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Identifying the User in an Informal Trade Ecosystem

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How do we identify the right target beneficiaries within an informal economic ecosystem for development interventions designed to maximize benefits and value for money? This was our initial research question when we conceived the human-centred design research program for exploratory fieldwork to map informal trade in the borderland of Kenya and Uganda. This paper narrates our discovery process and analytical journey identifying a previously unknown segment of micro-entrepreneurs whose business practices lead to the organic development of an economic microsystem - a "value web" or established network of customers, suppliers, and service providers. The individual actors in these microsystems collectively form a value creation engine which we identify as the target beneficiary or end-user, for the design of interventions meant to trigger progressively transformational change in the borderland's informal trade ecosystem. We describe the factors leading to our decision to consider the value creator's entire value web as the end-user, rather than the individuals at the heart of each such microsystem, for optimal outcome of systemic design interventions.

Systemic design, Complexity Studies, Design Research Methodology, Informal Economy

1. Introduction

Traditionally, beneficiaries of international development programme design have been conceptualized as the passive recipients of charity, with little or no agency. With the shift in thinking from aid to trade, there needs to be a concurrent shift in the way we frame the concept of the end-user or beneficiary when we design such programmes. (Doorneweert & Bhan, 2013) Trade implies an exchange of value between two or more parties, rather than the one-way transfer of value from a donor to a beneficiary. Thus, end-users in a trading economy must necessarily be recognized as active agents of value creation within their commercial ecosystems.

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Approaching exploratory user research to map the last mile of the farm to fork value chain for subsistence farmers in East Africa in 2013 from this perspective, we discovered that agricultural trade networks did not in fact resemble the textbook diagrams (Figure 1) used to illustrate the ecosystem.

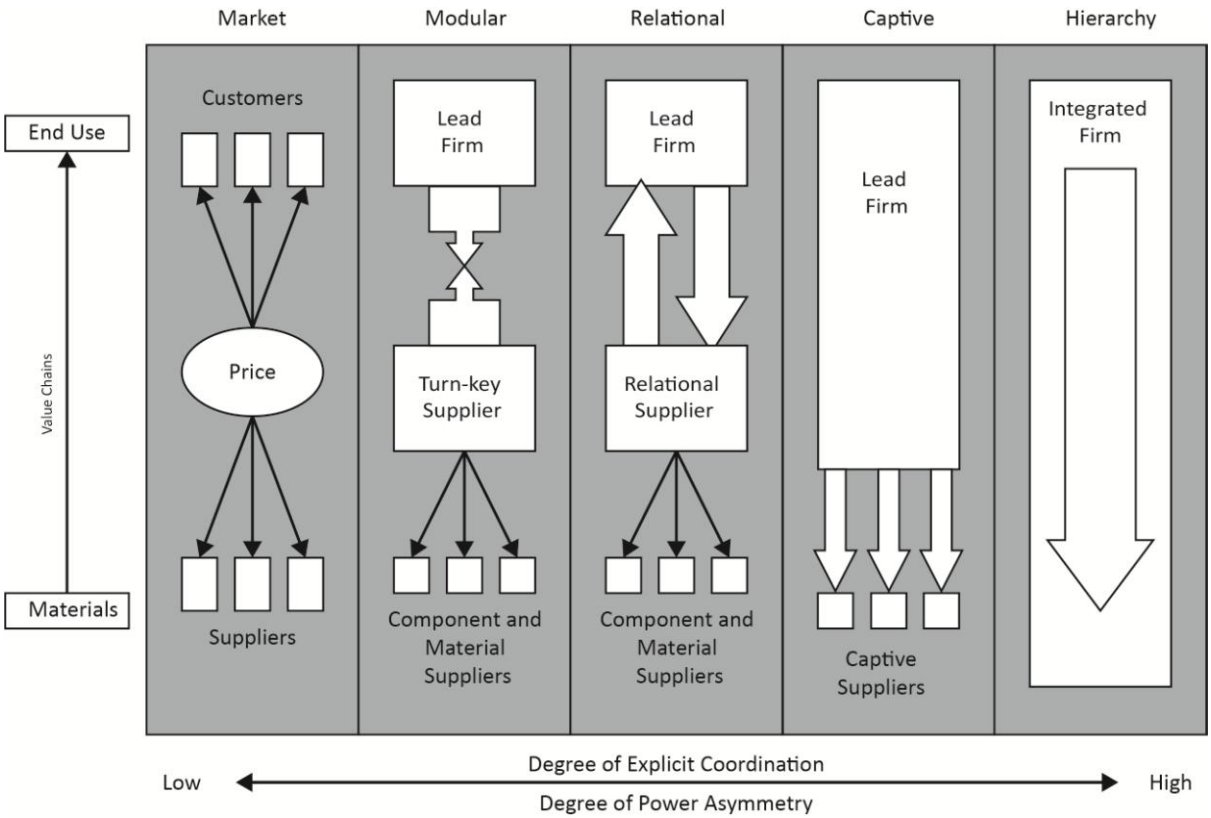


Figure 1 Five global value chain governance types (Gereffi, Humphrey, & Sturgeon et al., 2005)

> *Textbooks present orderly abstracted value chain models, also referred to as governance configurations, diagrammed in a manner that implies linear progression and a high degree of specialisation. The Kenyan 'farmer market' was not just a neat box in the formal structure of a value chain, but a flexible, multipurpose node in the rural economy's complex web of human interaction and exchange of goods, services and knowledge. The classic, orderly pattern of exchange in value chain form, based on assumptions of a structured, formal hierarchy of power residing downstream, does not, in fact, appear to exist. (Doorneweert, Bhan, Kimunyu, & Esko 2013, pg 12)*

That is, what we were seeing were all the signs of a complex adaptive system. (Barder, 2011) Although this economic sector in developing countries is categorized as "informal" (Hart, 1973) implying an ad-hoc or casual contrivance, these flexible, multi-purpose nodes were, in fact, value webs with indigenous forms of structure and organization organically evolving in response to market conditions.

> *This discovery signalled to us that instead of rushing to design new tools or solutions to enable farmers to bridge the last mile of the agricultural value chain, we needed to take a step back in order to better understand the existing situation linking the harvest in the field to the customer who purchases it. It underscores our recommendation for comprehensive exploratory user research in this last mile, and the need to first uncover and understand all the ways by which information flows through the ecosystem (Doorneweert, et al., pg 13)*

These discoveries subsequently informed our approach for framing the systemic design challenge and identifying target beneficiaries for pilot interventions aimed at social and economic development through increased trade.

> *Prior work in the last mile of the agricultural development value chain in rural Kenya has shown us that the linkages between activities and actors are not as linear nor as clearly demarcated as textbook diagrams make them out to be. There is a complex value web of relationships and transactions - value flows such as information on supply and demand; exchanges of goods and services; as well as fiat currency and currency equivalents - that take place in the social and economic ecosystem. Given the relationships between markets and the known proportions of agricultural produce being traded in the region, we believe that a similar value web exists at the borderland. This will be our starting point to anchor our exploratory user research. (Bhan & Gajera, 2015)*

Thus we began ethnographic fieldwork at the border of Kenya and Uganda to understand this phenomenon of the value web as the key node within the entire trading ecosystem. What we discovered throws open the entire field of understanding complex adaptive systems that are the target of international development programming (Ramalingam, Laric, & Primrose., 2014; Green, 2015).

While our fieldwork confirmed that there were indeed such value creating nodes in the ecosystem, we discovered that targeting them as individuals would not be sufficient for enabling progressive transformation through the design of interventions. We believe, for systemic impact, it is essential to include our users' entire economic microsystem as the focus for our intervention design in order to maximize the impact and benefits of the conceptualized borderland program - that is, we need to expand the scope of the user for our design process from the individual to the group. Below we describe our journey of discovery.

2. Scope and Methodology

The borderlands of the East African Community (EAC) are important for the trade and development sectors, as cross-border trade is a critical part of the region's food security system. Further, women make up more than 70% of the region's informal cross-border trade (UNIFEM, 2009), and tend to head the more economically vulnerable households. We were requested to discover and map the dynamics of informal trade for TradeMark East Africa (TMEA), a non profit company whose mandate is to boost trade facilitation and business competitiveness in the EAC. Their objective was to discover how to position themselves to develop structured programmes aimed at growing and formalising informal trade in tandem with their objectives of inclusive, sustainable prosperity through increased trade (TMEA, 2015).

The outcome was intended to be custom-designed programme interventions for beneficial transformation of the borderland's informal trade ecosystem, within the guidelines of value for money (HM Treasury, 2004). The deliverables of the project included developing a robust methodology for borderland ecosystem mapping across the EAC. Thus, our design research task was two-fold:

1. We had to apply ethnography and human-centred design methods for exploration and discovery of the dynamics of the informal trade ecosystem, and identify the end users for whom we would conceptualize designs for pilot interventions.
2. And, simultaneously, we had to abstract enough understanding of these dynamics in order to generalize the ecosystem frameworks towards developing a robust qualitative methodology to cost- effectively map more such borderlands.

3. Approach to Framing the Problem

Cognizant of the fact that this study would break new ground by mapping the informal trade sector as an ecosystem in its own right, we scoped the boundaries of our study in such a manner as to provide flexibility for exploration and discovery while constraining the content for greater clarity. We had to combine the need for qualitative insights with the concurrent need to develop and iterate design research methods and tools in-situ.

> *We see the borderland as an ecosystem in its own right, distinct from the more agriculture dominated economy across rural East Africa, with greater emphasis on trade and services. The vast majority of this activity falls within the informal sector, as is the case with the bulk of the region's economy. Considering it an ecosystem allows us to take a holistic view rather than narrowing our focus on a particular demographic or specific activity. We step back from the details to take a broader view of the entire operating environment of the borderland economy.*
>
> *Our second decision was to step back from the labels of informal economy and informal trade with all their contradictory definitions, categorization, and implications of illegality to consider only what is colloquially known as biashara. The Swahili word biashara can mean business, commerce, trade, the business enterprise itself as well as barter. This allows us to cover a far greater range of activities being conducted at the border than just the conventional meaning of the English word "trade". At the same time, it excludes the tax evasion by formal firms or other illicit activities at the border, since these are not considered biashara per se. (Bhan & Gajera, 2015)*

We structured our initial discovery process to run both primary and secondary research in parallel, dividing ownership between each author and maintaining close communication in order to ground the findings from the field firmly in the context of the insights from literature review, and vice versa. Further, we paused for an internal midpoint review and analysis to frame our final round of fieldwork after the first two short rounds of immersion.

This means that our narrative thread of logical progression of insights shared below may not always follow a simple, linear path and may repeat points as we alternated back and forth between lines of enquiry and modes of research.

3.1. Framing the Context of the Operating Environment

For the purpose of framing the context for prototyping the research protocol as well as to understand the landscape of current thinking on both the informal economy in East Africa as well as the informal trade sector whilst maintaining a gender lens, we undertook a rigorous literature review (Bhan, 2016) that went back twenty years to the very first cross-border trade research and methodology explorations (Ackello-Ogutu, 1996). The geographic scope covered the East African Community (Kenya, Uganda, Tanzania, Rwanda, Burundi and South Sudan), and the Democratic Republic of the Congo. The thematic scope covered the informal economy (Hart, 1973; Chen, 2007), the informal cross-border trade in the region (Little, 2007; Ackello-Ogutu, 1996; Titeca & Kimanuka, 2012), the concept of a borderland economy (Khadiagala, 2010) as well as women in trade (UNIFEM, 2009; Spring 2009) and the final synthesis included just over 60 papers.

This review shed light on a number of unsubstantiated assumptions being perpetuated over the years, and acting as barriers to development, such as the conflation of unrecorded trade with the illicit or illegal. Women traders have borne the weight of the consequences of these assumptions. According to UNIFEM (2009) over 70% of all cross-border trader in Africa are women, and they face frequent and periodic harassment and abuse (Friedrich Ebert Stiftung & the Collaborative Centre for Gender and Development, 2006), often accompanied by official confiscation of their goods with the concomitant loss of income that implied.

Further, there was no regulatory recognition of either retail or wholesale trade as a profession or full-time occupation, nor were there any attempts at segmentation of these women traders by any commercially relevant attribute. All were lumped together as livelihood actors struggling to sell their produce by the side of the road. Informal cross-border traders (ICBT) were thus portrayed as economically vulnerable women on the margins of society, and new studies, relying as they did on previously recorded data, continued to perpetuate this stereotype with each new report.

Our challenge was that Women in Trade programmes were currently being designed targeting the *assumed* needs of this stereotypical beneficiary, rather than the real world needs of actual traders. Initial reports from the first field survey made it clear that not only did this stereotype need to be unpacked with better qualitative analysis but a more up-to-date representation of the "woman informal cross-border trader" was required to be synthesized with tangible evidence from the field.

Across the board, the literature spent far more time focusing on the definitions of the informal economy, the informal trade sector, and various degrees of legality, than on the human actors themselves. There was no recognition of their agency in developing regional business networks (Walther, 2015) and supply chains for cross-border and regional trade. Keen to shift emphasis back to the user, we reframed the entire context of informal trade as "biashara" - the Swahili word for commerce and trade, as opposed to "magendo" - the Swahili word for contraband and smuggling. This released our research resources to focus on the people themselves that made up the borderland economy.

These findings broadened the focus of our first fieldwork immersion to be more inclusive. Our aim was to widen the range of data points to assist us in mapping the informal trade ecosystem, as well as identify participants for the subsequent in-depth ethnographic study.

3.2. Discovery Driven Design Research Methodology

We took a systems thinking approach (Jones, 2014) to understanding the landscape of informal trade at the borderland, having framed it as an economic ecosystem in its own right at the outset. Our research protocol was based on methods and tools from human-centred design, (Kumar, 2012; Keeley, Pikkel, Quinn, & Walters, 2013; Kimbell, 2014) adapted for the constraints and conditions of the data-scarce, infrastructurally challenged parts of the developing world, such as prevalent on the border of Uganda and Kenya.

The ethnographic fieldwork was designed to include three iterations over a duration of two months. The first two were shorter explorations, whilst the third was planned as an in-depth ethnographic study with pre-selected participants identified from earlier rounds of fieldwork. The aim was to discover the relationships and value flows between the roles, and identify the key archetypes in the ecosystem.

The first survey was semi- structured and intended to broadly sample a wide variety of economic actors involved in cross-border trade. We had one team member on site conducting a short questionnaire, and responses were shared in real time with both authors thus integrating findings from the literature review into the feedback for research protocol design iterations. This approach permitted an iterative refining of the focus in the second short round of immersion which was to shortlist users for the third stage of in-depth study.

For instance, although the brief was to study informal traders, our discoveries in the first round of fieldwork led to the inclusion of support services actors such as transporters, brokers, money changers, mobile currency agents, etc., and host of other services such as mobile charging or rent a storage per night. They were deemed such an integral part of each trader's daily commercial activities that we expanded our scope of user research accordingly. Subsequently, the fieldwork for the third and final round was designed to include mapping out the commercial relationships - the value webs (Kumar, 2012; Doorneweert, et al., 2013) - of the selected primary end-users (the informal traders) in addition to understanding aspects of their daily life.

Primary methods for context immersion were ethnographic observation and in-depth interviews supported by exploratory market and spatial analysis by means custom-designed tools and guides to trace linkages between urban and rural, and formal and informal, as well as map trade routes in the region.

Over 60 participants were interviewed in-situ, spanning both sides of the border in Kenya and Uganda, between the border market towns of Malaba and Busia. Most informal trader participants were female and those offering support services were male, and this was found to be proportionately true in the region per the literature review.

There was an explicit understanding that there would be a high degree of ambiguity in this, the first borderland exploration, which we later codified as an additional phase of discovery in the design of our borderland mapping methodology. This design and process will not be described within the scope of this paper.

4. Insights from Fieldwork

The goals set for the first phase were to discover the value webs of informal trade and identify and describe the archetypes representative of this activity for more in-depth and structured qualitative research that would inform and inspire the conceptual design of the pilot programme/s.

4.1 Patterns of Biashara

As we surveyed traders operating across a range of scale of operations, goods sold, and geographic reach in the first iteration of fieldwork, we saw patterns emerge in the borderland economy. Not only was it a self-contained system with regard to all the necessary services for cross-border trade, regardless of distance, but there was a rhythm and meaning to the pattern, not simply the first impression of chaos that informal markets tend to convey. It was this insight that led to expanding the scope of users surveyed as mentioned in the methodology section above.

The first thing we noticed was that the majority of full-time traders in this borderland economy were not merely scraping by at subsistence level, these women were professionals and business owners, and their demeanour conveyed it. There was a distinct difference between them, and the women who thronged the weekly market selling fresh produce. These produce sellers were the stereotypical informal cross-border traders the literature had described, but as we discovered, they in turn didn't always think of themselves as full-time traders. Rather, such petty trading was considered a part-time activity to supplement incomes, and these traders were either fulltime farmwives, or worked only during the school year.

Two elements from this initial survey stood out as being of interest. First, the informal trade sector seemed to signal a certain degree of commercial success by moving visibly to establish new lines of business. At a certain stage of business growth, a second person would be brought in to manage day to day operations, freeing the trader to explore new opportunities for revenue generation, and multiply their income streams as a risk mitigation strategy. In fact, more than half the traders surveyed in Busia and Malaba markets were running more than one line of business. And, a handful had as many as four different income streams, including non-trade related entities such as a copy center offering business services to customs agents. This behaviour also offered us insights on the economic potential of this borderland, as well as its stability in a region where neighbours were prone to conflict.

The second element was that most of the ambitious retailers aspired to become wholesalers. That is, we documented their intent to shift from purely business to consumer (B2C) sales to increasing proportion of business to business (B2B) sales. Such traders often helped newcomers entering retail trade – through such means as direct apprenticeship, supplying them goods to be sold on commission, and through advice and guidance. In fact, as it turned out, such mentoring had

economic value in the eyes of the traders, and this attribute helped us distinguish such value creators in the ecosystem.

This behaviour went counter to conventional modes of supply chain and distribution channel structures which rarely blend individual consumer facing sales with global trade in bulk shipments. Marketing to B2C and B2B customers tends to be separated at the business plan stage, and runs in parallel with different organizational structures and strategies.

What we discovered was that these were two of the main business development strategies for micro-enterprises that were organically evolved to cope with the limitations and constraints of their operating environment.

First, the need to diversify lines of business was necessary for two reasons:

1. There is a natural limit to how much one trader can grow the local customer base for goods such as clothing, footwear, household goods, etc. Unlike food, which is a consumable needing frequent replenishment, traders know that to increase their revenue streams they need to increase the size and value of each sale rather than rely on footfalls alone.
2. At the same time, without any decent safety nets or support from formal financial institutions, traders tend to mitigate risk by diversifying their income streams. This could be in the same product category or in a very different one. We noticed traders of all sizes experimenting with new items distinctly different from each other, such as selling day-old chicks and toilet paper. Or converting an observed need into a profitable income stream, such as renting out sacks to truckers to de-humidify their grain before crossing borders. Their aim was to identify demand for a profitable new line of business, through experimentation and iteration.

Second, the necessity of managing working capital requirements in an environment characterized by volatile cash flows and seasonality (Bhan, 2009), meant that planning and forecasting for business development required increasing the stability and predictability of their revenue streams. A proven tactic was the investment in mentoring newcomers, and nurturing a cohort of even smaller scale B2C traders, as described above. This ensured the trader had regular access to a relatively stable customer base, one that could be relied upon to provide periodic and consistent sales orders. This, in turn, provided an established revenue stream from a trusted network (Hart, 2000) whose day to day operations could be delegated, thus giving the business owner ample opportunity to focus on launching a second or third line of business.

That is, what we were discovering was evidence of a segment of traders falling outside the documented categories of either formal small and medium enterprises (SMEs) or the stereotype of the marginalized and vulnerable livelihood actors living on the edge. For narrative purposes, we labelled them the "Hidden Middle". These so called "informal" cross-border traders were, in fact, highly respected value creators within their micro-communities - building trusted relationships, mentoring the less experienced, and establishing supply chains in the form of stable networks.

This discovery helped us identify the user participants for in-depth observations, interviews and day in the life shadowing conducted subsequently.

4.2 Framing our theoretical approach for the design of iterative programming meant for complex adaptive systems in the context of international development

Initial insights had invalidated many of the assumptions implicit and explicit in the literature review, and pointed to the existence of segments of traders who were undocumented. The discovery phase had provided enough evidence of nodes of value creation composed of multiple stakeholders, not just the primary target beneficiary of the informal cross-border trader per our project's terms of reference.

The evidence pointed to an existing ecosystem that had organically evolved to create value by building stable, trusted networks of cooperation in cross-border trade, based on relationships between people. All it needed, from the perspective of intervention design, was fine tuning for boosting productivity, efficiency, and improving ROI (return on investment), not the kind of top down disruption that traditional programmes caused by disabling the flows of value in their attempts to impose pre-built ecosystems without ever questioning if there was already an existing one.

If indeed we could map the bounds of this complex adaptive system holistically, rather than in minute detail, then we could grasp enough of the sense of the value flows within the whole informal trade network, and discern the relative importance of its nodes. For this kind of systemic design to trigger positive transformational change through growth, we needed to identify the optimal target users for intervention pilots that would offer maximum value for money (HM Treasury, 2004); that is, concepts optimized for social impact, with benefits rippling out into the entire community.

And, the value creators we had discovered seemed to be the most likely candidates for this role since it was in their own business interests to grow trade and revenues across their entire trading network. Boosting the purchasing power capacity of their own economic microsystems (their value webs) would in turn benefit them, and this behaviour resonated with existing patterns of business growth strategies that we were to document in detail.

Therefore, we would need to understand this, during the final fieldwork, before we could move on to identifying the attributes by which to segment traders in the borderland or crafting personas for human-centred systemic design. We selected a representative sample of traders cutting across product categories, number of lines of business, education level, years of work experience, and the retail infrastructure.

4.3 Value Creators Hidden in the Middle

We began by tracing the value flows in the complex interdependent micro-system that each full-time trader's value web represented. Figure 1 is Alice's value web visualized with colour codes identifying the different forms of value – information/knowledge; services; goods; money & cash equivalents - being exchanged.

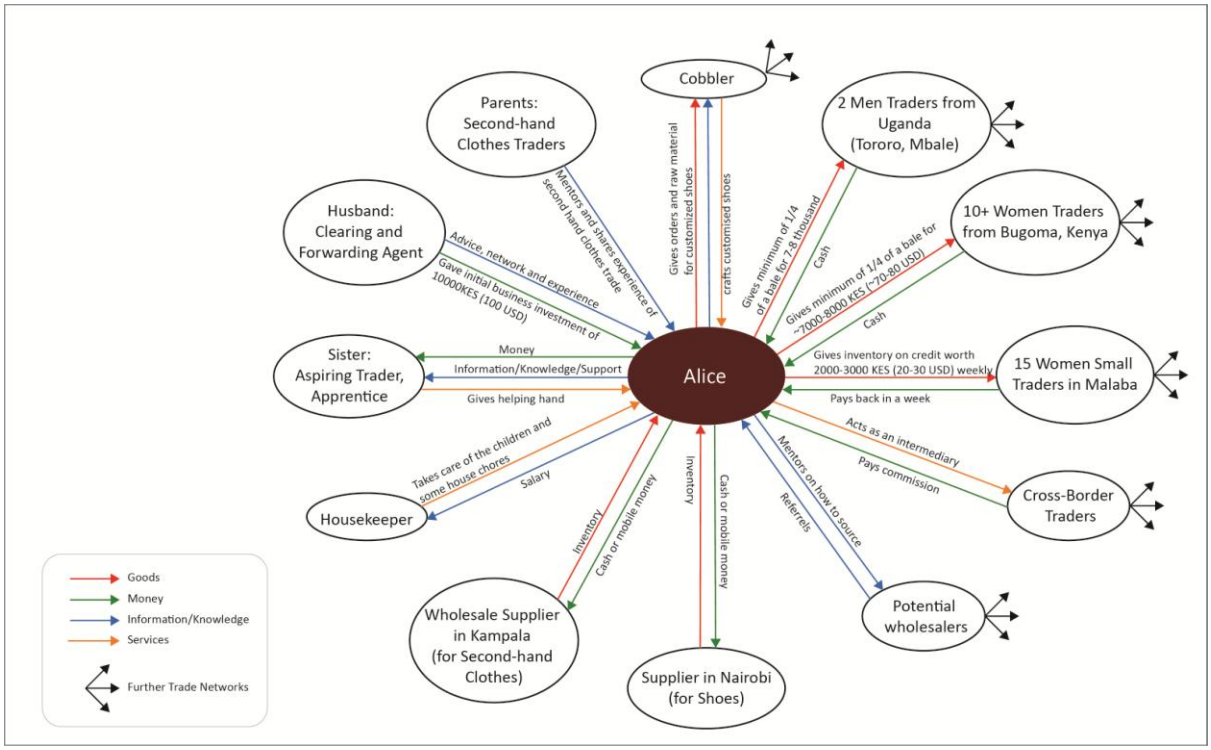


Figure 2 Alice's value web as captured during the fieldwork

Alice's economic impact is undeniable – after establishing a school supply storefront, her second line of business is wholesale of second-hand clothes. She supplies traders of both genders, on both sides of the border, as well as offering new entrants goods to sell on commission. That is, she lessens their burden during the apprenticeship process by taking payments only after they have sold. She also employs her sister to manage her shop. Alice's husband is a customs agent and this gives her a competitive edge in cross-border trade. Her third line of business is custom-made leather shoes, where she supplies local cobblers with leather uppers and rubber soles she imports from Nairobi.

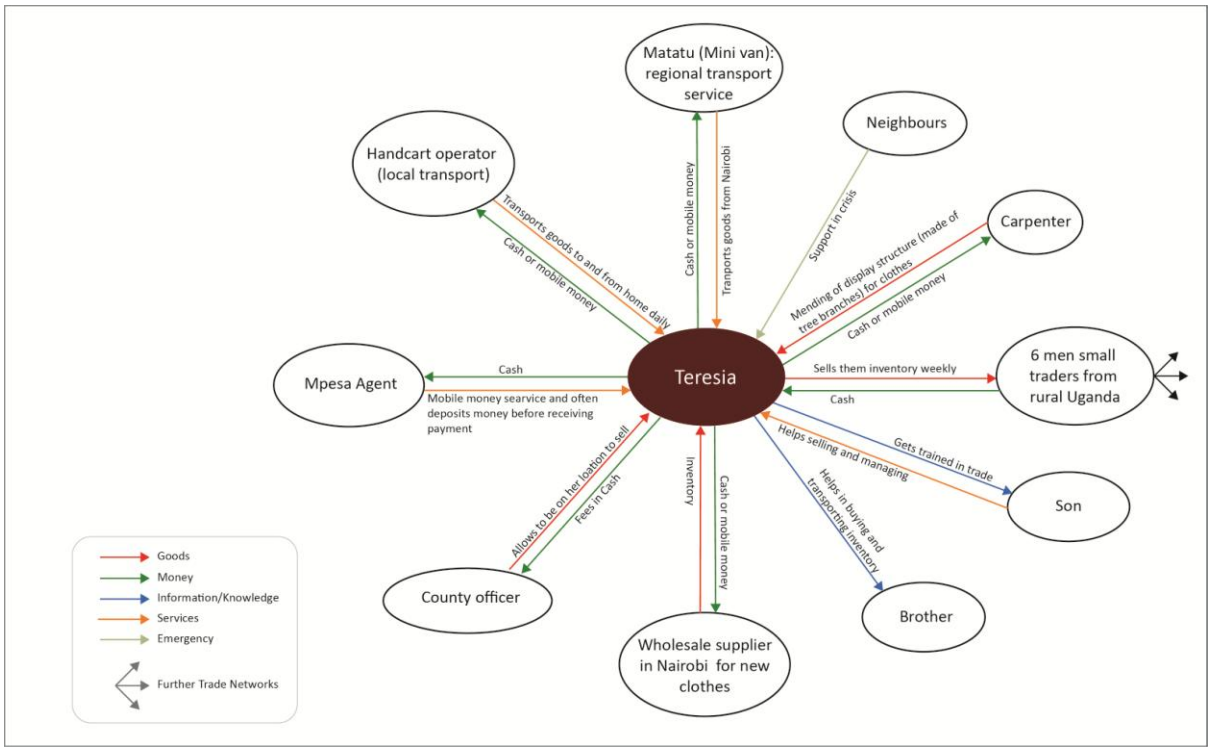


Figure 3 Teresia's value web as captured during the fieldwork

Teresia has not yet achieved Alice's scale of operations, having only recently begun establishing a wholesale network to supply a group of six Ugandan men. Teresia is a single mother and has been bootstrapping her business, failing to get a loan for working capital at the bank. But this has not stopped her from building and maintaining her micro-system, including support services such as transport and mobile money.

The task of synthesizing microsystems into value webs gave us a tool to distinguish between trader segments, and the subsequent analysis and synthesis provided us with fodder for selecting attributes for each segment. Since this was the first borderland, our aim was to seek generalities in trader business characteristics that could be applied as a lens to segment and evaluate the economic distribution of small scale and woman traders for any given borderland, given the dual purpose nature of our fieldwork. Once defined, the attributes could be used as a foundation for a census level Trade Survey. Comparative analysis of the value webs provided visual evidence of differences in commercial operations even within the value creator segment. At the same time, we knew that this would only be prototype segmentation since validation would only occur after implementation in more borderlands.

4.4 Segmentation attributes and the "Hidden Middle" in the trading economy

Profit margins and income streams are difficult to estimate in the volatile conditions of the cash intensive informal sector and price is negotiable between the buyer and the seller. However, every

experienced trader knows their pattern of investment in inventory, including seasonality of demand over the course of the natural year (Bhan, 2009). Thus, to estimate the scale of operations, two simple questions were asked – how many lines of business have you established? And, how often do you buy new inventory and for how much?

Table 1 Indicative Segmentation Range for Borderland trading economy

Monthly Inventory Purchases	Less than USD 600	USD 600 to USD 1000-1500	USD 1500 to USD 2500-3000	USD 3000 and upwards
Trader Stage	Part time trader and/or farmer; Apprentices	Entry level fulltime traders, Proto employer	Value creators, Established traders	Pre-formal SMEs, Business owners with multiple lines

At this borderland economy, the barest minimum requirement to keep business running as a fulltime trader – that is, relying solely on the cash flow from sales of trade goods, including perishables – was a monthly investment capacity in inventory of around USD 600. A business was considered established enough for the trader to start considering business development strategies for revenue growth after her investment capacity in trade goods began to exceed 1000 US dollars every month. This kind of distribution by periodic investment capacity offered us the means to capture the economic distribution for each borderland's trading economy.

In addition to their estimated average monthly inventory investment capacity, there was a natural correlation of education level to increasing sophistication of trade. With education, and the advent of affordable smart phones and data plans, along with ubiquitous mobile money solutions, trade had been disrupted at the borderlands. This was one of the reasons for the stereotype of the subsistence level woman trader as they were the only ones seen visibly trading in the marketplace and counted while crossing the border posts.

The Hidden Middle were hidden due to the transformative capacity of the personal mobile phone in a sector as heavily dependent on communication as trade. Value creators traded far more extensively, geographically speaking, and their deals were of higher value. But due to the discreet nature of making deals by phone, these traders and their activities remained invisible to the traditional researchers at the borderlands, and in the informal economy in general. It was only by diagramming their entire value webs were we able to see and communicate the full scale of their activities.

Giving personalities to traders at different phases of their entrepreneurial journey allowed us to craft a representative narrative of how the informal trade dynamics played out in the context of first, the trader's own value web, and secondly, how these microsystems networked with each other to build up the regional trade ecosystem. And, we could begin crafting personas to represent trader segments, such as Teresia who has the capacity to invest between USD 1000 to 1500 monthly, and Alice whose three lines of business may require investments of around USD 3000 each month as working capital.

5. Design Implications for an Ecosystem Approach to Policy and Programmes

Our fieldwork confirmed and further deepened our understanding regarding the existence, and identification criteria, of influential nodes in the informal trade ecosystem, that could be designated the primary beneficiary for the systemic design of programmes and interventions (Kimbell, 2011) meant to trigger positive, transformational change.

The informal trade ecosystem's business development strategies were such that investing in the highest grade of professional traders with extensive value webs outside the mainstream economy would have far more impact than simply focusing on subsistence level livelihood actors without an established or stable trading network. Interventions designed for an Alice as the target end-user would have ripple effects throughout her entire micro-system as a whole, including support services

such as local and regional transportation, mobile money agents, brokers and other intermediaries. Growth strategies for boosting trade and revenues could thus be optimized based on the economic distribution pattern of each such borderland.

Our discoveries lead us to posit that simply targeting each trader segment with customized programmes will not be enough to enable systemic change of the whole borderland informal trading economy; we will have to address their entire value web as the target beneficiary of an integrated set of programmes.

5.1 The Node is the Value Creator's entire Microsystem

Rather than considering the discrete individual as the active node in the informal economic ecosystem, our findings lead us to expand our scope to consider their microsystem as the node to target with our interventions. From the theoretical perspective, such a concept design prototype would act as the pilot to see how many of the microsystems centred around each value creating trader change in response to the interventions, and by what degree and scale. This approach to iterative programme design for complex adaptive systems also offers us the opportunity to rapidly design and test ecosystem scale pilots far more efficiently and affordably.

Shrinking the scale of systemic design down to selected handfuls of such microsystems would provide a more manageable scale of inputs to monitor and evaluate for iterations in programme design. By sampling microsystems from the range of trader segments, we would not only be able to identify the optimal stage of a business's development journey for interventions to boost trade related growth, but the data gathered would assist in developing a generalized framework of an economic microsystem, which we think may be the basic building block of the informal economic ecosystem. This is due to having identified such value webs in both the last mile of the agricultural value chain as well as the informal trade ecosystem. That is, we have begun laying the foundation for developing a reasonably accurate working model of the informal economic sector in East Africa.

5.2 Framing the Problem and Identifying the User for Informal Ecosystems

Our methodology is grounded in the first principles of human centred design (HCD) customized for operating environments where legacy consumer insights are scarce, and data flows unreliable. The selection of the primary “user” for whom we will design is a critical decision, as context and profile will subsequently act as a filter for evaluating concepts for best fit. Traditionally, the word user, in user centred design, or the word human, in human centred design, has denoted the individual, in the singular. However, due to the complex and volatile nature of the informal ecosystem the needs of the design process itself can best be served by expanding our scope of “the user” from the individual to the group - in this case, the trading economy's microsystems.

This is a group that would not be immediately recognizable or visible to a casual visitor. It is not an existing social organization such as a farmer’s association or a cooperative, nor a women traders’ self-help group. It is a micro-system composed of the entire supply and demand network of goods and services that generates revenues for established traders.

Selecting the entire group would be far more influential for the spread of new ideas and provide visible evidence of the beneficial outcomes of planned interventions. This would help in on-boarding more of this segment after the pilot programmes. The slower start implicated in the design and prototyping process by working with groups rather than individuals offers more time to refine the system design prototype at the micro level thus helping create a firmer foundation for interventions to take root.

Rural and informal economies are far too closely interdependent due to the people-centric nature of their transactions and any intended systemic change must occur on a significant enough scale for programmes to achieve their intended goals within the timelines set for their financial support. The need for exit strategies requires triggering self-sustainable change that can organically evolve and spread, and addressing each value creator’s entire web as the beneficiary changes the way we would

approach the design of pilots and programmes. It also transforms our perspective of the economic contribution made by these value creators with significant impact on poverty alleviation programmes (Bhan, 2017).

6. Conclusion

Design research methods in collectivist societies as compared to individualistic societies have a different approach and implications (Hofstede, 2001). As discussed above, the need to consider a micro-system rather than an individual end-user as a unit of investigation proved to be context appropriate for the rural and informal market and trading economy in East Africa.

Though dependent on the conditions of the client brief, this approach has scalability. We were able to build in a flexible phase of discovering and exploring in this first such project, and now have codified this need for liberty in research planning into our design methodology.

Finally, for social innovation purposes, in the resource constrained environments, interventions may not always take the form of tangible products or services neatly wrapped in a great user experience. It depends on what is actually required and what is the strategy for adaptation. The authors observed that even the "most logical" solutions such as bank accounts did not fit the requirements of the participants. Solution design must take the perspective of optimal triggers for progressively beneficial transformation, be it a policy, product or simply enhanced understanding of the context.

7. Next Steps

We have developed a theoretical framework for triggering progressively beneficial transformation in an informal economic ecosystem based on our discoveries in this project. This theory of change will be validated through pilot programmes, and the methodology prototyped for mapping borderland economies iterated with each subsequent location. The borderland described in this paper is located in a stable region with impressive trade facilitation at the border post. How we customize our framework and approach for more fragile conditions, or comparatively analyze value flows in thicker borders will be our next research task.

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