Export competitiveness of the Small and Medium Scale Enterprises in Sri Lanka: a case study based on the gem and jewellery sector

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Abstract

The factors affecting the export competitiveness of Small and Medium scale Enterprises (SMEs) are very complex. From the firm′s point of view, the trading environment SMEs conducts their business play an important role. Thus, a trade-enabling environment, based on adequate trade policies, an efficient trade and customs administration and good infrastructure are critical for enterprises to compete effectively in the competitive global market. Today international competition became more innovative and knowledge based, understanding trade performance goes beyond the parameters of the traditional comparative advantage paradigm and stressed the role of technology and continuous innovation for international competitiveness. Therefore, this study aims to contribute to the assessment of export competitiveness by investigating the influence of firm and industry specific characteristics in the gem and jewellery products sub sector in Sri Lanka. Structured questionnaire survey followed by descriptive and inferential statistical analysis of data was performed to identify the key factors for the export competitiveness. This study revealed that the firms export orientation, human capital and technological capabilities have significant relations to the export competitiveness of the firms. Furthermore, the government policy, freight facilities and distribution, product variability, research and development, export market promotion attitudes at the industry and firm levels have significant impact for the export competitiveness.

Key words: *Export competitiveness, Small and Medium Enterprises, Gem and jewelry, Global market*

Introduction

The importance of exports as an economic activity and a driver of economic growth has long been established in various research endeavours. An international competition has become more innovative and knowledge based, understanding trade performance went beyond the parameters of the comparative advantage paradigm and stressed the role of technology in affecting international competitiveness (Mytelka, 2000). Despite of being

developing or a developed country, the exports bring about measurable positive results to the economies. The flourishing export sector tends to improve the quality of the life of people in a country. There is no proper evidence for systematic studies to identify factors affecting export competitiveness of the SMEs previously for the Gem & Jewellery (G&J) sector in Sri Lanka. In order to address the rationale, the literature survey paved the way and provided guidance to build a suitable conceptual framework for the study. This prominent industry that offers competitive products capable of capturing premium value in the global market with the image built over the long history was not able to develop the exports up to the anticipated level up to now. Focusing on the role of SME's in shaping international competition, a critical observation made is that most of the firms face the same macroeconomic condition yet these firms respond & perform differently in their export activities. Therefore certain countries are dominating most of the product sectors by achieving 'economics of scale' by mass scale production. As such, the SMEs operating in the developing countries like Sri Lanka have to strategically handle their business to achieve the success in export endeavours. In order to survive in the respective business fields it is necessary to adopt new technology, new strategy in an appropriate manner to achieve the competitive advantage. It is of vital importance to find out the factors affecting export competitiveness in this potential product sector as nowadays the manufacturing & business sectors have become more competitive, dynamic and complex with rapid globalization.

Research Objectives

1) Overview the G&J sector in Sri Lanka & the existing mechanism of establishment for exporting G&J products

2) Ascertain the factors affecting the export competitiveness of SMEs operating in G&J product sector in Sri Lanka

3) To recommend policies and strategies to overcome obstacles & enhance export competitiveness of this industry

Research Methodology

The empirical research carried out in this area is limited as such the study was carried out through a survey of SMEs structured questionnaire. A conceptual model designed based on the literature review and questionnaire was developed first. The questionnaire was distributed among a randomly selected sample to collect data.

Conceptual Model

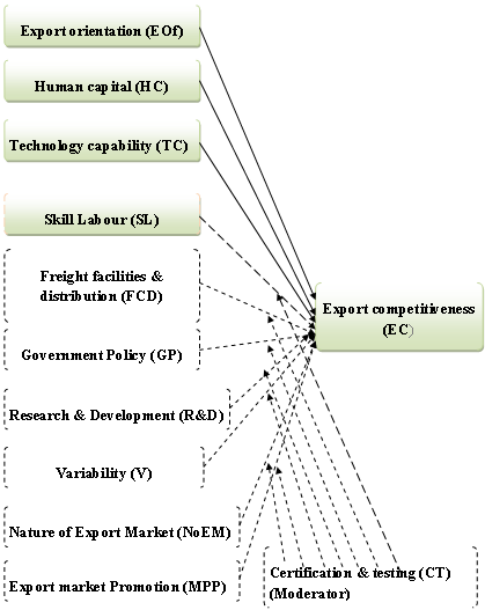

Figure 1: Shows the conceptual model developed

Denoted by Moderation effect by Certification & Testing

The framework was mainly developed by using the two models previously developed by (Cavusgil and Zou, 1994) & Prof. Michael Porters, Diamond model. The conceptual model included only one dependent variable & many independent variables.

Population frame & sampling

Approximately about 150 SMEs are operating in the G&J industry by managing sustainability in a long term basis based on their experience, operating capability, technological capability etc. The majority of the SMEs in the sector operate their business based on Colombo & Ratnapura districts especially due to the availability far better infra-structure facilities and positive environment for export business. Sample size of the study is 100.

Research instruments

Step 1- Exploratory study about SMEs and exporting mechanism of establishment

Discussions & interviews were conducted with SMEs in the G&J industry and also with related officials in key stake holders. Information and data available at the EDB and National Gem and Jewellery Authority (NGJA) was utilized effectively.

Step 2 – Pilot survey

A questionnaire is used to collect the required data for the research. The questionnaire is developed using the items used to operationalize the variables shown in Table 2. The questions used in the questionnaire were adopted from relevant prior research. The adopted items are validated and wording changes are made to tailor the instrument to match easy understanding of the target sample of the study

Step 3 – Structured questionnaire survey

The data collection for the research was planned to be instrumental in terms of a questionnaire. Five point likert type questionnaire was developed for the survey.

Questionnaire framework

Based on the knowledge acquired from the research done by the reputed researchers previously in the intended product sector and related other product sectors to determine the export competitiveness of the SMEs over the past period and our own experience was used to design the structured questionnaire.

Data collection procedure

Besides the feedback received via mails the EDB officers attached to the provincial officers and the head office supported the research by providing several sets of data.

Data Analysis

The analysis of the data was carried out by using the Statistical Package for Social Sciences (SPSS) version 17.0. Analysis based on the descriptive statistics was used to examine the characteristics of the sample. Specially checked export orientation surveyed sample at the firm level in order to assure the quality of the sample data. Pearson correlation and regression analysis is performed to test the hypotheses derived & developed the conceptual model. Conceptual model is further improved by using the moderator analysis.

Validity & reliability

Factor analysis was used to measure the validity of the collected data. Factor analysis attempts to identify underlying variables that explain the pattern of correlations within a set of observed variables. All the Cronbach's alpha values under the reliability statistic are greater than 0.6 then it can be concluded that the data are reliable.

Correlation analysis

Pearson Correlation Analysis was used in order to identify the linear associations between the variables of the conceptual model. The significance of correlation coefficients was tested at $\alpha = 0.01$ & 0.05 (2-tailed) comparing to the "p" (probability) value generated by SPSS outputs.

A correlation coefficient gives us the indication of the strength of the relationship between the variables and also the direction of that relationship. It does not indicate whether that relationship is statistically significant or not. There is a rough guide to interpret the correlation coefficients in terms of the strength of the relationship:

Table 1: Interpretation of Correlation Coefficients in Terms of Strength of Relationship

Correlation Coefficient	Strength of Relationship
0.0 – 0.2	Very weak, Negligible
0.2 – 0.4	Weak, Low
0.4 – 0.7	Moderate
0.7 – 0.9	Strong, High, Marked
0.9 – 1.0	Very Strong, Very High

Source: Student User Guide to the SPSS

Table 2; Results of Correlation Analysis

HC Pearson Correlation Sig. (2-tailed) N	1 100	TC									
TC Pearson Correlation Sig. (2-tailed) N	.245* 0.014 100	1 100	RD								
RD Pearson Correlation Sig. (2-tailed) N	0.001 0.991 100	.475** 0.000 100	1 100	V							
V Pearson Correlation Sig. (2-tailed) N	.676** 0.000 100	-.212* 0.034 100	-.458** 0.000 100	1 100	SL						
SL Pearson Correlation Sig. (2-tailed) N	-.366** 0.000 100	-0.046 0.652 100	0.036 0.720 100	-.487** 0.000 100	1 100	NoEM					
NoEM Pearson Correlation Sig. (2-tailed) N	.207* 0.038 100	.910** 0.000 100	.496** 0.000 100	-.240* 0.016 100	-0.137 0.175 100	1 100	MPP				
MPP Pearson Correlation Sig. (2-tailed) N	-0.024 0.815 100	.590** 0.000 100	.525** 0.000 100	-.331** 0.001 100	0.131 0.194 100	.681** 0.000 100	1 100	FCD			
FCD Pearson Correlation Sig. (2-tailed) N	.230* 0.021 100	0.122 0.226 100	-0.058 0.565 100	.517** 0.000 100	-0.173 0.085 100	0.044 0.664 100	0.009 0.926 100	1 100	GP		
GP Pearson Correlation Sig. (2-tailed) N	-0.073 0.468 100	.534** 0.000 100	0.17 0.090 100	-.412** 0.000 100	.465** 0.000 100	.475** 0.000 100	.279** 0.005 100	0.015 0.879 100	1 100	EOf	
EOf Pearson Correlation Sig. (2-tailed) N	.793** 0.000 100	.432** 0.000 100	0.064 0.526 100	.421** 0.000 100	-.214* 0.033 100	.394** 0.000 100	0.148 0.142 100	.299** 0.002 100	.209* 0.037 100	1 100	EC
EC Pearson Correlation Sig. (2-tailed) N	.732** 0.000 100	.582** 0.000 100	.268** 0.007 100	.254* 0.011 100	-.388** 0.000 100	.562** 0.000 100	.246* 0.014 100	0.086 0.395 100	0.183 0.068 100	.791** 0.000 100	1 100

***. Correlation is significant at the 0.05 level (2-tailed).**

****. Correlation is significant at the 0.01 level (2-tailed).**

Source: Structured Questionnaire Survey

Correlation coefficient gives the indication of relationships among the dependant variables and also their relationship with the independent variable at the significant level of 0.01 and 0.05.

Regression Analysis

Correlation itself does not explain all the relationships between variables in a research study. Regression analysis was used to notify the variables which have significant contributions to export competitiveness of the SMEs in the G & J product sector.

Table 3: Model Summary- Regression Analysis

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.907[a]	.823	.803	.17243	.823	41.261	10	89	.000

Source: Structured Questionnaire Survey

Table 4: ANOVA Results- Regression Analysis

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.267	10	1.227	41.261	.000[a]
	Residual	2.646	89	.030		
	Total	14.913	99			

a. Predictors: (Constant), EOf, RD, SL, FCD, MPP, GP, TC, HC, NoEM, V

b. Dependent Variable: EC

Source: Structured Questionnaire Survey

The correlation coefficient (R) is a measure of the linear association between variables. R value is 0.907 and closer to 1. In this model unadjusted R square is 82.3%. Adjusted R^2 represents the proportion of variance of the dependent variable that could be explained by its causing independent variables. Export orientation (EO_f), nature of export market at the firm level NoEM), skill labour (SL), human capital (HC), freight facilities and distribution (FCD), research and development (R&D), export market promotion at the industry level (MPP), government policy (GP), technological capability (TC), and product variability (V) are found to be significant determinants of the export competitiveness of the

firms, explaining 80.3% of the total variance. The ANOVA table for the overall regression shows that, F = 41.261 with 10 and 89 degrees of freedom, with a probability (in the Sig column) well below 0.05. The regression is significant.

Influence of Certification and Testing

Certification and Testing has been considered as a moderator variable in previous research studies done for the measurement of competitiveness. The variables, which are not a significant relation at the 0.05% confidence interval, by the regression and hypothesis testing check using the moderator analysis.

Table 5: Moderation Effect Coefficients - (RD)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.572	.306		8.402	.000
	RD	.410	.155	.389	2.636	.012

a. Dependent Variable: EC

Source: Structured Questionnaire Survey

Table 6: Moderation Effect Coefficients- (MPP)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.716	.236		11.517	.000
	MPP	.164	.066	.314	2.493	.016

a. Dependent Variable: EC

Source: Structured Questionnaire Survey

Table 7: Moderation Effect Coefficients- (SL)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.324	.295		18.067	.000
	SL	-.643	.095	-.736	-6.798	.000

a. Dependent Variable: EC

Source: Structured Questionnaire Survey

Table 8: Moderation Effect Coefficients- (V)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.566	.320		8.015	.000
	V	.168	.073	.292	2.301	.025

a. Dependent Variable: EC

Source: Structured Questionnaire Survey

Table 9: Moderation Effect Coefficients- (NoEM)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.386	.314		7.588	.000
	NoEM	.246	.084	.361	2.919	.005

a. Dependent Variable: EC

Source: Structured Questionnaire Survey

Table 10: Moderation Effect Coefficients- (FCD)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.307	.362		6.368	.000
	FCD	.311	.113	.342	2.746	.008

a. Dependent Variable: EC

Source: Structured Questionnaire Survey

Table 11: Moderation Effect Coefficients- (GP)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.874	.186		15.459	.000
	GP	.141	.061	.294	2.319	.024

a. Dependent Variable: EC

Source: Structured Questionnaire Survey

Certification and Testing has a significant moderation effect on the relationships between NoEM & EC, FCD & EC and MPP & EC at the 0.01 significant levels. It also found that Certification and Testing has a significant moderation effect V and EC and GP & EC at the 0.05 significant levels.

Research Approach and Hypothesis

Based on the conceptual model and key objectives of the research, hypotheses are developed as listed in Table 12.

Table 12: Research Hypothesis

Identifier	Hypothesis
H1a	Higher the export orientation at the firm level, higher the export competitiveness of the firm
H2a	Higher the human capital at the firm level, higher the export competitiveness of the firm
H3a	Higher the technological capability of the firm, higher the export competitiveness of the firm competitiveness of the firm
H4a	Higher the R & D effort at the industry level, higher the export competitiveness of the firm
H5a	There exists a positive relationship between product variability at the firm level and export competitiveness of the firm
H6a	Higher the skill labour facilities at the industry level, higher the export competitiveness of the firm
H7a	Higher the favorable export market conditions at the firm level, higher the export competitiveness of the firm
H8a	Higher the freight and distribution facilities at the industry level, higher the export competitiveness of the firm

H9a	Higher the market and product promotion at the industry level, higher the export competitiveness of the firm
H10a	Higher the favorable government policy at the industry level, higher the export competitiveness of the firm

According to the above results all the hypothesis can be accepted except H6a.

The model developed by the research to achieve the success of export competitiveness is,

Success of the Export Competitiveness = 2.394 + 0.240*(EOf) – 0.149*(FCD) + 0.058*(GP) + 0.224*(HC) + 0.194* (TC) + 0.042*(RD) – 0.134*(V) – 0.205*(SL) -0.057*(NoEM) + 0.019*(MPP)

Findings, Conclusions and Policy Recommendations

Findings

The gem industry in Sri Lanka is of great antiquity. Reference is made in the scriptures to gems being brought from Ceylon to the Court of Solomon. The entire industry employs approximately 650,000 persons including miners, cutters and polishers, dealers, jewellery designers, manufacturers and craftsmen, marketers and sales people (as per the articles published by the NGJA). The gem industry employs around 325,000 miners, 72,000 gem cutters and 300 gem exporters. Methods of gem cutting and polishing comprise both traditional method of handcrafting and the electronic methods of state-of-the art lapidaries.

The study revealed that the existing set-up for exporting the G & J products, supported by special facilities such as A T A Carnet system, GSP scheme etc. A T A Carnet system facilitates benefits for the participants of developing countries to promote their products by participating in the overseas trade fairs. G & J exporters in Sri Lanka should have to follow a set of procedures to export their G & J items. The efficiency of the supply chain of exports may influence by outcome of the key stake holders of government, individual firm specific factors, general trading environment & government regulations etc. It is also found that approximately 200, G&J exporting firms categorized under SMEs. About 150 SMEs are continuously engaged in the business over 10 Yrs period of time. Main certification and testing facility provider to the industry is NGJA meanwhile several private testing laboratories also operate to serve the purpose. The key government stake holder of the G&J sector is NGJA but there are numerous stake holders holding responsibilities with regard to customs,

marketing, environmental & forestry regulations, geological and mining regulation activities etc. In the process of exporting G & J products, the exporter has to come across the cumbersome procedure with respect to export documentation, testing and certification, custom regulations etc. With regard to the marketing perspective, the role played by the EDB seems to be important as even the prominent exporters of the industry also seek the EDBs assistance to improve their exports. Correlation analysis followed by regression analysis and hypothesis testing revealed that the EOf, HC, TC at the firm level is significant and positively correlated with the export competitiveness. This study reveals that export orientation, human capital and technology capability at the firm level are key determinants of the export competitiveness of the SMEs operating in the Sri Lankan G & J sector. Moderation role by certification and testing (C&T) is significant on many of the relationships such as FCD, NoEM, MPP, GP, V etc. With moderation by certification and technology FCD, NoEM, MPP, GP, V has shown strong positive relationship with the export competitiveness. This finding also further justifies the subsequent interviews with the proprietors of the exporting firms and experts of the governing stake holders such as NGJA and EDB. They justify that the C & T by an international organization makes a significant impact on foreign buyer. The analysis also shows that the majority of the firms are relying on their own export marketing efforts at the firm level as well as export market promotion efforts by the BDS organizations such as the EDB & NGJA etc. The majority of the firms believe that their training budget will have an influence on the technical skills & capabilities of the staff but subsequent discussions reveal they basically depend on the training facilities provided by the BDS organizations. The majority of the firms state that R & D budget of the government is not sufficient to enhance the export competitiveness of the G & J sector of Sri Lanka. They also state that new innovations resulted by research and development are not sufficient and those innovations do not transfer to the firm level. Product branding & enhancing the country image through the marketing campaigns are essential as per the view of the majority of the firms.

Recommended Strategies and Policies

Findings of this study revealed that the strategies like marketing, trade hub strategy, R&D, adaptation of state to art technology, and product standardization further improve the existing mechanism for exports. Proposed policies include identification of the need for developing industry at the national level, establishment of proper regulatory framework, provision of the decision making the powers for the key stake holders, avoiding duplications and reduce in time laps in the supply chain. Literature survey revealed that the majority of

the exporting firms operating in the G&J industry in Sri Lanka are SMEs. It is highly essential to improve the level of export competitiveness of these firms to achieve sustainable improved performance in future. The study reveals that variables or constructs which may be significant to influence the export competitiveness may vary on many parameters. Inter correlation between the key stakeholders who has direct influence on the supply chain of the G&J exports is the key to the success. G&J sector is one of the prominent product sectors to be improved to diversify the exports. To raise the export competitiveness of the Sri Lankan G&J industry, the remedy is to undertake immediate reforms in respect of three major areas (EO, NC and TC). It is also vital to improve the C&T facilities simultaneously with research and development, freight facilities and distribution, export market promotion by firm level and industry level, government policy and product variability in order to improve the export competitiveness.

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