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# EFFECT OF PROJECT SCHEDULE PLANNING PROCESS ON IMPLEMENTATION OF AGRICULTURE PROJECTS IN TUK COOPERATIVE: A CASE OF TWONGERE UMUSARURO WA KAWA COOPERATIVE IN KAYONZA DISTRICT.

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**Abstract**

This study investigates the effect of project schedule planning on the implementation of agriculture projects within the Twongerumusaruro wa Kawa (TUK) Cooperative in Kayonza District. Effective schedule planning, including the identification of project milestones, task duration estimation, and the use of appropriate tools and techniques, is crucial for the success of agricultural projects. The study draws on complexity theory, theory of constraints to offer a robust framework encompassing essential methodologies, tools, and processes for effective project management. Employing a descriptive survey design integrating qualitative and quantitative approaches, the study engaged in literature reviews, key informant interviews, and surveys among 150 stakeholders in Kayonza District's TUK cooperative. With a calculated sample size of 75 using Slovin's formula, the study employed a mix of random and selective sampling methods, including stratified random and purposive sampling techniques. Both primary data from questionnaires and interviews, and secondary data from academic papers, official publications, and ministry reports informed the research. Data analysis, facilitated by SPSS version 25, focused on descriptive statistics such as frequencies, percentages, means, and standard deviations. Reliability analysis of the variables shows high internal consistency, with Cronbach's Alpha values of 0.847 for the schedule planning process and 0.806 for project implementation. A significant proportion of respondents, 52.8%, strongly agreed that the project schedule is effectively communicated to all team members, with a high mean score of 4.24 and a standard deviation of 1.041, indicating that most team members are well informed about the schedule. Similarly, 50.0% of respondents strongly agreed that adequate time is allocated for critical phases, with a mean of 4.26 and a standard deviation of 0.979. Additionally, 61.1% strongly agreed that delays in schedule planning are promptly addressed, reflecting proactive management with a mean of 4.26 and a standard deviation of 1.151. Input from all stakeholders was also highly rated, with 63.9% in strong agreement and a mean of 4.40, indicating the inclusiveness of the planning process. Regular updates to the schedule, the clear tracking of progress, and the consideration of risks were also well rated, with mean scores above 4.25. The findings indicate that an effective schedule planning process plays a critical role in the successful implementation of agricultural projects. Key factors such as clear communication, timely updates, and stakeholder involvement significantly contribute

to project outcomes, including timeline adherence and quality completion. It is recommended that cooperatives adopt more inclusive scheduling practices that engage all stakeholders early in the process to ensure feasibility. Additionally, leveraging digital tools for real-time updates and progress tracking can further enhance project execution. Future research could explore the impact of emerging technologies, such as AI-driven project management tools, on improving schedule adherence.

***Keywords: Project schedule planning, Agriculture project implementation, TUK Cooperative, Coffee production, Kayonza District.***

### 1.1 Background of the Study

Global economies continue to rely heavily on agriculture, which also provides jobs, food security, and economic expansion (Anderson & Green, 2024). The successful execution of agricultural projects depends on effective project planning, which affects outcomes including productivity, resource management, and sustainability (Jones & Williams, 2024). Globally, the agricultural sector faces numerous challenges, including climatic variability, resource constraints, and socio-economic factors. Research indicates that comprehensive project planning encompassing scheduling, budgeting, communications, and resource allocation can mitigate these challenges and enhance project success (World Bank, 2022).

Research worldwide underscores the significance of project planning in addressing agricultural difficulties and attaining development objectives. The Food and Agriculture Organization (FAO) underscores the necessity for thorough planning to tackle challenges like food security and sustainable development (FAO, 2022). Efficient project planning can result in enhanced agricultural practices, heightened productivity, and superior resource management. This study seeks to furnish a global perspective on the influence of project planning on agriculture, utilizing contemporary research and practices to deliver practical insights for improving project execution.

Agriculture projects in the U.S. face a range of challenges, including fluctuating market conditions, regulatory requirements, and environmental factors (Roberts & Green, 2023). Comprehensive planning, which includes schedule, budget, communications, and resource planning, is crucial for overcoming these challenges and achieving project goals (Miller & Adams, 2022). The importance of effective project planning in agriculture is underscored by its impact on productivity, resource management, and overall project success (Smith & Johnson, 2023; Thompson & Lee, 2021).

Over recent decades, China has made significant strides in modernizing its agricultural sector through various initiatives and projects aimed at enhancing productivity and sustainability (Zhang, 2023). In the context of China's agriculture sector, where multiple stakeholders are involved, including farmers, government agencies, and private investors, clear and efficient communication can enhance project implementation and stakeholder engagement (Zhou, 2024). Schedule planning is integral to the success of agricultural projects, particularly in a country with diverse climatic conditions and seasonal variations like China (Chen & Wang, 2022). Proper scheduling ensures

that planting, harvesting, and maintenance activities are conducted at optimal times to maximize yields and reduce losses (Yang & Liu, 2023). Research indicates that timely execution of agricultural tasks, facilitated by effective schedule planning, can lead to improved crop performance and resource utilization (Li, 2022).

Agriculture is a fundamental component of economic development in Sub-Saharan Africa, employing a considerable segment of the population and making significant contributions to regional GDP (Chirwa & Mlozi, 2023). The sector encounters several challenges that impede its growth, such as inadequate infrastructure, restricted access to technology, and deficient project planning (Smith & Johnson, 2023). Effective project planning is crucial for addressing these challenges and enhancing the implementation and results of agricultural projects. Communications and resource planning are essential for aligning stakeholders and ensuring effective resource allocation (Osei & Kwaku, 2022).

Agricultural projects in Ghana frequently encounter challenges including poor scheduling, limited financial resources, and insufficient communication strategies (Agyeman & Baffoe, 2023). Schedule planning requires the establishment of realistic timelines and the coordination of activities in accordance with seasonal patterns, which is essential for optimizing crop yields and resource utilization (Bene, 2021). Budget planning allocates financial resources to project components, while effective communication planning enhances stakeholder engagement and problem-solving (Kumah & Agyemang, 2024).

Schedule planning is fundamental to agricultural projects, as it involves coordinating the timing of various activities such as planting, irrigation, and harvesting (Mapuranga, 2022). In Zimbabwe, where agricultural activities are highly dependent on seasonal patterns and climatic conditions, precise scheduling is essential for optimizing crop yields and reducing losses (Chikodzi & Nyoni, 2023). Effective schedule planning can help mitigate the adverse effects of climate variability and ensure that agricultural practices align with the optimal growing conditions.

Agriculture plays a pivotal role in Kenya's economy, contributing significantly to its GDP and employing a large portion of the population (Wangari & Gikonyo, 2023). Given its importance, the success of agricultural projects is crucial for enhancing food security, improving rural livelihoods, and fostering economic growth. Project planning is a fundamental component in achieving successful agricultural project outcomes, as it involves the strategic organization of tasks, resources, and timelines to ensure project objectives are met efficiently (Ndungu & Mugo, 2024).

In Rwanda, agriculture projects often struggle with issues related to inadequate planning and execution, which can lead to delays, cost overruns, and suboptimal outcomes (Niyonkuru & Munyaneza, 2022). Schedule planning is essential for coordinating activities such as planting and harvesting, which are highly dependent on seasonal conditions (Rwanda Agricultural Board, 2024). Properly planned schedules can help mitigate risks associated with weather and other environmental factors, thereby improving the efficiency and effectiveness of agricultural projects.

In addition to being an essential part of project management, budget planning is another important factor that influences the success of agricultural initiatives. As stated by Mugisha and


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Nshimiyimana (2023), insufficient budget planning can lead to financial constraints that impede the execution of a project and limit the ability to accomplish the project's objectives. Effective budget management ensures that resources are allocated appropriately, helping to avoid overspending and ensuring financial sustainability throughout the project lifecycle.

Strategic communications planning is crucial for the effective execution of agricultural operations. Effective and concise communication among stakeholders is crucial for coordinating activities, resolving challenges, and achieving project objectives (Uwimana & Niyonzima, 2023). Effective communication strategies can enhance collaboration between farmers, project managers, and external partners, leading to improved project outcomes and stakeholder satisfaction.

Rwanda, a small landlocked country in East Africa, has made significant strides in agricultural development in recent years, with coffee farming emerging as a key sector for economic growth and food security. The TUK Cooperative coffee farming project exemplifies the country's commitment to enhancing coffee production through strategic planning and implementation. This project aims to address challenges such as low productivity, limited access to markets, and inadequate infrastructure by implementing comprehensive planning and development strategies (Rwanda Ministry of Agriculture, 2020). Despite these efforts, the effectiveness of project planning in achieving the desired outcomes remains underexplored, particularly in the context of rural areas like Kayonza District, where agricultural practices and socio-economic conditions may vary significantly from other regions.

**1.2 Statement of the Research Problem**

The coffee agricultural sector in Rwanda faces numerous challenges that impact its productivity and profitability, particularly among smallholder farmers and cooperatives. Despite the country’s efforts to improve agricultural output, many cooperatives, including TUK Cooperative in Kayonza District, struggle with inadequate project planning, poor resource allocation, and ineffective implementation strategies, leading to suboptimal performance and limited market access (Boudreaux & Londono, 2020). External factors such as climate change, fluctuating coffee prices, and limited access to financial resources exacerbate these issues, hindering the success of coffee projects (Kanyambo, 2021). Additionally, there is a lack of comprehensive planning and resource allocation that addresses these infrastructural deficits, resulting in suboptimal project outcomes (IFAD, 2019). According to the Rwanda Agriculture Board (2021), coffee productivity in the district remains below potential, with average coffee yields reported to be around 10-15%.

There is limited research focusing specifically on the impact of project planning on the implementation and effectiveness of coffee development initiatives in Rwanda. Existing literature tends to generalize findings across various agricultural sectors and regions, failing to address the unique challenges faced by coffee projects in this context (World Bank, 2018). This gap in research means that tailored planning strategies and interventions, which could significantly improve project outcomes, have not been adequately explored. For instance, while broad guidelines for agricultural project management exist, there is a need for detailed studies that investigate how specific planning components, such as stakeholder engagement and resource management, influence the success of coffee development projects (FAO, 2021). The research gap identified

underscores the need for a focused study on the TUK Cooperative coffee farming project to evaluate the specific effects of project schedule planning processes on implementation outcomes.

## 2.0 Literature Review

### 2.1 Empirical Review - Schedule Planning Process and Project Implementation

The empirical review on schedule planning process and project implementation explores existing studies and evidence on the relationship between effective schedule planning and the success of project implementation. Schedule planning involves outlining the timeline, sequencing tasks, and allocating resources within a project to ensure that all activities are completed on time and within the designated time frame.

A study by Bortoluzzi and Cauchick-Miguel (2022) explores the relationship between project schedule planning process and project performance in the construction industry. Utilizing a survey that was disseminated to contractors and project managers involved in construction projects, the researchers implemented a quantitative methodology. They gathered information regarding project performance indicators, including cost, time adherence, and quality. The results indicated a substantial positive correlation between successful project outcomes and detailed schedule planning. In comparison to projects with deficient planning, those with well-defined schedules experienced fewer delays and cost overruns. This investigation emphasizes the significance of meticulous schedule planning in improving the efficiency and efficacy of projects.

A further study by Schwalbe (2020) investigated the impact of schedule planning process on the success of IT projects, focusing on software development and information systems projects. The research team used a mixed-methods strategy, gathering information from IT project managers through both quantitative questionnaires and in-depth interviews. In order to determine the connection between schedule planning procedures and project outcomes, statistical approaches were used to examine the quantitative data. The qualitative data provided insights into the nuances of schedule planning challenges. The results indicated that effective schedule planning significantly improves project delivery times and stakeholder satisfaction. However, the study also highlighted challenges such as scope creep and changing requirements that could undermine schedule planning efforts.

A study conducted by Mogues and Scott (2021) focusing on a case study to examine the role of schedule planning process in the implementation of agricultural development projects. The methodology involved a comparative analysis of several agricultural projects with varying levels of schedule planning. Data were collected through project documentation review and interviews with project stakeholders. The study found that projects with comprehensive and well-maintained schedules were more likely to achieve their objectives and meet deadlines. Key factors contributing to successful implementation included regular schedule updates and stakeholder engagement. The research emphasizes the need for robust schedule planning to navigate the complexities of agricultural projects.

Moreover, Vijayakumar and Gupta (2023) explored how schedule planning process affects the outcomes of non-profit projects, which often operate under tight constraints. The study used a quantitative approach with a survey targeting project managers in various non-profit organizations. The survey measured the effectiveness of schedule planning practices and their influence on project success metrics such as completion time and budget adherence. The findings indicated that structured schedule planning positively impacted project outcomes, with well-planned projects achieving their goals more consistently. The study also identified barriers to effective planning in non-profit settings, such as limited resources and volunteer turnover.

Moreover, El-Sayegh and Tumi (2022) investigated how schedule planning impacts performance in healthcare projects, including hospital construction and healthcare IT system implementations. Using a quantitative research design, they surveyed project managers and analyzed performance data from completed projects. The research utilized statistical methods to assess the impact of schedule planning on critical performance metrics, including project length, cost, and quality. Results showed that projects with rigorous schedule planning tended to perform better in terms of meeting deadlines and staying within budget.

### 2.2 Theoretical Literature on Project Schedule Planning Process

The schedule planning process is a crucial component of project management that profoundly influences project efficiency and success. Effective schedule planning includes creating a comprehensive calendar for project activities, establishing milestones, and allocating resources to guarantee timely achievement of project objectives. According to Kerzner (2022), a well-structured schedule provides a roadmap for project execution, helps manage stakeholder expectations, and facilitates effective monitoring and control. Kerzner emphasizes that schedule planning encompasses not only the creation of timelines but also the continuous updating and adjustment of schedules to accommodate changes and unforeseen challenges.

A major challenge in schedule planning process is addressing the complexities and uncertainties inherent in project environments. According to Meredith and Mantel (2021), schedule planning must account for potential risks and uncertainties, which requires a thorough analysis of possible scenarios and the incorporation of contingency plans. Their findings emphasize the need of adopting approaches like the Critical Path Method (CPM) and the Program Evaluation and Review Technique (PERT) to successfully handle these uncertainties. These strategies allow project managers to identify the most important tasks and efficiently allocate resources, increasing the likelihood of project success.

In recent years, advancements in technology have significantly impacted schedule planning process practices. With the advent of project management software and tools, scheduling has become more dynamic and integrated. Advanced functionality for creating, managing, and analyzing schedules are available in project management software like Microsoft Project and Primavera P6 (Jiang & Li, 2023). These tools facilitate real-time updates, resource leveling, and

the identification of potential scheduling conflicts, thus improving overall project management efficiency. Jiang and Li (2023) emphasize that leveraging these tools allows project managers to enhance accuracy and adaptability in schedule planning.

The role of stakeholder engagement in schedule planning has also gained recognition. According to Pinto and Slevin (2022), involving stakeholders early in the scheduling process can lead to more accurate and realistic schedules. Stakeholder input helps in identifying critical milestones, potential constraints, and expectations, which can be incorporated into the schedule to align with project goals and stakeholder needs. This collaborative approach not only improves the quality of the schedule but also increases stakeholder satisfaction and support throughout the project lifecycle.

Research by Baccarini and Collins (2022) suggests that effective schedule planning is positively correlated with project performance metrics such as time adherence, cost efficiency, and quality of deliverables. Their study indicates that projects with robust schedule planning processes are more likely to meet deadlines, stay within budget, and achieve desired quality outcomes. The significance of dedicating time and resources to create and update detailed schedules as a cornerstone of effective project management is highlighted by this.

### 2.3 Complexity Theory

Complexity Theory, which emphasizes the intricate and interconnected nature of systems, provides valuable insights into the scheduling and implementation of agriculture projects. In the context of agriculture in Rwanda, where projects often involve multiple stakeholders, variable environmental conditions, and fluctuating market dynamics, Complexity Theory helps in understanding how these factors interact and influence project outcomes. According to Waldrop (2018), complexity arises from the interdependencies and interactions among various elements within a system, which can lead to emergent behaviors that are not predictable from the individual components alone. This perspective is crucial for effective schedule planning, as it acknowledges that agricultural projects must adapt to changing conditions and unexpected challenges.

Effective schedule planning in agriculture projects is increasingly recognized as essential for managing complexity. As highlighted by Liu and Li (2021), robust scheduling techniques can improve project resilience by allowing for flexibility and adjustments in response to unforeseen developments. In Rwanda, where agriculture is a cornerstone of the economy, projects that incorporate dynamic scheduling methods can better accommodate seasonal variations, climatic changes, and market fluctuations. This adaptability ensures that projects remain on track despite the inherent uncertainties and complexities involved.

Implementing agriculture projects in Rwanda requires an understanding of how complexity affects project management. Complex systems, as described by Rescher (2020), often exhibit nonlinear behaviors, where small changes can lead to disproportionately large effects. This principle underscores the importance of incorporating contingency plans and iterative feedback loops in


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project schedules. For instance, agricultural projects that integrate real-time data and adaptive management strategies can more effectively navigate the unpredictable challenges posed by weather patterns and resource availability, ultimately leading to more successful project outcomes.

In conclusion, Complexity Theory offers a framework for enhancing the project scheduling process and implementation of agriculture projects by emphasizing the need for flexibility and adaptability. By recognizing the interconnected nature of agricultural systems and integrating dynamic scheduling approaches, project managers in Rwanda can better manage the complexities inherent in agricultural projects. Future research should continue to explore how Complexity Theory can be applied to optimize schedule planning and improve the effectiveness of agriculture projects in the Rwandan context.

## 2.4 Conceptual Framework

It's the theoretical lens through which things are studied and understood. A conceptual framework is like a foundation that holds study together. The idea frame for looking at how project planning affects the execution of agriculture projects combines important theory points of view with real-world concerns. The Resource-Based View (RBV) Theory adds to TOC by showing how important it is to use an organization's resources and skills in planning in order to complete a project successfully (Barney, 2021). This framework is further supported by project management principles that advocate for structured planning processes, such as the use of Gantt charts and critical path methods, to ensure effective project execution (Kerzner, 2017). By synthesizing these theories, the framework provides a comprehensive lens through which to assess how meticulous planning impacts the successful implementation of agricultural initiatives. This is shown in Figure 1.

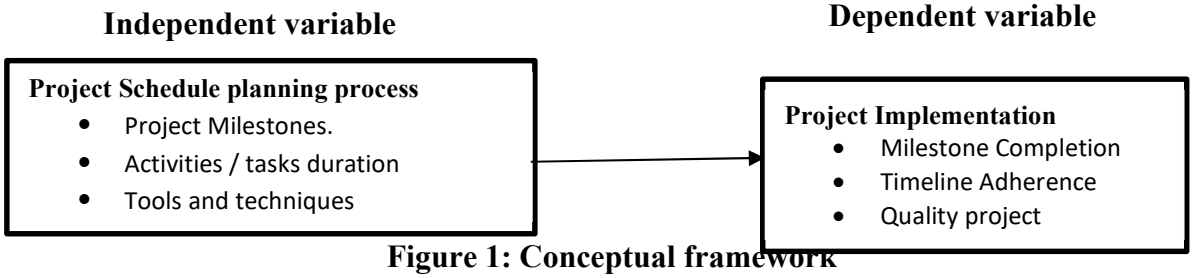


**Figure 1: Conceptual framework**

**Source: Researcher, 2024**

The conceptual framework for this study explores the relationship between the project schedule planning process (independent variable) and project implementation (dependent variable), particularly in agricultural projects. Key elements of schedule planning include defining project milestones, estimating task durations, and utilizing appropriate tools and techniques to ensure effective planning (Heagney, 2016). These elements directly influence project outcomes such as milestone completion, timeline adherence, and the delivery of a quality project (Kerzner, 2017). Effective schedule planning leads to timely completion of project milestones and adherence to

timelines, which are critical for maintaining project quality and success (PMI, 2021). The framework posits that when projects are carefully scheduled with clear milestones, well-defined task durations, and appropriate planning tools, they are more likely to achieve successful implementation outcomes. Schedule planning, grounded in Gantt chart methodologies and critical path analysis, is essential for ensuring timely project execution and avoiding delays (Kerzner, 2017).

## 3.0 Research Methodology

This study adopted a descriptive survey design to explore the effect of project planning process on the implementation of the TUK Cooperative coffee farming. The approach integrated both quantitative and qualitative research methodologies, allowing for a comprehensive analysis of the research problem. Quantitative data was collected through structured surveys and project reports, focusing on measurable indicators such as project timelines, budget adherence, and resource allocation. This data was analyzed statistically to assess the correlation between planning practices and project outcomes, following established procedures for hypothesis testing and data analysis (Creswell, 2014).

The target population for this study comprises a diverse group of 150 stakeholders involved in the TUK Cooperative coffee farming within Kayonza District. This group includes project managers, field coordinators, technical staff, and coffee farmers, all of whom play critical roles in the project's implementation and oversight (Bryman, 2016; Yegidis, Weismiller, & Ellis, 2018). This is as outlined in Table 1.

**Table 1: Target Population**

| Category | Description | Population |
|---|---|---|
| Project Managers | Individuals overseeing the overall execution of TUK Cooperative project | 2 |
| Field Coordinators | Personnel managing day-to-day field operations | 10 |
| Technical Staff | Experts providing technical support and guidance | 5 |
| Coffee Farmers | Beneficiaries engaged in coffee farming | 133 |
| **Total** | | **150** |

Source: ***TUK Cooperative Manager's Office 2024***

Researchers frequently employed the following formula to ascertain the suitable sample size from a target population of 150 in a finite population context.



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$$n = \frac{N}{1+\frac{N-1}{N}} \quad \text{(Equation 1)}$$

$$n = \frac{150}{1+\frac{150-1}{150}} = 75$$

Thus, a sample size of approximately 75 is recommended for a population of 150 to ensure statistical reliability while managing resource constraints (Kothari, 2017).

In this study, a hybrid of stratified and purposive sampling was used for data collection. According to Pallant (2020), the TUK Cooperative coffee farming was able to identify individuals with appropriate traits and experiences through the use of purposeful sampling. This included local coffee farmers, field coordinators, and project managers. This approach ensures that the sample includes individuals with direct insights into the project's planning and implementation. Additionally, stratified sampling was used within the purposive sample to ensure representation across various sub-groups, such as different levels of project involvement or geographic areas within Kayonza District (Creswell, 2014).

This study on TUK Cooperative coffee cultivation employed both primary and secondary data sources to guarantee thorough and reliable conclusions. Primary data was collected using structured surveys, interviews, and focus group discussions with stakeholders, such as project managers, field coordinators, technical personnel, and coffee producers. These methods provided firsthand insights into the planning and implementation processes and their impacts (Creswell, 2014). Secondary data was obtained from existing project reports, official records, and relevant literature to supplement the primary data and provide context (Yegidis, Weismiller, & Ellis, 2018).

In addition to quantitative analysis, qualitative data was gathered through interviews and focus group discussions with key stakeholders, including project managers, beneficiaries, and local officials. This qualitative component provided deeper insights into the nuances of project planning and implementation, capturing perspectives on challenges, successes, and areas for improvement (Charmaz, 2014). The integration of these two data types enabled a richer understanding of the impact of planning on project success. To ensure rigor, the study adhered to best practices in mixed-methods research, including triangulation and member checking (Tashakkori & Teddlie, 2020).

Data collection for this study utilized both primary and secondary sources to ensure a comprehensive analysis of the TUK Cooperative coffee farming. For primary data, a structured questionnaire was employed, designed to gather quantitative and qualitative insights from stakeholders such as project managers, field coordinators, and coffee farmers. This instrument


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included closed and open-ended questions to capture various dimensions of project planning and implementation (Dillman, Smyth, & Christian, 2014). For secondary data, a data sheet was used to collect and organize information from existing project reports, records, and relevant documentation. This approach facilitates the systematic analysis of historical and performance data, providing a contextual backdrop for the primary data findings (Leedy & Ormrod, 2019).

Qualitative data collection involves gathering detailed, non-numeric information through methods such as interviews, focus groups, and observations to understand phenomena in depth. Field supervisors play a crucial role in this process by facilitating interactions with participants, ensuring data quality, and providing context-specific insights. According to Creswell (2023), effective qualitative data collection requires careful planning and execution to capture rich, nuanced data that accurately reflects the participants' perspectives.

A pilot study was executed with a sample of 15 participants from the TUK Cooperative, constituting 10% of the overall sample size of 150 for this research. The initial phase is to evaluate the feasibility, duration, and logistics of the data collection procedure, in addition to refining the research instruments for the primary study. By conducting a pilot of the survey and interview protocols with a sample of the target population, researchers can detect concerns concerning question clarity, data collection methods, and participant comprehension (Van Teijlingen & Hundley, 2021).

This study evaluated validity via topic validity, which entails assessing whether the survey and interview questions adequately encompass the pertinent dimensions of project planning and implementation. Specialized evaluators in agricultural project management assessed the instruments to confirm their relevance and representation of the study's constructs (Bolarinwa, 2015). Moreover, construct validity was assessed by component analysis to verify that the instruments effectively represent the underlying constructs associated with project planning and implementation.

**Table 2: KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .703 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 89.327 |
| | df | 10 |
| | Sig. | .000 |

Source: **Pilot data results**, (2024)

Table 2 presents the results of the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity, which are crucial in determining the adequacy of the sample and the suitability of the data for factor analysis. The KMO value of 0.703 indicates a middling level of sampling adequacy, suggesting that the sample size is sufficient for reliable factor analysis, as values above 0.6 are generally considered acceptable (Field, 2020). Additionally, Bartlett's Test of Sphericity shows a


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significant chi-square value (89.327, $p < 0.001$), indicating that the correlations between variables are strong enough for factor analysis (Hair, Black, Babin & Anderson, 2019). These findings align with existing literature, which emphasizes the importance of these tests in assessing data suitability for multivariate techniques (Pallant, 2020). Studies have shown that a KMO value above 0.7 and a significant Bartlett's Test support the appropriateness of factor analysis (Tabachnick & Fidell, 2021).

Reliability was evaluated by test-retest methods and the Cronbach's alpha coefficient. The test-retest method is presenting identical instruments to the same participants at two distinct time intervals to assess the consistency of their replies (Guilford & Fruchter, 2021). A strong connection between the two answer sets signifies that the instruments exhibit temporal stability. Cronbach's alpha was employed to assess internal consistency, confirming that the items inside each scale consistently measure the same construct. A Cronbach's alpha coefficient of 0.70 or more was deemed adequate for confirming the reliability of the survey instruments (Tavakol & Dennick, 2021).

**Table 3: Reliability Analysis**

| Variable | Cronbach's Alpha | Comments |
|---|---|---|
| Schedule Planning Process | 0.847 | Reliable |
| Project Implementation | 0.806 | Reliable |

Source: **Pilot data results**, (2024)

The reliability analysis in Table 3 indicates that both variables—Schedule Planning Process and Project Implementation—are highly reliable, as evidenced by their respective Cronbach's Alpha values of 0.847 and 0.806. According to Nunnally and Bernstein (2014), a Cronbach's Alpha value above 0.70 indicates acceptable reliability, suggesting that the items within each variable are consistent in measuring their respective constructs. The Schedule Planning Process variable, with an alpha of 0.847, demonstrates excellent internal consistency, while the Project Implementation variable, with a value of 0.806, also shows strong reliability. These findings suggest that the measurement tools used for assessing the effectiveness of the schedule planning process and its impact on project implementation are robust and dependable (Tavakol & Dennick, 2021).

Data analysis for this study involved a comprehensive process starting from data collection through to final statistical analysis. Initially, data was collected using structured surveys and interviews with stakeholders involved in the TUK Cooperative coffee farming. Once collected, the data was coded to transform responses into a format suitable for statistical analysis. Coding involves assigning numerical values to categorical responses and ensuring consistency across the dataset (Hair, Black, Babin & Anderson, 2019). Following coding, the information was loaded into the widely used statistical analysis program, the Statistical Package for the Social Sciences (SPSS) Version 25 (Pallant, 2020). After that, data cleaning took place to resolve errors and inconsistencies and guarantee the validity and trustworthiness of the data. In this step, data entry mistakes, outliers, and missing numbers are checked (Field, 2018).

Thereafter, both descriptive and inferential statistical analyses was conducted utilizing SPSS. Descriptive statistics, such as means, medians, standard deviations, and frequency distributions, encapsulated and delineated the principal attributes of the data, offering a lucid summary of the characteristics and trends within the dataset (Pallant, 2020). Inferential statistics, including regression analysis and hypothesis testing, were employed to derive inferences and forecast the correlations between project planning and implementation outcomes (Field, 2018). This dual methodology enables a comprehensive analysis of the data, aiding in the discernment of critical trends and correlations pertinent to the study inquiries (Hair, Black, Babin & Anderson, 2019). The investigation also included regression analysis:

$Y = \alpha +$
$\beta_1 X_1 + \mu$…….
(Equation 2)
Y= Dependent variable – Project Implementation
$X_1$ = Project Schedule planning Process
$\beta 1$, is the coefficients of $X_1$.
Ethical concerns play a pivotal role in conducting this study to guarantee the integrity and dignity of all participants. Prior to participation, all participants were asked to provide informed consent, which guarantees they are fully informed about the goals, methods, potential hazards, and benefits of the study (Beauchamp & Childress, 2019). To preserve participants' privacy, data was anonymized and securely stored to ensure confidentiality (Wiles, 2018). In addition, there was no consequences if a subject decides to leave the study at any point. In order to ensure that the study is carried out with the greatest levels of decency and ethical practice, the research conformed by the ethical norms established by ethics committees (Sieber, 2019).

## 4.0 Results and Findings

### 4.1 Findings on Schedule Planning Process

The descriptive results on the schedule planning process provide a comprehensive overview of respondents' perceptions regarding its effectiveness and implementation within the Twongerumusaruro Wa Kawa Cooperative. As presented in Table 4, respondents were asked to evaluate various statements related to the schedule planning process using a Likert scale ranging from "Strongly Disagree" (SD) to "Strongly Agree" (SA). The mean scores and standard deviations associated with each statement offer insights into the consensus or variability in opinions among the respondents.

**Table 4: Respondents views on Schedule Planning Process**

| Statement on Schedule Planning Process | SD | D | NS | A | SA | Mean | Std Dev. |
|---|---|---|---|---|---|---|---|
| The project schedule is effectively communicated to all team members involved in the agriculture project. | 2.8% | 6.9% | 6.9% | 30.6% | 52.8% | 4.24 | 1.041 |
| Adequate time is allocated in the schedule for critical phases of the agriculture project. | 2.8% | 5.6% | 4.2% | 37.5% | 50.0% | 4.26 | .979 |
| Delays in schedule planning are promptly addressed and managed to minimize impact on project implementation. | 4.2% | 8.3% | 5.6% | 20.8% | 61.1% | 4.26 | 1.151 |
| The schedule planning process includes input from all relevant stakeholders to ensure practical feasibility. | 2.8% | 2.8% | 9.7% | 20.8% | 63.9% | 4.40 | .974 |
| Regular updates to the project schedule are made to reflect changes in project scope or external factors. | 2.8% | 2.8% | 5.6% | 37.5% | 51.4% | 4.32 | .917 |
| There is a clear system for tracking and reporting progress according to the scheduled plan. | 4.2% | 4.2% | 5.6% | 30.6% | 55.6% | 4.29 | 1.041 |
| The schedule planning process considers potential risks and includes contingency plans. | 2.8% | 4.2% | 9.7% | 31.9% | 51.4% | 4.25 | .989 |
| The allocation of resources in the schedule aligns with project needs and priorities. | 1.4% | 4.2% | 6.9% | 41.7% | 45.8% | 4.26 | .872 |
| Training and support are provided to ensure that team members understand and adhere to the schedule. | 4.2% | 2.8% | 8.3% | 34.7% | 50.0% | 4.24 | 1.014 |
| Feedback from previous projects is used to improve schedule planning for current agriculture projects. | 5.6% | 5.6% | 6.9% | 34.7% | 47.2% | 4.13 | 1.125 |

Source: **Primary data, (2024)**.

Table 4 summarizes respondents' views on the Schedule Planning Process in the agricultural project, highlighting a generally positive perception across several key statements. The majority of participants (82.8%) agreed or strongly agreed that the project schedule is effectively communicated to all team members, reflected in a mean score of 4.24 and a standard deviation of

1.041. Similarly, 87.5% felt that adequate time is allocated for critical phases, with an equally high mean of 4.26 (SD = 0.979). This aligns with findings in the literature that effective communication and proper time allocation are crucial for project success in agricultural contexts (Kok & Jansen, 2021). According to Bauer, Jansen, and Pohl 2022, a significant number of respondents, 81.9%, recognized that delays in scheduling are swiftly resolved. This finding continues to demonstrate the necessity of proactive management in minimizing disruptions.

Moreover, the table indicates that stakeholder involvement is perceived positively, with 84.7% of respondents affirming that the schedule planning process includes input from relevant stakeholders, achieving a mean of 4.40 (SD = 0.974). This is supported by literature emphasizing the importance of participatory approaches in agricultural projects to enhance feasibility and local buy-in (Osei & Acheampong, 2023). Moreover, the respondents rated the regular updates to the project schedule highly (mean = 4.32, SD = 0.917), reflecting the necessity of adaptive planning to accommodate changes and external factors, a practice supported by prior studies emphasizing flexibility in project management (Muller & Turner, 2020). Notably, while the overall perceptions of the schedule planning process are positive, the inclusion of feedback from previous projects received the lowest mean score of 4.13 (SD = 1.125), indicating a potential area for improvement. Ensuring that lessons learned are systematically integrated into future planning efforts can further enhance project performance and stakeholder satisfaction (Murray, Ahmed & Goel, 2021).

## 5.0 Conclusions of the study

The findings regarding the Schedule Planning Process indicate a robust perception among respondents of its effectiveness in facilitating project execution. A significant majority affirmed that the project schedule is effectively communicated to all team members, highlighting the importance of transparency and collaboration. Additionally, the allocation of adequate time for critical phases and the prompt management of delays were deemed crucial for minimizing impacts on project implementation. These insights align with existing literature that emphasizes the need for thorough scheduling practices to enhance project performance and efficiency in agricultural projects.

## 5.1 Recommendations of the study

### 5.1.1 Policy Recommendations

To enhance the effectiveness of resource planning in agricultural projects, policymakers should focus on creating robust frameworks that facilitate stakeholder engagement throughout the planning process. This can be achieved by establishing mandatory consultations with local communities and relevant stakeholders during the initial planning stages, ensuring that diverse perspectives and needs are considered. Additionally, policymakers should invest in capacity-building initiatives aimed at training project managers and team members on effective resource management practices, as this would equip them with the necessary skills to optimize resource

allocation and utilization. Implementing these policies will lead to improved project outcomes and greater sustainability of agricultural initiatives.

### 5.1.2 Theoretical Contributions

This study contributes to existing literature by reinforcing the significance of comprehensive resource planning frameworks in the success of agricultural projects. It highlights the critical role that stakeholder involvement plays in effective resource allocation and the identification of potential risks. Moreover, the findings support the assertion that continuous monitoring and evaluation are vital components of resource management, aligning with contemporary theories that advocate for adaptive management practices. By bridging theoretical concepts with empirical evidence, this research underscores the need for a theoretical model that integrates stakeholder input, resource efficiency, and ongoing assessment in agricultural project management.

### 5.1.3 Field Recommendations

In practice, project teams should adopt a more collaborative approach to resource planning by fostering partnerships with local stakeholders, including farmers and community leaders. This can facilitate a better understanding of local needs and challenges, leading to more informed decision-making. Additionally, it is essential to implement regular training sessions for team members on effective resource management techniques and risk mitigation strategies. By emphasizing the importance of adaptive management and real-time adjustments to resource plans, project teams can enhance their responsiveness to emerging challenges, ultimately leading to more successful agricultural project implementations. Regular feedback loops should also be established to gather insights from stakeholders, ensuring that resource planning remains relevant and effective throughout the project lifecycle.

## 5.2 Suggestions for Further Studies

For further studies, it is recommended to explore the long-term effects of project schedule planning on the overall sustainability and performance of agriculture projects across different regions and cooperative models. Future research could also investigate the role of emerging technologies, such as project management software, in enhancing the efficiency of schedule planning and project implementation. Additionally, examining the influence of external factors like climate change and market dynamics on schedule adherence and project outcomes would provide valuable insights. Comparative studies across different sectors beyond agriculture, such as manufacturing and construction, could help to generalize findings and offer broader applications of effective schedule planning processes in project management.

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