The Impact of Management Factors on Labor Productivity in the Tea Small Holding in Sri Lanka

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ABSTRACT : Tea production in smallholding sector, the dominant sector in Sri Lankan economy, is below its targeted levels. Therefore, this paper attempts to study the labor productivity in tea smallholding sector in order to uplift its sustainability. The study was carried out at Pitigala area in Galle district, Southern Province in Sri Lanka. Hundred tea pluckers from the five tea estates were selected as a sample of the study by using a structured pre-tested questionnaire. Based on correlation and the regression analysis, the study results revealed that management factors have a strong effect on labor productivity in the tea smallholding. Further, the most effective mode of management factor was Human Resource factor which indicated a correlation value of 0.795 and a regression value of 0.785. When comparing the values for Operational factors for the correlation it illustrated as 0.634 and regression value was shown as 0.649. Based on the results, the study showed a adequate level of service to the industry at present but need to improve the extension of the services in the high competitive environment of the production process of tea industry. Based on the survey, the study recommends strengthening the extension services in order to disseminate updated knowledge among tea smallholders and improving the high contribution to the nation in order to make the tea sector in Sri Lanka more efficient, effective and sustainable.

I. INTRODUCTION

Tea (*Camellia Sinensis*) can be called the most important crop among the main plantation crops grown in the plantation over the world. Tea is a natural beverage that competes in the world market with other natural beverages like coffee, cocoa, and alcoholic drinks and formulated products like soft drinks (Department of Census and Statistics, Statistical Pocket Diary, 2018). It has two basic forms, black tea and green tea. Literature has indicated that tea is the cheapest drink in the globe next to water (Warnakulasuriya, 2017). This crop, which had a massive impact on the plantation industry and the economy, was introduced to Sri Lanka in 1822 by Stuart Mcancy, the Governor of Sri Lanka (Arunatilaka, 2000). They initially introduced coffee cultivation and later expanded to include tea, cinnamon, coconut and rubber.

The first batches of tea seeds brought from China and Assam in north–east India were planted in the green houses of the Royal Botanical Gardens in Peradeniya, Sri Lanka (Tea Board, 2016). Therefore, tea sector has been the backbone of the Sri Lankan economy for over a century and half (Annual Report TRI, 2017). Estate sector and smallholder tea holding sector are the two main sectors of tea industry in Sri Lanka (Samaraweera, 2013). Lands less than 10 acres (4 hectares) in extent are considered as "tea smallholdings" according the Tea Control Act (Perera, 2014). Total land extent of tea smallholdings in Sri Lanka was 98,955 hectares in 2018, out of the total tea extent of 221,968 hectares (Central Bank, 2019). Tea Smallholder sector with a production of 76% of the national tea output, and made tea productivity of 2125 kg ha-1 year-1. Further, it provided livelihood for an estimated 4 million, which is about 20% of the total population (Ministry of Plantation Industries 2017). The tea produced in Sri Lanka is popularly known as "Ceylon tea" and 'high quality tea' in the global trade and continues to uphold its creditability in terms of quality and hygiene of the product (Moder and Wijeratne, 2001). Sri Lanka produces tea throughout the year and the growing areas are mainly concentrated in the central highlands and southern inland areas of the island. They are broadly grouped under the following categories according to their evaluations, with high grown ranging from 1200m upwards, medium grown covering between 600m to 1200m and low grown from sea level up to 600m. There are six main tea producing areas namely Galle to the south of the island; Ratnapura, about 65 Km east of the capital Colombo; Kandy, the low region near the ancient royal capital; Nuwaraeliya, the highest area that produces the finest teas; Dimbula, west of the central mountains; and Uva located east of Dimbula. Out of which Galle area was selected for this particular study. Figure 1 presents the main tea producing areas in Sri Lanka below.

Figure 1: Six main tea producing areas in Sri Lanka

Sri Lanka has shown two main categories of tea production with its nature namely upcountry tea and low country tea (National Plantation Management, 2000). Number of tea holdings and extent of tea, province wise is illustrated in the table 1 given below.

Table 1: Number and Extent of Tea by Provinces

Province	No. of Tea Holding	Extent (Ha)
Western	8,525	3,502
Central	26,000	78,051
Southern	101,818	38,110
North Western	135	49
Uva	15,440	29,868
Sabaragamuwa	55,138	31,580

(Source: Tea Commissioner's Division - 2014)

The tea industry in Sri Lanka provides year-round employment to over one and half million people - mostly female - while an equal number depends on tea-related ancillary activities for their livelihood. The extent of land in small holders sector is more than 287,000 hectares. The smallholders lands contribution is 40% (88,000 hectares), compared to the Large Scale of 60% (104,602 hectares). However, Small Scale tea production contribution is 61% which is more than other sectors of tea (Central Bank, Annual Report, 2018). The following wage trends were observed in the tea industry related labour market in Sri Lanka as shown in the table 2.

Table2: Tea - Daily wages by sector and gender (Informal)

Tea Industry	2015	2016	2017	2018	2019
Male (Rs.)	500	633	880	1000	1200
Female (Rs.)	300	434	628	842	1000

(Source: Central Bank, 2020)

The 'Growing of tea' recorded a significant negative growth rate of 7.1 percent in second quarter of 2018 and reported 6.8 positive growth rate in the second quarter of 2017. The total tea production has recorded a decrease of 6.8 percent over the corresponding quarter of 2017. The labour issues in the tea plantation industry and adverse weather conditions that existed in tea cultivation areas were the main reason for the decrease of tea production (Central Bank, 2019). Sri Lanka tea exports for first quarter of 2018 amounted to 68,701 MT and there was a decline of 2.2 percent against the same period previous year. The average price in Colombo auction per 1 kg of tea in second quarter of 2018 was Rs.576.24 in comparison to Rs.621.46 for the same quarter of 2017. The low grown tea having the largest market share around 60.2 percent of total tea production, recorded a

7.5 percent decrease in this quarter (Department of Census and Statistics, 2018). The tea sector has always been a vital component of the in Sri Lankan economy. It is also the country's largest employer providing employment both directly and indirectly to over one million people (Department of Census and Statistics, 2018). It also contributes a significant amount to the government revenue and to the gross domestic product. This position is demonstrated through the real income earnings by the country. Real National Income of the tea is (Rs. million Dollars) 2095, 1862, 1814, 3289, and 3779 respectively in the year 2004, 2005, 2006, 2007 and 2008 (Dept. of Census and Statistics, 2007). The real national income of the tea for export purpose is presented in the table 3 as follows.

Table 3: The World Export Tea – (MN Kg)

Country	2014	2015	2016	2017	2018
Sri Lanka (-2.31%)	1630.693	1339.945 (-17.83%)	1265. 243 (-5.57%)	1530.196 (20.94%)	1426.779 (-6.76%)
India	642.250	659.050	634.830	728.990	742.880
Kenya	1150.100	1368.490	1189.740	1250.270	1390.530
China	1273.470	1381.590	1484.880	1609.950	1780.000

(Source: ITC, 2019)

World export tea in 2019 has indicated as 3779 million kg in Sri Lanka and it has shown 1426.779 million kg in 2018 in the above table. Figure 2 present the Value of export tea from few countries as below.
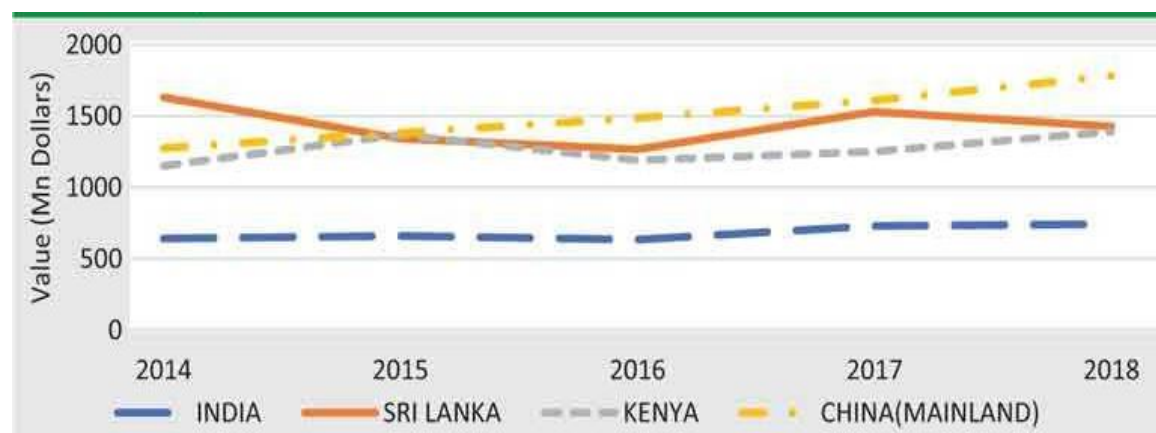

Figure 2: Value of Export Tea

In the tea manufacturing process, the labour productivity has several stages. Among those, tea plucking is the most imperative; according to Sivaram (1996), among the yardsticks available for judging the production efficiency of the tea industry, the most important is the plucker productivity and it represents the quantity of green tea leaves harvested per person per day. Plucker productivity in Sri Lanka is 17 kg to 20 kg person-day for the state sector and 20 kg to 24 kg person-day for the private small holdings sector, whereas, in Kenya the average is 40-50 kg person-day (Sivaram, 1996). Substantial variability can be seen in the quantity of leaf plucked by different pluckers. Jain et al. (1996) have shown that the physical condition and fitness of the pluckers, actual plucking methods and motion patterns account for the above differences. However, factors such as the type of clone, plucking intervals, climate factors, the elevation and various field practices adopted by the management also influenced the plucker productivity. (Sivaram and Herath, 1996).

One of the methods to increase the productivity of the tea plantation is to increase the plucker productivity, which is measured in kilograms of green leaves harvested per day. Plucker productivity depends on effective plucking time (EPT) and the speed of plucking. The actual time that pluckers spend on plucking is known as EPT. Pluckers perform different activities in the field other than actual plucking such as walking to weigh the leaves, weighing the leaves and transferring the leaves, which influences the EPT. According to time utilization study conducted in India the effective plucking time ranged from 3.8 hours to 5.7 hours per day. (Venkatakrishnan, 1996).

The macro-level position of smallholdings is somewhat distorted by wide-ranging regional differences. This will be evident from the sub sectors into which they can be classified. The highly productive; mostly clone tea with yields exceeding 2,000 kg/ha/yr is indicated in some sectors (Sivapalan et al., 2006). For this category, tea is invariably the sole or predominant crop and the use of hired labour is high. These units are mostly found in the southern districts of Galle and Matara, where the area under tea has gone up by more than 10,000 ha over the last 12 years (Tea Board, 2015). The objective of plucking tea is to harvest the maximum yield of good quality leaves per unit area, combined with the maximum labour efficiency (Watson, 1980), However the current labour utilization and labour management of tea sector has a huge gap (TSHDA, 2017). Among many issues, workers out-migration is a major problem faced by the management of the small scale tea sector (Wijerathne, 2004). Based on the out-migration, the workers contribution, especially women workers' contribution, maintains less quantity. Turnover and absenteeism, unrest of workers and theory X behaviour of the workers are common behavioural factors in this sector (Department of Census and Statistics, 2018).

The purpose of this article is to examine the factors affecting the productivity of the labour force in the Tea Small Holdings of the Galle district, Sri Lanka. Further obtaining a situational analysis or a snap shot of the situation with reference to the labour related productivity in the tea industry of the particular area is within the scope.

II. LITERATURE REVIEW

This section reviews secondary data obtained from similar research and publications, which will be analytically presented. The discussion covered numerous theories and models to improve productivity, especially labour productivity under this section and overview of selected constructs in relation to the study in the tea industry.

Theoretical background of the study: The focus is given in this section to identify some of the concepts which can be ideally used in conceptual and theoretical backgrounds. Due to the sheer ability of the infrastructure geared towards productivity, many of the following concepts are well practiced in a practical environment in western countries. Nevertheless due to the infrastructural and attitudinal factors in countries like Sri Lanka, it is a challenge to implement and practice the concepts which helps to improve the productivity (Nandasena, 1999; Opatha, 1995; Udayanga, 2004, 2009).

Cause and effect diagram (Kaoru Ishikawa) **:** Ishikawa diagram (also called fishbone diagrams or cause-and-effect diagrams) shows the causes of a certain event. Common uses of the Ishikawa diagram are product design and quality defect prevention, to identify potential factors causing an overall effect. Each cause or reason for imperfection is a source of variation. Causes are usually grouped into major categories to identify these sources of variation (Sharma, 1993). Figure 3 presents the fish bone diagram as follows.
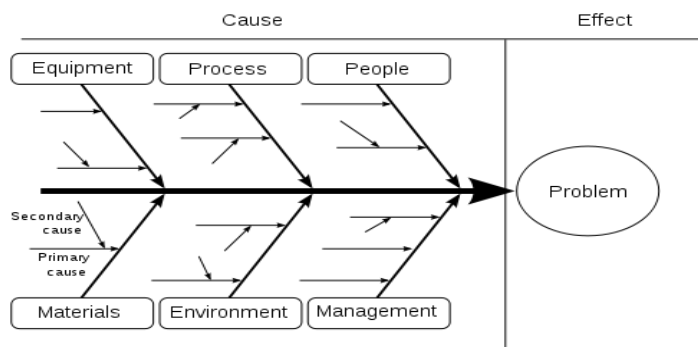

Figure 3: The Fish Bone Diagram

The categories typically include several such as People: anyone involved with the process; Methods: how the process is performed and the specific requirements for doing it, such as policies, procedures, rules, regulations and laws; Machines: any equipment, computers, tools etc. required to accomplish the job; Materials: raw materials, parts, pens, paper, etc. used to produce the final product; Measurements: data generated from the process that are used to evaluate its quality and Environment: the conditions, such as location, time, temperature, and culture (Douglas and Choudhr, 1997).

***Five (5) S Systems*:** Five (5) S is the name of a workplace organization methodology that uses a list of five Japanese words which, transliterated and translated into English, start with the letter S (Forrest, 1985). This list is how it should be stored and most importantly how the new order will be maintained. **Phase 1 - Seiri (整理)** Sorting: Going through all the tools, materials, etc., in the plant and work area and keeping only essential items. Everything else is stored or discarded. **Phase 2 - Seiton (整頓)** Straighten or Set in Order: Focuses on efficiency. When we translate this to "Straighten or Set in Order", it sounds like more sorting or sweeping, but the intent is to arrange the tools, equipment and parts in a manner that promotes work flow. **Phase 3 - Seisō (清掃)** Sweeping or Shining or Cleanliness: Systematic Cleaning or the need to keep the workplace clean as well as neat. The key point is that maintaining cleanliness should be part of the daily work - not an occasional activity initiated when things get too messy. **Phase 4 - Seiketsu (清潔)** Standardizing: Standardized work practices or operating in a consistent and standardized fashion. Everyone knows exactly what his or her responsibilities are to keep above 3S's. **Phase 5 - Shitsuke (躾)** sustaining the discipline: Refers to maintaining and reviewing standards. Once the previous 4S's have been established, they become the new way to operate. Maintain the focus on this new way of operating, and do not allow a gradual decline back to the old ways of operating. However, when an issue arises such as a suggested improvement, a new way of working, a new tool or a new output requirement, then a review of the first 4S's is appropriate. A sixth phase, "Safety," (安全) is sometimes added (Clarke, 1997). Purists, however, argue that adding it is unnecessary since following 5S correctly will result in a safe work environment. Often, however a poorly conceived and designed 5S process can result in increases in workplace hazard when employees attempt to maintain cleanliness at the expense of ensuring that safety standards are adequately followed (Brust, and Gryna, 2002).

***Pareto Principal*:** The Pareto principle (also known as the 80-20 rule, the law of the vital few, and the principle of factor sparsity) states that, for many events, roughly 80% of the effects come from 20% of the causes (Barbora and Barush, 1996). Business management thinker Joseph M. Juran suggested the principle and named it after Italian economist Vilfredo Pareto, who observed in 1906 that 80% of the land in Italy was owned by 20% of the population; he developed the principle by observing that 20% of the pea pods in his garden contained 80% of the peas. It is a common rule of thumb in business; e.g., "80% of your sales come from 20% of your clients." Mathematically, where something is shared among a sufficiently large set of participants, there must be a number k between 50 and 100 such that k% is taken by $(100 - k)$% of the participants. k may vary from 50 (in the case of equal distribution) to nearly 100 (when a tiny number of participants account for almost all of the resource). There is nothing special about the number 80% mathematically, but many real systems have k some where around this region of intermediate imbalance in distribution. Figure 4 presented the Pareto principle theory as below.
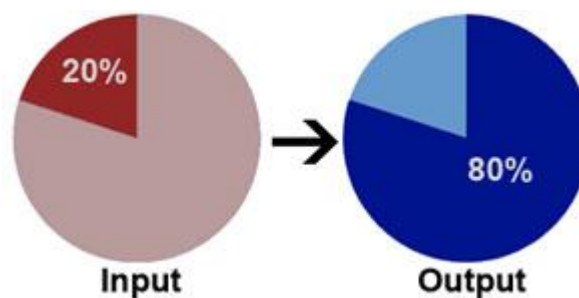

Figure 4: The Pareto principle theory

As per the above diagram 80% of the output is controlled by an input of 20%. Applying the productivity theorems where productivity is measured on output over input, controlling the influential 20% of input could have an impact on the majority 80% output (Bandara, 2002).

***Kaizen* :** Kaizen (Japanese for "improvement" or "change for the better") refers to a philosophy or practices that focus upon continuous improvement of processes in manufacturing, engineering, supporting business processes, and management (Anonymous, 1998). It has been applied in healthcare, government, banking, and many other industries. When used in the business sense and applied to the workplace, kaizen refers to activities that continually improve all functions, and involves all employees from the CEO to the assembly line workers (Adams, 1982). It also applies to processes, such as purchasing and logistics that cross organizational

boundaries up to the supply chain. By improving standardized activities and processes, kaizen aims to eliminate waste (see lean manufacturing). Kaizen was first implemented in several Japanese businesses after the Second World War, influenced in part by American business and quality management teachers who visited the country. It has since spread throughout the world. People at all levels of an organization can participate in kaizen, from the CEO down, as well as external stakeholders when applicable.

Mechanism of Labour Productivity: Factors based up on Human Resources and Operational will be considered under the mechanism of Labour Productivity. Different authors developed many theories related to human resources as indicated in the literature. Few theories relevant to this study are presented in table 4 given below.

Table 4: Human Resource Related Theories

Theory	Author
Vocational choice theory	Holland , (1959)
Theory of work adjustment	Dawis &Lofquist, (1984)
Attraction-selection-attrition framework	Schneider, (1987)
Goal theory	Pervin, (1989)

(Source: Perera, 2014)

This study lays greater emphases on Attraction-Selection-Attrition framework by Schneider's (1987). The reason for this is that several subject related studies (Hamdan, 2011; Harada and Bowman, 2004).) have referred to Schneider's (2000) Attraction-Selection-Attrition framework as the foundation for their research.

Attraction-Selection-Attrition Framework : Schneider (2000) after developing a framework on attraction-selection-attrition proposed that employees primarily behave depending on attributes, and not on the outside work environment, technology or the organization structure (Schneider, *et al*.2000). This framework which highlights three main elements are shown in figure 5 below.
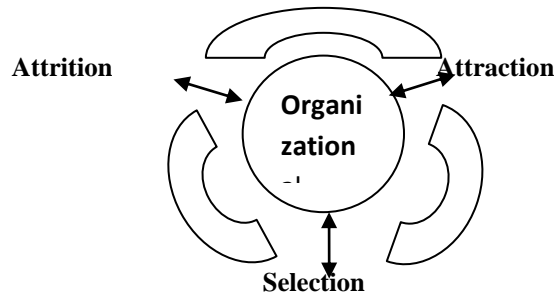

Figure 5: Attraction-Selection-Attrition cycle
(Source: Schneider *et al*., 2000).

The manner as to how, high performance human resource practices effect congruence among employees and their organizations is reflected by this framework (Boon *et al*., 2011).The main notion of this framework indicates that organizations attract, select and retain people who show personal characteristics that corresponds to the organization (Boon et al., 2011; Perera et al., 2013). According to the pattern of attraction, the organizations draw persons who identify their character to possess some similarity with the institution, like having the values of an organization. Organizations select persons who seem to match the job requirements and the common organizational setting which is reflected by the selection and when they are not compatible with the environment they apt to leave, which is known as attrition (Schneider, *et al*. 2000).

*Howletts Hierarchy of Work Motivators***:** The definition of motivation is to give reason, incentive, enthusiasm, or interest that causes a specific action or certain behaviour (Wu and Zembo, 2008). Motivation is present in every life function. Simple acts such as eating are motivated by hunger. Education is motivated by desire for knowledge. Motivators can be anything from reward to coercion. However, there are many theories and labels that serve as sub tittles to the definition of motivation. A common place that we see the need to apply motivation is in the work place. It is critical that anyone seeking to lead or motivate understand "Howletts Hierarchy of Work Motivators." Salary, benefits, working conditions, supervision, policy, safety, security,

affiliation, and relationships are all externally motivated needs (Wu and Zembo, 2008). These are the first three levels of "Howletts Hierarchy". When these needs are achieved the person moves up to level four and then five. However, if the levels from one to three are not met, the person becomes dissatisfied with their job. When satisfaction is not found, the person becomes less productive and eventually quits or gets fired. Achievement, advancement, recognition, growth, responsibility, and job nature are internal motivators (Wu and Zembo, 2008).. These are the last two levels of "Howletts Hierarchy." They occur when the persons motivate themselves (after external motivation needs are met.) Figure 6 presents the motivational process.
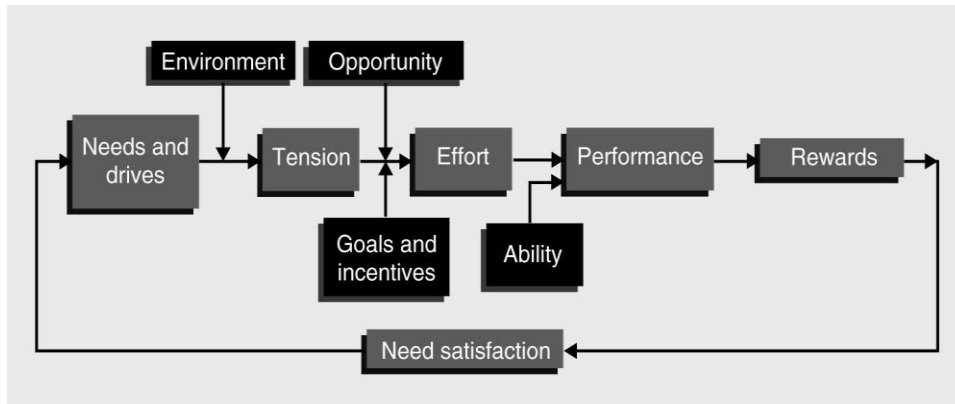

Figure 6: Motivational process
(Source: Nelson and Quick, 2005)

Motivation is not the only factor which affects the labour productivity. Also it is important to identify the needs of motivation. Figure 7 presents the Maslow's hierarchy theory as below.

Figure 7: Maslow's Hierarchy of Needs

Addressing the correct need required for motivation is a key in the labour productivity. Above model is a method to identify the needs for motivation of employees in the organization.

***Labor Relations and Industrial Relations* :** Industrial relations has three faces: science building, problem solving, and ethical. Industrial relations scholarship assumes that labor markets are not perfectly competitive and thus, in contrast to mainstream economic theory, employers typically have a greater bargaining power than employees. Industrial relations aspect also assumes that there are at least some inherent conflicts of interest between employers and employees (for example, higher wages versus higher profits) (Yang, Che and Spector, 2008). Thus, in contrast to scholarship in human resource management and organizational behavior, conflict is seen as a natural part of the employment relationship. Industrial relations scholars therefore frequently study the diverse institutional arrangements that characterize and shape the employment relationship ranging from norms

and power structures on the shop floor; employee voice mechanisms in the workplace; collective bargaining arrangements at a company, regional, or national level; various levels of public policy and labor law regimes; and "varieties of capitalism" such as corporatism, social democracy, and neo-liberalism (Asian Development Bank (2005).

***Typical Reasons for Employee Training and Development*:** Training and development can be initiated for a variety of reasons for an employee or group of employees. Figure 8 illustrates the need of training and development process with four stages process as shown below.
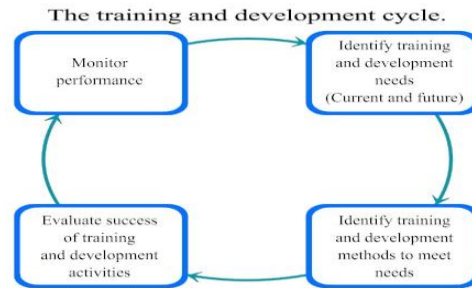

Figure 8: Training and Development Cycle

Training is designed for the purpose of employees who work in the line operations except the top management and development process is continued in accordance with the needs of the top management in the organization (Zimmerman, Kristof-Brown, and Johnson, 2005).

World Tea Industry : The main tea producing countries of the world are in Asia and Africa, of which the six largest are India, China, Sri Lanka, Kenya, Indonesia and Turkey. Figure 9 illustrates the global beverage consumption forecast in 2021 as indicated below.
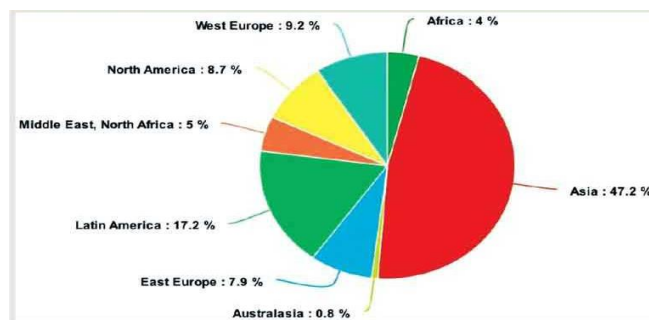

Figure 9: Global Beverage Consumption Forecast in 2021
(Source: Canadian, 2019)

Other smaller producers are Taiwan, Japan, Malaysia, Vietnam, Laos, Kampuchea, Burma, Thailand, Singapore, Papua New Guinea, Tanzania, etc. Although all of them have advanced their production levels over the years, the overall growth has been slow in the last decade (Sri Lanka's Tea Industry, world bank discussion paper, 1997). The contribution by the main producers in the tea market is given in the figure 10 below according to Forbes and Walkers tea brokers -International tea committee, 2006
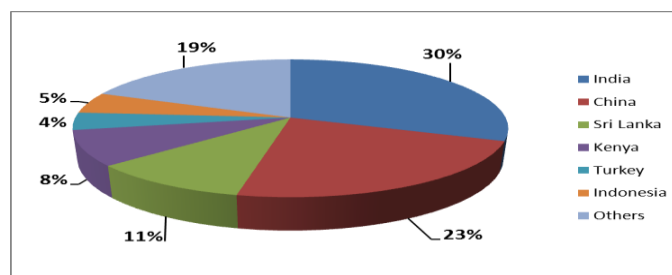

Figure 10 : Contribution by the main producers in the tea market

United Nations, Food and Agriculture Organization (2006) noted that Share of Global Tea Production which is presented in figure 11 below.
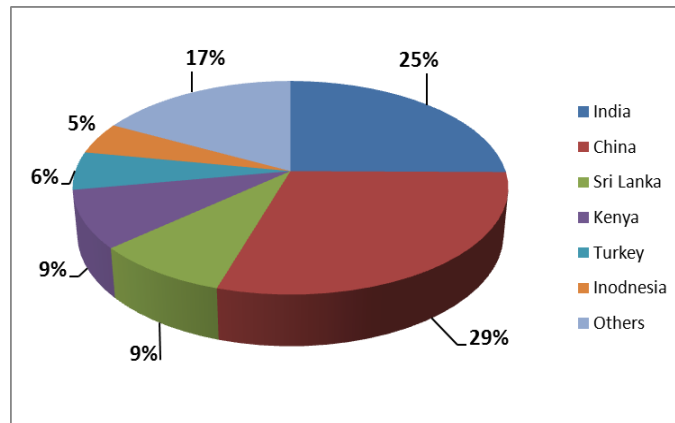

Figure 11: Share of Global Tea Production, 2006

Tea Industry in Sri Lanka: Orthodox black tea is now produced in a multitude of flavours: Strawberry, Raspberry, Mint, Rose, Banana, and the popular Earl Grey teas, which come in attractive packages. Tea bags are most popular in the west. ((Arunatilaka, 2000). Every aspect of tea production process requires manual assistance. From the land preparations to processing of the end product have many different tasks, which are quite different to each other. Therefore, both men and women workers perform different tasks and specialization of tasks and division of labour is a characteristic of the tea industry in Sri Lanka (Shankar, 2003). In the field, production process of tea starts with land preparation and it includes planting of tea, leading to bearing, pruning and plucking. Meanwhile, other cultural practices such as fertilizer application weed management, pests and disease management are essential while soil conservation and other sanitary work too are carried out in the field. After plucking, the leaves are brought to the factory. In the factory, tea leaves are subjected to withering, drying and grading to produce black tea grades. (Arunatilaka, 2000; Shankar, 2003). Among the field activities there is pruning and composting; manual transport and its application; cutting and cleaning of drains; planting and looping of shade trees; tipping and cutting across plants; chemical and hand weeding; and pest disease management (Samarasuriya 1981).

Labour Utilization in Tea Industry : Even though tea productivity depends on several factors such as soil, climate, crop and management other human factors also influence the plucker productivity (Venkatakrishnan and Sankar, 1996). Actual time that pluckers spend for plucking is dependent on plucker productivity. In order to calculate plucker productivity the green leaves harvested per hour needs to be measured. The average yield per plucker is around 20-24 kg of green tea leaves from 8 am to 2 pm. The effective plucking time is 3.3 hours. Some of the activities during the time spent by a labourer during afore mentioned work hours are idling on the field, transportation of pluckers to distant fields, lunch and water breaks at sites. (Venkatakrishnan and Sankar, 1999). Hence the quality time utilized for actual plucking is around 50%-60% of the total time. Daily routine work of a plucker is presented in the figure 12 below.
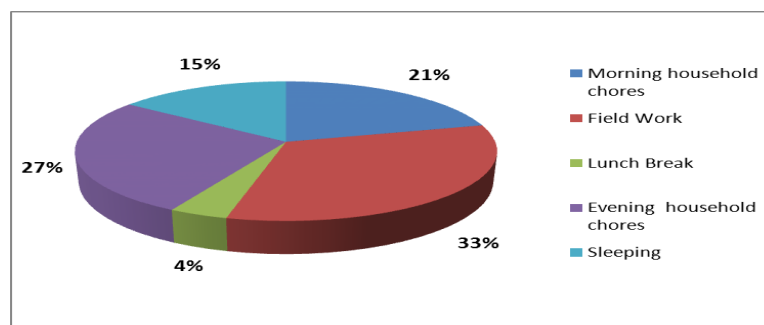

Figure 12: Daily routine work of a Plucker

Productivity : Productivity can be interpreted in different dimensions. It is not just applicable for a process or a mechanism but can be interpreted more holistically (Daily News, 2007). In the modern context the founding of the productivity and the concepts of productivity was done by Adam Smith who is a Scottish Moral philosopher and a pioneer of political economics. Productivity is a measure of output from a production process, per unit of input (Ekanayake, 1995). Labour productivity is typically measured as a ratio of output per labour-hour, and input. Productivity may be conceived as a metric of the technical or engineering efficiency of production (Saari, 2006). Productivity is a concept that is understood differently by different people. Ratio of output to input is a general view for the productivity (Hesket, 2010).

"Productivity is the belief in human progress. It is a state of mind which aims at perpetual improvement while it is a ceaseless effort to apply new technology and new methods for the welfare and happiness of mankind. Further it can be understood as the training of the minds and the development of attitudes of the people as a whole which determines whether the nation will realize high productivity and an affluent life or low productivity and poverty" (Asian Productivity Organisation, 2013).Productivity is very important for any existing company or organization today. This is precisely why the concept of productivity analysis is something that all companies and organizations have to be very familiar with. In its very basic form, productivity analysis is just a comparison between the estimated and the actual when it comes to manpower expenses such as Labour Productivity, direct labor cost productivity, capital productivity, direct cost productivity, total cost productivity, foreign exchange productivity, energy productivity and raw material productivity (Food and Agriculture Organization, 2005).

During this study the focus will be on labour productivity. Productivity and human resources go hand in hand. The increase of labour productivity will have an inevitable effect on the overall productivity. Workforce productivity is the amount of goods and services that a labourer produces in a given amount of time

$$\text{Labour Productivity} = \frac{\text{Labour Output}}{\text{Labour Input}}$$

This can be measured for a unit time so it can be expressed as a rate. Above is a mathematical method to concisely measure labour productivity. The indexes of output per hour measure the changes in the relationship between output and the hours expended in producing that output (Food and Agriculture Organization, 2005). To calculate a labour productivity index, an index of industry output is divided by an index of hours.

Human Resource Management on Labour Productivity: Factors based on human resources and operational processes will be considered under the mechanism of labour productivity. Motivation, training and development, labour and industrial relation, appraisal of the employees, safety and health, and welfare of the employees are few of human resource factors relevant to the labour productivity (Muchinsky, 2003) in this study.

Motivation: Motivation can be defined as the incentive, enthusiasm, or interest that promotes a precise deed or positive behaviour. Motivation exists in every single function of life. Even eating, although a very simple deed is motivated by hunger. The yearning for knowledge motivates education. Motivators can include rewards as well as duress. There are two main kinds of motivation: intrinsic and extrinsic. Intrinsic motivation is internal (Muchinsky, 2003). It occurs when people are compelled to do something out of pleasure, importance, or desire. Extrinsic motivation occurs when external factors compel the person to do something. However, there are many theories and labels that serve as sub tittles to the definition of motivation. A common place that we see the need to apply motivation is in the work place (Muchinsky, 2003). Motivation is not the only factor which affects the labour productivity. It is also important to identify the needs of motivation. Addressing the correct need required for motivation is a key aspect in the Labour Productivity.

*Training and Development***:** Training and development can be initiated for a variety of reasons for an employee or a group of employees when a performance appraisal indicates performance improvement is needed; to "benchmark" the status of improvement so far in a performance improvement effort; as part of an overall professional development program; as part of succession planning to help an employee be eligible for a planned change of role in the organization; to "pilot", or test, the operation of a new performance management system; and to train on a specific topic. Typical topics of employee training can be listed as **Communications,** a

necessity for the increasing diversity of today's workforce that brings a wide variety of languages and customs; **Computer skills,** that are becoming a necessity for conducting administrative and office tasks; **Customer service,** which is vital with increased competition in today's global marketplace for the employees to understand and meet the needs of customers; **Diversity** training which incorporates the different perspectives, views of people, and techniques to value diversity; **Ethics,** as today's society has increasing expectations about corporate social responsibility; **Human relations**, highlighting the increased stresses of today's workplace that can instigate misunderstandings and conflict; **Quality initiatives,** such as Total Quality Management, Quality Circles, bench marking, etc., require basic training about quality concepts, guidelines and standards for quality; **Safety**, a critical training when working with heavy equipment, hazardous chemicals, repetitive activities, etc., but can also be useful with practical advice for avoiding assaults; and **Sexual harassment,** to describe the organization's policies about sexual harassment, especially about the inappropriate behaviors (Gamage and Wickramasinghe, 2000).

Labor and Industrial Relations: When labor markets are seen as imperfect or when the employment relationship entails conflicts of interest, one cannot rely on markets or managers to always serve workers' interests, and in extreme cases to prevent worker exploitation. Industrial relations scholars and practitioners therefore support institutional interventions to improve the working of the employment relationship and to protect workers' rights (Government of Sri Lanka, 2015). The nature of these institutional interventions, however differ between two camps within industrial relations. The pluralist camp sees the employment relationship as a mixture of shared interests and conflicts of interests that are largely limited to the employment relationship. In the workplace, pluralists therefore support grievance procedures, employee voice mechanisms such as work councils and labor unions, collective bargaining, and labor-management partnerships. In the policy arena, pluralists advocate for minimum wage laws, occupational health and safety standards, international labor standards, other employment and labor laws as well as public policies. These institutional interventions are all seen as methods for balancing the employment relationship to generate not only economic efficiency, but also employee equity and voice. In contrast, the Marxist-inspired critical camp sees employer-employee conflicts of interest as sharply antagonistic and deeply embedded in the socio-political-economic system. From this perspective, the pursuit of a balanced employment relationship gives too much weight to employers' interests, and insist on deep-seated structural reforms to change the sharply antagonistic employment relationship that is inherent within capitalism. Militant trade unions are thus frequently supported (Government of Sri Lanka, 2017).

Work Appraisals: Generally, the aims of a performance appraisal are to give an employee feedback on performance; identify employee training needs; document criteria used to allocate organizational rewards; form a basis for personnel decisions; salary increases, promotions, disciplinary actions and bonuses; provide the opportunity for organizational diagnosis and development; facilitate communication between employee and administration and validate selection techniques and human resource policies to meet federal Equal Employment Opportunity requirements (Gamage and Wickramasinghe, 2000). The most popular methods used in the performance appraisal process include the management by objectives, 360-degree appraisal, behavioral observation scale and behaviorally anchored rating scales (Harriss et al., 1997).

Workforce Safety and Health: Since 1950, the International Labour Organization (ILO) and the World Health Organization (WHO) have shared a common definition of occupational health. It was adopted by the Joint ILO/WHO Committee on Occupational Health at its first session in 1950 and revised at its twelfth session in 1995 (Harriss et al., 1997). The definition reads: "Occupational health should aim at the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological capabilities; and, to summarize, the adaptation of work to man and of each man to his job." The reasons for establishing good occupational health and safety standards are frequently identified as moral- an employee should not have to risk injury or death at work, nor should others associated with the work environment; and economic- many governments realize that poor occupational health and safety performance results in cost to the state (e.g. through social security payments to the incapacitated, costs for medical treatment, and the loss of the "employability" of the worker). Employing organizations also sustain costs in the event of an incident at work Legal - Occupational requirements may be reinforced in civil law and/or criminal law; it is accepted that without the extra "encouragement" of potential regulatory action or litigation, many organizations would not act upon their implied moral obligations (Governmnet of Sri Lanka, 2017).

*Workforce Welfare***:** Welfare includes anything that is done for the comfort and improvement of employees and is provided over and above the wages. Welfare helps in keeping the morale and motivation of the employees high so as to retain the employees for longer duration ((Douglas, and Choudhry, 1997). The welfare measures need not be in monetary terms only but in any kind/forms. Employee welfare includes monitoring of working conditions, creation of industrial harmony through infrastructure for health, industrial relations and insurance against disease, accident and unemployment for the workers and their families. Labor welfare entails all those activities of employer which are directed towards providing the employees with certain facilities and services in addition to wages or salaries (Ministry of Plantation Industries, 2017). Further, labor welfare schemes are flexible and ever-changing as new welfare measures are added to the existing ones from time to time. Welfare measures may be introduced by the employers, government, employees or by any social or charitable agency and the purpose of labor welfare is to bring about the development of the whole personality of the workers to make a better workforce.

Operational Management Factors : Operations management is an area of business concerned with the production of goods and services, and involves the responsibility of ensuring that business operations are efficient in terms of using as little resource as needed, and effective in terms of meeting customer requirements (Moder, 1998), It is concerned with managing the process that converts *inputs* (in the forms of materials, labour and energy) into outputs (in the form of goods and services).ISO 9001 requires a business entity to follow a *process* approach when managing its business, and to achieve this business process maps will assist (Nandasena, 1999). The entity can then work towards ensuring its processes are effective (the right process is followed the first time), and efficient (continually improved to ensure processes use the least amount of resources) and quality *layout* of the place. Making process maps available using a web-browser only means that communication to, and access by stakeholders, is achievable - thus improving compliance, training and end-to end process understanding (Nandasena, 1999; National Plantation Management, 2000).

Labour Productivity and Related Issues in Tea Small Holdings : Although the tea industry is divided over the tea industry's future direction, certain key issues need to be addressed speedily, issues of productivity yields and labour in the plantations have to be resolved (Rajaratnam, 2002; Samarasuriya, 1981). More of the tea industry profits should filter own to the estates, upgrading labour and factory machinery. While debating the need for liberalizing imports and expanding the trade, the low volume of today's value addition needs to be questioned. Most of all a concerted effort should be made to promote the virtues of Ceylon Tea (National Plantation Management, 2000; People's Bank , 2007).

III.   METHODS

The tea sector in Sri Lanka has always been a vital component of the economy, and it's Labour Productivity depend on nature of the crop, location of the estate, effective plucking time, management practices, and human factor range, etc., This study is about identifying the relationship between the various aspects of management factors related to Labour Productivity in the tea small holdings, using the data available. The objective concerning this article is to identify the relationship between the identified management factors and the Labor Productivity of the tea small holdings.

Conceptual Framework: Based on the research problem, the research objectives and the literature review, the conceptual model was constructed as indicated in figure 13.
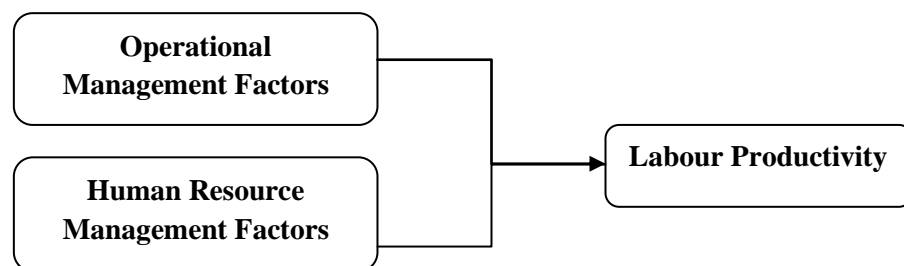

Figure 13: Conceptual Framework

Three main variables are considered for the conceptual frame work, Labor productivity being a function and dependent variable of Operational management factors and Human resource factors, which are independent variables,

Hypothesis: Labor productivity of tea small holdings is a dependent of many factors. Considering the management factors affecting the labor productivity few main factors can be identified as operational management factors and human resources factors (Samaraweera , 2013).

Based on the above identification the following hypotheses has been formulated.

> *H1:* **Hypothesis 1** - Operational management factors are positively correlated to the labor productivity

> *H2:* **Hypothesis 2** - Human resources management factors are positively correlated to the labor productivity

Study Area: The Pitigala area situated in the Galle district of the southern province, was selected for this study where low grown tea plantations are concentrated. In Sri Lanka, tea is grown in six provinces and the majority of the large scale cultivation (58%) is in the central province. However the southern province has a considerable number of small tea holdings with uniquely different characteristics of the tea variety itself, and the way the plantations are maintained. The Thundola Tea Estate was selected as the tea small holding for this study. Several management factors were controlled and altered during the one year of supervision to compare the effects on labor productivity. In addition a field survey observation and other methods are adopted.

Time of the Study (Time Horizon): According to Sekeran (1992), the time horizon may be either cross sectional/ one shot (the data collection is done once) or over a period of several days/weeks/months or longitudinal study where data collection is done in more points in time. This study took over three month for the collection of data. The data for the study were collected within a particular time period and there was no subsequent extension of the research contemplated. Hence, according to Zikmund, (1997), and Sekaran (1999) (as in Opatha and Ismail, 2003) the study was cross – sectional in nature. Further, after a year a similar cross sectional study was repeated.

Research Design: The research design consists of identifying the management factors related to labor productivity, sampling procedures, and measures of variables and method of data collection.

Identifying Management Factors: Based on the initial identification of the two main factors affecting labor productivity, Operational Management and Human Resource Management factors namely **Inputs –** numerous inputs required to carry out tea plucking is covered under this section which includes inputs such as information necessary to do the plucking job and the targets defined per labourer; **Process –** process defined for the tea plucking is defined under this section such as the protocol applicable as the plucker enters the site to preparation for plucking, plucking, transportation and exit from the estate is covered within the scope; **Layout –** tea estate layout related to the plucker productivity is defined here including the location and the geographical attributes of the estate and the factors considered during the designing of the tea estate such as array of the tea bushes; **Tools** –equipment related to plucking and the implication of the tools to the labor productivity are addressed here. Personal protective equipment (PPE) such as rain coat, boots are also addressed here. **Motivation:** factors affecting the motivation of the plucker such as salary they draw, job satisfaction, job security, incentive schemes to increase motivation are within the scope of this section; **Training and Development and Work Appraisal:** training and development cycle of a plucker and appraisal related attributes are covered within this section; **Labor Industrial Relationship:** the worker management relationship is mainly covered by this attribute incorporating aspects like the opportunity for the plucker to contribute ideas for the development of the process are also taken in to consideration under this topic; **Health & Safety –** health related issues from medical facilities to medical insurance are covered under this section which has a direct impact on the productivity of the plucker and **Workforce Welfare**: The basic features of labor welfare measures include various facilities, services and amenities provided to workers for improving their health, efficiency, economic betterment and social status which are in addition to regular wages and other economic benefits available to workers due to legal provisions and collective bargaining.

Sampling procedure: The unit of analysis of this study is individual pluckers. Therefore a sample of pluckers were selected to get the information covering the above mentioned attributes.Pluckers vary in terms of plucking productivity as it depends on several factors such as age, nutritional status, knowledge & skill and educational level (Shankar, 1977). Therefore, stratified random sampling method was adopted for this study. List of names

of the pluckers and their monthly plucking output for three months were obtained to get an average monthly output and information was readily available from the office control documents.

Blocking: In general, three strata of female tea pluckers can be identified as fast, medium and slow depending on their daily yield. 100 medium pluckers were filtered for further results to avoid anomalies. The age of the crop *i.e.* year after pruning will affect the plucking productivity. Generally the older bushes yield is lower than the new and replanted fields (Sivaram, 1996). Therefore in this study blocking was adopted to eliminate this effect. Hence, three different fields *i.e.* early, medium and late, since the last pruning, were selected. Therefore, pluckers in the experiment plucked in different year old fields.

Measure of Variables : The variables used for analysis and the measures of variables of this study are measured with Labor productivity using number of kilograms harvested on the day by a plucker and management factors of the study using an structured questionnaire, with Likert Scale. Both primary and secondary data collection methods were used. Primary data were collected through a field survey using a detailed questionnaire, unstructured interviews with officials and field observation. Secondary data were obtained from the government based as well as privet institutions in relation to the tea industry as annual reports, documents, information sheets, records at the libraries and manuals from the reputed organizations.

IV.   ANALYSIS OF DATA :

Primary and secondary data obtained, were first transformed in to a model which is suitable and comprehendible for further analysis. Data processing was done using Microsoft excel spread sheets and Statistical Package of Social Sciences (SPSS) computer package. The research model contained the three variables of Labor productivity, OM factors and HRM factors. According to the conceptual model, the Labor productivity was the dependent variable, while the other two variables which are OM Factors and HRM Factors were the independent variables. Another objectives of this research is to investigate any relationship between the each of the independent variables and the dependent variable. Hence, in this research the bivariate analysis was made to determine whether there is any relationship between the Labor productivity and the Operational Management factors and Human Resources Management factors. The statistical techniques of Correlation Analysis and Simple Regression Analysis were selected to test the analysis.

Correlation Analysis: The correlation analysis was used to measure the magnitude and the direction of the relationship between two variables (Gupto, 1971: Field, 2000). The correlation analysis determines the degree to which the variables are related (Levin and Rubin, 2000). The correlation coefficient, denoted by "r" (between –1 and +1) was the measure of the closeness of the relationship between the two variables. An observed high correlation between two variables does not indicate any causes and effect relationship, i.e. it may be caused by the influence of another (third) variable. Hence, the correlation analysis was made to measure the magnitude and the direction of the relationship between the pairs of variables.

Simple Regression Analysis: The simple regression analysis was used in this research to determine the functional relationship between a Dependent Variable and an Independent Variable (a predictor) for the purpose of prediction and making other influences (Gupto, 1971: Mason, Lind & Marchal, 1999: Field, 2000). The regression analyses show how to determine both the nature and the strength of a relationship between two variables (Levin and Rubin, 2000).

Multiple Regression Analysis: The principal advantage of multiple regressions is that it allows using more of the information available to estimate the variable (Levin and Rubin, 2000). Correlated analysis provides only a significant association relationship between each independent variable and dependent. Sometimes the correlation between two variables may be insufficient to determine a reliable estimating equation (Levin and Rubin, 2000). The regression model always indicates by how much (beta value) each variable could affect the dependent variables. Thus the technique of multiple linear regressions explain the behaviour of a dependent variable using more than one predictor (independent) variable simultaneously.

V.   RESULTS OF THE STUDY

The inter item consistency reliability was examined with Cronbach's Alpha test. The results of Cronbach's alpha test were done and suggests that the internal reliability of each instrument is satisfactory.

Cronbach's Alpha Coefficients: The content validity of the instruments was ensured by the conceptualisation and operationalization of the variables on literature, and indirectly by the high internal consistency reliability of

the instruments as denoted by Alphas. The construct validity of the variables of the study was ensured by the fact that the correlation and regression analysis support the hypotheses formulated linking the relationship between the independent variables and the dependent variable.

Correlation Analysis: Using the Pearson's Product Moment Correlation with two-tailed test of significance, the Correlation analysis was made to investigate any relationship like Correlation between OM factors and labour productivity and Correlation between HRM factors and labour productivity.

Correlation between Operational Management Factors and Labour Productivity: According to the results of the Pearson's correlation it shows that, there is a positive significant relationship between Operational Management factors and Labour Productivity. The fact that the correlations are inline reinforces the fact that the parameters and the output measured are satisfactory. It is shown in table 5 below.

Table 5: Correlation between Operational Management Factors and Labour Productivity

Pearson Correlation	0.634
Sig. (2-tailed)	0.000**

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

Pearson correlation between the variables is 0.634, which is positive. It shows that there is a positive relationship between Operational Management factors and Labour Productivity. The observed relationship is statistically significant as correlation is significant at 0.01 level (2-tailed). Thus, there is statistical evidence to claim that Operational Management factors and Labour Productivity are positively related. Literature has highlighted that some research are in agreement with this finding (Gupto, 1971; Levin and Rubin, 2000).

Correlation between Human Resource Management Factors and Labour Productivity: According to the results of the Pearson's correlation indicates that, there is a positive significant relationship between Human Resources Management factors and Labour Productivity. This is shown in the table 6 as follows.

Table 6: Correlation between Human Resource Management factors and Labour productivity

Pearson Correlation	0.795
Sig. (2-tailed)	0.000

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

Pearson correlation between the two variables is 0.795, which is positive. It shows that there is a positive relationship between HRM factors and Labour productivity. Then, the relationship is statistically significant as correlation is significant at 0.01 level (2-tailed). Thus, there is statistical evidence to claim HRM factors and Labour productivity are positively related (Samaraweera, 2013; Schneider, 2000).

Curve Fit Analysis: Regression analysis of the study has indicated the results of the association between OM factors and HRM factors on Labour Productivity of the tea pluckers in the tea industry. Table 7 indicates the results of regression analysis as follows.

Table 7: Results of the Regression Analysis

Variables	OM Factors	HRM Factors
Method	Linear	Linear
R Square	0.415	0.458
Adjusted R Square	0.396	0.458
F Change	57.278	73.588
Significance	0.000	0.000
B-constant	0.238	0.235
b- Value	0.649	0.785

The b-value of the equation for the OM factor, the gradient of the regression, is 0.649, which is significant at 1% (significant = 0.000). As indicated by R Squared, 41.5 % of the variance of Labour productivity is explained by OM factors with the standardized beta of 0.649. The F value is 57.278, which is significant at 1% (p = 0.000), which suggests that OM factors has significantly explained 41.50% of the variance of Labour productivity of the teapluckers in the tea industry in Sri Lanka

According to table, regression equation of OM factors is:

Labour Productivity = 0.238 + 0.649 (OM Factors) : Based on the HRM factors, the b-value of the equation, the gradient of the regression, is 0.785, which is significant at 1% (significant = 0.000). As indicated by R Squared, 45.80 % of the variance of Labour productivity is explained by HRM factors with the standardized beta of 0.785. The F value is 73.588, which is significant at 1% (p = 0.000), which suggests that HRM factors have significantly explained 45.80% of the variance of Labour productivity.
Regression equation of HRM factors is:

Labour Productivity = 0.235 + 0.785 (HRM Factors)

Tested Hypotheses: The hypotheses testing was carried using the results of Pearson's Product Movement Correlation analysis and the results of Regression analysis. Two Null hypotheses were tested using those results. Two hypotheses were concerned with a change in relationship ($0 > H_A$ or $H_A > 0$), two – tailed test was used in the correlation analysis.

Testing Hypothesis One
"Operational management factors are correlated to the Labor productivity"
The Null hypothesis was formulated as;
H_O: There is no relationship between Operational management factors and Labor productivity.
The alternative hypothesis was formulated as;
H_A: There is a relationship between Operational management factors and Labor productivity
According to the results of Pearson's Product Movement correlation analysis between Operational management factors of the tea industry, the correlation coefficient is 0.634, which is significant at 1% (p=0.000). As per the result of simple regression analysis between the two variables, the regression coefficient (b) is 0.649, which is significant at 1% (Sig. T = 0.000).
Therefore, according to the results of the test, the Null hypothesis is rejected and the alternative hypothesis is accepted since r≠0, and b≠0. Hence, the data support the hypothesis that there is a relationship between Operational Management factors and Labour productivity in the tea small holdings in Sri Lanka.

Testing Hypothesis Two
"Human resource management factors are correlated to the labor productivity"
The Null hypothesis was formulated as
H_O: There is no relationship between Human resources management factors and Labor productivity.
The alternative hypothesis was formulated as;
H_A: There is a relationship between Human resources management factors and Labor productivity.
According to the results of Pearson's Product Movement correlation analysis for HRM factors of the tea industry, the correlation coefficients is 0.795, which is significant at 1% (p=0.000). As per the result of simple regression analysis between the two variables the regression coefficient (b) is 0.785, which is significant at 1% (Sig. T = 0.000).
Therefore, according to the results of both the tests, the Null hypothesis is rejected and the alternative hypothesis is accepted since r≠0, and b≠0. Hence, the data supports the hypotheses that there is a relationship between HRM factors and Labour productivity in the tea small holdings.

VI.   CONCLUSION
The research problem in this study was as to what extent Human Resource Management factors and Operational Management factors affect the Labor Productivity of teapluckers of tea industry in Sri Lanka. Based on the theoretical information, conceptual framework is developed to test the relationship of Labor Productivity with the selected independent variables of Human Resource Management factors and Operational Management factors. According to the findings, it is substantiated that there is a positive relationship between all independent variables and Labor Productivity of the tea pluckers of the tea industry in Sri Lanka. If research on the tea industry covered the relationship between Labor Productivity and available attractive job opportunities, the gap

of theoretical knowledge prevalent within the industry can be minimized. Similarly respective studies on the relationship between Labor Productivity with motivation as well as the level of training and development would be important.

RECOMMENDATIONS, IMPLICATIONS AND FURTHER STUDIES : It was possible for the independent variables to account for 41% and 45% of the variation in Labour Productivity while the 59% and 55% of the variation was unexplained by OM and HRM factors in relation to the tea pluckers in the industry . In fact other variables, which were not considered in this study, should be the factors that may account for the unexpected factors in Labour Productivity of teapluckers in this industry.

According to the findings of the research, there is no divergence of the impact of Labour Productivity of tea pluckers in the tea industry. Therefore Human Resource Management and Operational Management factors of the tea pluckers are significant element to determine the Labour Productivity of the all tea pluckers in the tea industry. The findings of this research study would be important on the theoretical as well as practical scenario.

As a major approach of enhancing the Labour Productivity of the tea pluckers of the tea industry, the programs relating to the enhancement of the processes are to be implemented successfully. Hence more emphasis to be placed on Human Resource Management factors pertaining to training and development, motivation, appraisal, health & security of the tea pluckers and welfare. The Operational Management factors such as input, process, layout and process are the few methods of upgrading the labour productivity of a tea plucker.

Further, action could be focus on uplifting the living standards of the labour force; create attractive job opportunities within the industry; address the global requirements in accordance with the rapidly changing market needs; encourage research based on new technology, which can be deployed, as well as botanical and sociological research; create job satisfaction and professionalism in the tea industry; introduce new technologies in harvesting the tea in a more qualitative manner; and provide with the necessary training and development; use semi automation during the process; and uplift the overall productivity. These recommendations can be given with reference to the management factors, to uplift the Labor Productivity from the current low levels in the industry.

Further research studies are suggested to carry out to examine the effects of these factors on Labor Productivity of tea pluckers in tea industry in Sri Lanka. In the context of researching the effect of these variables on the Labor Productivity, essentially future researchers may have to encounter serious difficulties in measuring the variables, as there is no measurement instruments correctly developed.

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