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ANALYSIS OF TECH-DIVERSIFICATION STRATEGIES ADOPTED BY TECHNOPRENEURS: A CASE STUDY ON INTERNATIONALLY ORIENTED COCONUT TODDY TECH-BASED SMALL AND MEDIUM ENTERPRISES

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ABSTRACT

The coconut industry is an important source of foreign exchange and employment generation for Sri Lanka. This internationally recognized 'Coconut tree' or 'Kapruka' provides substantial contribution to the wellbeing of domestic people as well as the country's economy through its foreign earning generation. Pathiraja (2017) stated that in the global arena, export demand function widens its spectrum for more coconut related other products as a function. The main purpose of this research is to evaluate the performance of the TSMEs with the usage of different tech-diversification strategies adopted by the internationally oriented coconut toddy TSMEs. Secondary objectives of this research are identification of the impact and relationship of tech-diversification strategies on the TSMEs performance and determination of the optimum level of crop tech-diversification which maximizes performance of TSMEs. The ratio measures and aggregate measures from financial and physical measures are concerned for the methodology. For the sampling frame, a 58 sample of internationally oriented coconut toddy TSME technopreneurs in Madampe, Dummalasooriya, Kuliyapitiya and Narammala areas in Puttalam and Kurunegala districts in Sri Lanka considered for data collection with the usage of Simple Random Sampling technique. Findings of this research study revealed, overall tech-diversification strategy of the internationalized coconut toddy TSMEs is at a moderate tech-diversification level when considering aggregate financial measures. The level of tech-diversification should maintain at a moderate to high level where continuous and reasonable financial performance should be identified and adequately measured against the tech-diversification levels continuously.

Key Words: Internationalized Coconut Toddy TSMEs, Technopreneurs, Tech-diversification strategy

1. Introduction

Sri Lanka's internationally oriented plantation crop industry mainly consists from the three plantations of Tea, Rubber and Coconut. The internationalized coconut toddy TSMEs provide a valuable contribution to the country's foreign currency generation through exporting highly demanded coconut toddy exportation as a diversified product from the main coconut plantation. In the present technology driven competitive world, these technopreneurs try to add tech-value to the raw products, where tech-value addition through tech-diversification to the coconut toddy production as to improve TSMEs performance. Therefore, TSME technopreneurs apply different strategies such as crop tech-diversification strategies and non-crop tech-diversification strategies. Crop tech-diversification strategies are technology driven diversification strategies for core crop while non-crop tech-diversification strategies deal with core crop to utilization of under-utilized resources to gain maximum efficiency through tech-drives and tech-diversification with non-related business activities (Daud et al., 2009). As far as these coconut toddy TSMEs are concerned there are very less tech- diversifications implemented in the field. The question is, whether these tech-diversification strategies and operations are really improving the TSMEs performance? If yes, what will be the optimal level which will maximize the performance of TSMEs?

The main objective of this research is to evaluate the performance of the TSMEs with the usage of different tech-diversification strategies adopted by the internationally oriented coconut toddy TSMEs. Other objectives are identification of the impact and relationship of tech-diversification strategies on the TSMEs performance and determination of the optimum level of crop tech-diversification which maximizes performance of TSMEs.

2. Literature Review

The entrepreneurial aspect of the SMEs has more sharpen with the 'Technology' concern thus adds more technological value which is the most prominent process to undertake in current world circumstances. The use of new technologies is essential for most small businesses if SMEs are to improve their competitiveness thus face to fierce national and international competition. This presupposes access to scientific, innovative and technological information, making firms aware of developments in technology and the resources available for obtaining and using the technology correctly (Julien, 1995). The link between technology with entrepreneurship(TSMEs) and to ensure the growth of SMEs in a given economy has long been accorded a prime place in business, management and economics which still, remains inadequately tapped(Dutse et al., 2013). According to Samarajeewa (2002), since coconut is a perennial crop and hence the production decision are not made during the current year, the producer's response to changes in an economic variable is not spontaneous. Therefore, the length of lag in production response is a function of the characteristics of the industry, which may change over time due to market structure, demand and production technology changes. Pathiraja (2017) stated that the export destinations of traditional desiccated coconut have changed over the decades where a specific group of consumers cannot be selected to explain the consumer behavior of traditional desiccated coconut exports where in the global arena, export demand function widens its spectrum for more coconut related

other products as a function. Pathiraja (2015) showed during the recent past exports of coconut oil have been insignificant and at present, virtually all coconut oil produced in Sri Lanka consumes locally. Furthermore, stated that domestic coconut oil industry is characterized by a large number of small to medium scale and with obsolete machinery and technologies as they could not compete with the emerging high-tech industries like coconut cream and milk powder for raw material.

3. Methodology

Agricultural farm performance measures are concerned, there are financial and physical measures materially. Both the ratio measures and aggregate measures from financial and physical measures are concerned. As per the financial ratios, Operating Cost Ratio(OCR), Fixed Cost Ratio(FCR), Gross Ratio(GR), Benefit Cost Ratio(BCR), Break Even Productivity(BEP) and Cost Per Acre(CPA) were selected where, as per the financial aggregates, Gross Expenses(GE), Gross Profit(GP), Gross Income(GI), Gross Margin(GM) and Net Income(NI) were selected. Under the physical ratios, Yield Per Acre(YPA), Crop Yield Index(CYI), Intensity of Cropping(IOC), Crop Acre Per Main Equivalent(CAME) and Productive Man Work Unit(PMWU) were the into consideration, while for physical aggregates, Total Area Cultivated(TAC) and Total Production(TP) were selected.

Moreover, as per the sampling frame, a 58 sample of internationally oriented coconut toddy TSME technopreneurs in Madampe, Dummalasooriya, Kuliyapitiya and Narammala areas in Puttalam and Kurunegala districts in Sri Lanka considered for data collection with the usage of Convenient Sampling technique. A structured questionnaire was used to collect primary data. Time series data collected for the past years of 2015 January to 2019 December.

As per the dependent variable, Tech-Specialization Ratio(TSR) was used. Initially, as Specialization Ratio(SR), it was introduced by Rumelts (1982) where other researches modified and updated to end up with TSR. This research study has also used the modified criteria which best suit for different TSMEs as Very Highly Tech-Diversified, Highly Diversified, Moderately Diversified, Low Diversified and Very Low Diversified. Then the correlation between the TSR and the parameters explained above tested. Moreover, a descriptive plus a Simple Linear Regression used to analyze the gathered data.

Table 1: Tech-Specialization Ratio (TSR) Classification

Category	Range	Criteria
Very High Tech-Diversification	40=< TSR=<52	Sales proportion from the core product is equal or lower than 52% , equal or lager than 40%
High Tech-Diversification	53=<TSR=<64	Sales proportion from the core product is equal or lager than 53% , equal or lower than 64%
Moderate Tech-Diversification	65=<TSR=<76	Sales proportion from the core product is equal or lager than 65% , equal or lower than 76%
Low Tech-Diversification	77=<TSR=<88	Sales proportion from the core product is equal or lager than 77% , equal or lower than 88%
Very Low Tech-Diversification	78=<TSR=<100	Sales proportion from the core product is equal or lager than 88%

4. Results and Analysis

According to the descriptive statistics, (Table 2), it was revealed that TSMEs performance in different perspectives is diverse even the same level of diversification is maintained. In total, TSMEs as a whole, positioned in a level of moderate level of tech-diversification which valued TSR as 0.74 according to researcher criteria.

Table 2: Descriptive statistics results of degree of tech-diversification

Dimension	Performance Indicator	Mean	Minimum	Maximum
Degree of Diversification	Tech-Specialization Ratio	0.7300	0.5800	0.9900

Source: Data Analysis

Table 3: Pearson Correlation Results

Dimension	Indicator	Correlation Coefficient	Status of correlation
Financial Ratio	OCR	0.658	Strong Positive
	FCR	-0.290	Weak Negative
	GR	0.230	Weak Positive
	BCR	0.086	Weak Positive
	BEP	-0.004	Weak Negative
	CPA	0.497	Strong Positive
Financial Aggregate	GE	0.640	Strong Positive
	GP	0.214	Weak Positive
	GI	0.285	Weak Positive
	GM	0.497	Strong Positive
	NI	0.236	Weak Positive
Physical Ratio	YPA	0.342	Weak Positive
	CYI	0.328	Weak Positive
	IOC	0.592	Strong Positive
	CAME	-0.255	Weak Negative
	PMWU	0.827	Strong Positive
Physical Aggregate	TAC	0.512	Strong Positive
	TP	0.579	Strong Positive

Source: Data Analysis

Simple Linear Regression Model yielded following results.

Table 4: Regression Results

Dimension	Indicator	Coefficient	P-Value
Financial Ratio	OCR	0.303	0.000*
	FCR	-0.140	0.050*
	GR	0.119	0.129
	BCR	0.185	0.575
	BEP	-20	0.977
	CPA	480842	0.001*
Financial Aggregate	GE	1.9218	0.000*
	GP	27689946	0.159
	GI	83269526	0.058**
	GM	7406877	0.651
	NI	62986457	0.119
Physical Ratio	YPA	1865	0.021*
	CYI	1.09	0.028*
	IOC	0.265	0.000*
	CAME	-0.345	0.091**
	PMWU	6117	0.000*
Physical Aggregate	TAC	321	0.000*
	TP	841110	0.000*

*Significant at 0.05, ** Significant at 0.10

Source: Data Analysis

5. Discussion and Conclusion

According to the findings of this research study, overall tech-diversification strategy of the internationalized coconut toddy TSMEs is at a moderate tech-diversification level when considering aggregate financial measures. In different levels of tech-diversification, performance also varies while tech-diversification is better-off and also worse-off in different perspectives. Therefore, the level of tech-diversification should maintain at a level where TSMEs are most preferably looking at. That level can be moderate to high level where continuous and reasonable financial performance should be identified and adequately measured against the tech-diversification levels continuously.

6. Policy implications and Limitations

It is more important to concern the fact of introducing more tech-diversified strategies to this field which could benefit the toddy TSMEs nationally and internationally. The entire internationally oriented coconut toddy TSMEs face a huge labor force lack to tap and/or collect coconut toddy fruitfully and add value technologically. Even the existing small subset of labor force is also not up to the required tech-skill level. Therefore, to have an effective and efficient harvest of coconut toddy as well as to add value technologically, it is very important to equip the industry with highly competent and tech-skillful labor.

Moreover, the present scenario is that the entire internationally oriented coconut toddy TSMEs is suffering from inadequate modernized technologically upgraded machinery, tools and equipment, tech- processing facility to store the coconut toddy in an effective manner where the existing machinery, tools and equipment's, tech- processing facility are not sufficient as well as highly conventional to reasonably add technological value as to cope and compete with the international markets. These strategies would be highly prolific for the whole sector. It is more important to concern the fact of introducing more tech-diversified strategies to this field which could benefit the toddy TSMEs. It is highly recommended to have more technologically improved and up to date machinery, tools and equipment plus tech- processing facility for the entire internationally oriented coconut toddy TSMEs. The research has been conducted only in few areas of Sri Lanka. If this has implemented to the whole country the results might have been varied than the above given results.

References

Daud, W. M. N. W., Salamudin, N.B., and Ahmad, I.B., (2009). *Corporate Diversification and Performance, IBEJ*, Volume 2, Issue 01, pp. 24-29

Pandya, A. M., and Rao, N. V., (1998). Diversification and Firm Performance: An Empirical Evaluation, *Journal of Financial and Strategic Decisions*, Volume 2, Issue 1, pp. 50-78

Rumelt, R. P. (1982). Diversification Strategy and profitability, *Strategic Management Journal*, Volume 3, Issue 4, pp.359-369

Samarajeewa, S. R., (2002). The Economic Impact of Selected Government Interventions on the Coconut Sector of Sri Lanka, Unpublished.

Samarajeewa, S., Weerahewa, J. & Gunathilake, H. M., (2002). Tariff Policy Liberalization of Edible Oil Market and Its implications on the Coconut Producers in Sri Lanka. Tropical Agricultural Research, Volume 14, pp. 317-326.

Pathiraja, E., Griffith, G., Farquharson, R. & Faggin, R., (2017). Specifying and Testing an Equilibrium Displacement Model of the Coconut Market in Sri Lanka. Australian Agribusiness Review, Volume 25, pp. 55-86.

Pathiraja, E., Griffith, G., Farquharson, R. & Faggian, R., (2015). The Sri Lankan Coconut Industry: Current Status and Future Prospects in a Changing Climate. Australasian Agribusiness Perspectives - paper 106, pp. 1-23.

Surendra, S., (1997). Country Assistance Strategy for Mozambique, Board meeting of December.

Thirumarpan, (2014). Factors Affecting the Production of Cashew in Batticaloa Distric, Conference Paper, 04th International Symposium, SEUSL.

Thusyanthini, R., Sanotharan, N., and Theavivirathan, G., (2019), A Preliminary Study on Factors Affecting the Production of Cashew (Anacardium occidentale L.) in Mullaitivu District, Sri Lanka, *International Journal of Scientific and Research Publications,* Volume 9, Issue 9, ISSN 2250-3153

Singh, C. K., Robinson, P. H., McNiven, M. A., (1995). Evaluation of raw and roasted lupin seeds as protein supplements for lactating cows*, Journal of Technology*, Vol. 52, Issue 1, pp.73-76.