-P Model

Concentration Ratio classification

Market structure CR4 CR8

Highly concentrated 75-100

Moderately concentrated 50-75 slightly concentrated 25-50 Atomistic 0-25

<33

HHI

HHI < 1000= concentrated market

1000

HHI > 1800= highly concentrated

(Joe Bain's classification) Market Structure Indicators

Concentration Ratio

Herfindahl-Hirschman Index

Gini Coefficient

Lorenz Curve

Market conduct Indicators

Advertising Intensity

Capital Intensity

Market Performance Indicators

Return on Assets

Return on Shareholders' Equity

Return on Sales

Price Asymmetry Model

The study also incorporated the concept of co-integration to examine the relationship between prices i. e. farm-wholesale-retail in the price

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transmission mechanism. Von Cramon-Taubadel and Fahlbusch (1994) were among the first to incorporate the concept of co-integration into models of asymmetric price transmission. They extended a standard error correction model (ECM) by incorporating of asymmetric adjustments terms. The procedure involves estimating a relationship between prices (e. g retail and farm-level) using simple ordinary least square (OLS). If the prices can be referred to as co-integrated, the estimated coefficient of the OLS is an estimate of the long-term equilibrium relationship between the two variables. The inclusion of the ECT allows the estimated price to respond to the changes in the explanatory variables but also correct any deviation from the long-run equilibrium that may be left over from the previous periods. The ECT model takes the following form;

$$\Delta = \alpha_1 + \alpha_2 + \alpha_3 + \alpha_4 + Z^*EC1_{t-1} + \epsilon_{1t} \quad (1)$$

$$= \beta_1 + \beta_2 + \beta_3 \Delta P_{wt-l} + Z^*EC2_{t-l} + \epsilon_{2t} \quad (2)$$

Where, α_i and β_i are short-run coefficients and EC1 and EC2 are error correction terms, and are residuals in the equation (1) and (2) respectively.

Results and Discussion

S-C-P Results

The analysis of the results shows that there are 561, 567, and 447 firms operating in the entire industry in 2009, 2010, and 2011 respectively. The firms were categorized into six industries based on five digit code of the MSIC, 2008. The six industries were further grouped based on type of business of the firm into ex-farm, wholesale and retail market supply chain.

The results revealed there has been increase in the total revenue in the entire industry from RM12. 2b in 2009 to RM13. 6b in 2011. The average CR4 and CR8 of the ex-farm market level have slightly increase from 2009 to 2011 but remain within the quartile of moderately concentrated. The wholesale segment witnessed the same trend with CR4 31. 9 and 40. 6% in 2009 and 2001 respectively. The retail market level has moved from low concentration in 2009 to highly moderately concentrated quartile. The HHI index of the ex-farm market was above 1800 quartile for the three years of reference, while the wholesale remain in the low concentration throughout the study years the retail industry has roused from HHI 205, 980 and 1395 in 2009, 2010 and 2011 respectively. The performance indictors revealed there has been positive but low return on assets for both market levels in the year of reference, the ROE and ROS are also positive but slightly better with the values increasing over the last three years of reference.

Asymmerty Results

The study examines the vertical price relationship to evaluate degree of market power and competition along the market supply chain. Monthly average for the whole Malaysia price data 2004M01 to 2010M12 of standard broiler chicken for farm gate, wholesale and retail were analyze using co-integration technique. The results of the unit root test for both ADF and PP rejected the null hypothesis of unit root at 5% significance after first difference of the series indicating that the variables are integrated of same order I(1). All the lag selection criteria LR, FPE, AIC, SC and HQ suggest optimum lag of 1. The Johansen-Juselius co-integration test results show both Trace test and Max-Eigen test are statically significant to reject the null

hypothesis of no co-integration among the variables ($r= 0$) at 5% significance level. The VECM result indicates the causality of variables in the system, and the direction of causality within the sample period. The coefficient of the lag dependant variable and the error correction term in equation (2) are both significant indicating a bi-directional between retail price and farm price. There is unidirectional causality from farm to wholesale but at 10% significance level. The result is consistent with earlier studies, but conclusion could not be made at this point because the causality does not provide us with the dynamic interactions. The dynamic interaction analysis among variables was conducted through variance decomposition (VDC) and impulse response functions (IRF).

Table 1: Unit Root Testing Results**Augmented Dickey Fuller****(ADF)****Phillips-Perron****(PP)****Level****Variable****Constant Without Trend****Constant With Trend****Constant Without Trend****Constant With Trend****Retail**

-1. 8044

-2. 9993

-1. 6375

-2. 9827

Farm

-4. 8053**

-4. 9420**

-4. 4690**

-4. 5591**

Wholesale

-2. 2393

-3. 4034*

-2. 0055

-3. 3979*

First difference

Retail

-7. 3721**

-7. 3664**

-9. 8519**

-9. 9062**

Farm

-7. 0077**

-6. 9595**

-28. 7019**

-28. 3716**

Wholesale

-7. 6739**

-7. 6920**

-9. 8427**

-9. 9220**

** and * denotes significant at 5% and 10% significance level.

Table 2: Results of Optimum Lag Order Selection Criteria

Lag

LagL

LR

FPE

AIC

SC

HQ

0

297. 4498

NA

3. 39E-09

-8. 151384

-8. 024903

-8. 101032

1

488. 4225

355. 4213*

2. 63E-11*

-13. 01174*

-12. 37933*

-12. 75997*

2

502. 5870

24. 78779

2. 78E-11

-12. 96075

-11. 82242

-12. 50757

3

509. 7813

11. 79078

3. 59E-11

-12. 71615

-11. 07189

-12. 06156

4

522. 0813

18. 79162

4. 05E-11

-12. 61337

-10. 46319

-11. 75737

*indicates lowest lag order of the criteria. FPE= Final predictor error, AIC= Akaike information criteria SC= Schwarz information criteria, HQ= Hannan-Quinin information criteria

Table 3: Co-integration tests results**Hypothesized****No. of CE'(s)****Trace****Max-Eigen****Critical Values (5%)****Statistic****Statistic****Trace****Max-Eigen**

r= 0

70. 4759**

31. 8713**

47. 85613

27. 58434

r≤1

38. 6042

31. 0465

29. 79707

21. 13162

$r \leq 2$

7. 5581

5. 4143

15. 49471

14. 2646

$r \leq 3$

2. 1439

2. 1439

3. 841466

3. 841466

Note: ** donates Significant at 5% levels.

Table 4: Causality and price transmission results

Dependant Variables

Independent Variables

Long-run causality

Short-run Causality

ΔRP

ΔFP

ΔWP

ΔRP

-

9.031**

[0.002]

1.833

[0.176]

0.197**

(3.353)

ΔFP

0.039

[0.844]

-

0.242

[0.623]

1.284

(5.522)

ΔWP

0.075

[0.784]

2.890*

[0.090]

-

0.263*

(3.060)

* and ** denotes significance at 10% and 5% significance level, respectively.

The figures in the parenthesis denote as t-statistics and figures in the squared brackets represents as p-value. RP= log retail price, FP= log farm level price, WP= log wholesale price and Δ denotes change.