ANALYSIS TOTAL PRODUCTIVITY OF MADE TEA IN ETHIOPIA

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ABSTRACT

The introduction, adaptation, and domestication process of the tea plant taken long years. Commercial tea cultivation started after thirty years in 1957 near Gore town. Now, the tea plantations passed their maximum productive age after being planted on a commercial scale. But there is no clear information about long-term production, distribution of clones, actual cultivated land size, industry cost of production, and the present production status of Ethiopian tea farms. Therefore, it is imperative to have a baseline survey on a change of cultivated tea land, type of clone, and a long-term production trend of tea farms from 1997-2018. The result indicated that Ethiopia's tea industries hold a total of 13503.42ha lands. From these, Godere, Wushwush, Gumaro, Chewaka, and Small hold tea farms shared 36, 31, 20, 10, and 3 % of the total land, respectively. Over 97% of a green leaf mainly came from the larger tea farms, while a small hold sector contributed 3% only. The actual cultivated tea land reached 3611.37ha, with an annual expansion rate of 42.8ha per annum. Ethiopia tea farms commercially cultivated 14 type clones, and Clone11/56 widely cultivated clones from the rest, but around1018.35ha of Ethiopia tea farm covered with a mixed clone. Wushwush is the largest tea farm, found in the maximum productive stage, the mean made tea production reached 3818.8 tonnes y-1 (3042.3kgha-1), and the highest 4430 tonnes (3400.1kgha-1) made tea was produced in 2018. Gumaro is the second large tea farm found at the edge of the maximum productive stage and means made tea production reached 2546.2tonnes y-1(2926.3kgha-1). The highest 2946.9tonnes (3388.7kgha-1) made tea was produced during 2013. Chewaka is the third large tea farm tea bushes found in the early mature growth stages and produced the highest 1945.1 tonnes y-1 (3426.8kgha-1) tonne made tea in 2016, and the mean made tea production reached 1402.6tonnes y-1(2581.1kgha-1). In general, the national average made tea per hectare was increased by 53.5% from 1896.7 into 2910.8kgha-1 as nitrogen rate increased between 2008-2018, and the national annual mean made tea production was reached 7767.6tonne y-1, from this, more than 86 % made tea consumed locally. Ethiopia tea consumption as a percent of production was rising by187.2tonne y-1 (r2 = 0.68) and negatively increased by -1.55tonne per annum (r2=0.71). Hence, the local consumption as a percent of production not fits with the number of consumers; it remains insignificant with the growing number of populations.

Keywords: Ethiopia, Chewaka, Gumaro, Godere, Made Tea, and Wushwush tea farm.

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INTRODUCTION

Ethiopia has no long history of cultivation and drinking tea when compared to indigenous coffee. Tea cultivation began in 1927 by Canadian catholic missionary Father George Holland. He was brought tea seeds from Kenya and planted them around Bonga. The second introduction was made in 1928 from India by the British general councilor, and he brought seed from Assam and established Gumaro tea plantation near Illubabor (Chali et al., 2021). The first commercial tea plantation began in 1957 by Lebanese and Belgian experts in 25ha near Gore town, and the land reform proclamation seized private tea farms into governmental estate farms in 1975. The military regime expanded Gumaro and Wushwush tea farms into large commercial farms to reduce the import volume of made tea from India and Kenya and to accomplish the rapid growth of tea consumption in military service. After a fail of Derg regimes, the economic liberalization policy was returned tea farms into private property once again in 1996, and both Wushwush and Gumaro tea plantation was privatized under Ethio Agri-CEFT PLC private company by the Council of Ministers of (Regulations 2005; Dutta et al., 2010). Generally, early 1950 established tea farms (Wushwush, Gumaro, and Chewaka) occupied 8067.64ha of land. The farms lack attention. But, lately 2000, three foreign tea companies are guaranteed to start cultivation in 20000 ha of land. Still, the farmers have not entered into production. These long-years drawbacks created an imbalance in demand and supply of made tea inside the local market. According to Salamzade, "the concept of start-up companies is in its early stages, and earlier, start-up companies are an emerging field, both theoretically and practically also, the practical elements which are profoundly important for us, we acknowledge that the followings could constitute a theoretical contribution (Jayasinghe & Kumar, 2020). Also, he said that history is full of experiences and evidence supporting the evolution of organizations; however, the existing history lacks enough focus on the very early stages of a company, i.e. startup phase (Lemessa, 1996).

Statements of the Problem

Ethiopian tea plantations already reached their maximum productive age after being planted on a commercial scale. The tea plant has reached its peak production period in between 20 and 40 years (Michael, 1990). Currently, The productivity potential of farms and their significant yield differences per hectare are not studied. Also, there is no clear information about actual cultivated land size, distribution of clones, long-term production status, and their cost of production of tea farms. A long-year agronomic data, and "practical elements contribute a new information by introducing a set of stages that entrepreneurs may take to create a new venture" Also, it contributes to their knowledge of the new venture creation process. Therefore, it is imperative to have a baseline survey to estimate the productivity states of each tea farm and their

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economic importance for the country. The general objective of this study is: To analyze the total productivity of tea farms and their economic importance to the country.

The Cost leadership strategy refers to offering products or services which are economical as compared to those of competitors in a particular market. It involves up-scaling of existing facilities to improve efficiency, reduction in overheads and costs among others (Porter, 1980). Differentiation Strategy involves creation of products or service that customers perceive as unique or innovative. It could be executed by the way services are offered, up gradation of technology, and improving the customer service etc. Concessional contracting, design and build contracting, facility management etc. are the examples of differentiation strategy adaption in the construction industry (Price and Newson, 2003). Porter (1980) contends that long term sustenance of the uniqueness of product or service enables the firm to maintain high performance and ensures that the firm may recover the cost of uniqueness from the customers by charging a higher premium.

LITERATURE REVIEW

The tea plant (Camellia sinensis (L.)O. Kuntze) is the most popular, non-alcoholic, and caffeine-containing beverage crop in the world. Tea planted in all six continents, and Asia producing the large proportion, then followed by Africa (Monroy et al., 2019). In equatorial Africa, young shoots harvest all year round, and the area considers an east Africa tea belt zone. From 21 Africa Caribian and Pacific tea producers, Africa country Kenya accounts for over 60%, followed by Uganda 9%, Malawi 9% Tanzania 6%, Rwanda 4%, Zimbabwe, and others contributed 3% from the total ACP tea product (Salamzadeh, 2015). In Ethiopia, 50,000ha of land is identifying as suitable for tea production. However, the cultivated land of Kenya is 5699% greater than that of Ethiopia. Also, the organizational and structure policy of the Ethiopian tea industry has a critical problem in the expansion of the small-hold tea farming system. Here, Porter believed that groups or clusters of interconnected firms, suppliers, related industries, and institutions that arise in particular locations become a new way for companies and governments to think about economies, assess the competitive advantage of locations, and set public policy (Salamzadeh & Kirby, 2017). Today, Kenya Tea Development Agency manages 54 factories, whereas Ethiopia has had only three tea factories for the last twenty years. According to Jin Bei, “industrial competitiveness, also known as the international competitiveness of the industry, refers to a country or a regions competitive capacity in a particular, industry relative to other countries or regions in terms of production efficiency, meeting market demand, and gaining sustained profits (Xing & Guo, 2017).

MATERNAL METHOD

Description of Study Area

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The research was conducted in the Southwest part of Ethiopia. The area contains four private tea plantations, namely Wushwush, Gumaro, Chewaka, and Godere tea plantations (Table 1).

Table 1
DESCRIPTION OF TEA PLANTATION IN ETHIOPIA

Site	**Wushwush**	**Gumaro**	**Chewaka**	**Godere**
Region	**SNNPRS**	**Oromia**	**SNNPRS**	**Gambella**
coordination point	$7^0$18'N;$36^0$06'E^o	$8^0$08'N;$35^0$7'E°	$7^0$49'N;$35^0$28'E°	$7^0$22'N;$35^0$22'E°
Min and Max altitude	1720-1990	1630-1785	1700-1985	2000-2350
Annual Rainfall	1820 mm	2089 mm	2300 mm	1700 mm
Min and Max Temp	12 and 25^0C	12 and 25^0C	12 and 25^0C	12 and 26^0C

Sample Size Determination

All tea farms concentrate in a dense forest of southwest Ethiopia. The actual cultivated tea land size is ranged from 390ha to 1250ha (Table 1), each of the farms subdivided into three-four units farm, with an average land size between 170-330ha, and the whole sampling technique used to analyze the total production and yield per hectare in each private tea farm.

Data Collection Method

During the field survey, the data were records as follows.

The area under cultivation (ha): The total cultivated tea lands in each private farm and smallholder farmers were studied.

Type of clone: The type of clones and the proportion of clones' studies at each farm level.

Yield at national level: For each year, descriptive statistics (minimum, maximum, and mean fresh leaf and made tea computed at a national level. The mean is calculated as a sum of the annual yields, [Yf (t)] at farm f, divided by the number of years.

Yield at tea farm level: For each year, descriptive statistics calculate at the tea farm level. The mean is calculated as a sum of the annual yields,[Yf (s,t)] at farm f, divided by the number of years.

The number of workers directly involved in the tea industry and the operational cost of the tea industry evaluate at the farm level. Because labor productivity and economic growth are the key factors to maintain and improve the competitiveness of countries in the global market (Auzina-Emsina, 2014).

Data Analysis Method

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Linear correlation analyses, descriptive statistics (minimum, maximum and mean, and percentage) of comparison done by splitting into two decades and the association between long-term made tea production and the present production status of tea farms evaluate using SAS soft.

RESULT AND DISCUSSION

Area Under Cultivation

The total land hold by the tea farms reached 13503.42ha. From this, the Godere tea farm shared 5000ha of lands followed by Wushwush (4090ha), Gumaro (2604.31ha), Chewaka (1373.04 ha), and the small hold farmer holds 436.06ha of land. The actual cultivated tea land reached 3611.37ha at a national level, and From this, Wushwush tea farm shared 35 %(1253ha) of lands and followed by Gumaro 26% (934.21ha), Chewaka 16% (597.6ha), Smallholder 12% (436.06ha), and Godere 11% (390.5ha) of land at a national level. The ratio of actual cultivated tea to total land holds was showed a difference at the tea farm level. Wushwush tea plantation found in a ratio of, 1:3.3 followed by Gumaro 1:2.8, and Chewaka 1: 2.3 at tea farm level (Table 2). it implies that to cultivate a one-hectare tea plant, Ethiopia tea farms are utilized 2.8ha of land on average for different purposes, like preservation of the natural forest, swampy area, roads, Marginal land, the building of office and residential areas (Table 2).

Table 2
DESCRIPTION AND ALLOCATION OF LAND IN ETHIOPIA TEA FARM

No	Description of land in Tea farm	Wushwush	Gumaro	Chewaka	Godere	National
1	Actual tea cultivated land	1253	934.21	597.6	390.5	3175.31
2	Eucalyptus cultivated land	977	715	243	-	1935
3	Residential, office and roads,	415	100.91	80.32	2.9	599.14
4	Natural forest and Marginal land	897	854.19	452.12	4606.6	6809.91
5	Land used for maize and fruit	548	-	-	-	548
	Total land hold by private farm	4090	2604.31	1373.04	5000	13067.36
6	Smallholder tea cultivated land	286.7	129.76	19.6	-	436.06
	National actual tea cultivated land	1539.7	1063.97	617.2	390.5	3611.37
	Ratio of Actual tea and total land	01:03.3	01:02.8	01:02.3	-	01:02.8
	The ratio of Eucalyptus and Actual tea cultivated land	01:01.3	01:01.3	01:02.5	-	01:01.7
	Total Land hold at National level	4376.7	2734.07	1392.64	5000	13503.42

The actual cultivated tea land (3611.37ha) of Ethiopia is 5699% smaller than Kenya (209,426 ha) cultivated tea land, the cultivated tea land of Kenya was increased by 5443ha per annum whereas, Ethiopia's actual cultivated tea land is increased by 42.8ha per annum from 1997-2015 (Figure 1).

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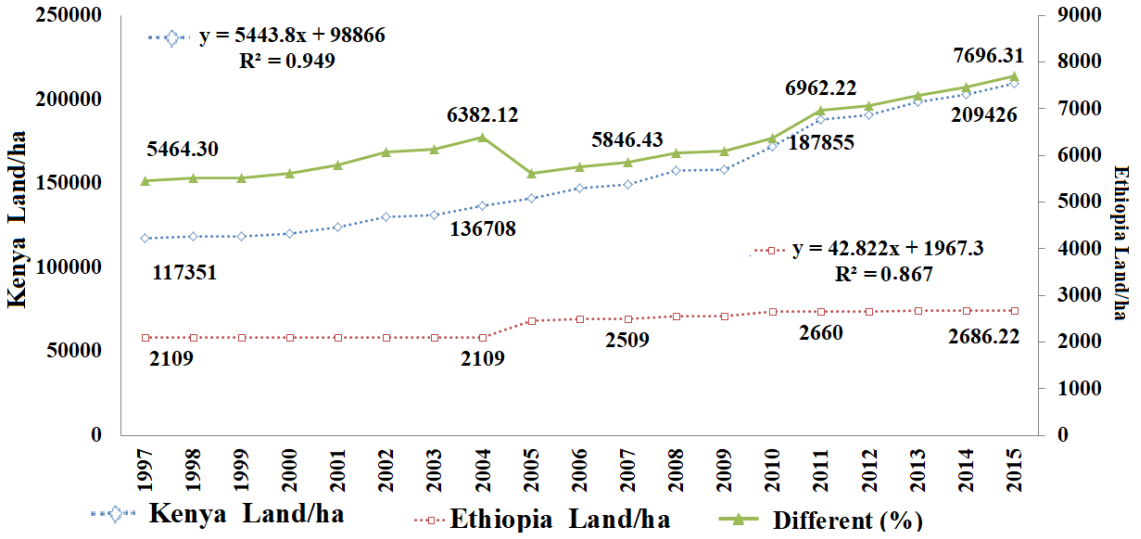

FIGURE 1
COMPARISON OF ETHIOPIA AND KENYA CULTIVATED TEA LAND SIZE (1997-2015)

Distribution of Clones in Tea Farm

In Ethiopia, fourteen types of clones are commercially cultivated, with different proportions. But over 823.4 ha of land cover by a mixed clone. And followed by Clone11/56 (487.7ha), Clone BB-35(355.56ha), Clone11/4 (266.85ha), and Clone 6/8(263.29ha) cultivated in large-sized. Moreover, unidentified Assam clone covered 194.94ha, then Clone SR (84.3ha), Clone GUM (75.76ha), Clone 12/38(62.76ha), and Clone 18/49(20.2ha) cultivated in small-sized. Whereas, recently introduced East Africa popular clones, like (Clone S15/10, Clone 31/11, Clone 31/12, Clone TN14/3, and Clone 31/8) together accounts 10.47 ha and Clone FNF (0.48 ha) cultivated in small size in Ethiopia (Table 3).

Table 3
A TYPE AND DISTRIBUTION OF CLONE IN SOUTHWEST ETHIOPIA

No.	Clones	Wushwush	Gumaro	Chewaka	Area(ha)	%
1	Mixed	329.44	292.14†	201.83	823.41	31
2	11\56	200.17	108.22	179.31	487.7	19
3	BB-35	242.71	17.76	95.09	355.56	14
4	11\4	266.85	-	-	266.85	10
5	6\8	146.25	54.68	62.36	263.29	10
6	Unidentified clone	-	194.94†	-	194.94	7
7	SR	-	84.3	-	84.3	3
8	GUM	-	75.76	-	75.76	3
9	12\38	62.76	-	-	62.76	2

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10	18\49	-	20.2	-	20.2	1
11	Recent *	-	-	10.47	10.47	< 1
12	FNF	0.001	0.48	-	0.481	< 1
	Total	1248.28	848.48	549.06	2645.82 ha	100

*Recent Clones (Clone S15/10, Clone 31/11, Clone 31/12, Clone TN14/3, and Clone 31/8)

A large portion, around 1018.35ha (38%), of tea land cover with mixed clones, and Clone 11/56 is widely cultivating in Ethiopia, accounts for 19% of actual cultivated land. Clone BB-35 is the second clone occupied 14% then followed Clone 11/4, and Clone 6/8 shared same 10% and the rest Clone SR (3%), Clone 12/38(3%), and Clone 18/49 (2%) were cultivated in medium land sized whereas, (Clone S15/10, Clone 31/11, Clone 31/12, Clone TN14/3, and Clone 31/8) and Cone FNF shares less than 1% (Table 3). At present, Gumaro, Wushwush, and Chewaka tea farms cover around 48%(487.08ha), 32 %(329.44ha), and 20% (201.83ha) with a mixed clone, respectively (Table 3). Most of the mixed blocks that existed today are occurred due to a shortage of planting material, lack of skilled workers, and shortage of transport facilities at the time of transplanting. Currently, the mixed tea population is one of the major factors that disturbs plucking tables, reduced leaf quality, and yielding potential of tea farms. Also, this tea population creates a problem to apply similar agronomic practices in a large tea field.

Made Tea Production

Made Tea Production at National Level

The national made production was significantly correlated with the age of tea bush at P< 0. 0003. The made tea production was showed a gradual growth trend from 1997-2018. The made tea production was continuously increased by 307.7 tonne y^{-1} (r^2=0.90) from 1997 - 2018 (Figure 2). Then, the analysis of tea split into two decades.

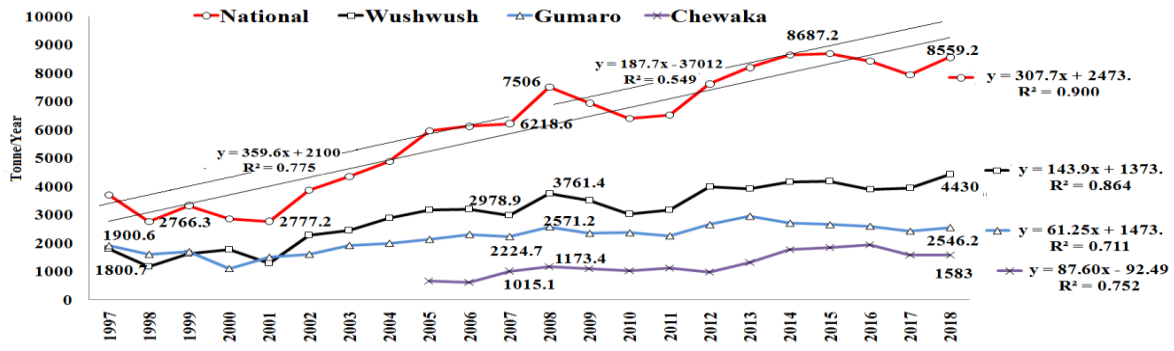

FIGURE 2
ANNUAL MADE TEA PRODUCTION TREND IN ETHIOPIA TEA FARMS

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In the first ten years (1997-2007), the national mean made tea production reached 4258.13 tonne y-1 (r2 =0.775) then, from 2008-2018, the national mean made tea reached 7767.6tonne y-1 (r2 = 0.549) (Table 4). In general, the national total made tea production was reached 8559.2tonne in 2018(Fig 2), and the mean made tea production volume was increased by 82.4 % from 4258.13 tonnes y-1 into 7767.6 tonnes y-1 with a continuous increment of 307.7 tonne y-1(r2=0.90) from 1997 – 2018.

Made Tea Production at Tea Farm Level

The annual made tea production was showed a high difference at the tea farm level. The Wushwush, Gumaro, and Chewaka mean made production continuously increased by 143.9(r^2=0.864), 61.25(r^2=0.711), and 87.6tonne y^{-1} (r^2=0.752) from 1997 - 2018(Fig 2). For the first ten years (1997 -2007), Wushwush tea farm has recorded a maximum of 3205.23 tonnes made tea in 2006, followed by Gumaro 2304.9tonne in 2006 and Chewaka 1015.1tonne made tea recorded in 2007. The mean made tea production of Wushwush and Gumaro recorded 2240 tonne y^{-1} (r^2=0.78) and 1810.3tonne y^{-1} (r^2=0.447) for the first ten years, respectively (Fig 2). Whereas Chewaka tea farm was entered lately into the production system in 2005 and the first three years (2005-2007), the mean yield reached 761.97tonne y^{-1} (Table 4).

Table 4
SUMMARIZED MADE TEA PRODUCTION IN ETHIOPIA TEA FARM FROM 1997-2018

		First ten Year (1997 - 2007)			**Last ten Year (2008 -2018)**			
Tea farm	**Range**	**Made tea (Kg/year)**	**Made tea (Kg/ha)**	**Made tea (t/year)**	**Made tea (Kg/year)**	**Made tea (Kg/ha)**	**Made tea (t/year)**	**Made tea %**
Wush	Max	3205230	2566.237	3205.23	4430000	3400.1	4430	38.2
Wush	Min	1171180	937.7	1171.2	3025740	2422.5	3025.7	158.3
	Mean	2240020	1793.5	2240	3818772	3042.3	3818.8	70.5
Gumaro	Max	2304930	2680.2	2304.9	2946852	3388.7	2946.9	27.9
	Min	1087755	1264.8	1087.8	2247612	2613.5	2247.6	106.6
	Mean	1810306	2105	1810.3	2546242	2926.3	2546.2	40.7
Chewaka	Max	1015066	2537.7	1015.1	1945144	3426.8	1945.1	91.6
	Min	616691	1541.7	616.7	977043	1773.2	977	58.4
	Mean	761940.7	1965.4	761.9	1402602	2581.14	1402.6	84.1
National	Max	6218634	2478.5	6218.6	8687197	3234	8687.2	39.7
Level	Min	2766290	1311.7	2766.3	6402437	2406.9	6402.4	131.4
	Mean	4258128	1896.7	4258.13	7767615	2910.8	7767.6	82.4

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In the last ten years (2008 -2018), Wushwush tea farm was recorded a maximum of 4430tonne made tea in 2018, followed by Gumaro 2946.9tonne y-1in 2013, and Chewaka 1945.1 tonne y-1 in 2016. The mean made tea production of Wushwush, Gumaro, and Chewaka reached 3818.8 (r2 =0.482), 2546.2(r2 =0.069), and 1402.6 (r2 =0.586) tonne y-1 made tea produced for the last ten years (Table 4).

When compared the first and the last ten years, the mean made of tea Wushwush was increased by 70.48% from 2240tonne y-1 (r2=0.78), as the age of bush increase from 16 to 26 years old to 3818.8tonne y-1(r2=0.48), as the age of bush increased from 27 to 37 years old. But the yield growth rate was a decline from 78% to 48% between 1997-2018. Also, The mean made tea Gumaro was increased by 40.65 % from 1810.3 tonne y-1 (r2=0.44), as the age of bush increase from 30 to 40 years old to 2546.2 tonne y-1 (r2=0.069), as the age of bush increased from 41 to 51 years old. But, the yield growth rate of Gumaro decrease from 44% to 6.9% between 1997-2018. Hence, the old bush is required agronomical measurement to renew the retard part of a bush. Whereas, Chewaka tea farm was entered lately into the production system in 2005. However, the mean made tea production increase by 84.1 % from 761.9 to 1402.6 tonne y-1 (r2=0.34) from 2005-2018, as the age of bush increase from 9 to 22 years old. In general, the national mean made production reached 7767.6tonnes y-1, and for this improvement, Wushwush Gumaro and Chewaka contributed around 49, 33, and 18 % for total annual made production.

Made Tea Production per Hectare

The national made tea per hectare highly correlated with the age of the tea plant at P<0.0001. The national annual made tea per hectare was showed a gradual growth trend. The lowest 1312kgha^{-1} made tea was produced in 1998, then the highest 3234kgha^{-1} made tea in 2018. The national mean made tea per hectare was continuously increased by 90.8kg ha^{-1}(r^2=0.84) whereas Wushwush, Gumaro, and Chewaka continuously increased by 113.3 kg ha^{-1}(r^2=0.857), 67.534 kg ha^{-1} (r^2=0.676), 95.27 kg ha^{-1}(r^2=0.453) from 1997-2018 (Figure 3).

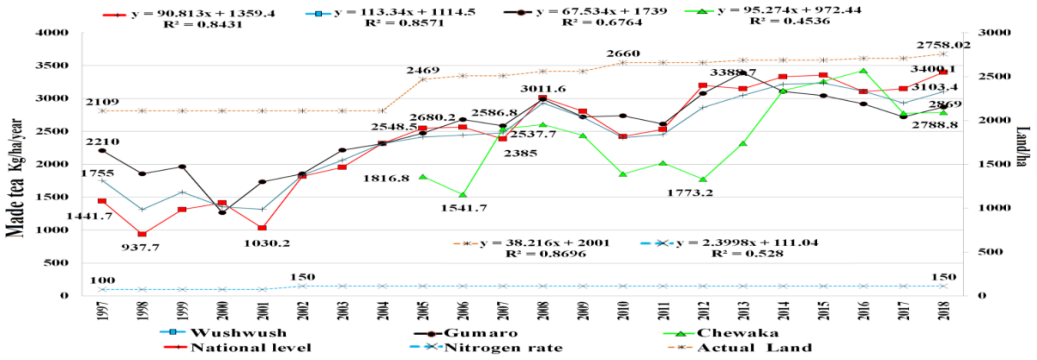

FIGURE 3
MADE TEA PER HECTARE PRODUCTIVITY TREND OF ETHIOPIA TAE FARMS

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In the first ten years (1997-2007), the mean made tea per hectare was showed a high difference at the tea farm level. Gumaro tea farm produced 2105kgha-1 (r2 = 0.45), followed by Wushwush 1793.5kg ha-1 (r2 = 0.78), whereas Chewaka tea farm entered into production in 2005, and for the first three years (2005-2007), the mean made tea production reached 1965.4kg ha-1 (r2 = 0.49), However, the national mean made tea per hectare reached 1896.7kg ha-1 (r2 = 0.73) (Table 4).

From (2008-2018) the mean made tea per hectare was showed high variation at the tea farm level. The mean made tea per hectare of Wushwush was reached 3042.3kg ha-1 (r2 = 0.436) and followed by Gumaro, 2926.3 kg ha-1 (r2 = 0.012) and Chewaka produced 2581.14 kg ha-1 (r2 = 0.34ns). However, the national mean made tea per hectare reached 2910.8kgha-1 y-1 (r2 = 0.375), whereas, in 2010, Kenya's production level was 2321 kg ha-1, the highest in the world, while China yielded 1034 kg ha-1; India, 1700 kg ha-1; and Sri Lanka, 1293 kg ha-1 (Elbehri et al., 2015).

When compared the first ten years with the last ten year made tea productivity of Ethiopia tea farms, Wushwush tea farm mean made tea per hectare was increase by 69.68%from 1793.5 to 3042.3kg ha-1y-1 followed by Gumaro tea farm 39 % from 2105 to 2926.3 kg ha-1y-1 and Chewaka 31.3 % from 1965.4 to 2581.14 kg ha-1y-1 in between the last two decade(Table 4). In general, the national mean made tea per hectare was increased by 53.5% from 1896.7 to 2910.8 kg ha-1y-1 with increasing in nitrogen rate from 100 to 150kg N ha–1 between 1997-2018. In Kenya, the average yield per hectare is higher on the large estates, between 1500 and 3300 kg ha-1, compared to smallholder farms between 600 and 2321 kg ha-1. Also, the Ethiopia tea farm utilized maximum150 kg of nitrogen per hectare, which is (66.7%) less than the East Africa nitrogen application rate.

Important of Tea in Ethiopia

Export Performance of Ethiopia Tea Industry

A national mean, export made tea was reached 979.76tonne y-1 (r2=0.76) from 2008-2018. The highest 1975.24tonne export made tea was produced in 2015. The Ethiopian produced 7776.62tonne made of tea from this 86% of made tea absorbed in the local market. The rest, 14% of made tea exported. Ethiopian export black tea had a good quality and exported to UK, Germany, Japan, Pakistan, Australia, UAE, Sudan, Eretria, and Middle East countries. Ethiopia's tea consumption as a percent of production varies from 77.3 to 94.6g per annum. It reached 88.2g per annum on average. Locally made tea was rising by187.2 tonne y-1 (r2 = 0.68). The consumption as percent of production negatively increased by -1.55 tonne per annum (r2=0.71, P<0.001) (Figure 4).

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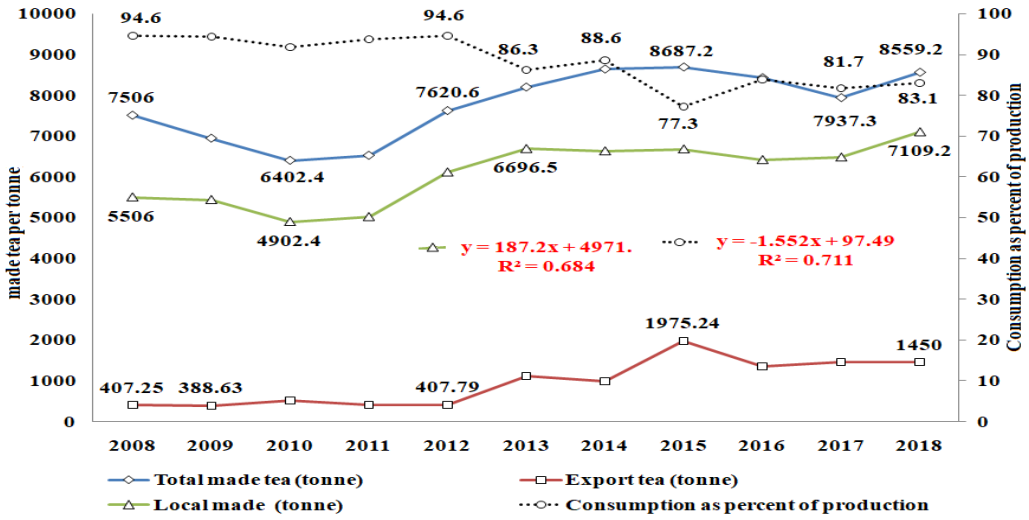

FIGURE 4
EXPORT, LOCAL, AND CONSUMPTION PER PRODUCTION OF MADE TEA IN ETHIOPIA

These indicated that the local consumption was increased by 68 %for the last ten years. But, Ethiopia's consumption as a percent of production made tea decreased with a deficit of 1.55 tonne per annum. Generally, these indicate that the local consumption as percent of production was not fit with the number of consumers.

Number of Workers Participate in Farm

The southwest tea industry created a direct job opportunity for 6549 workers, and it holds 630 individual families as small-hold farmers. Of this, Wushwush tea farm has 621 permanent and 3,834 temporary workers. Then, Gumaro tea farm has 196 permanent and 870 temporary workers, and Chewaka tea farm has 205 permanent and 837 temporary workers. Here, from the total number of workers, 69% are women. The number of temporary workers varied from season to season due to fluctuation of green leaf yield, low price of plucking green leaf per kg, and marginalized temporary workers from different benefits. Here, a critical turnover of temporary workers affects the quality and production potential of a sector. The startup might fail due to human resource management issues.

Operational Cost of Ethiopia's Tea Industry

The result has shown that around 46 % of operational cost absorbed by plucking then followed by fertilization cost 19 %, processing cost 14%, packaging cost 8%, tea maintenance cost 6%, fuel cost 5%, oil, and lubrication were cost1% from the total cost of production. Here, plucking is the most expensive operational cost in the southwest Ethiopia tea industry. For

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instance, over 95 % of southwest Ethiopia's tea is hand-picked. The tea industry uses about 40 to 80 workers per hectare to deliver fresh leaves on time. Thus makes plucking is the most cost and labor-intensive operation in the tea industry (Table 5).

Table 5
AVERAGE ETHIOPIAN TEA INDUSTRY COST OF PRODUCTION FROM 2011-2018

No	Main activity	7-year operational Cost (Birr)	Percentage of Cost
1	Plucking	98107248.3	46%
2	Fertilizer	40420509.01	19%
3	Processing	30521667.79	14%
4	Packaging material	16623685.13	8%
5	Tea maintenance	14074385.69	6%
6	Fuel	10943966.35	5%
7	Oil and Lubricant	1658666.47	1%
8	Herbicides and pesticides	2955929.71	1%
	Total	215306058.5	100

Fertilizer cost becomes the second expensive operation cost in tea farms. It is 142.72 % less than that of plucking costs. Similarly, the Fertilizer application is the second costly agronomic input in tea production after harvesting.

SUMMARY AND CONCLUSIONS

The history of Ethiopia tea spans more than 90 years. The expansions of large tea farms were rapidly grown at Derg regime in 1975. Over 97% of mad tea mainly come from large private tea farm. But, the smallholder sector was neglect. The strategy of tea production should change into a small-holding farming system, together with a growth of local demand. Globally, the tea smallholder sector covers 70% of the plantation area and produces 60% of global tea production volume.

The long-year production history was full of unpredictable events. The most common challenges are critical turnover of workers, high cost of production and lack of an entrepreneur approach, weak auction partner, unsolved legal issues like land and taxation. Here, the process of establishing the entrepreneurial start-up is characterized by uncertainty in terms of outcomes, success, failure, survival, lack of knowledge, and understanding. The other unique challenge of starting up is the perennial nature of crops. Tea has a long gestation period after being planted or hard pruning. Hence, the start-up process as a biological cycle, that process, can be described as the *"gestation process "* from conception to birth. Tea farm needs a direct-inject of finance for more than ten years to bring the bush into the maximum production line.

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Last twenty years, the average made tea production was increased by 82.4 %. For this increment, Wushwush, Gumaro, and Chewaka contributed 49, 33, and 18%, respectively. However, Gomaro and Chewaka were showed unsatisfactory performance when compared to Wushwush. Both, the tea industry lacks the environmental elements and supportive mechanism to implement different agronomical practices. However, the annual made tea production trend shows a significant increment between 2008-2018 than the period of 1997-2007. Currently, from the total 7767.6 tonne annual made tea, 86% of made ta is locally consumed, and the rest 14 % made tea exported. Here, the performance of the export market is poor and shows slight growth in quantity. Ethiopia tea consumption as a percent of production was rising by187.2 tonne y-1 (r2 = 0.68) and negatively increased by -1.55 tonne per annum (r2=0.71). Hence, the local consumption as a percent of production not fits with the number of consumers; it remains insignificant with the growing number of populations.

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Received: 04-Dec -2023, Manuscript No. JMIDS-24-14354; **Editor assigned:** 06-Dec -2023, Pre QC No. JMIDS-24-14354(PQ); **Reviewed:** 20-Dec-2023, QC No. JMIDS-24-14354; Revised: 22-Dec-2023, Manuscript No. JMIDS-24-14354(R); **Published:** 29-Dec-2023

Citation Information: Benti, T., Debela, A., Bekele, Y., & Suleman, S. (2024). Analysis total productivity of made tea in ethiopia. *Journal of Management Information and Decision Sciences, 27* (S2), 1-13.