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Smallholder value creation in agrifood chains: Value network approach

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ABSTRACT

To much of the development community, improving the inclusiveness of agrifood chains demands private institutional innovations that attenuate market failures confronting smallholders. How and how well such innovations contribute to sustainable rural development is still poorly understood, however, with research to date insufficiently generalizable to inform policy and practice. This partly stems from excessive reliance on instrumental and lead firm-centric perspectives on value creation that fail to recognize the complex organizational networks required to include, empower, and upgrade smallholders. To improve the explanatory capacity of existing theories and approaches, this article reconceptualizes how smallholders and other chain and non-chain actors derive value from participating in agrifood chains. Our 'value networks' inspired approach helps scholars and evaluators investigate and causally attribute how different types of value are created and captured through different types of private institutional innovations. We furthermore demonstrate how the approach can be used to generate the knowledge needed to advance business practice, development policy, and global value chain, global production network, and household theories.

1. Introduction

Attempts to boost private sector investment through liberalization reforms did little to remedy the many market failures trapping smallholders in poverty (Dorward et al., 2004; Wiggins, 2014; Sitko et al., 2017). Instead, the agrifood sector is becoming more concentrated (Clapp, 2021), with agribusinesses increasingly competing with smallholders for land and resources (Schoneveld, 2014). As a result, the contemporary global food system tends to entrench inequality, power imbalances, and marginalization (McMichael, 2009). To address this, many developing country governments are starting to deliberately incentivize investments that productively integrate the rural poor into agrifood chains, while curbing expansion of (plantation) investments with more extractive business models (Schoneveld, 2022).

These policy shifts reflect growing political commitment to more inclusive development and strengthening smallholder participation in sectoral growth. An often-preferred strategy for achieving this involves forging reciprocal partnerships between lead firms and smallholder producers (Ros-Tonen et al., 2019). This normally requires firms to develop interlocking arrangements and backward linkages (e.g., market guarantees combined with technical and input supply services) through production models such as contract farming, farmer-business joint venture, and/or collective organization (Vermeulen and Cotula, 2010; Schoneveld, 2022). Firms adopting such models are commonly referred to as inclusive agribusinesses (IAB). Because firms with such partnerships can help improve smallholder access to productivity- and profit-enhancing services that are often poorly accessible in many rural areas, IABs are said to ameliorate agricultural market failures, as well as improve agricultural productivity and rural livelihoods (van Westen et al., 2019; Fanzo et al., 2020). Since such partnerships also facilitate dissemination of climate smart practices and technologies and enable smallholder compliance with phytosanitary, quality, and sustainability standards, they can make important contributions to a sustainable food systems transition (Schoneveld, 2022).

Myriad scholars examined whether the theoretical potential of such partnerships is realized on the ground, as the many IAB effectiveness studies illustrate (e.g., Warning and Key, 2002; Miyata et al., 2009; Bellemare, 2012; Narayanan, 2014, Bolwig et al., 2009; Herrmann, 2017; Meemken and Bellemare, 2020). This body of work shows that while most IABs on aggregate enhance rural incomes (Ton et al., 2018),

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they do tend to privilege larger, more affluent farmers that pose fewer transactional and credit default risk problems (Schoneveld, 2022). Critical agrarian studies have also shown that some IAB models can exacerbate processes of social differentiation and vulnerability (Oya, 2012; Vicol, 2019). Such results raise fundamental questions about the ability of IABs to contribute to genuinely inclusive value chain development.

Evidence therefore points to a theory-praxis gap. Extant research, however, does not reveal much about the origins of this gap and whether and how it can be closed. As a result, we know little about what genuinely impactful and inclusive IABs look like, and how these can be more effectively developed and promoted. Unfortunately, current analytical frameworks and approaches cannot comprehensively capture *why* some lead firm-smallholder partnerships do deliver intended policy outcomes and others do not. For scholars to better inform the operationalization of emerging political commitment on food system inclusivity and sustainability, new analytical approaches for evaluating *how* different types of business innovations (can better) create value are therefore needed.

Frameworks such as Global Value Chains (GVC) and Global Production Networks (GPN) that are often used to examine the market structures and dynamics shaping value creation and distribution along chains do not stand up to the task. Both are frequently panned for, respectively, being too chain- and firm-centric, focusing excessively on the role of lead firms and characterizing value chains and production networks at the industry-level (Coe and Yeung, 2015; Horner, 2017; Vicol et al., 2019). GVC theories also tend to bracket and underplay the role of social context, geographies, histories, and the state in shaping value chain dynamics (Henderson et al., 2002; Bair, 2005; Fold, 2014; Horner, 2017). Both theories also suffer from decidedly narrow, linear, and deterministic conceptualizations of the role of value chains in development. This not only stems from their rather conventional portrayal of smallholders in agricultural value chains (Neilson et al., 2018; Vicol et al., 2019), but also from how 'value' is conceived. Under both frameworks, for example, perspectives on value creation are generally restricted to economic upgrading (e.g., moving to higher value activities), generation and capture of surplus value/economic rents and labor conditions (e.g., Humphrey and Schmitz, 2002; Coe and Yeung, 2015).[1] Perhaps most significantly, both frameworks tend to embrace excessive dyadic value creation perspectives (e.g., as a function of lead firm relations with smallholders), even though – as we will go on to demonstrate – lead firm and smallholder partnerships are typically enabled through a constellation of partnerships that all contribute uniquely to value creation.

With this article, we hope to address some of these limitations. Specifically, we develop and demonstrate the applicability of a strategic management-inspired *value network approach* (VNA) that intends to help scholars, businesses, and practitioners more critically and systematically examine how value is created for and captured by different types of smallholders within agrifood chains. As a critical response to the limitations of value chain effectiveness studies, as well as broader GVC, GPN, and sustainable livelihoods frameworks, VNA in our view helps generate the type of empirical evidence needed to design and promote more effective IAB and inclusive value chain innovations and policies. Despite it being motivated by the problematics of IAB, the proposed approach has broader theoretical and practical relevance. We, for example, expect VNA to be applicable to diverse sectors and inclusive value chain initiatives, while at the same time supporting further grounded theory development.

The rest of this article is structured as follows. The next section explores VNA's conceptual underpinnings and further problematizes IAB heterogeneity and complexity. We then present our approach and demonstrate practical application using a case study from Tanzania. We finally discuss the practical and theoretical relevance of VNA and how it can help strengthen the explanatory power and theoretical foundations of GVC, GPN, and sustainable livelihoods approaches.

2. Conceptual underpinnings

Compared to development studies, the literature on business models within the field of strategic management is much more concerned with how businesses create value, both for themselves and their stakeholders. Therefore, this literature offers more theoretically grounded perspectives on business model innovation and the dynamics of value creation. Even though the concept of value creation is also integral to GPN theories, as an unapologetically (lead) firm-centric theory that reduces value creation to economic rents (Coe and Yeung, 2015), it cannot comprehensively capture localized development impacts of smallholder engagement in agrifood chains (Vicol et al., 2019; Coe and Yeung, 2019).[2]

While the development community often loosely defines the business model concept and tends to conflate it with the system of production (Schoneveld, 2020), in strategic management, business models are regarded as an abstraction of the business strategy or as a conceptual framework that describes the firm's (1) value proposition, (2) value creation and delivery system, and (3) value capture system (Seddon and Freeman, 2004; Osterwalder and Pigneur, 2010; Geissdoerfer et al., 2016). The value proposition describes what value is provided to its stakeholders and the basic strategy for creating and sustaining a competitive advantage, while the value creation and delivery system how the firm intends to create value for and deliver value to its stakeholders (Richardson, 2008; Bocken et al., 2014; Aagaard, 2019). Value capture in turn describes how the value created for its stakeholders can be transformed into value useful for the company (Geissdoerfer et al., 2016). Put together, a business model thus represents the "logic of strategic thinking about value" (Richardson, 2008; p. 138).

Partnerships hold a prominent place in business model literature, with particularly the sub-field of sustainable business models emphasizing the importance of firms' partnerships in creating sustainable value (e.g., Yunus et al., 2010; Den Ouden, 2012; Storbacka et al., 2012; Evans et al., 2017; Geissdoerfer et al., 2016). The sustainable business models literature reframes business models as a concept that emphasizes shareholder and customer value into one where the natural environment and society are also considered stakeholders in a firm's business model, as well as sources and targets of value creation (Schaltegger et al., 2016; Evans et al., 2017). Since businesses with sustainability-oriented value propositions are especially likely to lack resources and capabilities in-house to tackle complex societal challenges, partnerships, especially cross-sector ones, are often integral to creating value for and delivering value to societal stakeholders.

A constellation of partnerships is commonly referred to as the *value network*, which can be viewed as the manifestation of the firm's business model. A value network is defined as the "roles and interactions in which people engage in both tangible and intangible exchanges to achieve economic or social good" (Allee, 2008, p. 6). Allee (2008) suggests that value is created within a value network through activity-focused relations involving value conversions (e.g., transforming one type of value into another type of value) that are contingent on intangible and

[1] Following criticism of their economistic views of upgrading, in both GPN and GVC, terms such as social and environmental upgrading became common, with the former referring to the "the process of improvement in the rights and entitlements of workers" (Gereffi and Lee, 2016) and the latter to processes that reduce the environmental damage of production systems (De Marchi et al., 2013).

[2] Coe and Yeung (2019), for example, concede that, "while GPN analysis is adept at diagnosing global production network-related development dynamics in a region, on its own it cannot be enough to explain fully the development of a region more broadly. This raises a series of contested political and distributional questions that go beyond the primary remit of GPN analysis" (p. 792).

Table 1
Ontologies.

Indicators	Description
Stakeholders	
Architects and Drivers	Stakeholders that are the primary architects of the value networks and primary drivers of its conception
Legal form	Type of organization, as defined by their legal status
Accountability structures	Key lines of reporting and accountability (e.g., shareholders, members, voters, and parent companies)
Goals	Overarching goals shared among network stakeholders and their consistency with stakeholder mandates, vision, and long-term (constituency) interests
Resources	
Social	Intangible resources such as networks, relationships, and affiliations
Organizational	Intangible resources such as organizational culture, goodwill, reputation, leadership, and internal processes
Informational	Intangible resources such as IT infrastructure and applications that support internal and external processes
Cognitive	Intangible resources such as knowledge and beliefs
Legal	Intangible resources such as intellectual property, copyrights, contracts, and licenses
Human	Tangible resources such as manpower, members, voters
Natural	Tangible resources such as land, biological assets, raw materials
Physical	Tangible resources such as processing facilities, vehicle, agricultural machinery, real estate, and inventory
Financial	Tangible resources such as cash, credit, shareholdings, and savings
Capabilities	
Sensing	Dynamic capability describing ability to sense and shape new opportunities
Seizing	Dynamic capability describing ability to capitalize on opportunities sensed
Transforming	Dynamic capability describing ability to realign structure and culture by investing in new or aligning existing operational capabilities
Functional	Operational capability describing ability to perform and coordinate internal value activities such as production, marketing, logistics and human resource management
Regulatory	Operational capability describing the ability to define rules and pursue legal issues
Networking	Operational capability describing the ability to develop, use, coordinate and maintain relationships with external stakeholders
Activities	
Roles	Types of productive or supportive roles allocated within value network
Content	The selection of activities performed
Structure	Sequencing and relationship between activities
Exchanges	
Goods and services	Types of goods and services exchanged such as crops, inputs, training, logistical services
Financial	Financial exchanges, such as payments for goods and services, loans, and equity
Intangible	Exchange of knowledge and benefits such as appreciation, affiliation, and favors that provide motivation
Processes	
Coordination instruments	Instruments used to coordinate exchanges (e.g., spot market, written contract, and oral contract)
Participation conditions	Criteria for engaging in and benefitting from value exchanges
Duration	Duration of coordination instrument where relevant
Pricing	Price determination (fixed, market, formula), including frequency and timing
Risk management	Mechanisms for sharing and/or managing market, regulatory, foreign exchange, and operational risks.
Incentive alignment	Mechanisms for preventing opportunism and principal-agent problems such as equity, profit sharing, and joint decision making
Dispute resolution	Mechanisms for resolving disputes over value exchanges and activities
Sanctions	Penalties for failing to comply with rules, norms, and metrics
Transparency	Mechanisms and information systems to balance information asymmetries (e.g., with respect to commodity prices, costs and performance requirements and incentives)
Service and input provisioning	Types of inputs and services provided within an exchange relationship, including payment terms
Functional autonomy	Ability of exchange partners to exercise autonomy over how value creating activities are performed
Managerial autonomy	Ability of exchange partners to exercise autonomy over managerial issues such operations, finance, HR and strategy.
Standards	Process, product and transactional requirements for activities and exchanges

tangible exchanges between partners in pursuit of a common goal. This concept captures well the complex institutional structures in which IABs are normally embedded and recognizes that value is created not only by an IAB but by an entire network of mutually dependent exchange partners. Since business models, as an abstraction and the primary source of competitive advantage, are less tangible and accessible to the external observer, value networks are a more suitable and convenient object of analysis (Schoneveld, 2022).

IAB literature to date, even those offering more critical and nuanced perspectives of IAB heterogeneity (e.g., Chamberlain and Anseeuw, 2017, 2019; Ménard and Vellema, 2020), tend to downplay the complex institutional structures required to meaningfully involve smallholders in commercial value chains. In practice, however, most IABs operate in highly uncertain and risky environments, usually lacking the necessary capacity to effectively engage and create value for smallholders and manage associated transaction costs (Reficco and Vernis, 2010; Abebe et al., 2013; Schoneveld, 2020). As London and Hart (2010) assert, firms engaging low-income groups accustomed to operating within informal markets cannot rely on the protective boundaries of the firm and host country legal systems. Such firms must exploit and build external resources and capabilities – for example, by engaging farmer organizations, non-governmental organizations (NGO), financial institutions, knowledge institutions, and/or government with complementary competences (Schouten and Vellema, 2019; Schoneveld, 2020). By combining the resources and capabilities of different partners, IABs can more effectively build the necessary rapport with smallholders, become locally embedded, respond to unintended impacts, and protect themselves from regulatory vacuums (Schouten and Vellema, 2019; Danse et al., 2020). Moreover, where IABs are generally guided by formal rules, smallholders are often accustomed to informal rules, involving social contracts and shared use of assets (London and Hart, 2004), with their activities rarely driven by purely capitalistic interests (Bernstein, 2010; Vicol et al., 2019). Therefore, aligning different modus operandi typically requires intermediation by external parties.

3. The value network approach

In this section, we present the core elements of VNA. Firstly, we describe the six value network building blocks that need to be mapped out to understand and explain value creation and capture dynamics. We proceed with a reflection on the relationships between the building blocks and how these come together to create value. Finally, we propose how sustainable livelihood approaches can be applied to identify how (well) small-scale producers capture/internalize the value that value networks help create. We conclude the section with reflections on potential analytical approaches and entry points and alternative applications of VNA.

3.1. Value network building blocks

3.1.1. Stakeholders

As a stakeholder-centric perspective (Bocken et al., 2014), like GVC (Kaplinsky and Morris, 2000), value networks are defined by their structural elements (Richardson, 2008): the stakeholders. In an IAB value network, this includes all stakeholders collaborating towards a

shared goal. This generally involves, besides intended beneficiaries (e.g., smallholders), firm, intermediary, and extra-firm actors (Coe and Yeung, 2015; Provan and Kenis, 2007). In agriculture, this can include, amongst others, lead firms, input suppliers, government, labor and farmer unions, development organizations, financial institutions, knowledge institutions, NGOs, traditional authorities, and certification bodies (Reficco and Vernis, 2010; Fuchs et al., 2011). Any of these can be the primary driver behind and the architects of the value network. These can, but do not necessarily need to be, the same stakeholder. Understanding primary drivers and architects helps identify strategic entry-points for intervention and innovation (Kelly et al., 2015), and also influences the types of common goals around which stakeholders are mobilized. These goals are further influenced by stakeholder-specific ownership and accountability structures, which in turn also affect value creation (efficacy) (e.g., by shaping internal incentive structures, rules, and safeguards that enable or constrain value exchanges).[3]

3.1.2. Resources and capabilities

Internal resources and capabilities of network stakeholders can be considered the means through which value is created and the primary repositories of value (Nenonen and Storbacka, 2010). Resources are those that can be owned or controlled by stakeholders (Foss, 1997), and can be either tangible or intangible (Foss, 1997). Based loosely on Scoones (1998), Kaplan and Norton (2004) and Avelino and Rotmans (2011), we propose four categories of tangible and five categories of intangible resources. Tangible resources include physical, natural, financial, and human types of resources, while intangible resources include social, informational, cognitive, legal, and organizational types of resources (see Table 1 for examples and definitions of each).

Capabilities, conversely, cannot be fully owned or controlled. They can neither be traded, imitated, or transferred since they evolve through routinization, learning, and experimentation (Jantunen et al., 2012; Nelson and Winter, 1982; Helfat and Peteraf, 2003). They are therefore highly idiosyncratic, path-dependent, and evolutionary in nature (Nelson and Winter, 1982; Eisenhardt and Martin, 2000) and distinguishable from resources.[4] Capabilities explain rather what a stakeholder can do with the different resources it owns or controls (Korhonen and Niemelä, 2005; Teece, 2007; Stadler et al., 2013).

A distinction is often made between lower-order or *operational* capabilities and higher-order or *dynamic* capabilities (Jantunen et al., 2012; Teece, 2018). Operational capabilities describe a stakeholder's ability to leverage existing resources to create value in the short-term, whereas dynamic capabilities the ability to further develop, renew, or reconfigure resources and operational capabilities with a view to long-term needs, interests, and demands (Teece, 2007; Jantunen et al., 2012; Winter, 2003). While dynamic capabilities are usually classified following Teece (2007) (e.g., sensing, seizing, and transforming),[5] there lacks a commonly accepted taxonomy of operational capabilities. For our purpose, we differentiate between functional, regulatory, and networking types of operational capabilities (combining Hall, 1993, Walter et al., 2006 and Cafaggi and Pistor, 2015, see Table 1 for working definitions).

3.1.3. Value activities

The distribution of and complementarities between these resources and capabilities within the value network in turn determine stakeholder roles with respect to their value activities and their network position (Peppard and Rylander, 2006). For our purpose, we distinguish between *productive* and *supportive* types of roles. Productive roles are those that involve bringing products or services from conception to end-use. Specific productive roles pertinent to agrifood chains include input production, input distribution, farming, aggregation, logistics, processing, research and development, trading, marketing, distribution, and support to consumers (Humphrey and Memedovic, 2006). Supportive roles, in contrast, are those that do not involve chain activities, but rather enable stakeholders with productive roles to perform and align their activities more effectively and efficiently. This includes coordination, facilitation, and regulation roles (Coe and Yeung, 2015; Horner, 2017). Each role usually involves several interdependent *activities* that are functionally coupled. This can be represented by the content and structure of activities (Amit and Zott, 2001). Performing activities requires resources and capabilities and involves *converting* one form of value into another form of value, *extending* value to others, and/or *adding* value to existing value (Allee, 2008).

3.1.4. Value exchanges and governing processes

In most instances, *value exchanges* between stakeholders are the necessary precondition for creating value by enabling stakeholders to perform value creating activities (Allee, 2000, 2008). The different types of value exchange include (1) goods and services; (2) financial resources; and (3) intangibles (e.g., knowledge and benefits) (Allee, 2008; Den Ouden, 2012). These exchanges can be inputs to or outputs of activities.

Ensuring that goal-oriented value networks create value effectively and equitably requires appropriate governance arrangements (Evans et al., 2017). Formal and informal *processes* embody important aspects of governance within networks. Such processes involve rules, metrics, and norms that regulate activities and value exchanges to ensure responsibilities and interests are aligned with the value proposition (Johnson et al., 2008; Richardson, 2008; Clauss, 2017).[6] These define, amongst others, who performs what activities and how (Zott and Amit, 2010), the terms, penalties, rewards, and incentives to ensure activities are performed effectively and efficiently and in accordance with expectations (Johnson et al., 2008; Pilbeam et al., 2012) and safeguard against opportunism and conflict (Ménard and Vellema, 2020) (see

[3] This could be expanded further by also accounting for GPN's *actor strategies* such as interfirm control, extra-firm bargaining, interfirm partnerships, and intrafirm control that in turn are products of *dynamic/competitive drivers* such as optimization of cost-capability ratios, development of new markets and financial discipline pressures and various types of risks (see Coe and Yeung, 2015 for a comprehensive conceptualization). We do not include these concepts here since they foremost help describe *why* certain value networks are designed the way they are and not *how* value is created within IAB value networks. While worthy areas of critical inquiry, this is beyond the scope of this article. That said, actor strategies can help categorize exchange relations, but we see greater value in characterizing these inductively using a systems rather than dyad perspective (section 5.2 explores this further).

[4] While resources and capabilities are often used interchangeably, this distinction became more mainstream following extensive criticism of the limitations of the inherently static resource-based view of the firm.

[5] Jantunen et al. (2012) relate sensing to amongst others adaptive capabilities, seizing to absorptive capabilities and transforming to innovative capabilities.

[6] We provide a more restrictive perspective of processes than much of the business model literature. Typically, the term 'processes' is used in reference to *internal* processes pertaining to management and operations (e.g., Johnson et al., 2008). We rather consider these to be types of organizational resources. In the context of value networks, our use of the term processes refers to processes external to the firm that are used to coordinate among roles and regulate exchanges.

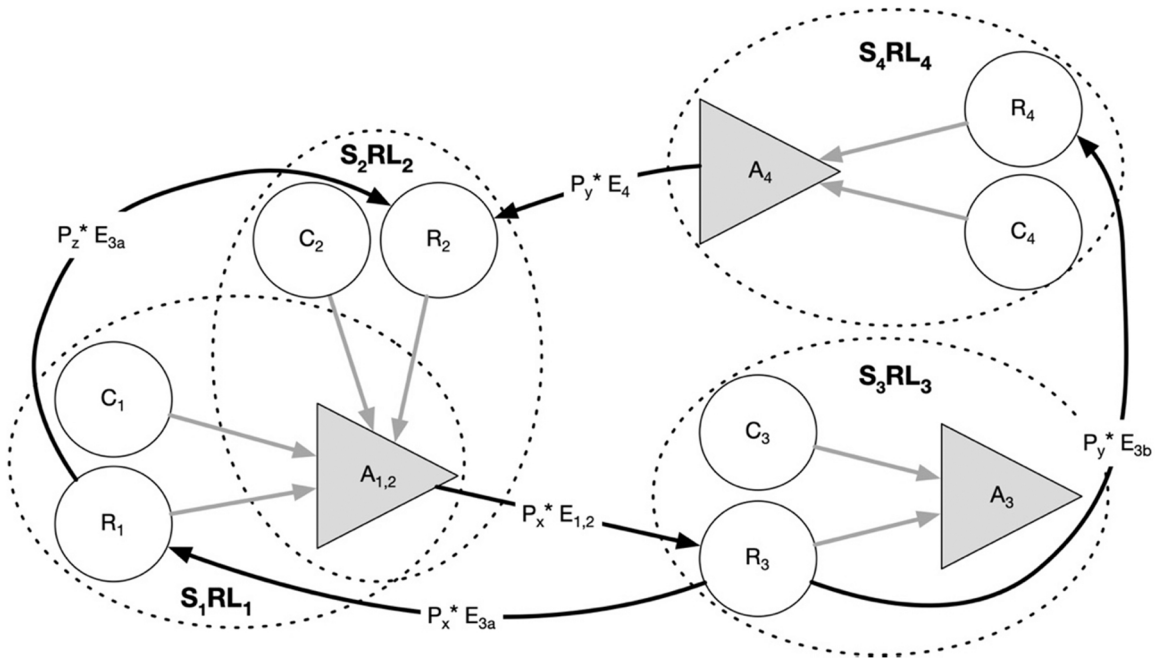

Fig. 1. The cycle of value creation. Note: S_x =stakeholders; RL_x = role, R_x = resources, C_x = capabilities, A_x = value activities, E_x = value exchanges; P_x = processes.

Table 1 for an overview of relevant sub-constructs).[7]

3.2. Value creation

The relationships between these building blocks as they combine to create value is depicted in Fig. 1. Each stakeholder (S) has a distinctive role (RL) in the value network. These roles involve leveraging their existing stock of resources (R) and capabilities (C) to perform activities (A). Activities then either involve converting, adding, or extending value, which form the basis of the exchange (E) with other stakeholders. This normally involves flows of value in return for other forms of value (e.g., the rewards). These exchanges are governed by specific processes (P) that stipulate various conditions that should be met by exchange partners for the exchange to occur (e.g., how activities should be performed and what resources are expected to be deployed and how). These exchanges allow stakeholders to replenish or build their resource base, which in turn enable stakeholders to continue performing their activities and/or invest in new resources that enable upgrading or transitioning into new, possibly unrelated, activities. This continuous cycle of deploying and (re)building resources is what constitutes value creation; at least, when the (perceived) utility of the resource base increases. Experience gained from performing activities and engaging in value exchanges repeatedly enables further capability development, which in turn enables stakeholders to deploy their resources more effectively or efficiently.

Fig. 1 also depicts three major types of exchange relationships. Borrowing from social exchange theory (e.g., Cook and Whitmeyer, 1992; Molm, 1997; Chen and Choi, 2005), the relationship between S_1 and S_3 is characterized by *direct exchange*. S_1 is involved in an activity ($A_{1,2}$), the output of which ($E_{1,2}$) is exchanged with S_3 in return for E_{3a}. This exchange is conditional on P_x, the rules, norms and metrics that govern the exchanges between S_1 and S_3. If S_1 is a smallholder and S_3 an IAB, $E_{1,2}$ could be a crop and E_{3a} money and fertilizers. This exchange can be governed by a production contract (P_x), which specifies how the crop should be produced and delivered, how much fertilizers is to be provided and when, and how prices are determined.

The relationship between S_1 and S_2 can be characterized as *co-productive exchange*. S_1 cannot undertake the desired activity without S_2 and vice versa and are, therefore, required to jointly perform the activity ($A_{1,2}$). Here, "both actors in the relation must contribute in order for either to obtain benefits" (Molm, 1997, 21). In the case of smallholder agriculture, S_1 could be infirm or an absentee and S_2 a landless migrant. S_1 has land, but no labor, and S_2 has labor, but no land. By combining their resources (R_1 and R_2), $A_{1,2}$ can take place and S_1 can comply with P_x. S_1 then shares E_{3a} with S_2 based on a verbal agreement (P_z).

Finally, S_2, S_3, and S_4 are engaged in a triangular relationship that can be characterized as *generalized* or *indirect exchange* (Molm, 1997). In this case, S_4 exchanges E_4 with S_2 in return for E_{3b}, which provides S_4 with the resources (R_4) that enables E_4. Since E_4 builds R_2, $A_{1,2}$ can be more effectively performed, enabling S_3 to obtain more or better $E_{1,2}$. S_3 may for example find that S_2 lacks the necessary agronomic skills (R_2) to produce the crop ($A_{1,2}$) to the requirements of P_x. It however lacks capabilities (C_3) to effectively train S_2, so engages the NGO S_4 that does possess these capabilities (C_4). S_4 performs the training (A_4) and in doing so exchanges agronomic knowledge (E_4) with S_2, thereby building R_2, which it hopes can contribute towards C_2. In return, S_3 receives better produce ($E_{1,2}$) and S_4 receives money and appreciation (E_{3b}). These exchanges are enabled by P_y, which could be a service contract between S_3 and S_4 that does not need to involve S_2 if S_2 is a willing recipient of E_4.

Fig. 1 is an overly simplified representation of value creation dynamics in a value network. However, as we will demonstrate when we apply the framework, it nevertheless serves its purpose by illustrating the inadequate granularity offered by the dyad perspectives of value

[7] While processes help delineate roles and the content and structure of activities in value networks, they foremost govern value exchanges. For example, to be rewarded for an activity, an activity needs to be performed according to pre-established expectations. If a stakeholder fails to do so, processes can be enforced by withholding the value exchange (or expulsion). While activities themselves can certainly be governed also, that typically involves rules and institutions external to the value network and therefore cannot be considered network-specific processes. Rather, they often constitute the meta-structures/enabling environment in which value networks operate, and certainly influence both network design and value creation dynamics. As such, they do deserve explicit consideration in any value network analysis. However, it is beyond the scope of this article to explore forces beyond the value network though this could become fertile grounds for further intellectual advancement, as we will reflect on in Section 5.2.

creation that prevail in GVC and IAB literature (e.g., direct exchanges between lead firm and smallholder). Even extant value network literature often tends to focus exclusively on direct exchange relations. Because a value network actor can be engaged in multiple (types of) exchange relations, value creation is not simply a function of one (type of) relationship. For example, S_1 requires a co-productive exchange relationship with S_2 to engage in a direct exchange with S_3, which is contingent on S_2, S_3, and S_4 engaging in an indirect exchange.

3.3. Value capture

It must be recognized that the value network delineation (e.g., around stakeholders and exchanges pertaining to common goals), while analytically necessary, provides incomplete insights into how value created *for* smallholders is captured in ways that advance livelihoods. S_1, for example, may use the financial resources accumulated through E_{3a} to acquire more land that yields more $E_{1,2}$, but may also use these financial resources to buy a dairy cow. By producing and selling milk, S_1 begins to participate in a milk value chain. This yields money and further develops R_1. The contribution of milk sales to R_1 could allow S_1 to acquire even more land for the purpose of $A_{1,2}$ compared to a situation where S_1 did not buy that dairy cow. In either case, E_{3a} was the impetus for accumulating R_1, but in the situation where S_1 acquired that dairy cow, S_3 is not directly responsible for all the improvements made to R_1. This highlights how value creation in practice can involve feedbacks between seemingly unrelated activities and chains. It also suggests that effectiveness studies that attempt to estimate the causal relationship between P_x and R_1 are overstating effect size by failing to differentiate between the indirect and direct effects of E_{3a}. Therefore, from the perspective of attributing impacts of participating in IAB value networks to specific building blocks, choices smallholders make outside the focal value networks should not be ignored.

This example is illustrative of smallholder particularities that defy conventional notions of the firm. As Vicol et al. (2019) argue, "smallholder decision-making about [value chain] engagement is not reducible to a simple algorithm of profit motivation" (p. 981). In contrast to mainstream depictions of buyer-driven agrifood chains characterized by low upstream bargaining power, smallholders are rarely fully bound by the capitalist logic of the value chains nor completely trapped into asymmetric power-dependency relations (Vicol et al., 2019). This inter alia stems from their dependency on nonwage labor (and the ability to self-exploit), the need to balance consumptive and productive demands, and diversified and increasingly pluri-active livelihood activities (Bernstein, 2010; Neilson et al., 2018). Smallholders are consequently distinct from capitalist firms, with implications for understanding value creation dynamics.

This suggests that smallholders are rarely devoid of agency when engaging in value networks. However, value creation in IAB literature, the triple bottom line, and shared value, amongst others, is often depicted as a unidirectional process of creating value *for* society; thereby, often reducing smallholders to mere recipients of the value created by a business. In IAB value networks, however, value is also created *by* smallholders through their productive activities. Moreover, because value received is often instrumentally rather than intrinsically valuable to smallholders (e.g., money is a means not an ends), judging the performance of a IAB by the value they *distribute* negates the heterogeneity of smallholder value capture dynamics. Integrating theories of the household such as the sustainable livelihoods approach can help produce insights into what value is created for, captured by, and distributed amongst different types of smallholder households (see Scoones, 1998). This requires critical analysis of the interplay between the value network activities performed by smallholders, the value exchanged, and livelihood attributes (e.g., household portfolio composition, strategies, and assets).[8]

By means of illustration, the value created *for* smallholders can help build household resources. When the value created remains in an instrumental form (e.g., money), a value capture process ensues (e.g., transforming money into wellbeing). Like in our dairying example, financial exchanges could enable investment in other economic activities or, alternatively, be transformed into another resource, such as land or educated children. The value created *for* smallholders is thereby respectively captured in the form of a household strategy and portfolio shift and a direct conversion of instrumental value into intrinsic value (often leveraging differentiated capabilities in the process). Alternatively, smallholders participating in a value network that requires new activities or changes to how activities are traditionally performed invariably need to reallocate some household resources. Therefore, value creation *by* smallholders also impacts livelihoods. More land or labor may need to be allocated, thereby constraining a household's ability to continue engaging in other activities. This could change (the relative importance of different activities in) livelihood portfolios, with implications for wellbeing.

Value creating activities performed by smallholders in value networks do not necessarily need to involve competition for internal resources, however - for example, if the value created for smallholders enables the household to use factors of production more efficiently (e.g., labor-saving technologies). Regardless, by understanding how these activities and value exchanges influence internal resource allocations and livelihoods more broadly and departing from income-based generalizations, value network stakeholders will be better positioned to engage in innovation. This could involve altering the content of smallholder activities considered socially undesirable or improving the nature, quality, and quantity of value exchanges and associated processes.

Finally, integrating livelihood perspectives also helps engage with fundamental questions about IAB inclusivity and wider development impacts of chain participation. As suggested by Bolwig et al. (2010), who similarly espouse a livelihood perspective in the context of GVC, productively engaging smallholders in value chains can produce four kinds of changes, namely (1) inclusion of new participants (e.g. those entering both the chain and the network in question for the first time); (2) continued participation under new terms (e.g. those already participating in the chain but newly entering the network); (3) expulsion of participants (e.g. those removed from the network for not following network processes); and (4) non-participation (e.g. those choosing not to or not being able to participate in the network). Arguably, a fifth change (5) deserves to be added, namely 'voluntary exit'. Smallholders can leave a value network voluntarily without that constituting expulsion per se – for example, because expectations are not met or because participants have become so empowered and capacitated that they no longer require the network's services. Extant IAB research rarely

[8] The definition of *household assets* or *capitals* in SLA (e.g., as social, physical, financial, natural, and human) is very similar to resources and capabilities defined here. We however feel our ontology is more granular by differentiating between human resources (as tangibles) and cognitive resources (as intangibles) and adding organizational, legal, and informational resources. The additions help to better capture smallholders as economic actors in value networks. While most smallholders are unlikely to own meaningful organizational and informational resources, more professionalized 'smallholders' can display more corporate characteristics (Schoneveld et al., 2019). Additionally, contracts can be important legal resources that can serve as collateral. Our conceptualization is also more dimensional and less instrumental by (explicitly) separating between what smallholders own or control and what they can do with those resources (e.g., capabilities). For example, ability to optimally exploit value inflows (e.g., inputs, finance) to create value is contingent on farmer capabilities. If these capabilities are lacking, then productivity can be affected or crops can fail, leading to an erosion of household resources and possibly debt traps.

differentiates between (1) and (2) or between (3)-(5), often dividing farmers into either 'participant' or 'non-participants' groups. Clearer distinctions are needed to fully capture (heterogeneity of) local impacts of IAB value networks, as well as spillover effects between the five groups. Such effects can only be captured by expanding the analytical scope beyond participants and non-participants and acknowledging that smallholders experiencing these different types of changes often have vastly different livelihood attributes, needs, and motivations. It also means that the relationship between value capture and value destruction, especially at the landscape level, needs to be understood. Capturing value by expanding landholdings, for example, could exacerbate deforestation, produce land scarcities, and incite conflict. Conversely, value capture can also have virtuous effects; for instance, when value is captured by investing in hired labor or buying food locally.

3.4. Analytical entry points and strategies

The framework can be applied in many ways but is foremost conceived to answer questions about the societal impacts of networks integrating and creating value for small producers in commercial value chains, and how those can be attributed to salient network characteristics so informed innovation can take place. As explored further below, producing answers to such questions can serve a wide variety of purposes and accommodate myriad research, business, and development objectives. However, the general approach to applying the framework remains the same: (1) map out value network building blocks, and relationships between them, and (2) evaluate how different stakeholders capture value from the value they create and receive.

Mapping out the value network requires qualitative methods. This begins by delineating the network's structural elements such as the network's shared goals and stakeholders sharing and contributing toward those goals.[9] These goals are often the same as the IAB value proposition, though can be narrower or broader in scope when IABs, network architects, and network drivers are different entities. Once the network is delineated, knowledge on value network building blocks needs to be generated. This can be done through (semi-)structured interviews with network partners or through more collaborative approaches such as participatory mapping. An entry point for this is typically stakeholders' roles vis-à-vis shared goals. Once articulated, a logical chain of reasoning and inquiry may include: (1) value activities undertaken to fulfill said roles; (2) the types of value exchanges emanating from those activities (value outflows); (3) recipients of those value exchanges; (4) the resources and capabilities exploited to perform value activities; (5) types of value received (value inflows); (6) how value activities and exchanges build and reconfigure stakeholders' resource and capability bases; and (7) the effects of (6) on the efficacy and efficiency of value activities and exchanges performed within and beyond the network. Depending on the research objective, exploring network evolution and configurational shifts may too be informative. Retracing how network structures evolved over time provides a window into (more difficult to capture) path-dependencies and dynamic capabilities. This not only helps contextualize observed impacts, but also helps identify future innovation drivers, spaces, and obstacles within networks.

Our experience piloting the framework across 26 IAB value networks suggests that participatory mapping is an especially effective method for unpacking these network dynamics. Through facilitated workshops involving network partners, stakeholders work together to graphically depict relationships between building blocks – very much like stocks-and-flows models. Dynamic systems modeling software such as STELLA can be useful tools for this. In our experience, participatory mapping methods yield richer discussions and data than interview-based approaches, especially in relation to efficacy issues and temporal shifts in network configuration. Moreover, such approaches offer an important co-learning opportunity, while helping network partners articulate network innovation priorities.

To subsequently assess network impacts, the two participant groups (e.g., newly included participants, existing participants under new terms), as the primary targets of IAB value networks, become the objects of analysis. Because the resources controlled by participant households are their most important sources and repositories of value, they form a critical basis for identifying long-term impacts and value capture trajectories. As such, we consider asset-based approaches (ABA) an appropriate lens to assess how smallholders leverage and sequence different resources to achieve livelihood security and wellbeing. Because ABAs capture the stock of resources households "store, accumulate, exchange or deplete and put to work to generate a flow of income and other benefits" (Rakodi, 1999, p. 316), they offer valuable insights into how participant households create and capture value within value networks. Compared to monetary measures of welfare such as income and consumption expenditure, asset accumulation approaches, as operational approaches to ABA, provide longer-term, more dynamic, perspectives of welfare and socio-economic mobility that are less susceptible to short-term shocks and seasonal variations (Moser, 2006). At the same time, they illuminate sources of insecurity and vulnerability, as well as the relative configuration of different resources households use to manage risk, adapt to change, and 'step up' (Moser, 1998; Dasgupta and Baschieri, 2010; Sherraden, 2018). Even though assets are - like monetary measures - still welfare proxies, taken together, they capture the "capability to be and act" (Bebbington, 1999), with some also having intrinsic value (e.g., assets representing cognitive, social, and human resources).

Household survey data is needed to unpack participant asset/resource accumulation pathways. While panel data is preferable, collecting such data is not always feasible. However, in contrast to monetary measures that suffer from serious recall biases and measurement errors even over single year reference periods (Schoneveld et al., 2021), resource endowments are normally more recallable over longer timeframes using cross-sectional data collection methods. In addition to shifts in household resource ownership, research instruments should capture changes in livelihood portfolio composition, as well as changes to activity-specific outputs and resource allocations. This helps generate insights into how distinct resource accumulation pathways shape resource allocation decisions and value activities (e.g., how value capture further supports value creation).

A combination of dimension reduction techniques and cluster analysis helps identify distinct accumulation patterns. A detailed overview of an analytical strategy adopting such methods is offered in Schoneveld et al. (2021). Dividing participant populations into more homogenous 'value capture groups' reveals how participants differently capture value, in turn providing valuable knowledge into impact heterogeneity. As shown by Schoneveld et al. (2021), smallholders benefit differently both within and across IABs. Such knowledge not only helps IAB value networks improve distributional equity (e.g., by identifying participant groups not meaningfully benefiting from participation) but also helps identify innovation and adaptation opportunities (e.g., to deepen impacts). Since it cannot ever be assumed that different types of participants pose and are confronted by identical opportunities and challenges, better managing these demands an impact heterogeneity perspective. Since IAB impact assessments to date average out impacts across participant groups, they fail to offer the nuance needed to design targeted solutions to group- and context-specific efficacy and equity problems. The approach offered by Schoneveld et al. (2021) is one of many ways to overcome this.

To illustrate the utility of an impact heterogeneity perspective, the approach adopted in Schoneveld et al. (2021) revealed four distinct value capture groups across their 12 IAB case studies:

[9] Network architects are a strategic entry point for this. These typically are, but do not necessarily need to be, IABs/lead firms.

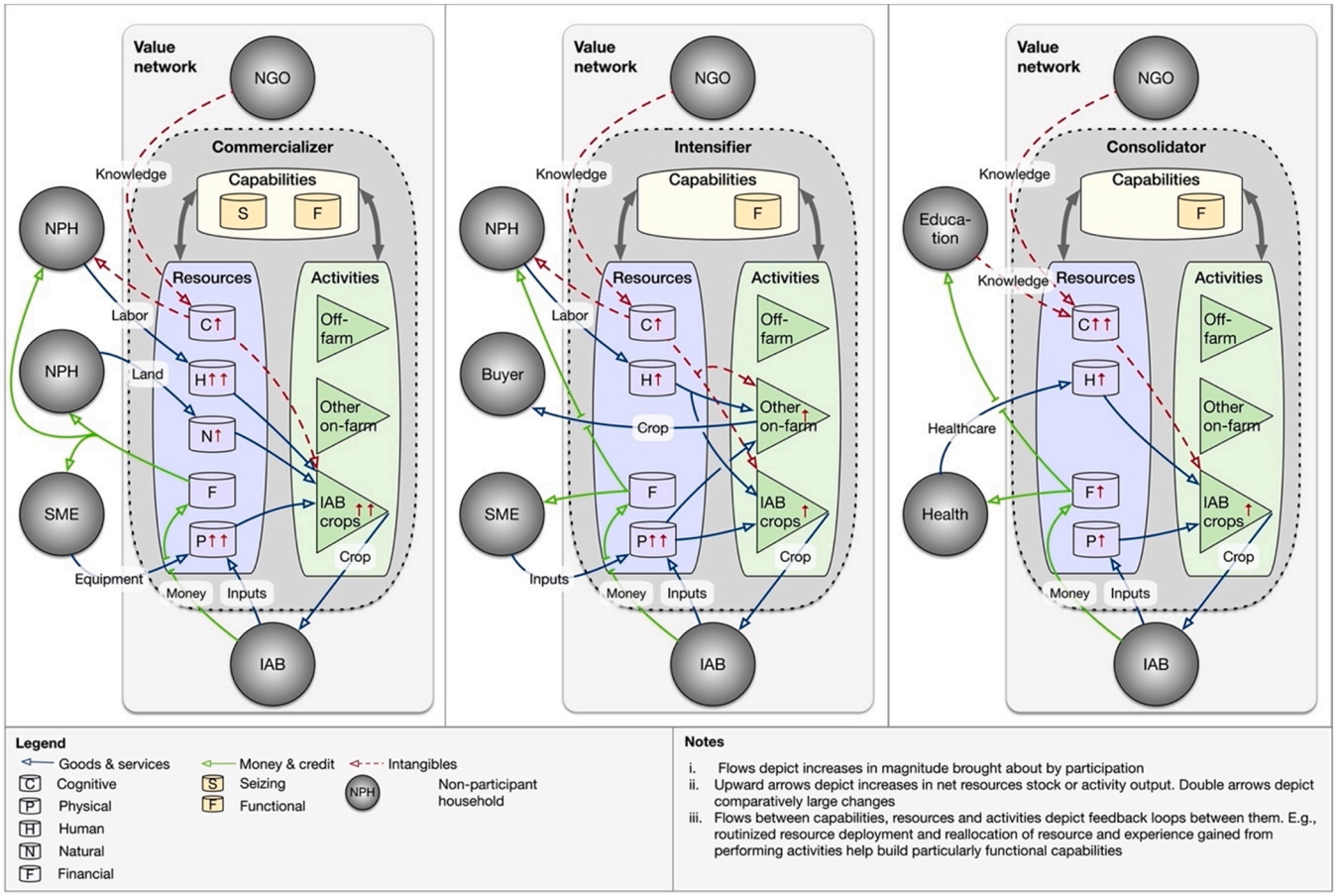

Fig. 2. Differentiated smallholder value capture dynamics.

(1) Commercializers: commercialization of network activities by investing in land and agricultural equipment and hiring more external laborers. These tend to be younger households, with considerable network experience, prioritizing income generation and consumption of durable and non-durable goods.
(2) Intensifiers: enhancing productivity of the household's entire agricultural enterprise by investing in inputs and soil quality for both the network commodity and other existing or new on-farm activities. These tend to be larger more risk avoidant households prioritizing on-farm diversification, household resilience, and food security.
(3) Consolidators: building the quality and stock of human, financial, and cognitive resources of the household by investing in education, health, and savings. These tend to be households with high dependency ratios new to the network, prioritizing (future) wellbeing of household members, often in anticipation of future out-migration and off-farm diversification.
(4) Non-accumulators: not investing and otherwise benefiting from network participation. These tend to be older households with little land that are unable or unwilling to divert the necessary land and labor resources to network activities.

Fig. 2 offers a stylized depiction of the first three value capture pathways. It must be noted that these are not definitive, static, and rigid. Participants can move from one group to another (e.g., consolidators become commercializers once intermediate goals are fulfilled) or adopt elements of other pathways simultaneously (e.g., commercializers can also intensify other on-farm crops). What the groupings reveal is the dominant value capture strategies pursued by different smallholders at a given point in time.

What Fig. 2 shows is how the same value created for participants in a value network (e.g. value inflows in the form of money and inputs from the IAB and agronomic knowledge from the NGO) differently contributes to participants' stock of resources due to differentiated strategies employed to transform one resource into another (i.e. *converting* value). This in turn influences how value is created by each type of participant, as is reflected in the changes to the output of specific activities, as well as the types of value exchanged with other stakeholders.

This shows how unpacking these dynamics offers concrete entry points for evaluating and eventually responding to broader societal and landscape-level impacts of IAB value networks. For example, commercializers are using value inflows (e.g., money) to acquire more land and hire more labor from non-participant households, which allows them to raise their net output of their IAB value activities considerably. This raises several pertinent questions. For example, does this drive land concentration, distress sales, or large-scale conversion of food crops and environmentally significant land uses for cash crops? How (well) are improved employment opportunities captured by non-participants? How do such output gains impact water quality, soil fertility, landscape-level food availability, and agrobiodiversity?

For value networks to deepen their impacts and really contribute to sustainable development, not only the direct but also these indirect impacts need to be understood. If certain issues are signaled, networks are better placed to look inside and identify adaptation priorities and opportunities. For example, let us assume that commercializers are found to be accumulating and converting forestland on a large scale, as we observed in some of our pilots. Then how can the value network address this? If a zero-deforestation policy is considered necessary, then network processes (e.g., smallholder contract rules) must change and monitoring systems developed. By having mapped out the network, one

can easily identify which stakeholders have the necessary resources and capabilities to integrate additional monitoring activities into their existing roles. If those resources and capabilities do not reside anywhere in the network, then network stakeholders will need to determine whose resources and capabilities need to be built to assume that role, and how and by whom. If that is deemed unviable, new stakeholders already possessing those resources and capabilities must be incorporated into the network. Alternatively, perhaps it is found that many consolidators divert labor from other on-farm activities to IAB activities (e.g., constituting a human capital outflow from one to another activity), which threatens food security. A solution for the network might then be partnering with labor contractors to support smallholder IAB activities and changing rules governing value exchanges so labor services can be forward financed.

3.5. Alternative applications

Even though VNA was conceived to unravel value creation and destruction dynamics bearing specifically on smallholders and landscapes, it has broader application. For example:

1) Civic and public value capture
   Participation in value networks can impact other types of value networks actors too. Civic and public stakeholders can similarly build their resource and capability base by performing value activities and engaging in value exchanges (e.g., building social resources from delivering on facilitatory roles). This could enable them to deliver on their larger societal mandates more effectively, as seen in our piloting. Conversely, participation may also drive undesirable internal resource diversions, which could compromise their ability to deliver on these mandates. The above value capture-creation conceptualization can therefore also be applied to non-farm partners.
2) Power relations
   Much like most theories of power, our approach is centered around stakeholder resource control and deployment. Using VNA can therefore yield valuable insights into how network stakeholders mobilize resources and capabilities to exercise power - in the spirit of Mann (1986) and Avelino and Rotmans (2011), amongst others. Resource-based power perspectives can be used to evaluate where power and influence resides within networks, based for example on stakeholder 'betweenness centrality' or the distribution of resources and capabilities across the network. Alternatively, power-resource perspectives can help explain network efficacy issues. For instance, value inflows for smallholders may poorly reflect the value of value outflows, which may be indicative of power imbalances and exploitation of, for example, social, legal, or cognitive resources somewhere in the network to exercise 'power over'. Less nefarious exercises of power could involve certain stakeholders mobilizing their resources to drive network-level innovation or introduce more ambitious network goals (e.g., 'power to').
3) Conflict and trust
   Piloting the approach revealed that many value networks contend with distrust and conflict between its stakeholders. This undermines networks' efficacy, viability, and scalability. Power analyses would help explain why that is the case. However, our piloting also suggests that distribution and separation of productive and supportive roles, as well as intangible value exchanges, indirect relations, and stakeholder social and cognitive resource stocks, may in some cases be more telling determinants of conflict and distrust. Viewed through this lens, the researcher/evaluator would want to emphasize role distribution, cognitive, and social resource stocks and intangible exchanges (e.g. knowledge and information). Guiding questions could thus include: how effectively are stakeholders' cognitive and social resources leveraged to engage in intangible exchanges? Are there stakeholders in the network that are better resourced to facilitate such exchanges? Do certain stakeholders' productive roles compromise their ability to fulfill their supportive roles? What supportive partners should be brought on board to help separate these roles and what processes should be introduced to safeguard their autonomy?
4) Scaling
   Many IABs are pressured by champions and financiers to expand their reach and broaden their impact. This can put tremendous strain on stakeholders' capabilities and resources and pose numerous viability challenges as transaction costs rise and depth of impact might need to be sacrificed (Schoneveld, 2022). To determine out-scaling risks and opportunities, networks should know, amongst others, who needs to do more of what (e.g., activities and exchanges), who possesses the necessary resources and capabilities to assume new roles or expand the scope of existing roles, and what resources and capabilities need to be built (and if so by whom) or acquired through new partnerships. By offering a systematized overview of value networks, VNA helps identify how changing activities and flows affect different parts of the system and how these can be reconfigured to accommodate scaling.

4. Applying the framework to tea block farming

To demonstrate application of VNA, this section applies the approach to a tea value network in Tanzania. Using some of the results from one of the 26 case studies, we illustrate the complexity of a typical IAB value network and how VNA can yield both theoretically and practically relevant knowledge. This case study involves smallholder block farming, a production model especially prevalent in developing country perennial crop sectors (e.g., tea, coffee, sugarcane, and oil palm). Under such schemes, smallholder production is, for efficiency reasons, consolidated into a spatially contiguous area. This can help reduce monitoring, logistical, and input and service delivery costs, while also strengthening horizontal learning and coordination. Our primary objective was to examine differentiated smallholder value creation and capture dynamics and associated spillovers to support stakeholders deepen and broaden their network's impact.

4.1. The value network

4.1.1. Network origin and stakeholders

Emerging from a collaboration between two international foundations, the case study IAB was incorporated in Tanzania in the mid 2010's to strengthen smallholder participation in Rainforest Alliance-certified tea value chains. This was expected to increase productivity, inclusivity, and sustainability of smallholder tea production.

With financial support from a bilateral donor, the two foundations pooled resources to establish a development investment company that owns a majority stake in the IAB. They recruited a team of Tanzanian managers with sectoral and business development expertise to manage IAB operations and co-develop the IAB business model and value network. Initially, the IAB tried to contract smallholders willing to convert existing land uses to tea, not wanting to contract established tea farms to avoid upsetting existing marketing relations. However, due to the prevalence of other high-value crops in the area, the IAB was largely unsuccessful. To overcome this problem, village governments were asked to identify and relinquish under-utilized village land suitable for block farming. Over 40 blocks of land, covering approximately 800 ha, were eventually earmarked for tea development. Each block was titled in the name of a land cooperative that is collectively owned by 20–30 participant smallholders. Each participant received rights to operate and manage a parcel of 0.5–1.0 ha. Participants were identified through open community consultations that sought to identify marginalized households standing to particularly benefit from participation.

To manage smallholder payments and strengthen bottom-up representation in IAB decision-making, participants were organized into three producer cooperatives. These were in turn organized into a joint-

cooperative enterprise that received a minority shareholding in the IAB.[10] As a result, participant smallholders, through their respective cooperatives, co-own the IAB. To deliver on its objectives, the IAB also forged partnerships with diverse institutions sharing common interests. This includes local government extension services, the national cooperative regulator under the Ministry of Agriculture, a large multinational (MNC), and a public research institute. Table A1 provides an overview of the different network stakeholders.

4.1.2. Roles and activities

At the time of research, network stakeholders with productive roles include the contracted smallholders, the IAB, and the MNC. In contrast to some block farming initiatives, smallholders are responsible for all tea farming-related activities (e.g., from planting to harvesting), the IAB for distributing inputs to smallholders and transporting and aggregating their harvests, and the MNC for processing and exporting. The foundations now fulfill a purely supportive role involving mediation between partners and IAB business development support. The bilateral donor in turn helps raise IAB visibility and sometimes liaises with national government on behalf of the IAB. The public extension agency trains smallholders on good management practices and provides general extension support. The MNC and a government research institute provide trainings and technical backstopping support to the agency's extension officers, especially in relation to Rainforest Alliance certification requirements. In addition to its productive role, the IAB also fills a supportive role by coordinating between these stakeholders and smallholders, regulating marketing, and running farmer field-schools. These schools cover topics beyond tea cultivation such as nutrition, staple crop cultivation, and livestock management.

The smallholder cooperatives' role in the network is purely supportive. They, for example, manage smallholder payments, offer savings services, ensure operational challenges confronting smallholders are identified and communicated to the IAB, and represent smallholder interests in the joint cooperative enterprise, which in turn ensures these are considered in the IAB's day-to-day operations and strategic decision-making processes. The different cooperatives receive support from the cooperative regulator, which advises and supervises cooperative management, as well as organizes trainings to build their managerial/organizational capabilities.

4.1.3. Resources and capabilities

This role distribution allows productive actors to leverage resources and capabilities from other partners that they do not possess themselves. Table A1 offers an overview of these resources and capabilities. The financial resources, sectoral and financial expertise, network, political influence, and dynamic capabilities of the foundations were invaluable to mobilizing, funding, linking the various stakeholders, and incentivizing the MNC to become more smallholder-centric in this region. The development investment company, for example, offered concessionary loans to the MNC to enhance their processing capacity in exchange for IAB off-take guarantees. The resources and capabilities of the MNC too were instrumental. Their agronomic expertise was extensively leveraged to build the cognitive resources and functional capabilities of the extension agency, which in turn enabled smallholders to become Rainforest Alliance compliant. Through their enlarged processing capacity and market relations, smallholders also gained access to more stable markets and international price premiums. The local and legal knowledge, regulatory capabilities, smallholder relations, and (extension) infrastructure of the various government institutions involved were furthermore extensively exploited to develop smallholders' and cooperatives' cognitive resources and functional capabilities.

4.1.4. Value exchanges

The myriad partnerships helping productively engage smallholders have produced and are enabled by a complex web of direct and indirect value exchange relations (Fig. 3). These enabled considerable flows of intangibles, which underscore the social-mission driven nature of this network. The intangible exchanges involve agronomic and organizational knowledge, supervisory and advisory services, and smallholder feedback (e.g., on performance challenges). This contributes to building smallholders' functional capabilities that are needed to upgrade activities and become compliant with Rainforest Alliance (e.g., improving value creation *by* smallholders). These exchanges are largely enabled by the financial resources of the foundations and the bilateral donor. In particular, the IAB became well-positioned to co-fund the activities of the resource-constrained extension agency and cooperative regulator, acquire and distribute inputs on credit to its contract farmers, establish its farmer field schools, and shoulder the high upfront costs of plantation establishment.

4.1.5. Processes

Most value exchanges are governed by formal contracts involving the IAB. For the sake of brevity, we will only explore the smallholder-IAB contract in detail here. Under this contract, the IAB provides smallholders a combination of grants and loans for plantation establishment. These are repayable at zero-interest over 11 years. The IAB is also responsible for providing inputs and logistical services on credit, which it deducts at cost recovery rates from gross smallholder tea revenues, as well as for coordinating and financing trainings, extension support, and certification. A five percent commission is levied on gross tea revenues for these services. Although land titles are held collectively under the land cooperatives, under their contract, smallholders are responsible for all crop and land management activities individually and in accordance with the Rainforest Alliance certification standard. A quality-based performance bonus received by the IAB from the MNC is shared with cooperative members. Salient characteristics of the smallholder-IAB contract are summarized in Table A2 and distribution of productive responsibilities as per the contract in Table A3.

Even though the IAB signs contracts individually with smallholders, monthly payments are managed via cooperative saving accounts due to poor access to banking services. A key process innovation is the use of an integrated data system for electronic weighing, receipts, and payrolls to enhance transparency. At collection depots, smallholders receive printed receipts after tea is weighed on electronic scales, with the information automatically feeding into monthly payrolls. This system sought to prevent common accounting errors. This IAB-smallholder contract is underpinned by an exclusive sales contract between the IAB and the MNC, renewed annually.

4.2. Value capture

4.2.1. Smallholder participants

Five years after establishment, research activities reveal initial successes and challenges. Most contracted smallholders reported overwhelmingly positive livelihood impacts. An analysis by the foundations showed that tea income per hectare is more than two times higher for IAB farmers (~$1100) than farmers selling to other companies (~$500). This difference is attributable to higher productivity due to the trainings and extension support and higher unit earnings due to price premiums and performance bonuses.

Performing value activities did, however, require a reallocation of household labor for many households. Since tea cultivation is labor intensive (especially when complying with sustainability standards), particularly women traditionally responsible for harvesting activities experienced an increased labor burden. Nevertheless, most households were eventually able to leverage their improved financial resource base to overcome excessive/competing labor demands by hiring more laborers from within the community. Furthermore, since women and

[10] At the time of research, the joint-cooperative enterprise owned 49% of the IAB, with the foundations owning the remaining 51%. The long-term goal is to transfer all the foundations' shares to the joint-cooperative enterprise.

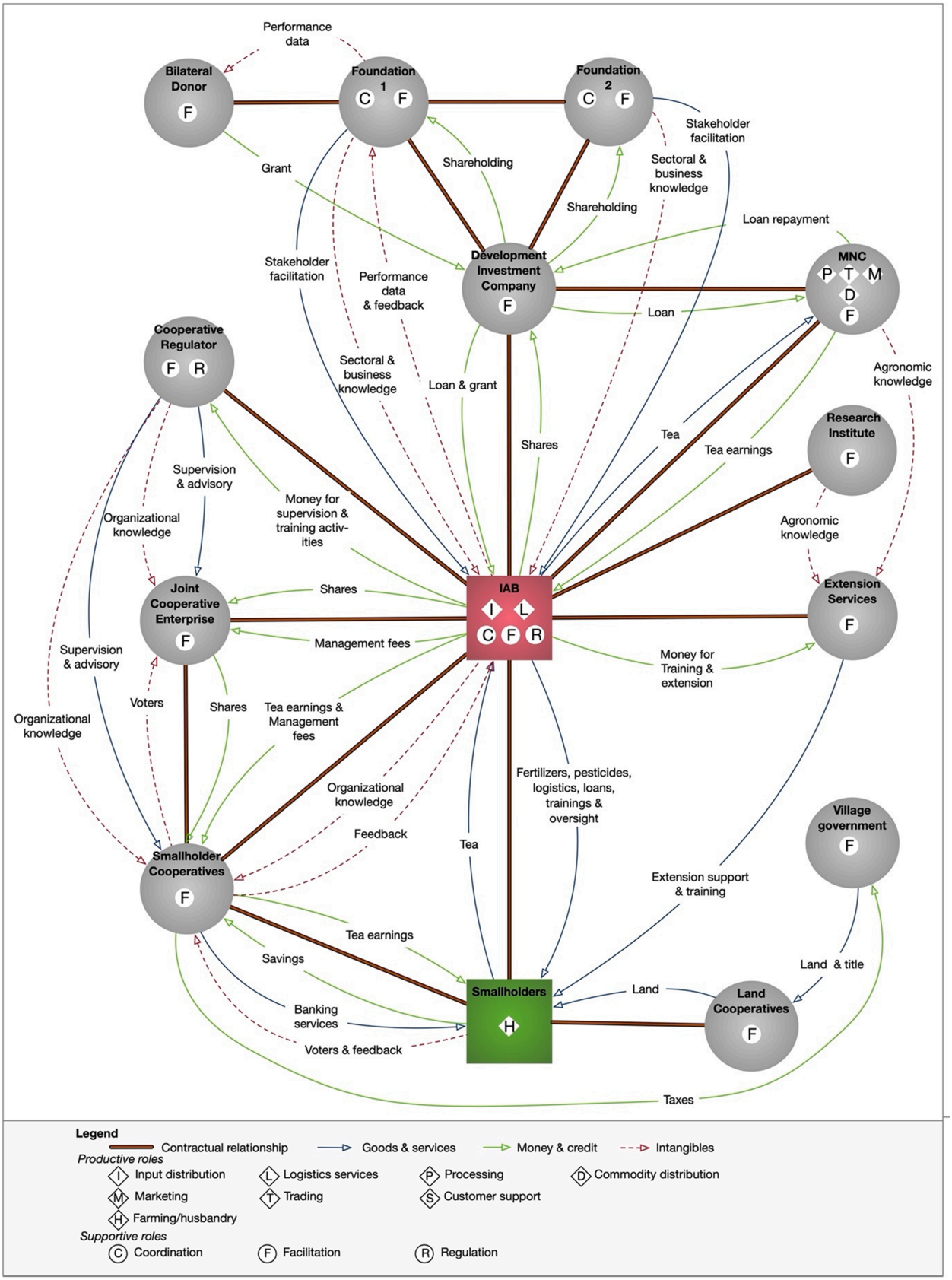

Fig. 3. Tea IAB value network.

other land-constrained groups were explicitly targeted by the IAB, participation generally had an empowering effect. Participation in the network was especially attractive to women and youth that lacked access to the land and finance needed to produce high-value crops. Despite this, most contracted smallholders were engaged in tea cultivation already. These tended to be better resourced from the outset. Such farmers were more likely to utilize additional income to diversify their livelihood portfolios; for example, by investing in other on-farm activities such as staple crop and dairy production (e.g., 'intensifiers'), while female-headed households and first timers to tea were more likely to be 'consolidators' (15% of the sampled households), prioritizing healthcare, education, and savings. Almost all participant households in the intensifier group, comprising approximately 67% of the sample, reinvested financial inflows to raise their output of staple crops, while almost half used financial inflows to start dairy farming for the first time. This was partly enabled by the IAB, which established farmer field schools offering trainings on nutrition, food crop production, and labor-saving technologies to ameliorate labor diversion problems and associated food security and livelihood specialization risks.

No households in this case are 'commercializers', with acute land constraints in the network's catchment area preventing farmers from extensifying. The remaining 18% of farmers were found to be non-accumulators. These were generally older and labor-constrained households unable to devote adequate labor to tea production, resulting in low input application rates and irregular harvesting. Such farmers were generally unwilling to sacrifice food crop production and by extension household food self-sufficiency for cash crop production.

In addition, most households also managed to strengthen their social resource base. With skepticism about corporate intentions and cooperative participation rampant in the study area, participation helped build trust and rapport with other value chain actors. This can be credited to the IAB's information technology system (e.g., informational resources). This system has eliminated the potential for mismanaged bookkeeping at collection points or within cooperatives during payment disbursement, both of which common problem eroding farmer trust in contract farming and cooperatives in Tanzania and elsewhere. Cooperative supervision and support from the cooperative regulator also contributed significantly to this; in large part by strengthening cooperatives' organizational resources. The IAB farmer co-ownership structure furthermore ensured farmers had a say in and/or were adequately informed about major decisions, thus raising trust.

All in all, participation helped almost 900 of the 1075 participant households 'step-up'. The value network therefore largely succeeded in delivering depth of impact, while also contributing to more sustainable land use. However, while the value network was expected to gradually expand its reach to broaden impacts, due to local land constraints limited expansion was achieved in recent years. Moreover, since the IAB has yet to become financially self-sustainable and continues to depend on financial resources of the development investment company, it also lacks the resources needed for a large-scale expansion.

4.2.2. Other stakeholders

The value network also benefitted many non-participants within beneficiary communities. The most important pathway for this was demand for local labor. On average, participant households employed 2.6 farm laborers, increasing from 1.1 over a five-year period. This suggests that for labor intensive crops, IABs have the potential to produce significant multiplier effects for local labor markets. Additionally, knowledge gained by participant farmers through extension support and farmer field schools were often readily shared with non-participant farmers, especially when these had a labor relationship. While we did not seek to quantify how knowledge diffusion translated into non-participant practice changes, during our community validation workshops, many claimed that non-participant confidence and ability to adopt new practices improved as a result. No meaningful negative spillovers were observed in this case. In contrast to some of the other cases we analyzed, there were no instances (yet) of 'expulsion' and 'voluntary exit'. The lack of (opportunities to become) commercializers also contributed to this.

Many other value network actors also derived significant benefits from participation. By and large, value exchanges helped most build their resource and capability base, with knock-on effects to extra-network activities. This was especially so for the government extension agency. Participation in the network allowed the agency to build their financial resources through IAB service commissions, their cognitive resources through training by the MNC and research institute, and human resources by using their financial resources to recruit more extension officers. As a result, the extension agency became better placed to offer meaningful extension support – especially in relation to sustainable tea production - to non-participant farmers. This not only helped socialize the value of sustainable tea production and certification, but also elevated the social legitimacy of the extension agency that was long viewed as under-capacitated and -resourced.

4.3. Innovation priorities

While the application of VNA helped identify how different societal groups create and capture value, our overarching purpose was to inform future network innovation priorities and pathways so impacts could be deepened and broadened in future. To support that, facilitated workshops were held with network stakeholders. These were structured around two main challenges identified through the research and prioritized by network stakeholders, namely (1) non-accumulation amongst labor-constrained participants and female labor burden and (2) out-scaling challenges linked to IAB self-sustainability issues. The value network diagram served as a useful dialoguing tool for identifying who has the resources, capabilities, responsibilities, and mandate to address these issues, and which needed to be changed and/or built. The exchanges and rules governing these that could be impediments to and/or leveraged for network adaptation were furthermore explored.

To resolve the non-accumulation/labor burden issue, it was held that households experiencing such issues needed access to more capable labor. Since many such households lack financial resources and confidence in their functional capabilities to hire, train, and oversee hired labor, some sort of specialized labor service would need to become available under a forward finance arrangement. None of the network stakeholders currently possess the necessary human resources to initiate and assume responsibilities for such a service. This means that either new stakeholders need to be integrated into the network (e.g., specialized service providers) or the roles and resource/capability base of existing network stakeholders needs to improve. The former was considered infeasible since such service providers are absent in the landscape and developing these would be costly and time-consuming. With the IAB confronted by self-sustainability challenges and government agencies lacking the mandate, neither could assume these responsibilities either.

This leaves either other participant smallholders or the smallholder cooperatives. One avenue is for cooperatives to broker profit-sharing agreements between non-accumulators and more entrepreneurial, capable, and resourced participants that would manage the land on the others' behalf. Another avenue is for cooperatives to recruit a full-time labor force offering bespoke labor services (e.g., ranging from harvesting to full farm-management). The second avenue was preferred since it could empower cooperatives while preventing (1) disempowerment of non-accumulators and otherwise labor-burdened households, (2) improving local access to formal full-time employment opportunities, and (3) allowing cooperatives to generate additional income for its members (in turn also benefiting non-accumulators). To achieve this, cooperatives would need to assume a productive role, be trained to manage and coordinate a labor force (with support from the MNC and cooperative regulator), and build the capabilities of that labor force (with support from extension services). At the same time, myriad

Table A1
Value network stakeholders.

Type	Description	Resources	Capabilities	Activities
IAB	Private limited company registered in Tanzania. Majority owned by the Investment Company, and minority held by the Joint Cooperative Enterprise.	**Physical**: Agricultural equipment **Natural**: Tea planting materials **Financial**: Cash **Cognitive:** Sectoral and organizational knowledge **Social**: Political, market and donor relations **Informational:** Integrated data management system	**Dynamic**: Seizing, sensing, transforming **Operational**: Functional, regulatory, networking	■ Acquisition, provision and distribution of planting materials and inputs ■ Aggregation and logistical services ■ Trainings through farmer field schools ■ Contract enforcement ■ Liaising with government and other stakeholders
Foundation 1	**Primary architect and driver–** UK-based foundation owned by a philanthropic family. Funds economic and social development projects in East Africa.	**Financial**: Cash **Cognitive:** Sectoral and organizational knowledge **Social**: Political, commercial and donor relations	**Dynamic**: Seizing, sensing, transforming **Operational**: Functional, regulatory, networking	■ Funding acquisition and distribution ■ Technical assistance and business support ■ Performance monitoring ■ Liaising with government and other stakeholders
Foundation 2	**Primary architect and driver–** UK-based foundation owned by a philanthropic individual. In Africa, it funds local institution building, agricultural research, and public-private development partnerships.	**Financial**: Cash **Cognitive:** Sectoral and organizational knowledge **Social**: Political, commercial and donor relations	**Dynamic**: Seizing, sensing, transforming **Operational**: Functional, regulatory, networking	■ Funding acquisition and distribution ■ Technical assistance and business support ■ Liaising with government and other stakeholders
Bilateral Donor	European donor agency offering official development assistance across many sectors such as agriculture, education, health, sanitation, and industry.	**Financial**: Cash **Social**: Political relations	**Dynamic**: Seizing, sensing **Operational**: Regulatory, networking	■ Grant financing ■ Performance monitoring ■ Liaising with national government
Development Investment Company	A shell company registered in the UK, owned by the Foundations to channel, de-risk and recycle finance for smallholder tea development in East Africa.	**Financial**: Cash	**Operational**: Regulatory	■ Grant and loan disbursement ■ De-risking ■ Represent Foundations in IAB
Multinational	Public limited company incorporated in Tanzania, owned by a large vertically integrated British-Dutch consumer goods multinational.	**Physical**: Processing factory **Natural**: Land with tea **Financial**: Cash **Cognitive:** Agronomic knowledge **Social**: Political and commercial relations	**Dynamic**: Seizing, sensing **Operational**: Functional, regulatory, networking	■ Farming and processing of tea ■ Distribution, packaging, and marketing of processed tea ■ Training of extension officers
Smallholder Cooperatives	Cooperatives owned by and representing tea contract farmers.	**Legal**: Ownership of the joint cooperative enterprise **Social**: Community and local government relations	**Operational**: Functional, regulatory, networking	■ Disbursement of payments to smallholders ■ Representing smallholders in Joint Cooperative Enterprise ■ Conflict mediation
Joint Cooperative Enterprise	A joint cooperative entity owned by the Smallholder Cooperatives that co-owns the IAB. Managed by a joint board composed of board members from the Smallholder Cooperatives.	**Financial**: Shareholding in the IAB **Social**: Commercial, community and local government relations	**Operational**: Functional, regulatory, networking	■ Representing smallholders in IAB ■ Conflict mediation
Land Cooperatives	Cooperatives that hold land titles to tea farm blocks, owned by contracted smallholders.	**Natural**: Land with tea	**Operational**: Regulatory	■ Land titling
Cooperatives Regulator	A government regulatory body with the mandate to advise, supervise and regulate cooperatives in the country, reporting to the Ministry of Agriculture	**Cognitive:** Cooperative management knowledge **Legal**: Regulatory power to penalize misconducts	**Operational**: Regulatory, networking	■ Supervision of and advisory to Cooperatives ■ Law enforcement
Extension Agency	A government agency dedicated to offering extension support for smallholder tea farmers, reporting to the Ministry of Agriculture	**Cognitive:** Agronomic knowledge	**Operational:** Functional, networking	■ Provision of training, extension services and oversight to smallholders
Research Institute	An autonomous state-owned research organization dedicated to tea. Governed by a Board of Directors representing the Government and the tea industry of Tanzania.	**Cognitive:** Agronomic knowledge	**Operational:** Functional, networking	■ Training extension officers ■ Technical backstopping
Village government	Lower level government, with elected administrator, reporting to the Ministry of Local Government and Regional Administration	**Natural**: Unutilized land **Cognitive**: Local knowledge **Legal**: Regulatory power to grant land titles	**Operational**: Functional, regulatory, networking	■ Land identification, surveying and titling

(*continued on next page*)

Table A1 (*continued*)

Type	Description	Resources	Capabilities	Activities
Smallholders	Semi-subsistence farmers in IAB's catchment area	**Social:** Political and community relations **Human**: Labor **Legal**: Contracts **Social:** Community relations	**Dynamic**: Seizing **Operational:** Functional	▪ Field preparation, planting, application of fertilizer and pesticides, and harvesting

Table A2
Contract characteristics.

Feature	Description
Type of contract	Individual, written contract
Contract duration	15 years
Payment frequency	Monthly + end-of-year bonus
Pricing	Smallholders receive 95% of the price paid by the MNC processor to the IAB. 5% is deducted by the IAB as commission. Cost of inputs and logistics deducted at cost price.
Incentive alignment	Performance bonus as per the MNC quality bonus system.
Risk management	None
Transparency	Integrated data management system linking electronic weights with payrolls.
Conflict resolution	Through IAB board representation
Equity share in IAB	49% by smallholders via Joint Cooperative Enterprise
Product standards	None
Process standards	Rainforest alliance certified (cost borne by IAB)
Logistical standards	Loading and transportation based on pre-established schedule
Participation conditions	Member of village allocating land to block farm

processes governing existing exchanges must change to accommodate new exchanges and facilitate forward financing. How that can be done is for network stakeholders to continue innovating on. What mapping out the value network rather offered is a systematized way of looking at the network to support more informed future decision-making and targeted network adaptations.

In relation to out-scaling challenges, the network has two options: (1) start engaging other farmers using their own land resources or (2) attempt to replicate the value network in another area suitable for tea production but confronted with fewer land constraints. The first option is challenging. Engaging existing tea farmers would be against the spirit of the network since that would upset existing marketing relations with other tea buyers, while engaging farmers cultivating other crops would invariably drive conversion of food crops. Furthermore, the existing extension support infrastructure would be strained, and transaction costs would increase since such farmers are unlikely to offer efficiencies associated with land consolidation under block farming. IAB service commissions would then need to increase, which in turn may reduce how much value is created for and captured by existing participants, while potentially straining existing social relations. Replication elsewhere is therefore more actionable, albeit no easy feat either. Since the network leverages considerable place-specific resources and capabilities and spatially-delineated mandates, the IAB, along with its civic partners, would need to engage and build new partnerships elsewhere. Lessons learnt from developing this value network will help, though a completely new (type of) network will likely need to emerge since it cannot be assumed that stakeholders elsewhere will share the same goals and possess similar types of resources and capabilities. With the existing value network yet to demonstrate financial viability, extensive out-scaling is unlikely to be practical in the near future given the dynamic capabilities and investment needed. As Schoneveld (2022) explores in more detail, since many IABs rely on some form of development finance, like this IAB many are confronted by tremendous pressures to expand their reach and meet funding targets within short funding cycles. As this case also illustrates, the complexity of most IAB value networks and various replication constraints and self-sustainability challenges many face – not to mention unexplored opportunities for further deepening impacts - suggest that externally imposed IAB scaling pressures may do more harm than good.

5. Discussion

5.1. Implications for IAB research

Research-for-development is becoming more mainstream. Researchers depending on public monies to fund their research activities are rightly facing mounting pressure to deliver tangible impacts. This is forcing many to reevaluate their methods and the practical utility of the knowledge their research generates. In the context of the topic at hand, effectiveness studies alone do little to satisfy the moral duty of the development scholar anymore. If only such methods were applied in our illustrative case study, for example, we would have learnt that participants' total household incomes on aggregate increase, but nothing about

Table A3
Contractualized distribution of responsibilities.

Activity	Terms	Costing	Activity Responsibility
Plantation establishment	Planting materials and machinery services provided by IAB on credit; labor is provided by smallholders under IAB supervision.	Three-year grace period. 25% repayment deducted in the first harvest year through monthly payments, 75% repayment deducted over the following ten years. Zero interest.	Smallholders
Infrastructure establishment	Not applicable (N/A)	N/A	
Input acquisition	Fertilizers, pesticides, and herbicides provided by IAB	Monthly deductions at cost recovery rates.	IAB
Plantation labor	Smallholders' own labor	N/A	Smallholders
Plantation management	Smallholders' own management	N/A	Smallholders
Harvesting	Smallholders' own labor	N/A	Smallholders
Logistics	Required to use IAB loading and transportation infrastructure	Included in 5% commission	IAB
Technical training & extension	Organized by IAB.	Included in 5% commission	IAB
Other skills training	Staple crops, livestock, and nutrition training. Organized by IAB.	Included in 5% commission	IAB

how participation changed lives, livelihoods, societies, and landscapes, who failed to benefit from participation or anything about the value creation dynamics and network configurations responsible for observed outcomes. To the many IAB stakeholders, champions, and policymakers challenged to design, deliver, promote, and mainstream impactful value chain solutions that equitably benefit the rural poor, such learnings are key. Since analytical approaches commonly employed in IAB scholarship are not equipped to capture heterogenous impacts and spillovers (Ton et al., 2018; Schoneveld et al., 2021), as already mentioned, the development contribution of IABs are often generalized and uneven development impacts and deleterious impacts erased. Without this nuance, such research risks merely validating many of the myopic IAB policies and programs that emerged in recent years. While Ton et al. (2018), in reference to the absence of studies that capture spillovers claim that "spillovers are less of an issue for impact evaluations of contract farming than for many other impact evaluations, because in most regions only a minority of the farmers participate in contract farming" (p. 53), in many of our pilots, spillovers were found to be highly significant, with participants outnumbering non-participants in many communities.[11]

What (piloting of) our approach showed is that mixed method approaches in which research subjects are simultaneously research participants contributing to problem diagnosis, results validation, and collaborative solutioning not only contributes to a richer, more practically relevant, knowledge base, but also allows research subject-participants to learn collaboratively, make sense of essential complexity, and engage in informed innovation. Moreover, results demonstrate heterogenous value capture dynamics and societal spillovers and, by extension, the utility of the framework's integrated livelihood perspective. This reaffirms that impacts cannot merely be read off from the value created *for* smallholders, as per the prevailing social value narrative, nor be fully captured by households' financial resource gains. Such knowledge also helps value networks become more impactful by allowing its stakeholders to identify non-accumulation issues and unintended spillovers, while, at the same time, benefiting from an institutional systematization that helps diagnose causes and identify adaptation and innovation opportunities.

Finally, our pilots also yielded practically and theoretically relevant insights into *how* value is created. This knowledge is not only essential for monitoring and evaluation purposes, but also helps generate valuable lessons with broader relevance, especially within the context of comparative research. For example, in the illustrative case, technical trainings and intangible exchanges helped enhance access to premium markets, raise productivity, improve adoption of more sustainable production, and build social resources. In contrast to many of our other case studies where efficacy was undermined by network rigidity, power imbalances, distrust, and conflict due to opaque processes, dependency on direct exchange relations, and absence of intangible exchanges, in this case well-embedded smallholder representation structures, comparatively independent facilitatory partners, mutual dependencies, separation of productive and supportive roles, and a transparent information system enabled the network to effectively respond to smallholder needs, remain downwardly accountable, and develop trust-based relations. Such insights enable IAB champions, technical support agencies, policymakers, and financiers to more effectively leverage their influence over value network design and innovation. That said, our current evidence base is not robust enough to inform such actions. We therefore encourage more comparative and practically relevant research like this.

[11] In our experience, Ton et al.'s assumption is unfounded and needs to be proven wrong before analytical strategies are devised, especially since failing to capture spillovers within quasi-experimental studies produces a so-called contamination effect that biases results.

5.2. *Improving the explanatory power of GVC, GPN and sustainable livelihoods*

While building extensively on the field of strategic management, VNA's combined ontological apparatus is inherently transdisciplinary, drawing liberally from a wide range of disciplines. As a result, it enables methodological and disciplinary cross-fertilization. It also speaks directly to several theoretical limitations and needs, mostly notably in the fields of GVC, GPN, and sustainable livelihoods.

As mentioned, in GVC and GPN theories, the role of value chains and lead firms in development is viewed through a distinctly linear and deterministic lens, with value creation often conceptualized in purely economistic terms. The absence of analytical tools to adequately explain the many different types of upstream impacts associated with innovations in agrifood chains (and how local development trajectories are influenced as a result) has inspired several valuable sustainable livelihoods-inspired conceptualizations of chain contributions to development in recent years (e.g., Bolwig et al., 2010; Riisgaard et al., 2010; Carswell and De Neve, 2013; Kelly, 2013; Fold, 2014; Vicol et al., 2019). Empirical application of livelihoods approaches to smallholder chain participation, as most of these have done, has illustrated that territorial outcomes cannot simply be read off from actor strategies, chain governance, and modes and types of strategic coupling with regional assets. In demonstrating that development impacts are more nuanced and differentiated in situ than either theory would suggest, the purported explanatory power of GVC/GPN has been brought into question.[12] However, in practice, these conceptual contributions are principally livelihoods 'add-ons' that are tenuously integrated into existing GVC/GPN theories, with few conceptual linkages between key livelihoods and GVC/GPN constructs being forged. Consequently, they provide a richer understanding of the types of impacts associated with smallholder participation in different agrifood chains, but not the underlying mechanics. Their utility to those working to expand the explanatory capacity of GVC/GPN is therefore limited. This is reminiscent of limitations of livelihood approaches, more generally, that have long been beset by its weak connection to theories on economic and social change and inability to adequately situate livelihoods within broader political and economic (power) structures (O'Laughlin, 2004; de Haan, 2012). Scoones (2009), for example, concedes that "one of the persistent failings of livelihoods approaches has been the failure to address wider, global processes and their impingement on livelihood concerns at the local level…. The challenge for the future is to develop livelihoods analyses which examine networks, linkages, connections, flows and chains" (p. 187–188).

Our framework could serve as a (partial) corrective to this scalar and disciplinary disjuncture. In developing VNA, we principally hope to engender a collective pursuit of a knowledge base on value network configurations and value creation and capture dynamics within rural

[12] This is also demonstrated by the application of our approach. For example, application of GPN 2.0 (see Coe and Yeung, 2015) would suggest that our illustrative case is characterized by actor strategies that can be classified as interfirm control (e.g., creating value through outsourcing) and extra-firm bargaining (e.g., creating value through a conducive institutional environment) and a structural mode of strategic coupling (e.g., where external actors connect the region to the chain). This is similar to what is termed captive governance in GVC (Gereffi et al., 2005). According to these theories, this type of coordination and coupling are generally associated with excessive firm control, weak farmer bargaining power, high dependency and power asymmetries that are likely to result in lock-in, extractive relations, decoupling and weak smallholder value capture. This is clearly not the case here. This illustrates how poorly both theories explain and can predict outcomes associated with particularly mission-driven IABs.

spaces that are inspired by the bottom-up, inductive, logic that underpins livelihoods approaches. We caution against purely relying on the top-down, deductive, and unidirectional perspectives common to GVC/GPN that make a priori assumptions about (the centrality of particular) causal mechanisms (Ponte and Sturgeon, 2014; Neilson et al., 2018).[13] This results in certain 'types' of agrifood chains being painted with the same brush. Such perspectives also risk simplifying complexity and discounting contingency, largely serving to (un)confirm theory rather than build theory. Doing so threatens to reproduce reductionist discursive and theoretical narratives informed by methodologically disjointed empirical evidence of questionable internal validity. We therefore contend there is ample room to improve the explanatory power of GVC/GPN, at least with respect to agriculture. This demands renewed attention to grounded theory development and making sense of complexity, however inimical to the intentionally parsimonious GVC. This begins with recognizing that smallholders increasingly engage in agrifood chains through complex value networks whose actions are rarely fully informed by purely capitalist strategies and involve a multitude of chain and non-chain actors that co-create value.

More critical insights into the salient characteristics of agricultural value networks and how these differentially shape value creation and capture dynamics within landscapes can help develop the type of evidence base needed to inform both theory and practice. This in itself will not contribute to grounded theory development, however. The inability of livelihood approaches to effectively distill generalized trends, or what de Haan (2012) terms the "deadlock of endless variation" (p. 352), due to their weak conceptualization of the relationship between household and structure (Scoones, 2009), must be overcome. Since this framework, compared to sustainable livelihoods (add-ons), more comprehensively captures the complex network structures through which smallholders are productively engaged into the economy and internalize values created, it is well-placed to stand up to the task (*see* also footnote 8).

More network-centric comparative analyses of value network configurations and value creation dynamics are an important first step. Relevant guiding questions to support theory building include: To what extent are certain outcomes associated with certain network configurations? Are certain network configurations more common in certain geographies and for certain crops? Are certain *types* of value networks discernible? Engaging with such questions permits a more constructive conversation with GVC/GPN. Where this framework is better positioned to explore development impacts,[14] it needs the GVC/GPN toolbox to provide an answer to questions such as: Why are certain types of value networks more common in certain chains and/or geographies? How does market structure, actor strategies, political and geographic context, standards, and chain governance affect value network design and efficacy? Exploring the interface between place-based value networks and wider chain structures could yield valuable theoretical perspectives into how agrifood chains precisely 'touch down' and generate an expanded and more nuanced understanding of causal mechanisms.

We see particular potential for enriching GVC/GPN theories by more critically exploring the relationship between shared network goals (in business literature often considered 'value drivers') and dynamic/competitive drivers (GPN), chain and interfirm governance (GVC), and actor strategies (GPN). Stakeholders with productive roles participating in IAB value networks driven by social and environmental objectives, for example, rarely fully adhere to the logic of the capitalist firm, employing a blend of atypical coordination mechanisms. Our case studies suggest that value networks can be (competitively) driven by the need to integrate and upgrade non-firm actors (e.g., smallholders and state agencies). This demands indirect exchange relations coordinated through indirect, delegated forms of governance. These are poorly captured by the current governance and actor strategy taxonomies of GVC and GPN and exemplify how a bottom-up approach can help advance grand theories.

6. Conclusion

This article challenges prevailing conceptualizations of private institutional innovations intended to productively integrate smallholders into agrifood chains. We contend that existing analytical tools and theories fail to adequately capture *how* these innovations precisely contribute towards local development. This emanates in part from dyadic and chain/firm-centric perspectives that neglect to fully account for the complex and heterogenous institutional structures generally required to productively integrate smallholders. Responding to the need for further grounded theory development and more evidence-based agricultural development programming, this article proposed an approach that permits more comprehensive analysis of value network configurations and value creation and capture dynamics within those networks.

We demonstrate the framework's explanatory capacity by applying it to a case study of an IAB in Tanzania. Results suggest the framework is well-placed to deconstruct value networks and identify the primary causal mechanisms through which value is created and captured. Results also point to internal and external validity issues within many IAB effectiveness studies and the limitations of the deductive and deterministic approaches prevalent in GVC and GPN.

As such, VNA can serve various empirical, practical, and theoretical purposes. For example, employed as an analytical framework, it can guide development of methods that allow researchers to more systematically deconstruct the value creation systems in which many smallholders are embedded (e.g., beyond the smallholder-firm dyad). Development of a more credible empirical evidence base could in turn foster more informed IAB policy, design, and innovation. Finally, because of its transdisciplinarity, the framework lends itself to grounded theory development by bridging the disciplinary divide between GVC/GPN, sustainable livelihoods, and strategic management.

Data availability

Data will be made available on request.

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Appendix

See Table A1,Table A3.

[13] With respect to agrifood chains, examples of this include Lee et al. (2012), Gómez and Ricketts (2013) and German et al. (2020). Chains are pre-categorized based on a priori assumptions about causal mechanisms. These mechanisms include chain governance, crop and market attributes and the role of public policy and standards. Our piloting results suggest that numerous other mechanisms also play a key, if not more important, role.

[14] This applies particularly to chains where upstream relations rely on one or more of the coordination instruments described by Chamberlain and Anseeuw (2019). Where smallholders participate in value chains merely through spot markets, 'value networks' may be so simple that they cease to be value networks. However, this need not be the case since even informal value chains can contain complex networks of actors mobilized around common goals that are governed by informal rules and norms. Such goals could even be nefarious (e.g., in value networks involving smuggling or illegal extraction).

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