Promoting Innovations in Tea Smallholdings in Sri Lanka: Insights from Ureshino, Japan

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I. Introduction

Tea (*Camellia sinensis*) is the most consumed manufactured beverage in the world. It contributes substantially to the economies of producing countries in terms of Gross Domestic Production (GDP), foreign exchange and employment. Tea covers 11% of the total cultivated land in Sri Lanka. About 10% of the total population of Sri Lanka is involved in tea cultivation, processing and marketing (Central Bank of Sri Lanka, 2018). Tea cultivation in Sri Lanka is divided into two main subsectors: 1) the smallholding sector (land extents <20.2 ha) and 2) the estate sector (20.2 ha or more) (Tea Smallholders Development Authority, 2016). In 2018, the tea smallholding sector held 61% of Sri Lanka's tea-producing areas (122,448 ha) and contributed to 75% of Sri Lanka's made tea (228.1 million kilograms). There are approximately 400,000 smallholders in Sri Lanka. Their main function is cultivating and supplying green leaf to processing factories (manufactures) that convert the green leaf tea into made tea. The estate sector owns 39% of the tea-producing land (77,553 ha) and contributed to 25% of Sri Lanka's made tea (75.8 million kilograms) in 2018. The estates have their own processing factories.

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In 2018, Sri Lanka was the third largest tea exporter in the world, accounting for 14.7% of total global tea exports. Nearly 60% of this tea was exported in primary processed bulk form. Bulk tea refers to the primary tea type, which is produced at processing factories and sold at tea auctions. After bulk tea is exported from Sri Lanka, it is converted into value added forms through flavoring, blending, bagging, and packaging, and is sometimes converted into Ready to Drink (RTD) forms and other products by various business enterprises around the world (e.g. Rotterdam, London, Hamburg and Dubai) (Kelegama, 2018). Obviously, bulk tea is sold at lower prices than value-added tea forms. For instance, in 2018, the average price of Sri Lankan bulk tea was 4.01 US$/kg, while the average prices for tea bags and tea packets were 8.18 US$/kg and 4.47 US$/kg respectively. During the last five years (2014-2018) Sri Lanka earned only 4.83 US$/kg, comparatively lower than non-tea producing countries such as Poland, which earned US$10.13/kg; Germany, US$9.55/kg; and the UK, US$7.18/kg.

Japan earns as much as 24.24 US$/kg from tea exports, which is the highest among the tea exporting countries. Tea is grown on large plantations and small-scale family farms in Japan. In 2018, there were 41,600 ha of land under tea cultivation in Japan (i.e. 21% of the area under tea cultivation in Sri Lanka). The area of land under tea cultivation in Saga Prefecture, where our area of study Ureshino, is located, was 841 ha (2% of Japan's total tea cultivation areas). Saga prefecture is famous in Japanese tea history as the place where tea cultivation originated in 1191 (Brekell, 2018). In Ureshino, tea is mainly produced as a smallholder family business. There are 228 tea farmer families and 90 processing factories within Ureshino.

Japan produces hundreds of different beverage and non-beverage products from the same *Camellia sinensis* tea plant using different processing methods. Remarkably, teas and tea-based cosmetics, food supplements and

confectionaries produced in the relatively small Ureshino area, are finding markets all over the world. This reveals a huge untapped potential for innovations and new markets in the tea sector in Sri Lanka. With this as a background, the objective of this study is to determine cultivation, processing and marketing practices that could be recommended to improve innovation capabilities in the tea smallholding sector in Sri Lanka.

II. Literature Review and Theoretical Framework

Innovation can be viewed under different contexts and referred to as either an activity or an outcome. The Oslo manual (2018), an international reference guide on innovation, defines innovation activities as any developmental, financial or commercial activities resulting in significant changes in an outcome. According to Julienti and others (2010) the resource-based view of product innovation can be used to elaborate on how a firm (an entrepreneur) utilizes existing resources to initiate innovation. Barney (1991) suggests that a firm should exploit its variant resources to satisfy the consumer in order to retain competitive. Thus, firms produce new products to satisfy consumer needs through the process of innovation (Barney, 1991; as cited by Zawawi *et. al*, 2016). Resources, either tangible or intangible, are the stocks of available factors that are converted into final products or services. While tangible resources --- in our case, land, labor, and capital (warehouses, processing plants) --- are important, use of intangible resources --- such as organizational knowledge, cognition and social capital --- determines the competitiveness and sustainability of a firm (Kamasak, 2015).

Organizational knowledge has two types; 1) tacit knowledge (knowing-how); and, 2) explicit knowledge (knowing-what). Tacit knowledge gained from experience is more important to entrepreneurs. For instance, a tea smallholder who is an entrepreneur and has a processing plant, utilizes

organizational knowledge to create new tea products and market them. Cognition refers to entrepreneurial responses to changes in the external environment. An entrepreneur with cognitive capabilities correctly identifies new opportunities and allocates resources to adapt to changing consumer needs. Social capital is the access that an entrepreneur has to all the tangible and intangible resources, which are not under his control. Through social capital, an entrepreneur practices developing and maintaining relationships that form networks (e.g. with relevant government institutes, tea associations, and professional organizations). Although a large amount of empirical research has addressed entrepreneurship and innovation, hardly any research has been done in this area in regard to the tea smallholding sector in Sri Lanka. This study aims to fill this research gap by the comparative analysis of tea smallholders in Sri Lanka and Ureshino, Japan.

III. Methodology

In regard to Sri Lankan tea, value addition (flavoring, blending, and packaging) is mainly done by tea exporters. In our research, we surveyed 43 of the 180 tea exporters registered with the Sri Lanka Tea Board in 2019. The exporters are categorized into three groups based on their total average annual export quantities: 1) large, 2) medium and 3) small. In our sample 23 exporters (53%) were categorized as large, 14 were medium scale (33%) and six were small (14%). In order to elaborate on the role of tea smallholders and their involvement in innovative tea production in Sri Lankan tea industry, we used results of the Sri Lanka Tea Research Institute (TRI) survey conducted by the authors in 2016. This survey consisted of 322 tea smallholders from three districts in Sri Lanka. To identify the involvement of the tea growers and tea processors in producing innovative tea products in Ureshino, we conducted two case-studies and five key informant discussions.

We use marketing mix as a tool to compare innovations in tea marketing in Sri Lanka and Japan. Marketing mix is a set of actions that entrepreneurs use to reach consumers to market their goods or services. This is comprised of four elements: 1) product (variety, quality, design, packaging of the product etc.), 2) price (discounts, credit terms, payment period etc.), 3) place (transport, inventory, logistics etc.) 4) promotion (branding, advertising, sales promotions, public relations etc.).

IV. Results and Discussion

In this section, we present our findings related to innovations of the tea sector, focusing on major differences between Sri Lanka and Japan under three sub-categories: a) Cultivation and Input Supply b) Processing; and c) Marketing.

a) Cultivation and input supply

In order to supply quality inputs throughout the year for manufacturing, it is essential to employ proper cultivation practices. In Sri Lanka, there are two government organizations that help tea cultivation: 1) The Tea Research Institute (TRI)[1] and 2. The Tea Small Holdings Development Authority (TSHDA)[2].

Tea cultivation starts with land preparation, which include site selection, slope management, establishment of drains, etc. (Table 1). One major difference we observed in land preparation between Sri Lanka and Japan is

[1] The TRI, which was established by the British rulers in 1925, is mandated to generate new technologies (innovation) related to tea cultivation and processing and disseminate such technologies to the growers having extents four hectares or more.

[2] The TSHDA was established in 1977, to help the production and welfare of the tea smallholders (less than four hectares land) in Sri Lanka.

the slope of the land where tea is cultivated. The TRI recommends tea to be cultivated on land with less than a 31.5° slope in up country and low country regions and less than a 24.75° slope in mid country regions. As a result, the majority of tea in Sri Lanka is cultivated in areas with steep slopes between 15°-26.5°. Consequently, mechanization is impractical, and many areas have been subjected to erosion making them unproductive lands. In Japan, 94% of the tea is grown on relatively flat or moderately sloped land with slopes between 0-15°. In Sri Lanka, by contrast, the tea bushes are grown directly on the slopes. Although there is initial high capital requirement in Japan to create terraces and the like, in the long run such alterations help them to increase the productivity through mechanization and controlling soil erosion. In Japan, during the land preparation, deep plowing is done up to a one-meter depth to improve soil condition. Surface drains (furrows) are constructed to facilitate drainage, and these drains are lower in depth compared to those in Sri Lanka, due to flatter lands. These drains are used to irrigate the bushes during dry periods and conveniently move machines. In prefectures where there are prolonged drought periods, underground irrigation tubes are also laid. Irrigation is hardly practiced in Sri Lanka resulting high fatalities.

In tea planting, on average only 66% of the lands are cultivated with improved cultivars in Sri Lanka. The percentage is higher (about 98%) in the smallholdings' sector in Sri Lanka. In Japan the total area of tea cultivation under improved cultivars is 97% in both smallholding and estate sectors. In addition to developing cultivars that improve yields, fight off different diseases and thrive under different climatic conditions, Japan has been developing cultivars for innovative products such as tea beverages since the 1980 s (Dufrene, 2013). In Sri Lanka, seedlings are planted according to the conventional single-row planting to have a good spreading. In contrast the Japanese employ a double-hedgerow method in which the bushes are closer together in a "dorm type." Empty spaces between single rows encourage

higher weed growth. In Sri Lanka, this means higher costs for frequent weedicide application and labor-intensive manual weeding. In recent years, many countries, including Japan have rejected buying tea from Sri Lanka due to the high chemical content in the finished products. Japan has avoided this problem by using Polyvinyl Chloride (PVC) sheet mulch or straw mulch to reduce weed growth.

Table 1: Comparison of input supply and major agronomic practices between Sri Lanka and Japan

Variable	Sri Lanka	Japan
Land slope (average range)	15° -26.5°	0-15°
Drains	Leader and lateral drains (30-45 cm deep)	Surface drains also used for irrigation and mechanization
Extent of improved cultivars (%)	66%	97%
Planting	Mainly single rows	Mainly double hedgerows
Irrigation method	Hardly in practice	Sprinkler, drip and furrow
Weed control method	Manual, mechanical and chemical	Mulching, chemical & mechanical
Ave. number of plucking rounds	52	4
Main harvesting method	Selective plucking (manual)	Mechanical plucking
Extent under mechanical plucking	2 - 3%	80%
Green leaf yield (kg/ha)	6382	8722
Labor requirement for harvesting (Man days/ha/year)	518	170
Labor productivity (kg/man day)	12.32	51.31
Leaf quality improvement methods	None	Shading and fans

Source: Central Bank of Sri Lanka (2018), Central Tea Association of Japan (2018) and surveys of the authors.

In order to have high quality black tea, Sri Lanka mainly practices selective plucking (manually plucking two tender leaves and a bud), which is labor intensive (518 man days/year). As there is heavy labor shortage in the tea sector in Sri Lanka, and the situation is getting worse the TRI has introduced shear and motorized tea harvesting. However, these machines are hardly in use (only 2-3% of the total extent of tea cultivated land) due to

impracticability of using such machines on steep slopes.

Japan has only around four plucking rounds per year between late April and early October. Eighty percent of the total crop is mechanically harvested. The first plucking round produces the best quality tea --- *ichibancha* --- which accounts for 40% of the total harvest of the four plucking rounds. Made tea produced from *ichibancha* gains highest price thus, on many family farms, top quality buds are sometimes hand plucked. There are three types of machines used for mechanical plucking; 1) portable machines; 2) riding type and walking type self−propelled machines; and 3) rail tracking machines (World Green Tea Association, 2020). The Japanese use these innovative machines according to bush type, harvesting cycle and land slope. The national average of green leaf production in Sri Lanka was 6382 kg/ha/year in 2018 while in Japan, having only four plucking rounds and about six months dormant period, it was considerably higher amounting to 8722 kg/ha /year.

To produce different tea types, steps are taken early on during field cultivation. The Japanese use three types of shadings at this stage: 1) ceiling shelf covering; 2) simple tunnel shading; and 3) direct covering. Ceiling cover is used to protect the plants from the frost while tunnel shading is used to extend the plucking time. With direct covering, the bushes are covered by a black plastic mesh 20-30 days before plucking to produce *tencha* and *gyokuro* teas. This process reveals efforts made at the field level to increase the diversity of the finished products. In Sri Lanka, there is no human interventions in the field to improve the quality of tea.

As explained earlier, entrepreneurs use both explicit and implicit/tacit knowledge to make innovations. Interviews with tea growing entrepreneurs in Ureshino, revealed that many of them participated in a two-years

professional training course offered by the Japanese Tea Research Centers prior to starting tea cultivation. The prefectural government paid half of the tuition for the course. In Sri Lanka, tea smallholders started tea cultivation as a cash crop around 1960. Many of them were farmers resettled to marginal tea lands as part of various government development programs. Research has indicated that these farmers were not highly educated and received no or little special training in tea cultivation. Despite this, they have adopted good agricultural practices and achieved high productivity levels compared to the estate sector. As we observed, the typical role of the Sri Lankan smallholder is to supply green leaf for manufacturing and there isn't much incentive to be innovative. It can be presumed therefore that if Japanese models were followed by the TRI and TSHDA, and technological innovations and knowledge were disseminated, with necessary financial support from the government, Sri Lankan tea smallholders, could be more productive and innovative.

b) Tea processing

Black tea accounts for 98% of Sri Lanka's total tea production. About 30-40 types of tea grades are produced in the black tea manufacturing process (e.g. Orange Pekoe, Flowery Orange Pekoe, Broken Orange Pekoe). The categorizations are completely based on appearance and particle size[3]. Annual average production figures for the past ten years (2009-2018) reveal that 91% of the tea produced in Sri Lanka was orthodox black tea[4], 8% was CTC tea (crush, tear and curl type)[5], and 1% was green tea. In the production

[3] For example, Orange Pekoe is a medium sized leafy tea grade without stalk or fiber while Flowery Orange Pekoe is a tea grade with golden tips of succulent tea shoots.

[4] In orthodox black tea production, the green leaves are processed through; withering, rolling, oxidizing, drying and sorting.

[5] In CTC tea production, withered leaves are mechanically cut into uniform size and fed into the CTC machine where they are crushed, torn and curled.

of flavored teas, a flavoring agent is sprayed over the black tea and then mixed. Other than this, there has essentially been no innovations in the primary processing of green leaf in Sri Lanka (Table 2). Of the 43 firms we surveyed, only eight have produced innovative tea types other than flavoring during 2016-2019. Only one firm has produced and exported tea based non-beverage product (tea cookies) in 2016-2019.

Conversely, Japanese produce more than 20 different innovative tea types using the same tea plant. First, they produce unrefined/raw tea (*aracha*) from the green leaf, which is stored and used as a base to produce different types of tea throughout the year. Using basic processing methods, Japanese produce steamed-pressed (*fukuamushi sencha*), and pan-fried (*kamiricha*) teas. If we consider the part of tea plant used for processing, they produce *mecha* from buds, *sencha* from the leaves and *kukicha* from the stalk and stems. With respect to the type and shape of the finished product, there is *matcha* powdered tea and *tamaryokucha* ball-shaped tea. When tea is mixed with rice, it is called *genmaicha*. These are only a few examples to illustrate the variety and innovativeness of teas produced in Japan.

Loose leaf teas are sold mainly in tea pouches in Japan. Such pouches were introduced around 1982. They are light, easy to move and take up relatively less shelf space, allowing a variety of products to be sold in a small shelf area (Asopa, 2011). Japan produced 6.38 million liters of different types of tea beverage in 2017, including green tea (45%), black tea (16%), blended tea (13%), mugi tea (13%), oolong tea (10%) and other teas (10%). These tea beverages come under different container types; PET (Polyethylene terephthalate) (92%), tetra packs (6%), steel cans (1%), aluminum cans (0.7%), and glass bottles (0.2%).

Table 2: Comparison of processing between Sri Lanka and Japan

Variable	Sri Lanka	Japan
Made tea productivity (kg/ha)	1594	1899
Raw material used for processing	2-5 leaves and a bud	Tender leaves and its parts
Storage of raw materials	None	Raw tea (*Aracha)* at -25 C°
Beverage tea types (Production %)	Orthodox (91); CTC tea (8); Green tea (1)	*Sencha* (58); *Kabusecha* (5.4); *Matcha/tencha* (2.8); *Tamaryokucha* (2.8);*Gyokuro* (0.3); Other teas (30.7)
Number of leafy tea grades	App. 30-40	More than 100
Major forms of tea beverages	Lose tea, tea bags	Lose tea, tea bags, ready-to-drink (RTD) tea, powdered tea (matcha)
Types of beverage tea containers	Packet and pouch	Tea pouch, PET-bottles, glass bottles, tetra packs, and cans
Processing factories (ownership)	689	4698
■ Sole proprietorship	225 (33%)	3427 (73%)
■ Private companies	422 (61%)	483 (10%)
■ Government	37 (5%)	–
■ Agricultural unions, Farmer groups, Agricultural cooperatives and Other	5 (1%)	788 (16.7%)
Processing factories (output)		
■ Primary product	Black tea 619 (90%)	*Aracha* 3806 (81%)
■ Finished product	70 (10%)	892 (19%)
Non-beverage tea types	None	Cosmetics, food supplements, confectionary (cookies, cakes, biscuits, ice creams), culinary products, etc.

Source: Sri Lanka Tea Board 2018, Ministry of Planation Industries and Export Agriculture of Sri Lanka 2020, Central Tea Association in Japan 2018 and surveys of the authors.

Regarding tea processing facilities, 81% of Japan's 4698 tea factories are *aracha* processing factories. One of the main finding here is that even though Japan processes about 25% of the amount of green leaf tea that Sri Lanka does, there are 892 factories in Japan that produce various types of innovative teas. In 2018 in Sri Lanka, there were only 689 tea factories, of

which the larger majority (57%) belonged to large estates and private owners. Only five factories belonged to tea smallholders' federation. The role of most of the smallholders is to supply green leaf to these factories. It is important to highlight that in the two-year period in 2016 to 2018 that 23 tea factories in Sri Lanka closed down due to lack of raw material supply. As is the norm in Japan, Sri Lanka needs to think about collectivizing smallholder farmers into agricultural unions, farmer groups or farmer cooperatives, to operate their own factories and come up with innovate new supply sources, storage methods and different types of teas and tea-based products. Tea based non-beverage products such as cosmetics, food supplements, confectionary, culinary products are common in Japan. Tea-based cookies, cakes, ice cream, sauces, gift packs are produced in small-scale units and sold at local markets.

A case-study was conducted in Ureshino with an entrepreneur who owns a tea farm, a processing factory, and his own sales outlet. Using his own green leaf as well as leaf bought from neighboring farms, he annually produced 70 tons of raw tea (*aracha*) and stored it in minus 25℃ temperatures to produce different types of teas throughout the year. Both the processing factory and the sales outlet is run as a family business, by three family members. Only six people outside the family --- two in the factory and four in the sales outlet --- are employed by the firm. The processing factory produces eight major tea types (*sencha, kamairicha, tamaryokucha, matcha, konacha, kukicha, genmaicha* and black tea) as well as a tea beverage for PET bottles. The firm uses *kamairicha* tea for the PET bottles beverages, which is considered as the most popular tea type from Saga prefecture in Japan. This tea beverage is the result of a collaborative production project undertaken by eight farmer cooperatives in the Ureshino Tea Merchants Association, where the farmers received technical assistance from the Saga Prefectural Tea Research Center and Industrial Center.

Sri Lanka also lags far behind Japan in tea processing too, failing to come up with much more than what was given to it by the British rulers. To drive home this point, the TRI has failed to come up with even a single successful new product in its nearly 100 years of existence. Smallholder entrepreneurs in Sri Lanka could easily produce tea-based products if they were given enough support from the relevant agencies.

c) Marketing of tea products

Approximately 90% of the tea produced in Sri Lanka is exported. The primary product (orthodox tea) is sold at the Colombo tea auction. Buyers in the foreign countries contact exporters in Sri Lanka and forward their product requirements (e.g. tea type, either in bags, packets or in bulk form). Under these conditions, exporters purchase primary teas at the auction and process them to match with buyer requirements (e.g. by blending different types of tea to acquire taste and color and or bagging or packaging). Tea exported in bulk form (60%) is given added value by international buyers in their own tea processing centers outside of Sri Lanka through blending, flavoring, bagging, packaging, etc. In the Sri Lankan domestic market, basically lower grades purchased from the auction (e.g. Dust and Fannings grades), are either packed into different weights or sold in loose form at wholesalers, retail shops and supermarkets (Table 3).

Japan consume 96% of its total tea production domestically. It also has an auction system, but it is set up to sell *aracha* or unrefined tea, which is produced at primary processing factories. For the most part, these auctions are held on the prefecture level and the buyers purchase *aracha* for secondary processing. Processed teas are domestically sold at owner's tea outlets, tea shops, supermarkets, vending machines, on the Internet or directly from producers or middlemen to customers through courier services. Japanese market their teas abroad through overseas agents, wholesaler and

Table 3: Comparison of marketing strategies between Sri Lanka and Japan

Variable	Market	Sri Lanka	Japan
Place	Domestic channel	Colombo Auction >local buyers > wholesalers > retailers (boutiques and supermarkets) > customers	Prefectural Auction (*Aracha*) > manufactures > retailers (tea outlets, tea shops, supermarkets, vending machines) and e-marketing > customers
	International channel	Colombo Auction > exporters > importers/international agents > retailers> customers	Prefectural Auction (*Aracha*) > manufactures > agents and importers> retailers and e-marketing > customers
Product	Domestic and International	Please see Table 2 for main products and packages	Please see Table 2 for main products and packages
Price	Domestic	4-5 US$/kg	12.5 US$/kg
	International	4.9 US$/kg	26.7 US$/kg
Promotion	Domestic	Traditional promotion methods	Promote in both domestic and export market using various campaigns by the manufactures
	International	Ceylon Tea brand is promoted by Sri Lanka Tea Board and the tea exporters	

Source: Tea exporters' survey conducted by the authors (2019) and the case-studies conducted in Ureshino, Saga

retailers or directly to customers through the Internet.

Although the average domestic tea price is about 12.5 US$/kg in Japan, the prices have a large range due to product diversity. For example, in the Ureshino tea processing center, prices for 100 g of *tamaryokucha, and kamairicha* range from US$3 to US$27 and US$4.5 to US$46, respectively. The low domestic price of tea in Sri Lanka is mainly because of two reasons: 1. Sri Lanka, unlike Japan where there is tea culture (e.g. there is tea ceremony), does not have a tea drinking culture; 2) domestic teas are mainly blends of lowest grade teas. Quality tea grades are exported, but the average FOB price in Sri Lanka, is lower due to the higher proportion of bulk tea exports.

Promotion in the tea business includes branding and communication oriented towards informing a target consumer group about a particular product. In Sri Lanka, for the most part, teas are exported under the common brand name "Ceylon tea". Unlike Sri Lanka, Japan sells tea under different brand names used by different companies although these teas are commonly called Japanese tea. Among these are the world-renowned tea brands such as *Giontsujiri* and *Fukujuen*. In Japan, tea producers at all levels mainly target the domestic market. There are a large number of teas and tea products produced within different prefectures in Japan that are differentiated based on their geographical region (e.g.- *Ureshino cha, Uji cha, Sayama cha*) among domestic consumers.

In Sri Lanka, tea marketing is mainly handled by the tea promotion division of the Sri Lanka Tea Board (SLTB). Tea exporters of the SLTB are the main group who promote tea and the buyers are mainly in the importing countries that are often not where the final consumers live. Therefore, rather than using conventional advertisement and promotional campaigns to reach consumer, 83% of the tea exporters we surveyed said they participated in international trade fairs for promotion. The Sri Lanka Tea Board (SLTB) subsidized 50% of the cost for space at international trade fairs for selected exporters based on their performance. Firms who supplied the domestic market said they used different promotion methods including advertising on magazines (35%), newspapers (20%), and television (9%).

The tea manufacturing entrepreneur in Ureshino mentioned that he used a website to market his products, for which he got a 50% subsidy from Saga Prefectural government. In addition, the Ureshino firm uses innovative promotional methods such sending information to an e-mail base of around 3000 local and international consumers and creating promotions for loyal individual buyers. The firm also engages in educating school children about

Ureshino tea and provides guide tours and seminars for their local and foreign consumers as well. The tea grower we interviewed has a website to advertise his products and has a 100 to 150 customers in Japan who buy products directly and have them delivered through courier services. About 80% of his products are sold to this group and the remained 20% is sold at tea fairs and his sales outlet.

V. Conclusions and policy implications

The objective of this study is to determine cultivation, processing and marketing practices that could be recommended to improve innovation capabilities in the tea smallholding sector in Sri Lanka. In the cultivation phase, Sri Lankan smallholder entrepreneurs can benefit from adopting innovative practices such as growing more tea in flat areas where mechanization, irrigation, weed control and more efficient harvesting can be employed. Subsidies given to smallholders for re-planting and new planting should be directed for land preparation for mechanization as a lack of labor is becoming one of the major obstacles to the tea industry's sustainability. It is high time that the TRI should start taking action on appropriate farm mechanization and tea quality improvement and contribute to the industry in a meaningful way.

In the processing phase, Japan produces more than 20 different tea types while Sri Lanka has only three types (black tea, green tea and instant tea). There are also a number of non-beverage tea-based products such as culinary, confectionary and cosmetics available in the domestic market and most of them are produced in the small and medium enterprises. Sri Lankan tea smallholders have to think more about producing tea products and processing tea on their own. While keeping large tea factories for orthodox black tea (Ceylon tea) and CTC tea production for the mass export market,

new, innovative teas and non-beverage tea products could be produced in the small-scale processing factories (e.g. in 23 factories recently closed down) targeting selected domestic and international niche markets. This process can be facilitated by collectivizing smallholders first into farmer groups, unions, or cooperatives or private companies and partnering with domestic and international firms. The potential entrepreneurs should be offered training, and this might requires the collaborative efforts of the TRI and TSHDA and Industrial Technology Institute (ITI).

Tea-manufacturer-owned tea shops, e-marketing, market segmentation, consumer convenient packaging, differential prices, and cost-effective advertising methods are some of the innovative marketing approaches observed in Japan. In terms of marketing in Sri Lanka, direct linkage of innovative tea producers to exporters would be beneficial at the initial stage. Effective means of promotion such as websites and e-mail consumer base could be practical and efficient for niche marketing. In the case of marketing non-beverage tea products, small-scale processing centers can initially target the domestic market and foreign tea fans visiting Sri Lanka.

Thus, by innovating cultivation, processing and marketing practices, Sri Lanka should be able to develop and advance its smallholder tea industry. This will help Sri Lanka as a whole to overcome its existing product and market concentrations and help to diversify, expand and sustain the Sri Lankan tea industry.

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