Potential Global Competitiveness of Sri Lankan Virgin Coconut Oil Industry

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Abstract- *The study focuses on Sri Lankan virgin coconut oil industry because of it is one of the upcoming export products and also its position as one of the key player in the global market. Sri Lankan coconut industry is one of the major foreign exchange and employment generation source and element of the Sri Lankan nation. The study attempted to unearth the determinants of export competitiveness of virgin coconut oil industry in Sri Lanka by drawing attention on Porter's theory of the competitive advantage of nations. The target population of the study consisted with individual firms which are engaging in virgin coconut oil export in Sri Lanka is two hundred and nineteen. The study used a likert scale to measure the chosen variables. Based on the Pearson Correlation analysis researcher can say that there is significance strong positive relationship between Availability of Raw materials, Quality of demand and Market share of export with the Export Competitiveness. According to regression analysis researcher can say that availability of Raw materials, Local market, Quality of demand and Market share of export has significance positive affect on Advantage of Export Competitiveness.*

Keywords: *Virgin Coconut Oil; Export competitiveness; Regression analysis*

1. INTRODUCTION

Export competitiveness has been paid more attention in order to develop export portfolio of nations. The process of economic integration, globalization and technological advancement strengthen export development of nations. To encourage economic development and endurance in the global competitive market, export competitiveness is an essential factor of a country. For small economies, export is substantial in sustaining growth and vitality (Saboniene, 2009, p.49). Export contributes economy in terms of capital inflows, employment, expansion of industry widening the production base, and achieve economies of scale in domestic industries.

1.1 Competitiveness Index and Sri Lanka

The Atlas of Economic Complexity Index (ECI) assesses the complexity of each product produced by a nation. The ECI measures ubiquity (number of countries that a product is connected to) and diversity (number of products that a country is connected to) of a particular product. The ECI shows a clear picture on competitiveness of a country's product. In the ECI (2011), Sri Lanka's ranking in the index is No.78 and for the year end of 2016 ranking has grown up to 68th position in the index. While comparing other Asian countries like; Thailand, Philippines, Vietnam, Indonesia and India, their ECI ranks are No. 87, 95, 67, 51, and 37 respectively. According to Sri Lanka's current complexity map, almost 100 percent of its products are simple products which can be easily copied by other competitive countries.

Table 1: Global Competitiveness Index of selected countries

Country	Global Competitiveness Index Rank						
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Thailand	28	28	34	36	38	39	87
Philippines	**75**	**71**	**71**	**87**	**85**	**75**	**95**
Sri Lanka	**81**	**70**	**77**	**79**	**62**	**52**	**68**
Vietnam	64	68	70	75	59	65	67
India	42	48	50	49	51	56	37
Bangladesh	92	107	111	106	107	108	118
Singapore	**8**	**7**	**5**	**3**	**3**	**2**	**3**
Indonesia	**54**	**54**	**55**	**54**	**44**	**46**	**51**

Source: Global Competitiveness Report, several issues

1.2 Virgin Coconut Oil Industry

Virgin Coconut Oil (VCO) one of the finest oil which is extracted from fresh coconut kernel gained from mature coconuts (12 months old from pollination) by mechanical or natural means, with or without the tender of heat, which does not lead to variation of the nature of the oil. Virgin Coconut Oil can be consumed in its natural state without the need for further processing. Hence, Virgin Coconut Oil does not undergo chemical refining, bleaching or deodorizing. Colorless, free of sediment and has natural fresh coconut scent is the main identity of the virgin coconut oil. It is free from rancid odor or taste. Virgin Coconut Oil consists mainly of medium chain fatty acids. From animal fats which mainly consist of long chain saturated fatty acids the fatty acids in virgin coconut oil are distinct. Philippines ($1.14B), Indonesia ($815M), Malaysia ($160M), Sri Lanka ($93.3M) and the United States ($74.3M) are the top exporters of Coconut Oil are the. And United States ($844M), Malaysia ($211M), Germany ($209M), China ($203M) and Italy ($81.5M) are the top importers in the coconut oil industry.

1.3 Overview of the Problem

The natural gift of a beneficial climate is still an advantage in producing the world's one of the best quality virgin coconut oil. Along with that benefit, Sri Lanka still provides best quality virgin coconut oil to the world. However, the present situation of the industry in the global market clearly demonstrates that Sri Lanka is moving away from its competitiveness. Sri Lanka's total export market share of virgin coconut oil is continuously declining relative to its main competitors. The main problem of this study is why Sri Lankan virgin coconut oil industry lost its export competitiveness? To address the main research problem, it is necessary to identify the factors which effect on export competitiveness in Sri Lankan virgin coconut oil industry. Therefore, the specific research question is; what are the determinants of export competitiveness as pursued by the firms in virgin coconut oil industry in Sri Lanka?
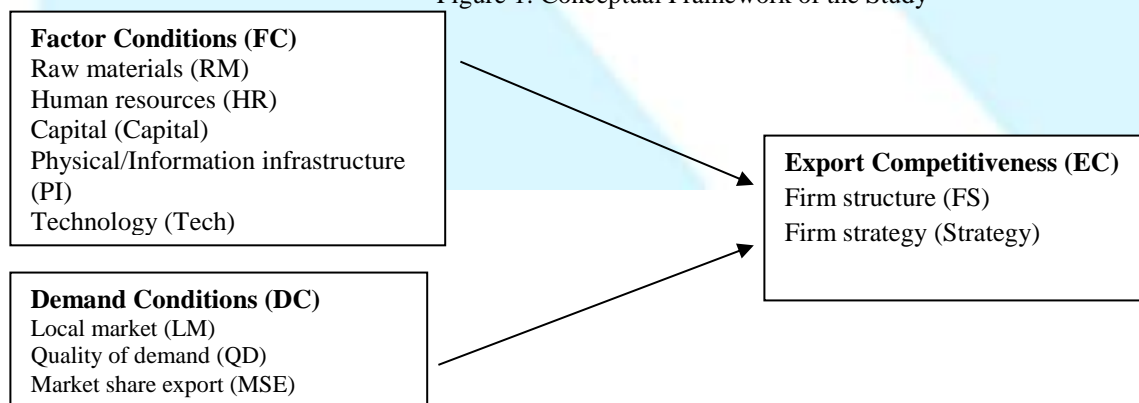
2. METHODOLOGY

The objective of this study is to identify the specific conditions that enable firms in virgin coconut oil industry in Sri Lanka to become internationally competitive. The core question of this study is: what are the success surroundings that have led to become internationally competitive in virgin coconut oil industry in Sri Lanka. The previous studies of export competitiveness (Olmeda and Varela (2012)[23] and Daniel (2000)) were based on qualitative approach to collect data. Those studies adopted in-depth, semi-structured interviews with key resource persons to collect primary data. Contrast to those studies, Oral and Mlangeni (2000), and Bakan and Dogan (2012)[2] conducted their studies based on mixed approach; both qualitative and quantitative approaches. This study used quantitative approach to investigate determinants of virgin coconut oil export competitiveness in Sri Lanka. As Amaratunga et al., (2002)[1] mentioned primary goal of the quantitative research is to describe and understand the strength of relationships in order to establish causal associations among objectively specified variables through testing hypotheses derived from predictive theories.

2.1 Conceptual Framework

The projected model in this study is based on Bakan and Dogan (2012)[2] and Kumarasinghe and Sachitra (2014)[16] models which are adopted from Porter's diamond model. In this study researchers argued that three variables of the diamond model; factor conditions, demand conditions and related and supporting strategy, affect the competitiveness factor. As competitiveness factor, firm strategy, structure and rivalry of the diamond model was used. Researchers used structural equation model (SME) to support their arguments. By addressing the Firm's strategy, structure and rivalry explains how industry is systematically organized and managed the domestic competition that could support a firm or industry to achieve a sustained competitive advantage internationally. By following the above-mentioned literature review in the said field, this study model consists of four determinants (factor conditions, demand conditions, related and supporting industries and government) and one dependent factor (export competitiveness); each includes two to six elements. The conceptual framework of the study is illustrated in Figure 1

Figure 1: Conceptual Framework of the Study

Factor Conditions (FC)
Raw materials (RM)
Human resources (HR)
Capital (Capital)
Physical/Information infrastructure (PI)
Technology (Tech)

Demand Conditions (DC)
Local market (LM)
Quality of demand (QD)
Market share export (MSE)

Export Competitiveness (EC)
Firm structure (FS)
Firm strategy (Strategy)

Source: Porter (1990) with adaptations Bakan and Dogan (2012) and Kumarasinghe and Sachitra (2014)

Competitiveness can be defined as the ability of a firm or a product to compete with others and desire to be more successful than others. In the process of understanding and investigating competitiveness, it is challenging to identify, measure and analyze the attributes of competitiveness. The development of global sales volume, market share or profitability is identified as the indicators to measure the competitiveness of a firm or industry (Hoefter, 2001, p.61)[12]. To measure the variables used in this study a likert scale was applied as a measurement scale of choice. The scale of choice ranged from strong disadvantage to strong advantage with a neutral point in the middle.

The target population of the study consisted with individual firms which are engaging in virgin coconut oil export in Sri Lanka is two hundred and nineteen. The study excluded virgin coconut oil manufacturing firms, especially virgin coconut oil factories which are not up to the standards, from the target population. According to industry statistics there are one hundred and thirty-two firms engage in virgin coconut oil exporting (Sri Lanka Export Development Board, 2017). Theoretical requirements of sample selection clearly mentioned that when target population is less than three hundred it is useful to consider all target population as a sample. Maurel (2008, p.126) analyzed the factors affecting French wine small and medium size enterprises export performance. Population of the study consisted with the wine companies with a turnover superior to three million euro. Then target population counted two hundred and fourteen companies and all of them were taken as the sample of the study. Researcher highlighted that

population was not adequate to select sample and it was useful to take whole elements in the target population as the sample. Then data were collected through mail survey questionnaires from two hundred and fourteen companies. Applying the same phenomenon, to fulfill the theoretical requirements of sample size, one hundred and thirty-two firms were taken as the sample of this study. A structured questionnaire and face-to-face interview were the main techniques used to collect primary data from the selected samples. The ordinal scale is ranging from 1 (strong disadvantage) to 5 (strong advantage) with the neutral point of 3 (neither competitive advantage nor competitive disadvantage). To identify the factors which affect export competitiveness of virgin coconut oil industry in Sri Lanka the study used correlation analysis and regression analysis.

3. RESULTS AND DISCUSSION

The objective of this study is to identify the factors which affect export competitiveness of virgin coconut oil industry in Sri Lanka. In the assessment of the degree of measurement error in any measure, the researcher must address two important characteristics of a measure; Reliability and Validity.

3.1 Reliability and Validity of the Study

Internal consistency was measured with Cronbach's alpha (α). A low value of alpha could be due to a low number of questions, poor inter-relatedness between items or heterogeneous constructs. Cronbach's alpha (α) values greater than 0.7 is acceptable.

Table 2: Reliability of the Study

Variable	Cronbach's Alpha	No of Items
Availability of Raw materials	0.974	3
Availability of Human resources	0.975	3
Availability of Capital	0.861	4
Availability of Physical and Information infrastructure	0.937	4
Availability of Technology	0.960	3
Local market	0.853	3
Quality of demand	0.886	3
Market share of export	0.703	3
Advantage of Export Competitiveness	0.953	10

Source: Author Compiled (2018)

According to the Table 2, Cronbach's Alpha values of all dimensions are greater than 0.70. In the validation process of the research survey instruments, two basic validities namely content and construct were assessed to get the uniqueness of the measures. Content validity ensures the measure includes an adequate and representative set of items that cover the concept. Content validity is the subjective assessment of the measures affiliated with the face validity for informal. All questions in developed

questionnaire was adopted from previous studies. All questions were theoretically examined. By doing so, content validity was thus ensured.

Convergent validity is tested by using Kaiser–Meyer–Olkin (KMO) measure, Bartlett's test of sphericity, composite reliability (CR) and Average Variance Extracted (AVE). The value of AVE for each construct should be at least 0.50 for accept to convergent validity. The Table 3 shows the Convergent Validity.

Table 3: Convergent Validity of the Study

Variable	No of Items	KMO	Bartlett's Test Chi Square Value	Sig	AVE	CR
Availability of Raw materials	3	0.70	605.08	0.00	0.95	0.98
Availability of Human resources	3	0.71	655.66	0.00	0.95	0.98
Availability of Capital	4	0.59	673.08	0.00	0.70	0.90
Availability of Physical and Information infrastructure	4	0.72	675.44	0.00	0.84	0.95
Availability of Technology	3	0.65	526.86	0.00	0.92	0.97
Local market	3	0.69	187.66	0.00	0.77	0.91
Quality of demand	3	0.62	270.50	0.00	0.82	0.93
Market share of export	3	0.65	67.87	0.00	0.61	0.82
Advantage of Export Competitiveness	10	0.65	2808.44	0.00	0.70	0.96

Source: Author Compiled (2018)

According to above table, All KMO values are greater than 0.5. Likewise, all Sig values of Bartlett's Test also persistently maintain the condition of values that are lesser than 0.05, composite reliability (CR) greater than 0.7 and the AVE values are above 0.5. Hence the researcher could safely conclude that the validity of this research lied at a higher position.

3.2 Identify the factors which affect export competitiveness of virgin coconut oil industry in Sri Lanka

Correlation analysis use to analyze the relationship between factors which affect export competitiveness of virgin coconut oil industry in Sri Lanka and advantage of export competitiveness. Regression analysis use to identify the factors which affect to advantage of export competitiveness of virgin coconut oil industry in Sri Lanka and develop the equation for advantage of export competitiveness of virgin coconut oil industry in Sri Lanka.

3.2.1 Correlation Analysis

The Pearson correlation coefficient is a measure of the strength of a linear association between two variables and is denoted by r. The Pearson correlation coefficient, r, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association, that is, as the value of one variable increases the value of the other variable will increases. A value less than 0 indicates a negative association, that is, as the value of one variable increases the value of the other variable decreases.

Table 4 : Correlation Analysis

		Advantage of Export Competitiveness
Availability of Raw materials	Pearson Correlation	.745[**]
	Sig. (2-tailed)	.000
Availability of Human resources	Pearson Correlation	-.038
	Sig. (2-tailed)	.669
Availability of Capital	Pearson Correlation	.224[**]
	Sig. (2-tailed)	.010
Availability of Physical and Information infrastructure	Pearson Correlation	-.051
	Sig. (2-tailed)	.558
Availability of Technology	Pearson Correlation	-.050
	Sig. (2-tailed)	.570
Local market	Pearson Correlation	.526[**]
	Sig. (2-tailed)	.000
Quality of demand	Pearson Correlation	.628[**]
	Sig. (2-tailed)	.000
Market share of export	Pearson Correlation	.566[**]
	Sig. (2-tailed)	.000

Source: Author Compiled (2018)
According to Pearson Correlation analysis researcher can say that there is significance strong positive relationship between Availability of Raw materials and Advantage of Export Competitiveness, there is significance weak positive relationship between availability of Capital and Advantage of Export Competitiveness, there is significance moderate positive relationship between Local market and Advantage of Export Competitiveness, there is significance moderate positive relationship between Quality of demand and Advantage of Export

Competitiveness, and there is significance moderate positive relationship between Market share of export and Advantage of Export Competitiveness.

3.2.2 Regression Analysis
To identify the factors which affect to advantage of export competitiveness of virgin coconut oil industry in Sri Lanka and develop the equation for advantage of export competitiveness of virgin coconut oil industry in Sri Lanka, researcher use regression analysis. Then try to develop following equation;

$$EC = \beta_0 + \beta_1 RM + \beta_2 HR + \beta_3 C + \beta_4 PII + \beta_5 T + \beta_6 LM + \beta_7 QD + \beta_8 MSE + \varepsilon$$

EC = Advantage of Export Competitiveness
RM = Availability of Raw materials
HR = Availability of Human resources
C = Availability of Capital
PII = Availability of Physical and Information infrastructure
T = Availability of Technology

LM = Local market
QD = Quality of demand
MSE = Market share of export
Before develop the model researcher must check whether independent variables have an affect on dependent variable. Then test nine hypotheses.

Table 5 : Regression Results of the Study

Model	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	-.907	.345	-2.626	.010
Availability of Raw materials	.479	.073	6.572	.000
Availability of Human resources	.065	.078	.840	.403
Availability of Capital	-.071	.068	-1.049	.296
Availability of Physical and Information infrastructure	.060	.160	.376	.707
Availability of Technology	.065	.134	.488	.626
Local market	.336	.055	6.098	.000
Quality of demand	.143	.066	2.180	.031
Market share of export	.167	.080	2.092	.038

Source: Author Compiled (2018)
Availability of Raw materials, Local market, Quality of demand and Market share of export has significance positive affect on Advantage of Export Competitiveness. Then develop the equation for Advantage of Export
Regression Equation

Competitiveness by using Availability of Raw materials, Local market, Quality of demand and Market share of export as follows;

$$EC = -0.907 + 0.479RM + 0.336LM + 0.143QD + 0.167MSE + \varepsilon$$

According to above equation researcher can say that availability of Raw materials , Local market, Quality of

demand and Market share of export has significance positive affect on Advantage of Export Competitiveness.

Table 6: Overall model significance ANOVA table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	66.031	8	8.254	37.631	.000[b]
	Residual	26.979	123	.219		
	Total	93.009	131			

a. Dependent Variable: Advantage of Export Competitiveness

b. Predictors: (Constant), Market share of export, Availability of Capital, Availability of Human resources, Local market, Quality of demand, Availability of Technology, Availability of Raw materials, Availability of Physical and Information infrastructure

Source: Author Compiled (2018)

According to above table, overall model significance test by ANOVA Statistic, P value is 0.000. It is less than 0.05. Researcher can say that overall model significance at 95% confidence. Overall model significance means that Availability of Raw materials, Local market, Quality of demand and Market share of export jointly affected to Advantage of Export Competitiveness. According to regression analysis researcher can say that an Availability of Raw material has significance positive affect on Advantage of Export Competitiveness. This indicated when Availability of Raw materials increase, Advantage of Export Competitiveness will increase. Local market has significance positive affect on Advantage of Export Competitiveness. This indicated when Local market increase, Advantage of Export Competitiveness will increase. Quality of demand has significance positive affect on Advantage of Export Competitiveness. This indicated when Quality of demand increase, Advantage of Export Competitiveness will increase.

4. CONCLUSION

In this study it includes the perspectives of export competitiveness, the compared resource based according to the view of firm and local and foreign demand conditions of the firm to propose a suitable model to identify the factors affecting to gain competitive advantage in virgin coconut oil industry of Sri Lanka. The study is based on Porter's diamond model which has mainly focused on individual firm level. According to analysis finding that Availability of Raw materials has significance positive affect on Advantage of Export Competitiveness. This indicated when Availability of Raw materials increase, Advantage of Export Competitiveness will increase. Local market has significance positive affect on Advantage of Export Competitiveness. This indicated when Local market increase, Advantage of Export Competitiveness will increase. Quality of demand has significance positive affect on Advantage of Export Competitiveness. This indicated when Quality of demand increase, Advantage of Export Competitiveness will increase. Market share of export has significance positive affect on Advantage of Export Competitiveness. This indicated when Market share of export increase, Advantage of Export Competitiveness will increase. Regression model requirements and assumptions are fulfill. It means that this model is valid. . It is hoped that future researchers may reflect positively on this work, despite its apparent limitations. Further development offered here will help to make advance understanding in the important area of export competitiveness and how it is useful in international business.

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