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## Significance of Activity Schedule Organizational Performance of Coffee Cooperative Societies in North Rift, Kenya

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### **Abstract:**

*Activity schedule provides key steps and stages in the achievement of the organizational goals and objectives. It informs implementation of the level of cleared and remaining tasks that are necessary in solving an identified problem in the community hence provide confidence to the stakeholders. Kenyan coffee cooperative societies pool resources in pursuit of improving livelihood of rural coffee farmers through processes that include primary processing, storage, transportation and managing books of accounts. There has been consistent reduced production and total income for coffee farmers in the recent past, a situation which may be attributed to the activity schedule process plan. The research was carried out in Trans Nzoia County coffee cooperative societies which are 30 in number and information was sought using structured questionnaire with closed and open-ended questions. The sample size was arrived at through purposive and simple random sampling leading to a sample size of 346 respondents based on Krecie & Morgan sample table. Data were analysed using Spearman's correlation coefficient with aid of SPSS computer program. The findings presented in tables and descriptions established that activity schedules have a statistical significant positive influence on the organizational performance ( $P < 0.05$ ) and it is hoped that policy makers and extension service providers will enhance the utilization of activity schedules in the operations of rural development project planning and management. We recommend further analysis of types of activity scheduling techniques utilized by the cooperative societies and their influence on performance.*

**Keywords:** Rural development, project planning, organizations, performance

### **1. Background of Study**

According to Birchall (2004), coffee cooperative operations have to cope with prevailing and ever-changing market demands. The cooperative sector has continued to play an important role in agricultural processes including production, processing, storage, marketing and financing especially in the coffee sub sector as well as general agricultural production (Hussi, Murphy, Lindberg, & Brennehan, 1993; Manyara, 2003; Chambo, Mwangi & Oloo, 2008; Sualeh & Mekonnen, 2013; Mohammed & Lee, 2014; Chareonwongsak, 2017). Kenya has over 924, 000 farmers affiliated to the agricultural cooperatives whose key function is to improve agricultural technology transfer to increase production and productivity, to improve agricultural marketing and to enhance financing (saving, credit, banking and investment), this is affirmed by Baka (2013) and Josephine (2015). Agricultural cooperatives are crucial in supporting rural folk on improved small scale agricultural production, marketing and natural resource management among the marginalized groups through creation of sustainable rural employment (Food and Agriculture Organization [FAO], 2011). However, many cooperatives globally and Kenya in particular are in poor performance state of below 50% performance coupled with a myriad of challenges ranging from poor attitude, lack of commitment by leadership, poor governance, low capital base and corruption vice, insufficient knowledge and skill all of which is exhibited through reduced performance level as indicated by FAO (2011), Chege (2012) and Mohammed & Lee (2014).

Coffee in Kenya is mainly grown on smallholder farms leading to formation of cooperative societies though there are those carrying out farming on plantation/large estates categorised as private growers (Karanja & Nyoro, 2002; Agriculture and Food Authority [AFA], 2017). Kenya grows Arabica coffee whose marketing is done internationally through the Nairobi Coffee Exchange in different grades of AA, AB, PB, C, E, TT and T. Grading is determined by size, shape, density, physical and

organoleptic quality. The main processing methods employed are wet and dry processing (Gathura, 2013; Gemson, 2013; Sualeh & Mekonnen, 2013; AFA, 2017). Wet processing entails de-pulping of berries, washing, and drying while dry processing entails direct drying of berries with pulps until moisture content is 11.5%. In the smallholder coffee operations, farmers deliver their cherry to coffee co-operative factories for primary processing. Coffee co-operatives societies take over the processing and deliver parchment to millers for secondary dry milling process guided by a legal engagement upon which the millers hand over the coffee to appointed marketers under instructions from the cooperative societies for marketing at the Nairobi Coffee Exchange (Karanja & Nyoro, 2002; Murthy & Naidu, 2012; AFA, 2017). The many activities involve a process plan for coffee processing and procedures necessary for quality coffee production in the cooperative pulping stations (Theuri, 2012).

Introduction of coffee in Kenya occurred in the 1890s by Missionaries experimenting suitability of environment and its viability in different regions (Mureithi, 2008) and produced its highest volumes amounting to 130,000 MT in late 1980s, followed by a slump that saw production reduce to as low as 47,000 MT in 2015 (Karanja & Nyoro, 2002; AFA, 2017). Kenya's coffee industry faces a myriad of challenges and competition from countries and regions with minimal labour costs and crops with lower engagement in terms of costs and labour intensity. Coffee cooperative societies strive, therefore, to cut costs through elimination of waste and in improving sustained coffee quality. This is with aim of sustaining the industry competitiveness and to be in tandem with emerging regulations both nationality and globally. In the context of meeting the demands of the emerging markets, it is prudent for any concerned organization to optimize use of resources in pursuit of its operations, product development, process planning and production for the current situations while considering the future sustainability of both the organization and the industry stakeholders (Uphoff & Wijayaratra, 2000). Emerging and better production techniques and technology ought to be utilized in order to create relevance in the face of competitors within the industry locally, regionally and globally (Manyara, 2003; Chambo et al., 2008).

Process Plan implementation is important in the utilization of new technologies; equipment processes and in enhancing product performance while on the other hand increases probability of profitability and sustainability of the coffee cooperatives and organizations at large (Birchall, 2004). Emerging processing technologies and market demand have led to production difficulties within the coffee cooperative sector (Karanja & Nyoro, 2002). These changes have created and imposed new and sometimes challenging demands on the production process plans within the sector and industry at large. While adapting to the new environment that is constantly changing, new methodologies must exist or be developed and implemented within the coffee cooperative process planning to ensure effective adaptation within the pace of the changing environment. Efficient process planning function needs to address the management of information regarding equipment, timing, strategy, processing and projects. The parameters established together with decisions arrived at during process planning influence productivity and cost efficiency of the coffee cooperative society process while further determining environmental impact accruing from the processing of coffee and other related projects within the organization (Audu, Ibitoye & Umar, 2010).

Alipour, Golrang, Mohammad, Asadi & Zareii (2013) noted that process planning is an art and not a science. It has no basic similarity of working methods hence it is dependent on the planner and situation of planning. However, plans normally fulfil the specified requirements within the different set ups through its implementation process. Contemporary operation technology is constantly changing human operational skills required and because of intense professional activities involved in various operations, it has called for intelligence in judgment and decision-making on its implementation at the expense of strength power and is particularly relevant in coffee processing industry (Alipour et al., 2013). There is a great shift from labour intensive work to knowledge-based work increasing efficiency information processing and decision-making. Co-operatives have had many challenges including constraining financial and human capacity to operate projects and/or secure loans to expand existing projects (Audu, Ibitoye & Umar, 2010).

Cooperative societies like any other company or entity consider success based on profitability, return on investments, cash flow and ability to pay bills/dividends timely. Demand has also been increasing in consideration of environmental and social aspects, which enhances sustainability of the cooperatives (Uphoff & Wijayaratra, 2000). According to Sualeh & Mekonnen (2013), major part of work activities in production entails making selections, retrieving information, understanding messages and structuring information before processing it. Similarly, it is vital to consider output of process, which is a basis of the cooperative society membership besides the efficiency of knowledge available (Kurimoto, 2002; Hussain, 2014).

While research has been done mainly on physical coffee production, little attention has been put on activity scheduling process plan implementation in coffee production performance especially cooperative society sector. This research attempted to focus on the importance of activity schedules in the performance of the coffee cooperative societies in Kenya.

## 2. Activity Scheduling

Activity scheduling in coffee cooperative societies is vital for achievement of its goals and in improving organizational performance in general. According to Ndididi & Akpomiemie (2016), the key objectives in process planning include inventory, operational costs, transportation costs, tardiness costs and establishment costs. Activities are scheduled in coffee cooperative societies in a manner that one or more objectives are collapsed at a given time. Processes in the various industries differ causing different process plans and different in implementation of process plans (Kabiru, & Adah, 2013). Coffee industry

and agricultural industry at large exhibit discrete processes where process differs at every stage and time. Therefore, this creates uniqueness in the process plans implementation as compared to conventional process planning.

Coffee is among most popular beverage drinks globally and indeed the second most drunk to water. More so, coffee is rated second in trade to oil making it livelihood supporter of about 25 million farmers world over. The rich body, pleasant aroma, comfortable acidity and desirable colour of coffee arise from complex process from the farm level to the cup preparation. Key of the process that affect the taste of coffee is pulping, drying, storage and transportation which is carried out by the cooperative societies through their factories (Reinato, Borem, Cirillo, & Oliveira, 2012; Ghosh & Venkatachalapathy, 2014).

Coffee as a crop grow well in tropic and subtropical regions with temperate and humid climates of Africa, Central and South America and parts of Asia. Processing of coffee is done yearly from harvesting cherry optimally when brick red, glossy and firm in order to produce the desired cup quality. Sorting is then followed to remove any abnormal beans that may lead to compromise of the quality, after sorting, the cherry is pulped to remove the coffee pulp remaining with parchment. Parchment is then fermented and washed followed by a regulated drying process to moisture content of between 11-13%. Processed parchment is stored, bulked and delivered to the commercial millers for hulling in a secondary processing stage where husks are removed to remain with a green/clean bean. Furthermore, clean beans are subjected to quality analysis through physical (Density, shape and size) and organoleptic (Body, Aroma, Acidity) tests. The process determines the pricing and income to the farmers hence activity scheduling process plan implementation is critical in the determination of coffee performance hence cooperative society performance (Muhidong, Mursalim & Rahman, 2013; Ghosh & Venkatachalapathy, 2014).

Coffee cooperative society activity scheduling is the process of developing and maintaining best optional tactics and operational plans, in order to achieve higher value of the process. In determining the best option to be chosen, constraints and resource scarcity is critical consideration. Activity schedule and implementation capability of in a coffee cooperative society is directly related to management willingness and support of the key stakeholders in the industry.

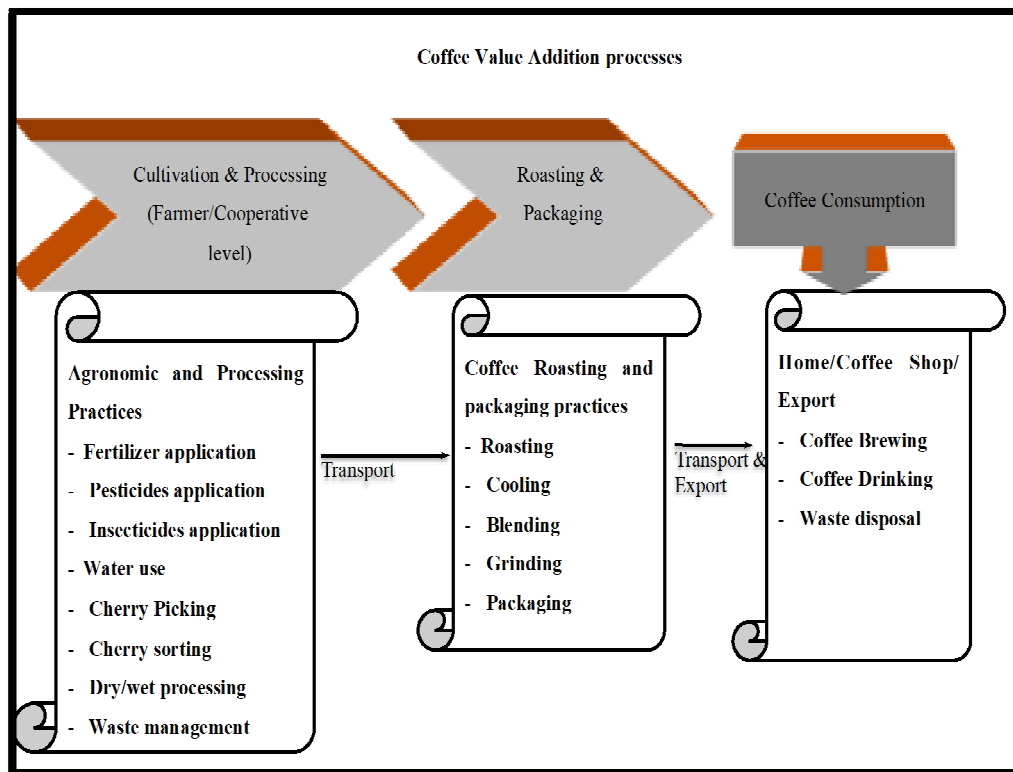


Figure 1: Coffee Value Addition Processes

### 3. Research Methodology

The study was carried out in Trans Nzoia County in Kenya. The county has 29 coffee cooperative societies which have been affected by dismal performance in the recent past leading to the closure of 5 of them despite the growing demand for coffee globally. Besides the closure of some societies, many other have challenges in the level of coffee quantity and quality production thus calling for the investigation into the role of the implementation of process plans in the organizational performance. The main economic activities in the area is farming especially horticulture, large scale maize & wheat farming, tea, coffee and commercial Businesses. The entire county is suitable for coffee farming generally.

The research process was non-experimental and specifically, the research was correlational in nature where it established the effect of activity schedule process plan implementation in the performance of the coffee cooperative societies in Trans Nzoia County. Research used cross sectional survey using self-administered structured questionnaires. Sampling was

done purposively by focusing on 3,274 small-scale coffee farmers in Trans Nzoia County. A total of 346 Small scale coffee farmers were selected at random to participate in responding to the questionnaire filling. A confidence level of 95% with a margin of error of 0.05 was the basis of the study. Data were acquired using a survey technique with aid of structured questionnaire and focus group discussion schedule. Validity of the tools was tested through expert assistance especially the peer and the supervisors of the study process while reliability was identified by correlation coefficient test on the pilot study questionnaires with 42 items for response.

A total of 20 respondents were used for piloting of the questionnaire in Siboti fcs farmers and a Cronbach's alpha coefficient of 0.84 was achieved giving confidence that the tool was reliability and would give acceptable results consistently and in achieving the purpose of the research. Data were collected through administration of a structured questionnaire, which contained the questions for the relevant information sought for the achievement of the objectives of the study. A total of 6 farmers and 6 stakeholders were chosen for focus group discussion to deliberate on major and unclear issues in order to achieve clarity of information given by the respondents and in guidance of the understanding of the issues that could not be well interpreted due to biasness of understanding by the researcher. The achieved data was sorted, run and analysed using correlation and descriptive statistics with aid of SPSS version 22 program. The results then were presented in form of tables, charts and descriptions.

#### 4. Results

The questionnaire was distributed to 346 respondents who were coffee growers in Trans Nzoia County out of which 341 were sufficiently filled and returned amounting to 98.6 %, which was sufficient enough to continue with the analysis of the data and that it gave sufficient information required during the study.

Research findings established that existence of activity schedules in the coffee cooperative societies have significant relationship with time utilization ( $r = 0.169$ ,  $P < 0.05$ ), reduced and efficient labor force ( $r = 0.180$ ,  $p < 0.05$ ), increased efficiency in decision making ( $r = 0.189$ ,  $P < 0.05$ ), increases individual responsibility in work ( $r = 0.223$ ,  $P < 0.05$ ), leads to reduction of waste of scarce resources within the cooperative societies ( $r = 0.197$ ,  $P < 0.05$ ) as illustrated in Table 1. Further existence of activity schedules has statistical significant relationship with enhanced operational timeliness of activities ( $r = 0.137$ ,  $P < 0.05$ ) and improved quality of coffee in the cooperative societies ( $r = 0.123$ ,  $P < 0.05$ ) as shown in Table 2. However, existence of activity schedule does not have statistically significant effect on coffee production ( $r = 0.035$ ,  $P > 0.05$ ), does not have statistically significant influence in leading the cooperative society to early detection of risks ( $r = 0.091$ ,  $P > 0.05$ ) and does not lead to enhancement of team work as measured by statistical significance ( $r = 0.008$ ,  $P > 0.05$ ) as illustrated in Table 2. Results therefore indicate that activity schedule influences greatly the quality of production and not the quantity of coffee in the coffee cooperative societies a scenario which may be attributed to the processes within the cooperative societies as separate from processes at the farm level which is more of agricultural than managerial in nature.

The findings of the study indicates insignificant statistical relationship between who prepares the activity schedule and improvement of time utilization, Reduced number of workers in the society, Increased efficiency in decision making, improved individual responsibility, reduced time wastage, enhanced timely operations, improved coffee quality, increased coffee production, enhanced risk detection and enhanced team work in the cooperative society ( $r = 0.052$ ,  $r = 0.036$ ,  $r = 0.025$ ,  $r = 0.095$ ,  $r = 0.003$ ,  $r = 0.037$ ,  $r = 0.064$ ,  $r = 0.098$ ,  $r = 0.002$ ,  $r = 0.01$  respectively all with  $P > 0.05$ ). From the respondents' point of view, it does not matter who prepares the activity schedule as long as it is well prepared and implemented which was affirmed by the focus group discussion.

"For a coffee society, as long as the activity schedule is well prepared early enough and followed with consent of people who are members, it is good. We don't really care who prepares it"

The findings inform that it does not matter who prepares the activity schedules as long as the tenets of planning and management are adhered to in a timely and cost-effective manner and especially if participatory approach of process planning is adhered to.

On whether activity schedule is beneficial in the organization performance, results from the study indicate that respondents viewed activity schedules as beneficial in improvement of time utilization ( $r = 0.260$ ), important in the reduction of workers hence cost in the cooperative societies ( $r = 0.417$ ), it further showed importance in enhancing decision making, enhancing individual responsibility, reduction of wastage of resources, enhancing timely operations in the organizations, improvement of coffee quality, increase in production of coffee, early detection of risks and more so beneficial in team building at correlational significance of  $r = 0.383$ ,  $r = 0.365$ ,  $r = 0.377$ ,  $r = 0.287$ ,  $r = 0.272$ ,  $r = 0.109$ ,  $r = 0.125$ ,  $r = 0.138$  respectively and statically significant value  $P < 0.05$ . It is important therefore to have activity schedules in place in the cooperative societies which will enhance the performance and hence profitability and sustainability of the coffee cooperative societies in Trans Nzoia County and the Country at large.

		<b>Improves time Utilization</b>	<b>Reduce Number of Workers</b>	<b>Increase Decision Making Efficiency</b>	<b>Caters Individual Responsibility</b>	<b>Reduces Waste of Resources</b>
Existence of activity Schedule	Pearson Correlation	-.169**	-.180**	-.189**	-.223**	-.197**
	Sig. (2-tailed)	0.002	0.001	0	0	0
Who Prepares activity Schedule	Pearson Correlation	0.052	-0.036	-0.025	-0.095	-0.003
	Sig. (2-tailed)	0.355	0.519	0.661	0.09	0.956
Activity Schedule Beneficial	Pearson Correlation	-.260**	-.417**	-.383**	-.365**	-.377**
	Sig. (2-tailed)	0	0	0	0	0

Table 1: Activity Schedule and Performance of Organizations

Research findings therefore indicate existence of a relationship between activity schedule and the performance of the coffee cooperative society leading to rejection of the null hypothesis ( $P < 0.05$ ) and hence the alternate hypothesis prevail that activity schedule affect the performance of the coffee cooperative societies. It is prudent, therefore, that organization ensures existence of the activity schedules and available to all parties interested in the organizations to enhance efficiency and effectiveness throughout its operations at all times.

		<b>Enhance Timely Operations</b>	<b>Improves Coffee Quality</b>	<b>Increased Crop Production</b>	<b>Risk Are Detected Early</b>	<b>Enhance Team Work</b>
Existence of activity Schedule	Pearson Correlation	-.137*	-.123*	-0.035	-0.091	-0.008
	Sig. (2-tailed)	0.012	0.024	0.525	0.096	0.891
Who Prepares activity Schedule	Pearson Correlation	-0.037	-0.064	-0.098	-0.002	-0.01
	Sig. (2-tailed)	0.514	0.254	0.081	0.976	0.862
Activity Schedule Beneficial	Pearson Correlation	-.287**	-.272**	-.109*	-.125*	-.138*
	Sig. (2-tailed)	0	0	0.047	0.022	0.012

Table 2: Organizational Performance Based on Activity Schedules

## 5. Discussion

Research findings through Chi-Square test established that age, position in the coffee cooperative society, number of years as a member of the coffee cooperative society, type of plans and existence of budget has statistical significance to and hence influences transparency in cooperative societies, they further influence the control of income and expenditure in the coffee cooperative societies hence reduction of wastage and leads to increased focus on major and important activities in the organizations, more so, they help in tracking finance utilization, source of funds and deficit if any. The variables tend to enhance detection of financial challenges early hence calling for early mitigation. Furthermore, the background aspects help in the reduction of conflicts among members and hierarchy in the coffee cooperative societies, they inform investment to be made and which to avoid as well as defining whether budget will be fully implemented or not.

Age represents generational difference with representatives viewing operations differently. Young generation would want transparency enhanced while the conservative elderly has no issue with any form of information hiding or provision as long as the work progress is on ongoing in the coffee cooperative societies. Furthermore, young generation are better equipped in book keeping hence controlling of income and expenditure is a necessity as well as in tracking the utilization of the funds and other resources available and which are presumed scarce in the coffee cooperative societies. As resource use is tracked, challenges in the finance and other resources are easily detected and evaded or countered depending on the circumstance pre-existing in the organization. The available book records and tracking information help in the reduction of conflicts and which is prevalent in the young than in the elderly cohort, however the elderly have better conflict resolution mechanisms and patience than the young members in the coffee cooperative societies. Young generation are risk takers hence are quick to determine which investments to engage in with consideration of profitability while the elderly is slow in determining which investments to undertake, however the elderly have a strength of the history of the previous investment and methods that led to success or failure over time.

Position in the coffee cooperative societies enhance level of understanding of what is of necessity and in determining the level of resources available. Those in the executive position understand the level of financial capacity of the organizations than ordinary members hence may not query much the reason of a given investment. However how the management dispense information to the members of the coffee cooperative societies determine how conflict level stands. Basically, conflicts reduce when flow of information is consistent and timely across the respondent cohorts.

The findings further established no statistical significance of gender on transparency in the cooperative societies, no influence on Control of income and expenditure by gender, neither does gender orientation enhance tracking of finances or detection of financial challenges in the organizations, more so gender does not contribute much on the conflict reduction, choices of investment and full budget implementation by the coffee cooperative societies. This affirms that gender perspective has little to influence the operations as long as the tenets of operation and organizational planning and management are adhered to fully. Furthermore, educational qualification does not have statistical significance on transparency in the cooperatives, it further does not have any influence on control of income and expenditure, tracking of finances, detection of financial challenges, reduction of conflicts and in the informing of investment direction by the cooperative societies as organizations. This is because educational qualification only enhances the interpretation of information but its operationalization has to be done based on the basic principles of process planning and management in order to enhance organizational performance.

An activity in the coffee cooperative societies involves identification of the specific schedule events that require to be undertaken in order to achieve a specific outcome in a given time and stage of operation of the coffee cooperative societies (Bansal, Gao & Qureshi, 2014). Activities establish the outputs at the lowest levels of work breakdown structures popularly known as work packages, which require different levels of resources in quantity and type for it to implement towards achievement of the objective (Rolstadaas, 2008). The work packages are further broken down into smaller components labeled scheduled activities that are implemented by individually responsible persons in the organization. The decomposition of activities therefore gives the benchmark of providing estimation of cost and time, scheduling, implementation and responsible persons and basis for monitoring and evaluation of the organizational performance (Bansal et al., 2014). Existence of activity schedules in the coffee cooperative societies have significant relationship with time utilization, reduced labor force, increased efficiency in decision making, increases individual responsibility, leads to reduction of resources, enhanced operational timeliness and improved quality of coffee, however existence of activity schedule does not affect coffee production, does not lead to early detection of risks and does not lead to enhancement of team work.

Activity schedule is a procedure and events that is to be followed in order to achieve a goal of an organization while highlighting the timings of every stage. It therefore represents the full conversion of the goals into methods and events together with the timings (Pinto, 2007; Rolstadaas, 2008). Activity Scheduling is a critical ingredient of project planning and subsequently in the monitoring and evaluation of the organizational processes, scheduling further gives times under which the activities will be undertaken or accomplished (Pinto, 2007; Rolstadaas, 2008). In order to fulfill activity schedule establishment, the management need to have sufficient information regarding, what type of activities are to be performed at every stage, the duration of undertaking the said activities, the type and quantity of resources needed to undertake the activities and establish how the laid down activities could interact and associate with one another in order to produce maximum results in an organization (Bansal et al., 2014).

Many organizations try to attain significant savings of costs from effective and efficient materials and activity schedule management within the entire process of goal achievement. Key focus therefore in an organization should be on the management of the activity processes and arrangement, which are geared towards cost reduction, increasing economics of scale and reduction of wastes of resources and energy. Coffee production especially the smallholder coffee production management basically through the cooperative societies have faced a myriad of challenges and further facing several competitions from other crop enterprises, fragile and unpredictable global market and beverage choices. This various category and causes of challenges calls for the prudent analysis and establishment of better mitigative measures within which performance may be enhanced and guarantee its sustainability and purpose towards the better performance.

## 6. Conclusions and Recommendations

Research findings confirms that activity schedule process planning implementation is important in the utilization of new technologies; equipment processes and in enhancing product performance while on the other hand increases probability of profitability and sustainability of the coffee cooperative societies. Efficient activity schedule process planning function addresses the management of information regarding equipment, timing, strategy, processing and projects. Contemporary operation technology is constantly changing human operational skills required and because of intense professional activities involved in various operations, it has called for intelligence in judgment and decision-making on its implementation at the expense of strength power and is particularly relevant in coffee processing industry.

The findings affirm that coffee cooperative societies are instrumental in ensuring smooth production processes through orderliness, stable operations and utilization of existing management skills. Cooperative societies endeavor control of operations costs, efficient use of resources and coffee quality focus, which is key through deliberate financial control and allocation. The coffee cooperative process plans are formulated to reduce cost and improve quality of coffee parchment and Mbuni. The eminent costs that organizations try to minimize include production costs, storage costs, tardiness costs, non-

delivery costs, handling costs, costs for increase in resource capacities, transportation costs and costs for increases in storage capacities. Coffee cooperative societies therefore need to adhere to the activity scheduling as a process planning tool to enable them perform optimally better and ensure sustainable development within coffee production set up.

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