

# AN ACTIVITY THEORETICAL APPROACH TO TRANSFORM AGRICULTURAL FINANCING TOWARDS STABLE FOOD SYSTEMS: A LITERATURE REVIEW

R. KAWEESI <sup>1\*</sup>, S.H.P. CHIKAFALIMANI <sup>2</sup>, M. MUSINGUZI <sup>3</sup> and N. KIBWAMI <sup>4</sup>

<sup>1,2</sup>Department of Entrepreneurial Studies and Management, Durban University of Technology (DUT), Durban, 400 South Africa.

<sup>3</sup>Department of Geomatics and Land Management, School of Built Environment, College of Engineering, Design, Art and Technology (CEDAT), Makerere University, Kampala, Uganda.

<sup>4</sup>Department of Construction Economics and Management, School of Built Environment, College of Engineering, Design, Art and Technology (CEDAT), Makerere University, Kampala, Uganda.

Email: <sup>1</sup>22384757@dut4life.ac.za (\*Corresponding Author), <sup>2</sup> samuelc@dut.ac.za,

<sup>3</sup>moses.musinguzi@mak.ac.ug, <sup>4</sup> nathan.kibwami.amak.ac.ug

## Abstract

Agricultural financing in developing economies is a complex system that threatens food supply despite numerous research and interventions. Research in this area has yet to have a critical realistic constructivist lens to analyze the transformation of agricultural financing in a sociocultural and long-term perspective using Activity Theory (AT). This selective review of literature seeks to justify how agricultural financing is an Activity Theory (AT) phenomenon and addresses how Activity-Based Analysis (ABA) can be leveraged to transform agricultural financing systems. Key findings indicate that activity theory principles and theoretical implications help guide researchers and policymakers to frame transformational policies interventions toward addressing agricultural financing system challenges. We argue that considering agricultural financing activity as the unit of analysis enables researchers and policymakers to incorporate dynamic, multi-level and complex activity elements for agricultural financing over space and time dimensions. Empirical testing of Activity Theory approaches towards agricultural financing design research is crucial for future research.

**Keywords:** Agricultural Financing, Activity Based Analysis, Activity Theory, Interventions.

## 1. INTRODUCTION

According to the FAO, while agriculture currently contributes approximately 4% to global Gross Domestic Product (GDP) for the global south, the agricultural sector also accounts for as much as 25% of national GDP (World Bank, 2023). Evidence suggests that the growth of Gross Domestic Product (GDP) from agriculture is twice as effective at reducing poverty as GDP growth linked to the non-agricultural sectors (World Bank, 2007). Agricultural real estate and rural revitalization fundamental to the national economy and food system require accelerated financial innovations and affordable financing (Li et al., 2022). Agricultural assets need capital as an additional factor of production to realize their highest and best use and capital value (Kan et al., 2022).

Elahi *et al.*, (2022) argue that agricultural-scale operation requires the flow and reallocation of production factors such as capital to achieve the purpose of large-scale and intensive production. Additionally, from the perspective of expanding and scaling land operations for food production, farmers' access to a certain scale of financing increases their probability of

agricultural land utilization and production output. Therefore, agricultural assets require capital and financing alongside other factors of production for stable food system (Collier & Dercon, 2014). However, agricultural financing is traditionally challenging for financial institutions due to its inherent risks (Bank of Uganda, 2011; Huang & Wang, 2014; Colliard, 2019; Kessy, 2022). Although, traditional agricultural financing avenues such as credit facilities, warehouse receipting, indexed based insurance, among other public and private avenues have been researched widely and set up in different jurisdictions, the agricultural financing challenge still exists as these interventions dissociate public and private capital (Markovic & Kokot, 2018; Havemann et al., 2020).

Furthermore, the underdeveloped markets in Africa further limit the mobilization of equity financing by restricting the transfer and spread of risk of asset ownership, yet risk management is at the centre of new paradigms and approaches that inform investment initiatives and shaping financial structuring (Komarek et al., 2020). Where decentralized local channels such as rural cooperatives exist, they are also faced with insufficient loanable funds to meet the financing needs of players in the agricultural sector (Schmidt et al., 2014). As a result, players in the agricultural sector often lack the needed financing tools to utilize their land-based assets to their highest and best use, thereby facing severe growth constraints that negatively impact food systems (Bank of Uganda, 2011; Huang & Wang, 2014; Colliard, 2019).

This background poses an important question that this study attempts to answer, first by testing whether agricultural financing is an activity theory phenomenon addressing how Activity Theory can be leveraged for transformative inquiry interventions to guide policy-making processes for agricultural financing system. There is a need for a theoretical framework for investigating and guiding the application of policy interventions to address the current challenges in agricultural financing for a stable food system. This paper contributes to the current discussion regarding what an appropriate approach for analyzing agricultural is financing, especially in developing economies.

### **1.1 What is Activity Theory?**

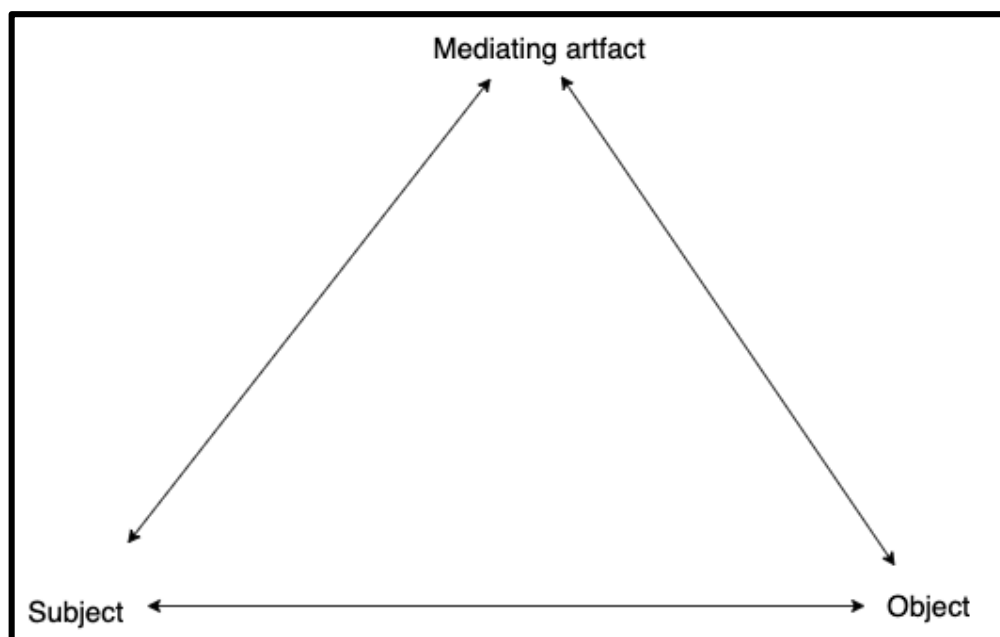
Activity Theory (AT) is a philosophical and interdisciplinary framework for assessing and guiding policy interventions in practice while considering the socio-cultural context of human behavior (Bai & Henesey, 2012). AT considers the interactions between individuals, organizations and social groups with their context (culture, norms, rules, values, technologies, artefacts, and power structures) as the basic unit of related social systems (Adamides, 2023). Thus, AT combines the tools, technology, and organizational context into the activity system as the unit of analysis (Karanasios, 2018).

As an analytical tool, AT is associated with activity-theoretical studies that call for transformative system interventions (Prenekert, 2006). AT shifts the focus of the unit of analysis from the individual or group to the broader “activity” itself, relying on the transformative interaction between the actors (“subjects”) and the world (“objects”) (Marocco & Talamo, 2022). Thus, AT offers policy relevance without losing sight of conflict, politics and the

relationship between intrinsic contradictions within activity systems, thereby providing a platform for learning associated with the transformation of practices.

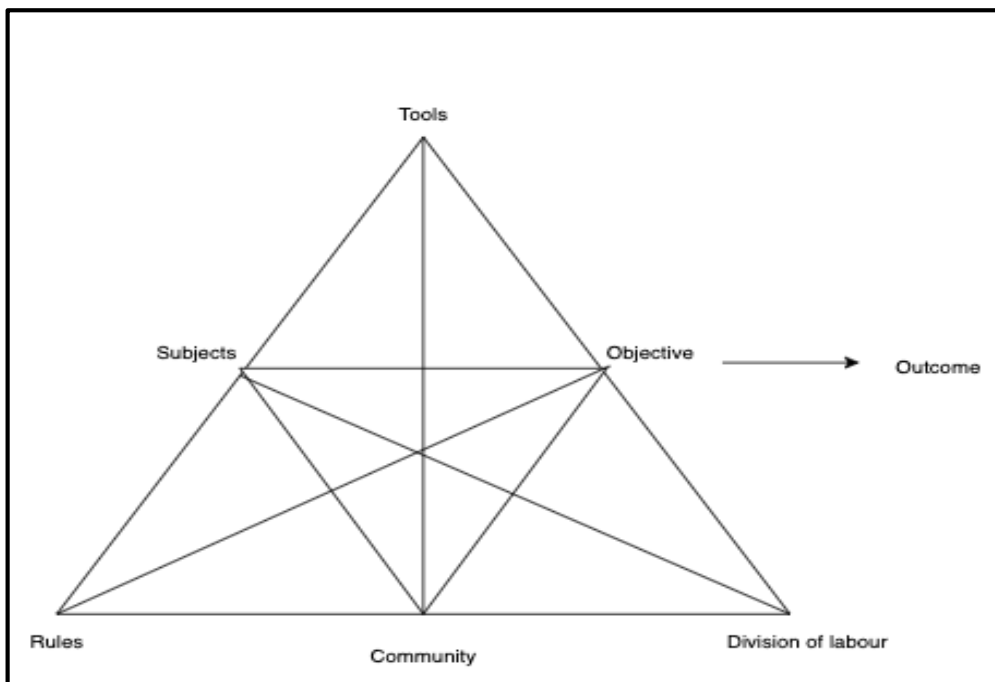
AT is a well-known framework for a broader practice-based approach for illuminating both socio-organizational personal-behavioral spheres typically of agricultural financing (Vakkayil, 2010). AT has evolved from the first generation based on (Vygotsky & Cole, 1978) that focused on the interaction between the human agent, subject, and object, mediated by tools/artefacts as shown in *figure 1*. The second generation (*figure 2*), also known as the “*Activity Theory Model*” was expanded by Engeström by further adding three elements of complexity (rules/norms, community, rules and norms and division of labor) as crucial elements of an activity system (Karanasios, 2018; Marocco & Talamo, 2022).

The third generation AT (*figure 3*) addressed the challenges of developing conceptual tools for understanding dialogue, multiple perspectives and networks of interacting activity systems (Engeström, 2001). Third-generation activity systems include at least two interacting activity systems such as agricultural financing and insurance. In this study, we use the terms “activity” and “activity system” interchangeably concerning Engeström's third-generation “activity system”.



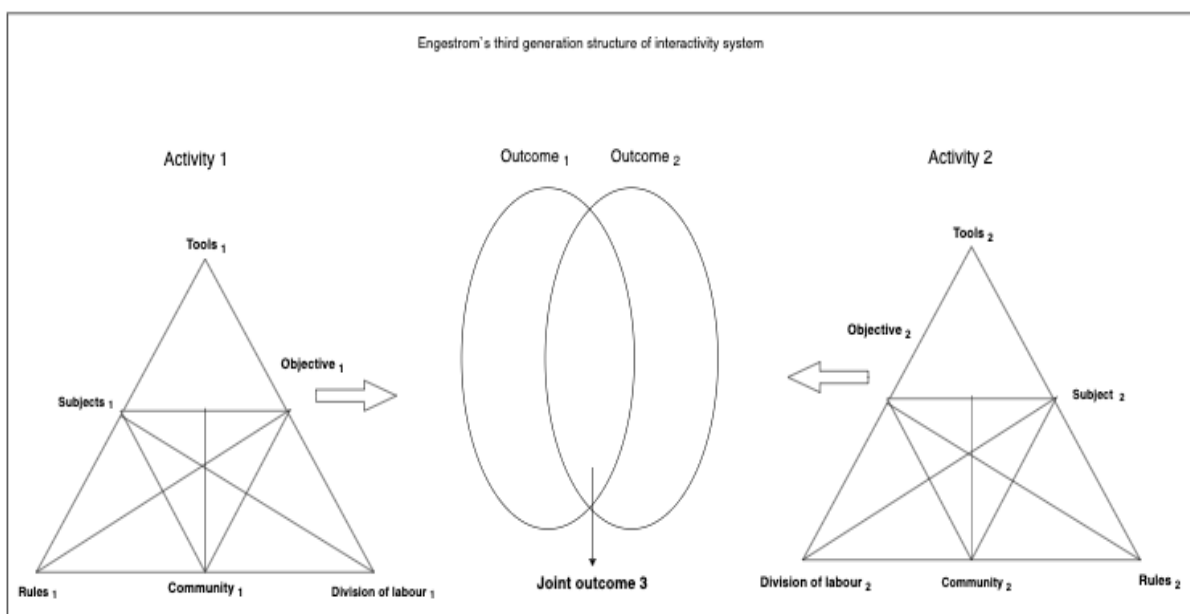
**Figure 1: Vygotsky`s first generation structure of an activity system**

Source: modified from (Engeström, 2001)



**Figure 2: Engeström's Second Generation Structure of an Activity System (“Activity Theory Model”)**

Source: modified from (Engeström, 1987)



**Figure 3: Engeström's Third Generation Structure of an Interactivity System**

Source: Modified from (Engeström, 2001)

According to activity theorists, actors/stakeholders (subjects) engage in purposeful (objective) activity to satisfy their established needs and for survival by achieving the objective/purpose. There is a collective subject for a collective activity, while for an individual activity, there is an individual subject. However, each individual is a free agent with their own goals and ideas, making it hard to predict their behavior.

The object (ive) motivates actors to carry out the activity. Activeness is essential because it accounts for human actions through the use of tools/instruments that are means (technological artefacts or other “softer” elements, such as language and signs) by which the activity is carried out (or mediated). The transformation of the object (ive) is possible only through these historically developed means, which also participate in the construction of the subject’s identity concerning a specific activity.

Rules are cultural norms, formal or informal rules, regulations, and institutions governing the performance of the activity (e.g., standards, regulations). Community denotes the various stakeholders of the activity, and division of labor signifies who is responsible for what, who does what, and how roles and power hierarchies are organized, as the procedures and processes for carrying out work activity.

The social and cultural structure of an organization (community) can constrain or influence how work activity is successfully carried out within a given context. The sense of community aligns the individual subject to shared rules and norms governing the multiple relationships between elements of the activity system (Kamanga et al., 2019). Finally, the outcome of the activity is the desired outcome of carrying out the activity.

AT helps to understand the propagation of system change and how change gives rise to new problems requiring innovative solutions that are particularly important in planning interventions and the interactive governance of the system interventions (Adamides, 2023). The described view of activity theory makes it particularly relevant for organization and business interventions (Kamanga et al., 2019).

AT is characterized by contradictions that comprise primary contradictions that are fundamental, persistent and manifest at the level of individual elements, reflecting the tensions that stem from the difference between use value and exchange value (Bai & Henesey, 2012; Nicolini, 2013). Secondary contradictions occur between two elements of an activity (e.g., between tools and rules) and are usually exacerbated when trying to remediate a primary contradiction (Baek, 2004; Foot, 2014).

Tertiary contradictions arise between new and old definitions or new ideations of culturally more advanced activities of the same object, whereas quaternary contradictions arise when a change in a related activity generates contradictions in relations with its neighbors (Adamides, 2023; Mursu et al., 2006; Singh et al., 2009). Contradictions are central to activity theory as they are associated with disturbances and tensions as sources of learning and transformation. The contradictions can transit from one activity to another through inter-activity interactions of space and time (Vakkayil, 2010).

The contradictions are not antagonistic but rather positive enablers and catalysts creating opportunities for transformation of the activities` system (Hawkins-Waters, 2007).

## 2. MATERIALS AND METHODS

The study aims to justify how agricultural financing is an AT phenomenon and address how Activity Based Analysis as the analytical arm of AT can facilitate understanding and analysis of the Agricultural financing systems and guide interventional policy-making to transform the sector. A selective literature review was conducted to collect relevant evidence on agricultural financing following pre-specified eligibility criteria to answer the research questions.

### 2.1 Identification and Selection of Literature

Identification of relevant primary sources adopted the conventional systematic approach of Search, Appraisal, Synthesis, and Analysis (SALSA) framework as elaborated by (Mengist et al., 2020) to guide the qualitative data collection search, extraction, analysis and synthesis. This guide was chosen due to its clear methodological procedures for being systematic for conducting high-level scientific abstraction.

We deploy a defined search strategy in Scopus and Google Scholar to identify the relevant studies. The search strings focused on “agricultural financing” were restricted for published literature dating 5 years (after 2019). Where publications were not able to be downloaded for further investigations, we rejected them. Peer-reviewed conference papers, journal articles and book chapters were included in the literature search.

Given the limited combined literature on agricultural finance, activity theory and agricultural financing transformation, we supplemented our literature review with relevant articles. We also reviewed reference lists of cited articles to identify further relevant studies. We finalized the literature search was finalized on 03 May 2023. After removing duplicated search records, the literature search resulted in 237 articles.

We applied strict inclusion and exclusion criteria to narrow down the results to the most relevant papers to achieve the objectives of the review work, as shown in *Table 1* below.

**Table 1: Inclusion-Exclusion Criteria of Literature**

<i>Criteria</i>	<i>Decision</i>
Where the predefined keywords exist as a whole or at least in title, keywords or abstract section of the paper	Include
Paper is published after 2010	Include
Paper is not original/primary research	Exclude
Papers duplicated in search results	Exclude
Article address at one at least agricultural financing construct	Include
Paper published in scientific peer-reviewed journal	Include
Paper presents pieces of evidence on activity theory	Include

Source: Author

After the general screening, the articles were reduced to 116 retained for further title reading, of which only 70 articles fulfilled the eligibility criteria for further abstract reading. After reading the abstracts, only 38 articles remained for full-body reading. Among them, 26 assessed agricultural financing activity aspects, and such articles were downloaded for further screening steps. In the end, 26 publications fulfilled all the inclusion criteria used in this study to match the quality assessment, and 17 were selected consisting of 65% of the original articles in the databases as most research articles on the topics were not open sources. That limited the final number of published articles included for further assessments.

## 2.2 Synthesis and Analysis

The variable of interest included the activity theory elements and theoretical principles. *Table 2* in section 3.1 indicates activity theory-disaggregated findings and discussions related to the Activity-Based Analysis of agricultural financing activity system for each study. The general information of the articles includes years of publication, activity-based analysis and activity theory thematic mapping.

The analysis phase involved answering the formulated research questions regarding how agricultural financing is an activity theory phenomenon and addressing the appropriateness and significance of Activity Theory in transformative investigation and interventional policy guidance related to the agricultural financing system. Analysis covered the qualitative thematic analysis and narration of the results.

## 3. RESULTS AND DISCUSSIONS

### 3.1 Justification for Applying Activity Theory to Agricultural Financing - How Agricultural Financing Is an Activity Theory Phenomenon

Agricultural financing knowledge generation and learning of relational practices involves different actors demanding a practice theory such as AT. AT encompasses several other aspects, such as conflicts, institutions and systems, paying particular attention to conflict sensitivity, contradictions and politics among stakeholders typical of agricultural financing systems (Blackler & Kennedy, 2004; R. Engeström, 2009; Macpherson & Jones, 2008). *Figure 4* illustrates how agricultural financing is an AT phenomenon leading to the outcome of food security.

The framework considers the AT elements elaborated in section 1.1 (Tools, Subjects, Object, Rules, Community, division of labor). A coordinated interaction between each of the elements in the agricultural financing activity system contributes to food security as an outcome through innovative financial tools for agricultural production and business scaling thus improving food purchasing power, value chain supplies, production and consumption diversification among producers and consumers of agricultural products.

Financing generally faces increasing uncertainty and change in a highly competitive environment characterized by strict regulations, technology, globalization and volatility of customers` preferences. The dynamics are such that agricultural financing is practiced under

conditions of uncertainty which necessitates the development of theoretical frameworks capable of coping with complex and dynamic spatial-temporal and social dynamics. Such theoretical developments require a departure from the traditional dichotomies originating in the objective/subjective divide, which inhibit the understanding of learning and knowledge creation that are simultaneous and interdependent with practice.

Agricultural financing as a constituent of financing is a multi-levelled process involving multi-level changes in the underlying financial systems. Financial systems are intellectual conceptualizations that are included in generative and operational processes. Studying the agricultural financing process requires a holistic unit of analysis that considers transformations that take place simultaneously, considering the different mediating financial tools and artefacts proposed by the stakeholder or the community of stakeholders. This argument means that agricultural financing is a social function with interrelated societal outcomes.

The tools component entails financial resources and tools for accessing internal and external financial markets through risk exposure. For agricultural financing, these include tangible and intangible artefacts that all financial activity players create and use to achieve the objective of agricultural financing.

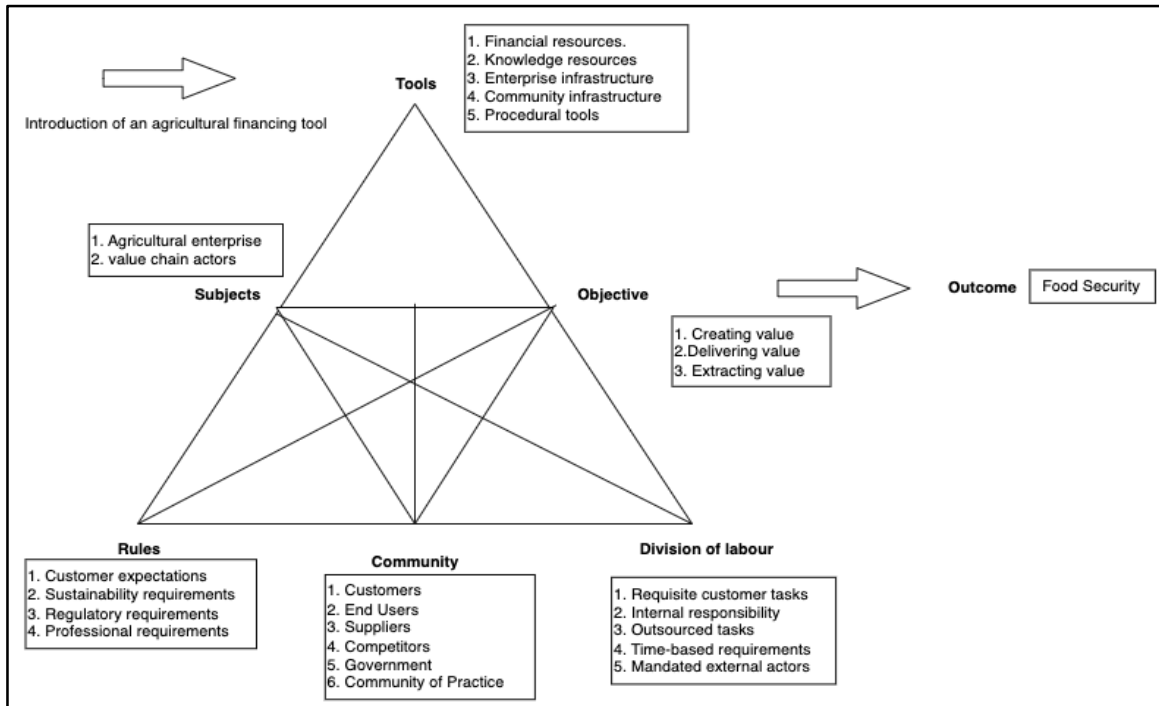
The subjects are the leading players in the agricultural financial activity. These may include producers of agricultural products on the production side, and consumers are the consumption side or value chain actors along the agricultural supply chain. These are the subjects of the financing intervention being considered in the agricultural financing system activity.

The objective is the end product in terms of value creation and addition. The rules define the expectations, regulatory and professional requirements, norms and culture of the actors in the agricultural financing activity system.

The community are the actors involved in the agricultural financing activity, while the division of labor component encompasses their roles and responsibilities. When there is a coherent interaction between each of the elements depending on the financing tool referred to, the of food security outcome is attained, as shown in figure 4 of the agricultural financing activity system.

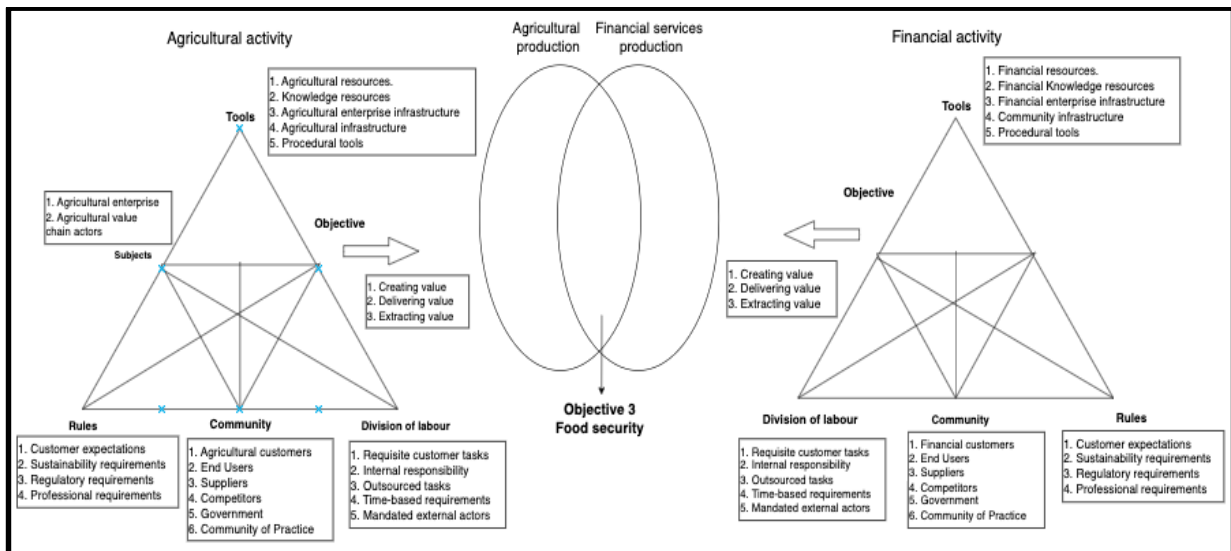
Furthermore, agricultural financing is attained when agricultural activity interacts with other activity systems, such as the general financial activity system or the insurance activity system. In this case, a potentially shared or jointly constructed objective of food security is attained, as shown in figure 5.





**Figure 4: Conceptual Links between Agricultural Financing, Human Activity System and Food Security**

Source: Author (2023)



**Figure 5: Conceptual Link between Agricultural Activity and Financial Activity, Two Interacting Activity Systems Leading To Food Security**

Source: Author (2023)

As shown in Table 2 below, existing research below has intensified its focus on the functional and cultural issues underpinning the agricultural financing practice. The functional approaches regard learning the practice and performance, while the cultural approaches regard learning the actor's underlying market practices. These existing approaches need to capture the complex relationship between actors instead of focusing on the creation of new financing innovations and tools.

These complexities related to the networked production of value are viewed as a threat obstructing the creation of knowledge (Håkansson & Ford, 2002). Therefore, there is a need to extend the current understanding of agricultural financing knowledge and learning by applying a theory sensitive to contradiction, instability, and uncertainty. AT stands out among other theories because it contains systemic analytical tools for recognizing contradictions, instabilities, and uncertainties inherent in highly political practices such as agricultural financing (Hemetsberger & Reinhardt, 2009).

Table 2. Below highlights the relevant agricultural financing studies included in this study. The table indicates and confirms that the agricultural financing activities studied are disaggregated and aligned to the AT elements for each study.

**Table 2: Selected Literature for Agricultural Financing (Detailed table in data appendix)**

Author/Year	Agricultural financial Activity	Findings	Activity Side
Komarek et al., (2020)	Agricultural Risk	Management and transformation of agriculture risk can be conceptualised in activity theory	Consumption
Balana & Oyeyemi, (2022)	Agricultural Credit	Production and consumption of agricultural credit activity transformation leads to access to tools/technologies for improved productivity and livelihoods	Consumption
Ansah (2022)	Non-agricultural Asset security	Sensitivity of household demand for food demand can be transformed through contradictions that lead to development of tools for resilience capacity	Consumption
Appiah-Twumasi et al., (2022)	Agricultural Financing	Adoption of innovative financing tools can be modelled through the activity theory framework	Consumption
Timu & Kramer, (2023)	Agricultural Insurance	Adoption of gender inclusive, responsive and transformative agricultural insurance can be modelled through activity theory	Consumption
Kessy, (2022)	Agricultural Financing	Deployment of risk mitigation tools requires activity system to enhance their lending and financing to the agricultural sector	Production
Omodero & Ehikioya, (2022)	Agricultural Financing	To achieve food production and security, Activity theory elements and contradictions should be addressed	Production
Okwuchukwu, (2022)	Agricultural Financing	The direct relationship between agricultural finance and shift from subsistence to commercial farming goes through activity theory contradiction and resolutions to the contradictions	Production and Consumption

Zhang & Meng, (2022)	Agricultural Financing	Scaling operations cause contradictions in the agricultural financing systems that require resolutions of all elements to lead to positive environment effects	Consumption
Kengyel, (2022)	Agricultural Financing	EU is transforming the Agriculture through ensuring the activity elements are all covered in the Common Agricultural Policy CAP	Production and Consumption
Havemann et al., (2020)	Agricultural Financing	The study recognises the need for rules and norms to effective design blended financing mechanism to support the transition involves activity theory conceptualisation	Production and Consumption
Kan et al., (2022)	Agricultural Financing	Market development of agricultural land financing requires activity elements to be fulfilled	Consumption
Lam et al., (2022)	Agricultural Financing	The rules and norms of deploying AVCF are requirement in the AVCF activity	Production and Consumption
Chacko et al., (2022)	Agricultural Financing	The Blockchain framework for agricultural financing is an activity system	
Pillai & Deshpande, (2022)	Agricultural Financing	Warehousing receipting activity system	Production and Consumption

Key activity theory principles assess transformative activity system interventions seeking to address agricultural financing. Theoretically, Engeström (2001) identifies five critical theoretical principles for the interacting activity theory system to design a qualitative analysis framework. Table.3 introduces the fundamental theoretical principle of AT and its application towards addressing agricultural financing challenges.

**Table 3: Key Activity Theoretical Principles and Their Application towards Addressing Agricultural Financing Challenges**

<i>Activity Theory's Theoretical principles</i>	<i>Theoretical insights that are useful for transformative interventions</i>	<i>Impact towards analyzing and addressing agricultural financing</i>
Collective artefact-mediated and object-oriented activity system	This concept guides interventions to facilitate the transformation of financial artefacts in the entire activity system	To address agricultural financing, sustainable interventions that take both the internal and external mediating effects of artefacts need to be consideration
Multi-voicedness	An activity system is a community of multiple points of views, traditions and interests	Multivoicedness is a source of trouble and a source of innovation, demanding action for translation and negotiation in the activity system
Subject - Object relationships	Expand the scope of analysis from users' interaction with financial products or services to how users carry out meaningful motive-oriented activities	Consideration needed to uncover the relations between the user's primary motives in the financing activity system and the corresponding actions and operations that the user performs for compatibility between motives and goals
Tension and Contradiction	Provides a holistic view of how tensions and contradictions within	To reveal tensions and contradictions within and between different constituents of the

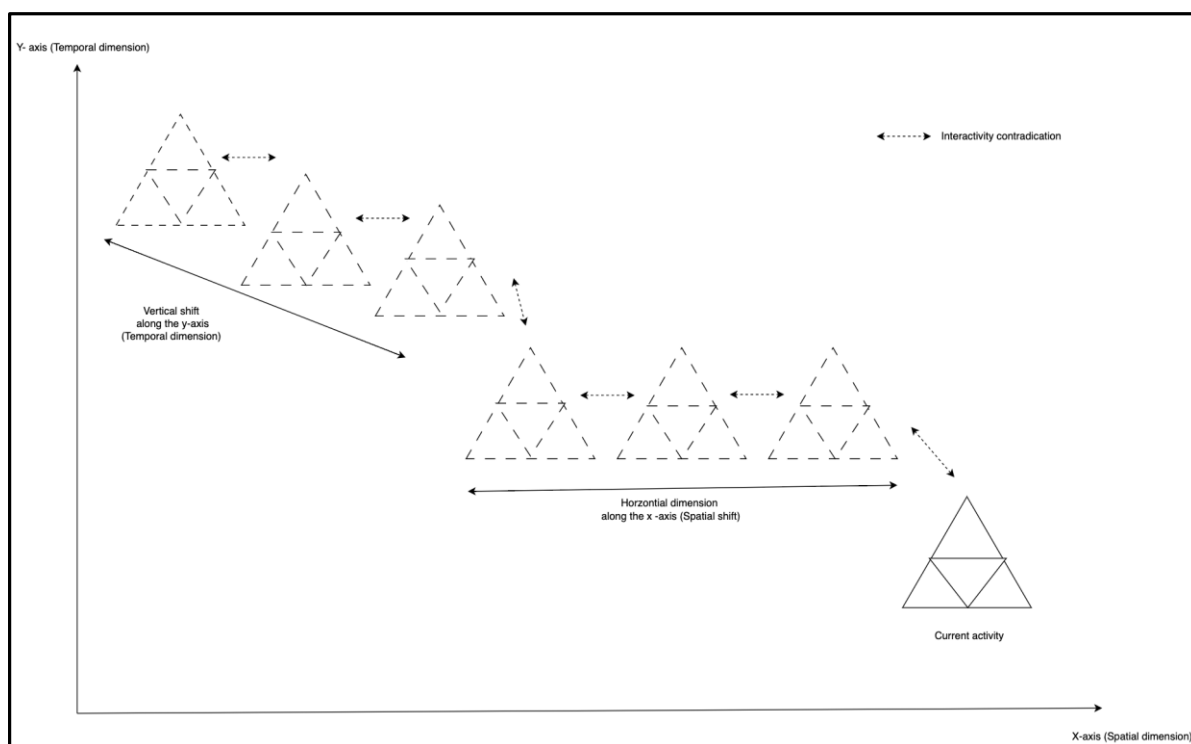
	and between subjects' activity systems may lead to potential resolutions of challenges. They are source of change and development	user activity system and how these tensions and contradictions may affect the outcome of the agricultural financing activity. Also reveal why interventions fail to achieve desired outcomes on agricultural financing activity
History and Development	Behaviour transformation may occur due to objects and communities attempting to find temporary solutions to address tensions and contradictions in the activity system.	Analyse how users cope with existing tensions and contradictions in agricultural financing activity systems over time and how this can lead to potential opportunities for new interventions
Socio-cultural context	To analyse and envisage the potential impacts of design intervention at different levels: individual, collective and societal. Help understand people's behaviour in real-life contextual settings rather than task-based laboratory settings	Investigates the effects of the proposed design interventions at the individual level while assessing how the interventions might be incorporated into the financial activity system on a broader scale

Source: Modified from (Chu et al., 2021)

Agricultural financing involves the production and the consumption of financial products. The outcomes from the production activity are inputs for initiating and accomplishing the consumption activity (Adamides, 2023). Change from an initial state to a new state follows investigations on whether such changes result from the multi-cross-cutting internal features of the activity or investigation of instruments introduced by other connected activities that comprise the external environment of the activity system (Adamides, 2023), such as the introduction of a new financing tool, for example, crop insurance or Agricultural REIT. The introduction of new tools creates contradictions and tensions that are often related to constraints and limits engendering collective action in agricultural financing activity system and are sources for potentialities of the creation of new practices and interventional tools for agricultural financing.

Agricultural financing subjects can shift from one financial activity to another resolving the contradictions between different activities. An understanding of the context, priorities, and possibilities (perspective shaping), joint participation in practice within a community (perspective making), and interactions with other communities (perspective taking) are all essential to the integration and cooperation of groups with multiple and competing objectives (Blackler et al., 2000). Engeström (2001) emphasizes the creation and sharing of new artefacts of mediation related to tools and concepts such as insurance risk management tools and credit shared within SACCOs, commercial banks and insurance companies. These tools are created through some agricultural financing activities and are used in several other financing activities (Vakkayil, 2010).

Interactivity between agricultural financing activity and other activities, such as agricultural insurance, creates element linkages over space and time, as shown in Figure. 6. This spatial and temporal occurrence enables collective resolutions to contradictions from a single activity to a network of related activities over a long-term transformation of the agricultural financing activity. For these reasons, AT overcomes the existing agricultural financing domain limitations and opens new and topical avenues for cross-cutting and multidisciplinary investigations. As a financial theory, AT offers the possibility of rendering an accessible, dynamic view of the knowledge, learning and practice of the broader financing theory and practice.



**Figure 6: Spatial and Temporal Interactivity**

Source: Modified from (Chu et al., 2021)

### 3.1 Framework for Transforming Agricultural Financing through Activity Theory

The practice of agricultural financing suits a practice-theory approach that requires the providing new information about the financial market. In this section, we highlight how the AT suits the practice-theory approach by elaborating on the usage of AT as an investigation tool to assess and guide policy interventions for agricultural financing system. The motivation originates from the productive use of AT in different spheres at macro and micro level systems as an analytical framework for knowledge creation (Adamides et al., 2021; Engeström et al., 1999; Singh et al., 2009). We focus our contribution on reframing and remodeling of the agricultural financing systems that underpin systems change and transformation rather than

proposing new explanatory model for agricultural financing transformation. By building on previous work by Adamides (2023) that introduced AT in the system's innovations for transformation, stressing its explanatory potential based on an underpinning philosophy, we build on the post-positivist epistemology of AT consistent with constructivist views to highlight the interactivity transformative potential of AT in the stimulating change and guiding policy interventions for agricultural financing system for food security and food systems.

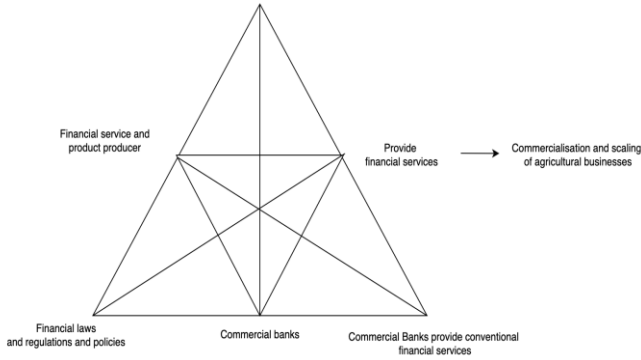
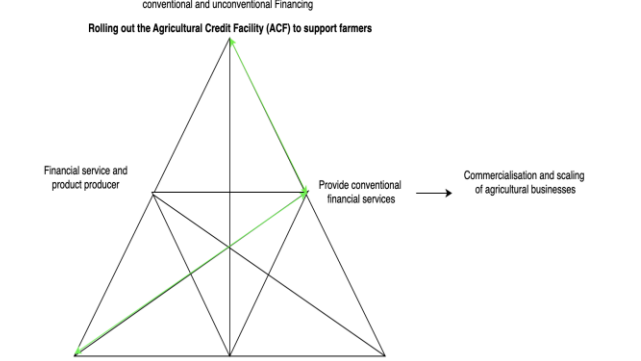
Transformation of agricultural financing for food systems requires interventions to incorporate holistic interacting financing activity system frameworks. Understanding and creation of activity system interventions for agricultural financing is conducted through activity-based analysis (ABA). ABA aims to identify contradictions in the agricultural financing activity system and guide strategies on how they are remediated. Nicolini, (2013) refers to this feature as the analytical lens of activity (the "magic triangle" of activity). Providing the analytical capability to moves up and down the activity hierarchy and across different activities as the investigation process unfolds. During this process, new findings are established to support or refute the ad hoc hypotheses under investigation.

Based on the AT principle for historicity, evolution, mediation, contradiction expansive transformation, we developed a descriptive narrative on the properties of the activity-based representation of the agricultural financial production system in Table 4. E/I denote events/interventions, C denotes contradictions, and R denotes the resolution (of contradictions). The initial point of the transition timeline commences with the production activity of agricultural financing by identifying a new objective of meeting the farmers' financial needs produced by the new or existing requirements for commercialization and scaling of their agricultural business and utilizing the highest and best use of their agricultural assets. Agricultural society demands affordable and easily accessible financing for agricultural businesses. Limited agricultural financing avenues adversely affect farm output and production (Balana & Oyeyemi, 2022). Therefore, limited access to agricultural financial tools significantly impediments access to technology, mechanization and access to markets among smallholder farmers in developing countries (Balana & Oyeyemi, 2022; Collier & Dercon, 2014; Elahi et al., 2022; Kan et al., 2022; Kessy, 2022; Keyser & Tchale, 2010).

Table 4 below the initial stage (A), the status quo is constant as there are no contradictions and constraints on the financial products as existing tools on the market. In this case, there is no (E/I). In stage B, the existing agricultural financing products and tools fail to meet the needs and requirements of the consumers. The contradiction (C) is that agricultural financial products through mainstream business loans and credit with exuberant interest rates do not support the objective of accessing affordable financing for commercialization and scaling for stakeholders in the agricultural value chain. At stage C, the introduction of the financing tool such as an (Agricultural Credit Facility ACF or agricultural REIT) to mobilize equity capital for agricultural business is introduced. Despite contributing to meeting the financial needs of the stakeholders, the intervention creates a primary contradiction for financial institutions to adopt the tool into their systems. The primary contradiction further creates a secondary contradiction (C) for defining how the subjects and community will interact and relate. The resolution (R) to

the contradiction at this stage is to define the policies, laws and regulations for operating the new financial interventional tool (Agricultural Credit Facility ACF or Agricultural REIT). Secondly, the financial institutions as subjects would need to absorb the implementation requirements of the tool (Agricultural Credit Facility ACF or Agricultural REIT). Lastly, at stage D, the implementation of resolutions aligned with all the contradictions arising from introducing of the intervention tool (Agricultural Credit Facility ACF or agricultural REIT) leads to the transformation of agricultural financing system.

**Table 4: The Activity-Based Analysis for Agricultural Financing**

<p style="text-align: center;">conventional and unconventional Financing</p> 	<p><b>Stage A. Agricultural financing activity</b></p> <p>E/I- Initial stage with no contradictions and constraints on the financial products offered</p>
<p style="text-align: center;">conventional and unconventional Financing</p> <p style="text-align: center;">Rolling out the Agricultural Credit Facility (ACF) to support farmers</p> 	<p><b>Stage B. Agricultural financing productivity</b></p> <p>E/I – Requirements of conventions agricultural financing lack to meet the financial needs of small-scale agricultural farmers</p> <p>C- The financial products through mainstream business loans with exuberant interest do not support the objective</p> <p>R- Introduction Agricultural Credit Facility as a subsidized tool to provide low-cost financing for agricultural business</p>

	<p><b>Stage C. Agricultural financing production activity</b></p> <p>E/I -Rolling out the Agricultural Credit Facility to meet the financial needs of small-scale agricultural</p> <p>C- The financial institutions need the take on the tool in their operation systems</p> <p>R-Define the terms and policies for operating</p> <p>R- Financial institutions absorb depending on the capacity</p>
	<p><b>Stage D. Agricultural financing production activity</b></p> <p>E/I – Transforming agricultural financing to need the needs of small-scale farmers.</p>

Source (Author, 2023)

#### 4. CONCLUSION AND IMPLICATION FOR POLICY

Several perspectives, such as game theory, systems thinking, actors-network theory and socio-technical theory have been used to study agricultural financing and its evolution on differing ontological assumptions. However, more than these perspectives is needed to deal with the transformative challenges in agricultural financing as they may fall short of providing a holistic analysis of existing socio-economic situations because they focus on isolated individual actions and interventions towards agricultural financing. Applying AT to agricultural financing as an activity system practice confirms the intertwined character of knowing, learning and doing.

The idea of multiple actors interrelated through mediated interactions enables the AT framework to explain changing patterns of agricultural financing activity in terms of creating and emerging new meanings for mediating artefacts. The critical contribution of AT to the theory and practice of agricultural financing lies in the potential for the exploring of the unconventional dynamics of financing in this area of practice. AT reveals the value of the contradictory character of agricultural financing practice has potentialities for creating new



tools, artefacts, concepts, mediated interactions and practices deriving from disturbances and collective action.

The mediating effect of artefacts between the activity elements and interactivity relations provides an entry point to design transformative interventions and innovations for agricultural financing. This conceptualisation sparks a contradictory relationship among elements and other related activities. These contradictions answer why the mediating agricultural financial artefacts are not contributing to meeting the objective and the expected outcome. The effects provide researchers with a systematic perspective of how agricultural financing challenges take place at different levels and how they can be resolved at different levels within the activity system. The constant search for challenges and solutions undertakes agricultural financing through an iterative transformation process.

This study provides an overview of the literature on how AT can transform agricultural financing. Using a framework initially developed by Adamides, (2023), our study goes beyond production and consumption activity systems to provide a narrative explanation of how agricultural financing can be transformed. The review finds that most studies on agricultural financing have a limited AT dimension focused on objective /subject analysis and narrative. In this case, Activity Based Analysis for contradictions of agricultural financing activity systems is an area for further research. In agricultural financing, AT opens exciting opportunities for analyzing broader contexts and focusing on critical issues by providing a rich vocabulary and a repertoire of enabling concepts for transformation in the sector.

Adopting an activity theoretical framework should enable policymakers to identify the gaps in policy ingredients towards agricultural financing. Policymakers should be responsive to the multidimensions of inter-activity interactions. One way to do this is to design a holistic activity theory element as a holistic unit of analysis with a representation of the different agricultural financing interrelated activities to identify the tools stakeholders use for agricultural financing, how they use the tools, what mediates the development of the tools and how their knowledge, attitudes and practices regarding the tools influences the tools adaptability. Through this analysis, activity theory qualifies as a flexible unit of analysis offering a coherent methodology for studying agricultural financing.

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