Towards a Theory of Ecosystem Catalyst

ABSTRACT

Organizational growth, size, and longevity are core assumptions within the notion of 'scale' within the entrepreneurship literature. The concept of scale, however, has limited use when taken-for-granted in the social impact context because it neglects that a social venture may synchronize growth in value creation, exchange, and capture for their intended beneficiaries through changes that occur within an ecosystem, rather than through growth that is confined to the boundaries of the organization. In this study, we inductively explore the case of ColaLife - an organization created to scale up access to diarrhea treatment in Zambia while also rendering itself gradually more redundant until ceasing its operations. We ask an undertheorized question in entrepreneurship literature: How do social entrepreneurs scale social impact while simultaneously scaling away their own organizations? By studying ColaLife in-depth and over time, we theorize the role of *Ecosystem Catalysts* as the combinatorial function of instilling in an ecosystem a shared purpose, leveraging existing capabilities and resources, and enhancing the autonomy of local players. We argue for a more nuanced and value-based conceptualization of 'scale': one that is more adequate to interpreting scaling efforts at the intersection between social entrepreneurship and entrepreneurial ecosystems.

Keywords: Social Entrepreneurship; Ecosystem; Scale; Scale Up; Catalyst, Social Impact

Towards a Theory of Ecosystem Catalyst

INTRODUCTION

> *"For DfID [UK Department for International Development, one of the donor agencies of ColaLife] we have to show how you're gonna grow, 'how are you going to become self-sustaining?', and we say, 'we don't want to grow, and we don't want to exist in 10 years, if we are successful, we won't be here in 10 years.' I have to do a budget every year projected 5 years into the future for the auditors and charity commission. But it's fiction. They want us to have a reserve to grow our organization, but we don't want to grow our organization!" (CL2)*

The quote above is taken from one of our interviews as part of a longitudinal case study of ColaLife, a non-profit co-founded by social entrepreneurs Jane and Simon Berry. We were first drawn to this case because of an innovative, award-winning idea executed into reality by the two social entrepreneurs. While in Zambia, they noticed that people could purchase and drink Coca-Cola in the remotest and poorest regions of Zambia, and yet they could not access life-saving treatment for diarrhea: one of the biggest killers of children under the age of five in Zambia. In response, the couple designed a package for diarrhea treatment that could fit between bottles of Coca-Cola. Their idea was to tap into Coca-Cola's distribution chain to make diarrhea treatment accessible in the so-called Last Mile of Zambia.

While organizational growth, size, and longevity are core assumptions of the notion of 'scale' in entrepreneurship literature (DeSantola and Gulati, 2017; Du and Temouri, 2015; Eisenmann and Wagonfeld, 2012), the intended strategy from ColaLife's founders was to scale up access to diarrhea treatment in a way that they could leave Zambia with the legacy of sustainable access to treatment – an approach they describe as "catalyst." On the one hand, ColaLife aimed to scale access to diarrhea treatment in Zambia by empowering and organizing an ecosystem of local players to materialize a new value proposition. On the other hand,

ColaLife intentionally made itself gradually more redundant until ceasing to exist in Zambia (a process we call 'scale away').

To scale social impact, the social entrepreneurs enabled others with value creation, exchange, and capture, without the long-term aim of capturing economic value for their own organization. We found this strategy to be theoretically puzzling: ColaLife's approach to scale contrasts with much of the entrepreneurship literature, therefore making it a unique and "extreme case" for theory building (Eisenhardt et al., 2016; Eisenhardt and Graebner, 2007). Provided with the unique opportunity to study this organization in-depth and over time, we observed how ColaLife achieved its strategic goals by taking on the role of an e*cosystem catalyst*. We thus ask a question that has been undertheorized in entrepreneurship literature: How do social entrepreneurs scale social impact, while simultaneously scaling away their organizations?

In this paper, we propose a grounded theory of *ecosystem catalyst* as the function of three interconnected processes: instilling a shared purpose, leveraging existing capabilities and resources, and enhancing the autonomy of local players. We show how organizations can combine these processes to scale a solution to a social problem by focusing exclusively on local ecosystems. Our work posits that the scaling of social impact in an ecosystem should be decoupled from the scaling of organizational size, thus illuminating the dynamics of how organizations can solve problems without the need for their continuous growth and existence as a fixed entity.

SCALE WHAT AND FOR WHOM?

The term 'scale' has proliferated in entrepreneurship scholarship over the past two decades and is often used to describe the synchronization o corporate growth with the organization of the company's internal resources, capabilities, and activities (Du and Temouri, 2015; Eisenmann

and Wagonfeld, 2012). This dominant view of 'scale' is primarily underpinned by economics-based philosophies of strategic growth, market positioning, and market capture (Winter and Szulanski, 2001), and builds on a tradition of studies that connect corporate growth with how organizations change their strategies over time and variations in size. Notable contributions include Hambrick and Crozier's (1985) definition of "stumblers" and "stars," Birch and Medoff's (1994) "mice" and "gazelles," as well as Penrose's (1959) investigation of how organizations transform themselves from "caterpillars" to "butterflies." Expanding on these early contributions, studies on 'scale' in commercial entrepreneurship investigated, for example, how high-growth firms achieve replication at scale; how companies attend to the increased scope of activities that accompany growth; how companies change and align their internal resources and operations over time; and how changes in internal organizing allow companies to grow further (Baum and Bird, 2010; Coad et al., 2017; Demir et al., 2017; Winter and Szulanski, 2001).

The term has also profoundly influenced research on social entrepreneurship (Stevens et al., 2015; Bradach and Grindle, 2014). The view of 'scale' that focuses on corporate growth and internal organizing remains largely undisputed, as social entrepreneurship literature broadly recognize that a successful social venture should create and expand social impact while also capturing more economic value to grow and survive (Bloom and Skloot, 2010; Seelos and Mair, 2017). Studies have suggested the importance of raising an agenda for "scaling social impact" (e.g., Seelos and Mair, 2017) to increase "the impact a social-purpose organization produces" (Dees, 2008, p.18), typically using the size or growth of the organization as proxies for the "scale of social impact" (Uvin et al., 2000). Studies in the field have also been particularly attentive to the tensions between a social entrepreneur's desire to address social problems and the challenge to ensure the venture's survival, as well as the need for a social venture to grow

and yield higher 'social returns' on investments (Bloom and Chatterji, 2009; Cornelisson et al., 2021; Wry and York, 2015).

With a different perspective on the nature and objectives of social ventures, Santos (2012) argues that the primary objective of social entrepreneurs should be to offer a permanent institutional fix to an enduring problem. Instead of scaling up their ventures, they should aim to render themselves obsolete:

> *"While true commercial entrepreneurs who care for value capture try to become indispensable, true social entrepreneurs who care for value creation try to make themselves dispensable. Naturally, social entrepreneurs often get emotionally attached to their organization and may focus on sustaining the organization more than solving the problem for society. Yet, true social entrepreneurs should invite competition instead of resisting it, since replication of the innovative solutions will increase the value created to society*" (Santos, 2012, p.346)

Several organizations and practitioners in the social impact space have also demonstrated frustration with borrowing scaling models from commercial entrepreneurship. A joint report by the World Economic Forum and the Schwab Foundation (2017, p.4), for example, argued: "For a sector that has long been obsessed with the holy grail of organizational scale, the social entrepreneurship sector is now coming to terms with the limits of incremental growth... Conventional scaling models borrowed from the private sector... seem woefully inadequate when aiming to create meaningful social change for entire populations."

Consistent with these critiques, we posit that the term 'scale' has been appropriately conceptualized for commercial entrepreneurs whose primary objective is to capture economic value and who try to scale up to make themselves an indispensable or a valuable target for merger or acquisition (DeTienne, 2010; DeTienne et al., 2015), but it has irreconcilable limitations if taken for granted in the social impact context. The conventional interpretation of "scale" is particularly inappropriate for social ventures whose sole goal is to expand social wellbeing, as such views assume that a social venture inevitably must grow to expand its social impact – as if a larger social venture necessarily translated into bigger or better social impact

(see Alvord et al., 2004). As described by Shepherd and Patzelt (2020, p.9), "a social venture can be terminated (and thus experience no or "negative" organizational scaling), yet other actors may continue to widely disseminate its social solution such that the social venture was successful in scaling social impact."

There may be a legacy effect of an organization, even after its demise, because the organization worked towards the scaling of social impact in an ecosystem. Making sense of the impact an organization may have by focusing on the confines of that organization fails to account for a systems-level understanding of how the impact and success of addressing intractable problems is a relational phenomenon (Grewatsch et al., 2021). We thus turn our attention to literature on ecosystems to examine how social ventures may nurture growth in value creation, exchange, and delivery for their intended beneficiaries. Our research seeks to fill a gap that accounts for how social impact can be scaled within an ecosystem, but without the need for the permanence of the social venture. As such, the way the social venture interacts with the ecosystem is a core feature of our research.

SCALE AND THE ECOSYSTEM(S)

Along with other related concepts in management scholarship such as platforms (Gawer, 2009; Markman et al., 2016), value chains and value networks (Clarysse et al., 2014; Hitt et al., 2017), and business models (Teece, 2010), literature has become more attentive to attributes of ecosystems that enable entrepreneurial activity (Ács et al., 2014; Alvedalen and Boschma, 2017; Auerswald, 2015; Motoyama and Knowlton, 2017; Spigel, 2016; Wurth et al., 2021; Ye, 2016). These ecosystem attributes include, for example, cultural attitudes that shape what individuals consider possible or viable; the pool of tangible and intangible resources available to entrepreneurs; the social networks and policies that support the access and circulation of knowledge, technologies, and funds; and the organizations that support early-stage ventures,

such as accelerators and incubators (Fritsch et al., 2014; Hoang and Antoncic, 2003; Spigel, 2017).

The growing investigation of ecosystems in entrepreneurship literature signals the incorporation of a more localized view of entrepreneurial activities and transformations, with an emphasis on the enablers of entrepreneurial activity (Audretsch, 2015; Feldman and Lowe, 2018; O'Connor et al., 2018; Wurth et al., 2021), and how ventures adapt to their respective environments (Adner, 2017; Dodd and Anderson, 2007). Ecosystems re-orient research on entrepreneurship away from an exclusive emphasis on new venture creation to look instead at interconnected entrepreneurial activities (Isenberg, 2016).

Such studies have indicated that it requires significant efforts from states and other actors to help produce, reproduce, and strengthen enablers of entrepreneurial activity; particularly, in cultivating the resources and communities that already exist in a place (cf. Audretsch, 2015). Instead of creating enablers from scratch, there is a growing recognition of the importance of gradually supporting ongoing entrepreneurial activities, attracting further resources, offering training schemes, strengthening intermediaries, and providing more funding to nurture entrepreneurial culture in the region over time. When an ecosystem becomes more robust, such as the Silicon Valley, Singapore, and Tel Aviv (Feldman and Francis, 2004), it is then able to develop itself more autonomously; thus, creating a sort of positive feedback loop, where the more ventures scale, the more likely it is for other ventures to scale in that region. This localized view is consonant with the biological origins of the term 'ecosystem' as a self-organizing, mutually reinforcing, and self-sustaining system, composed of actors and local characteristics that evolve together (Feldman and Francis, 2004; Willis, 1997). Ecosystems thus provide lenses to look at a variety of distributed, fragmented, and concurrent activities, which may align, coalesce, diverge, or die out (Thompson et al., 2018).

Despite the growing body of literature contributing to 'ecosystem' research, currently, little is known about the role that actors play in cultivating an ecosystem for social impact – that is, actors that make a systematic effort to gather and coalesce these distributed contributions around a common social purpose. Most empirical studies on entrepreneurial ecosystems focus on commercial businesses, with far less attention paid to studying ecosystems that support social ventures. This is particularly problematic if we are to recognize and value the broader effects of entrepreneurship beyond economic output (Shepherd and Patzelt, 2020; Thompson et al., 2017).

Instead of focusing too much on how a single social venture captures value as it grows, a possible way forward for social entrepreneurship literature is to question what scale means in the context of interdependent networks of players united by shared purposes and mutually engaged in collective value creation, exchange, and capture. Here, we engage particularly with literature on entrepreneurial ecosystems with an emphasis on 'value' (Thomas and Autio, 2020; Thompson et al., 2018) and adapt to the context of social impact. More specifically, we build on Adner's (2017, p.43) definition of 'ecosystem' as "the alignment structure of the multilateral set of partners that need to interact in order for a focal value proposition to materialize." The systematic effort to scale social impact in an ecosystem can thus refer to developing these structures that materialize the value proposition, instead of what a single organization delivers. As Adner suggests, these may be analyzed through a careful examination of activities, actors, and positions that they occupy in the flow of value, as well as how they exchange value and contribute towards the materialization of the value proposition.

With this fresh perspective on 'scale,' we now look and interpret our case study of ColaLife: an organization that acted as 'ecosystem catalyst' in Zambia, 'scaling away' its organization while 'scaling up' a self-sustaining solution to the lack of access to diarrhea treatment in the country.

RESEARCH METHODS

Our research is a single case study of a multi-stakeholder initiative in Zambia led by a small British non-profit named ColaLife. The following quote summarizes the view of ColaLife towards the scaling of access to diarrhea treatment, which motivated our inductive study:

> *"We brought the good practice…of making yourself redundant and empowering people that were already there to do what they are supposed to do...and to catalyze new relationships. You can do it as a temporary actor and then withdraw. We believe that every single problem in developing countries can be solved by the people and the systems that are already there. It's not a question of bringing in new people or parallel systems... [it is about] building capacity and using the local system; not about a system that comes from overseas that you try to enforce locally… They already have policymakers, who might need to be advised, capacity might need to be built, but they are already there, that's their job, their responsibility, and they are gonna be there for decades, in fact, for all their lives, you're not... We knew from the beginning we wanted to leave Zambia in a self-sustaining way. We've built in our own demise" (CL1)*

Through a real-time, in-depth longitudinal case study method (Eisenhardt, 1989; Eisenhardt and Graebner, 2007; Yin, 2003), we inductively explored what this scaling approach entails; contributing to unpacking different ways of conceptualizing and organizing for 'scale' (Flick, 2009), within the perspective of 'ecosystems,' and motivated by 'social impact' (Eisenhardt et al., 2016).

In the proceeding section, we first lay out the problem and the context of the case study: lack of access to diarrhea treatment in Zambia, and briefly describe the work of ColaLife in Zambia to ensure the expansion of perennial access to diarrhea treatment. Then, we explain how we collected and analyzed data and depict the resulting axial coding scheme from our inductive analysis, which fleshes out the key themes that we observed in our case study.

Lack of access to diarrhea treatment in Zambia

Diarrhea is the second leading cause of death of children under five, accounting for approximately 8% of childhood deaths worldwide (Liu et al., 2015). The treatment for diarrhea recommended by the World Health Organization (WHO) since 2004 combines oral rehydration

salts and zinc (ORS+zinc). ORS replaces lost fluids and essential salts, treating dehydration and shortening the duration of diarrheal episodes. Zinc supplementation decreases the length and severity of diarrheal episodes and the risk of subsequent infections in the 2-3 months following treatment. Despite being promoted by the WHO, being cheap and available over the counter, about 95% of diarrhea cases in under-five children in sub-Saharan African countries by 2015 were not treated with life-saving ORS+zinc (WHO, 2017).

Zambia, with 64% of its population living on less than $1.25 per day, and one of the highest child mortality rates in the world (Ramchandani, 2016), is a particularly challenging setting to provide diarrhea treatment, particularly for the rural poor. A litany of government and market failures hamper access to the treatment of the disease, making it a tough health challenge to solve (Getahun and Adane, 2021). Even when funding is available, poor logistics and infrastructure severely prevent over-the-counter medicines from reaching remote areas via the public sector (Ramchandani, 2016). The Zambian government states that there should be a health facility within 5km of every household, yet this is only the case for 50% of rural households (Chankova and Sulzbach, 2006). The country's Ministry of Health recognizes that access to treatment through the public sector is constrained by insufficient infrastructure, sparsely distributed population in rural settings, inadequate resources for outreach (e.g., vehicles), and poor scheduling of services (Zambian Ministry of Health, 2013).

The 'Last Mile' of Zambia presents even more significant challenges than the country's urban areas. The Last Mile refers to the most challenging areas to deliver aid and social services due to geographic inaccessibility and lack of infrastructure (USAID, 2015). Remote regions are rarely reached by international aid, public sector delivery tends to be intermittent, and market failures hinder access through the private sector. Despite the magnitude of the problem, most attempts at tackling the lack of access to medicines in remote areas revolve around improving

infrastructure: changes that are very costly and can take a long time to be implemented (Ahmed et al., 2015).

Nationally, access to diarrhea treatment through the private sector is also minimal: primarily taking place through pharmacies, but there are only 59 pharmacies in Zambia, 40 of which are in the capital, Lusaka. There are also less than 100 pharmacists (i.e., qualified with a Bachelor's degree) in Zambia. Since every pharmacy must employ a registered pharmacist to meet the local legislation, the growth of these outlets is severely constrained, and local pharmaceutical companies producing locally adapted medicines are weak and threatened by international competitors; consequently, restricting the offer of locally made products, which are adapted to the needs of low-income settings (Palafox et al., 2012).

ColaLife in Zambia

Despite the difficulty of delivering aid in the Last Mile, the provision of fast-moving consumer goods (FMCGs) such as Coca-Cola, sugar, and cooking oils could be found and purchased across Zambia, including in the Last Mile. To make diarrhea treatment accessible in the Last Mile and across Zambia, ColaLife sought to benefit from the existing components, connections, and flows of FCMGs. In this way, ColaLife took a localized view of ecosystems – one that values the existing resources and communities within a local ecosystem (cf. Audretsch, 2015) – and acted as an outsider committed to making itself gradually more redundant while empowering local organizations and helping them create, exchange, and capture new value.

Figure 1 depicts the ecosystem of diarrhea treatment in Zambia after ColaLife 'scaled away' (designed with the support of ColaLife's founders). All actors were mobilized around the purpose of saving lives through access to diarrhea treatment. The key actors are at the center. A key actor is Pharmanova, a local pharmaceutical industry that started to produce and commercialize Kit Yamoyo: the co-packaged ORS+zinc treatment designed and freely licensed

by ColaLife. Kit Yamoyo passes through various intermediaries (wholesalers, retailers, government agencies, etc.) until reaching caregivers. The actors are all local, most of whom were in the FMCGs ecosystem, and not engaged or connected for medicine delivery. This meant that many actors did not have the needed capacities or resources from the outset to engage with the vision. Other actors, international and local, were in the periphery of the figure: these relate with but sit outside the ecosystem – such as international NGOs with a strong presence in Zambia, pharmaceutical multinationals, and government agencies that regulate medicine dispensation. ColaLife is not in the figure because it did not aim to make itself part of the ecosystem, and from the outset, it sought to leave without causing any disturbance in the ecosystem.

Insert Figure 1 about here

The uptake of ORS+zinc in intervention areas increased abruptly with ColaLife's intervention, especially in regions that received medicines both through the public and private sector: from 1% to 53% between 2015 and 2017, according to a household survey conducted by ColaLife. At the end of 2018, after 7 years in Zambia, ColaLife left the country believing that it had left a self-sustained ecosystem for diarrhea medicines that would no longer rely on them and could grow autonomously to the remaining districts in the country. By the end of 2019, ex-factory sales of the diarrhea treatment reached 1.2 million products, and it is estimated that 1 life is saved for at least 1000 kits used.

Data collection

The first author carried out and recorded 70 face-to-face semi-structured interviews between May 2017 and July 2019 in Zambia and the United Kingdom. Interviewees included a mixture of public, private, and government organizations in addition to the ColaLife team. These were

supplemented with secondary materials that covered the period that ColaLife worked in Zambia, from 2011 to 2018, and the two following years (2019-2020).

As depicted in Table 1, the interviews were carried out over several rounds as ColaLife's activities in the ecosystem unfolded over time. The questions asked of actors varied depending on their role in the ecosystem. We used open-ended questions to start the interviews, such as "Can you tell me about your work?"; "Why do you engage with this scale-up project?"; "What is the value of this project for you?"; "Whom do you engage with and how?"; "What are the key challenges that you face?" Since the role of the actors varied from technocrats working at large intergovernmental organizations to shopkeepers in the remotest regions of Zambia, the follow-up questions were subsequently catered to the actor category and informed by their answers to the open-ended questions.

After each round, we analyzed the data to inform subsequent interviews conducted across various districts. On average, each interview lasted approximately 30 minutes, which led to over 40 hours of interview data that was audio-recorded and fully transcribed for subsequent analyses. Some interviews were concise but targeted. For example, we interviewed retailers or community health workers based in remote regions or wholesalers who perform a specific function in the ecosystem. The interviews and engagement with the actors that take a more prominent role in the case study, such as ColaLife, Keepers Zambia Foundation, and Pharmanova, were longer, broader, and more in-depth.

Insert Table 1 about here

In addition to interview data, the first author was embedded within the projects and gathered field notes over the duration of ColaLife's scale-up projects between June 2016 and November 2020. As depicted in Table 2, the interview data and engagements were supplemented with extensive private and public archival documentation to triangulate core insights that emerged from our analyses. The authors collectively used these different data

sources, as depicted in Table 2, to compare insights (Yin, 2003) on the unfolding of events from multiple perspectives and to track the systemic interactions that occurred to scale the social impact of the initiatives within the community.

Insert Table 2 about here

We started by transcribing our interviews, combined with the compilation of archives and participant observation notes. Our analysis followed a stepwise approach that has been regularly deployed in management studies (see Tracey et al., 2011). The first step consisted of building an event history database (Garud and Rappa, 1994), which allowed us to work across the different data entries on the problems, the context, the scale of the system transformation, and the roles performed by ColaLife and other stakeholders. We were careful to ensure that we represented a balanced portrait of the perspectives of multiple stakeholders, not only the ones of ColaLife's founders.

We subsequently analyzed the content of our data with the assistance of NVivo software through the coding of relevant extracts and the identification of patterns and themes (Weber, 1990). As this is semi-structured research, the nodes and categories emerged during content analysis. Table 3 illustrates each first-order category with representative data.

Insert Table 3 about here

We then employed the method described by Gioia et al. (2013) to inductively interpret our coded data and synthesize them into more aggregate themes, paying particular attention to the events as experienced through the people we interviewed and observed in the first-order analysis (van Maanen, 1979). Searching for relationships between first-order categories (Strauss and Corbin, 1990), we found second-order categories, and we further synthesized them into adequate aggregate dimensions that speak to larger empirical and theoretical issues (Eisenhardt, 1989). Finally, we sought out theoretical precedents in the literature, oscillating

between data, interpretations, and existing theory, to inform the development of our grounded understanding of the aggregate dimensions that emerged from our case study (Strauss and Corbin, 1990). In this interactive process, we found 14 first-order codes, categorized into 6 second-order themes, which we subsequently synthesized into 3 aggregate dimensions, as described in Figure 2.

Insert Figure 2 about here

RESULTS

From the inductive axial coding of our data, we derived three macro-themes that explain the model of 'ecosystem scale' pursued in Zambia: *defining purpose*, *synchronizing of resources and capabilities of others*, and *cultivating autonomy*. This section scrutinizes and expands on what each of these themes entails.

Defining Purpose

ColaLife's design was underpinned by the understanding that the prevention of diarrhea in Zambia requires the synchronization of structural changes that were too intractable for a single organization such as ColaLife to realistically address: a total solution required ridding the country of poverty and making improvements in water and investing in sanitation infrastructure such as running water and sewerage systems, that are costly and time-consuming. A critical strategic imperative for ColaLife was to break down the complexity of the intractable problem into a tractable vision: reconstructing the solution to the problem as something most actors could see as practical and achievable.

Instead of working towards preventing diarrhea, ColaLife focused on something much more tractable: easy access to the correct diarrhea treatment, as recommended by the WHO, across Zambia. The provision of medicine is more viable and less daunting than addressing all the

systemic bottlenecks that lead to high infection rates in the country. With this vision, ColaLife promoted a solution to the high rates of child mortality, stunting, and other healthcare problems, which they believed could be avoided if children had been provided with the correct diarrhea treatment in a cheap, robust, efficient, and timely manner.

ColaLife started from a baseline of less than 1% in most rural districts, reflecting how challenging the situation was at the time of ColaLife's inception. Access was limited both through the public and private sectors. According to an expert at the Centre for Infectious Disease Research in Zambia (CIDRZ), "*at the national level we take an integrated approach; [however] there are gaps and challenges with regard to how to comprehensively put all these things together."* Furthermore, an official at the Ministry of Health told us that a significant part of the population resides in the so-called Last Mile, and they "*are still far from realizing the vision of bringing people [in rural regions] as close as possible in an area of 5km"*. Ramchandani (2016), a physician and public health expert who worked with ColaLife, also reported other constraints, such as that access to diarrhea medicines through the private sector was minimal and that communication and transportation between health facilities and public warehouses were poor. The Institute for Health Metrics and Evaluation (IHME, 2015) found in 2014 that 23% of rural health centers reported having stock-outs of ORS and 30% of zinc. Even when available in healthcare facilities, utilization rates of zinc are less than 5%.

Facing such a dire situation, ColaLife not only had to scale access, but also to make the correct treatment perennially available. In the words of one of ColaLife's co-founder: *"There are lots of programs that start, 5-year programs, and they transform the landscape for 5 years, and then they go, and things get back to what it was before, if not worse than before, because it was a temporary initiative."* These two intertwined visions were employed to guide every decision ColaLife made and were also used to mobilize actors.

Along with setting an achievable vision, ColaLife actively sought to bind actors to a set of resolute principles that were a non-negotiable part of the relationship: they did this by prioritizing local actors and mobilizing them around a shared purpose rather than around a lofty and idealistic vision or around the aims of a single organization or a specific project. In the words of one of ColaLife's cofounders:

> *"People from outside the country coming into the country with THE solution, never, ever, ever, works! But it's still what happens to this day. So, a philosophy right from the beginning was to look [at] what was there, what was already working, and then try to nudge that so it worked for children's health. People say you can't get stuff into these remote places, but yes you can, because in every single village in Zambia there's a shop, in that shop will be all the things that those people want, so if you can do that for cooking oil, or eggs, talk time [pre-paid mobile phone top-ups], Coca-Cola that can even manage to get the bottles and the crate back, surely you can do it for medicine. It's always been about nudging what is already there. Doing it exclusively through local organizations"* (CL1).

This means that ColaLife's aim was to "*simply [be] the initial custodian of this vision*" (CL1). According to a co-founder, "*the concept of convening people around a vision rather than around a particular 'lead' organization or a project is a powerful one: it means people are empowered to participate and contribute, within the role that they are already supposed to be doing. It gives them a voice, to be listened to, to deploy their responsibility – rather than the funded project taking over that responsibility from them, for a time-limited and action-prescribed period"* (CL2).

Particularly relevant to ColaLife and key stakeholders in this process was a focus on *"local manufacturing,"* which not only is a *"boost to the local economy" (MSL1)* but also contributed to ensuring the continuity of the supply and the adaptation of the medicine to new contexts and contingencies after ColaLife left the country. This meant that, from the outset, ColaLife had to stick to this ethos and not cave to others' vested interests and political pressure. One of the founders described, for example, that they had two funding failures because of their commitment to their resolute principles:

> "*Grand Challenges Canada said: "We want to give you another million", as they gave us a 100k and we delivered the results…but then it went through so many iterations and so much time and there was some kind of policy change in the last minute when they really wanted it to be some kind of Canadian corporate beneficiary as a partner. Right at the end. And we didn't have a Canadian corporate beneficiary. It was like "can you have the Zinc produced in Canada" and we were "no, we are about local production". And they said "well, we would prefer it if you had more control over your private sector partner in Zambia, the manufacturer". And we asked: "what do you mean by control?". They said: "a more formal relationship, so you would have a contract with them to supply you". We were not going to do that! That's completely against everything, they wanted us to be the customer. And for us to sell on to the Ministry of Health, and on to the market, and have a warehouse, and do the logistics, and we were "no!". So, the assessor said: "it is what it is, we're not funding it then". So, we said: "yes, it is what it is". They wanted us to abandon our idea of working with local organizations and not to become part of the solution".*

The notion of 'local solution to a local problem' was shared by the other stakeholders involved in the scale-up project throughout the entire timespan of the projects. As described by an employee of the local pharmaceutical industry, which started to sell the diarrhea treatment for the projects, "*because local partners understand the terrain, understand the industry, understand everything better, and it is easier to move, with a local partner, rather than someone sitting in Washington, and trying to make decisions based on statistics".* He went further and described that healthcare interventions in Sub-Saharan African countries recurrently fail because medicines come from NGOs who hold ownership of the product and the data; hence, *"after the funding finishes the products cease to exist."* They had then to focus on synchronizing these existing resources, as detailed in the next section.

Synchronizing of resources and capabilities of others

ColaLife synchronized the capabilities and resources of others, tapping into what was already available in Zambia and engaging them to expand access to diarrhea treatment. This requires a different organizational model: the focus lies on the synchronization of growth of access to medicines with the capabilities and resources of a wide range of local players in Zambia.

ColaLife first learned more about the local context through a trial that lasted from August 2012 to September 2013. At the trial, they were particularly interested in understanding why Coca-Cola (a superfluous product) was sold in the remotest places in Zambia, whereas a life-saving medicine that could also be afforded by people living in extreme poverty was not. Their early idea – as described by an employee of the local non-profit, Keepers Zambia Foundation (KZF, hereafter), that worked alongside ColaLife – was that "*the logistics pathway for Coca-Cola, for cooking oil, exists… all you have to do is maybe use that same framework to move this product [diarrhea treatment]".* Most local actors who would dispense the medicine through the private sector, such as wholesalers, supermarkets, and rural shopkeepers, could be the same as the ones who dispense FMCGs: they could sell diarrhea treatment along with their portfolio of products.

When engaging with Coca-Cola's bottler in Zambia, SABMiller, ColaLife realized that they had to understand the ecosystem of FMCG instead of simply benefiting from the existing flow of products. Their approach was based on the identification of what products are available in remote regions and the understanding of 'how' these products currently reach these areas: who are the actors that integrate the FMCG ecosystem, how do they interact with each other, the role each member plays, what (and whose) tangible and intangible resources were employed, and how each member benefits. In doing so, ColaLife could analyze how value flows backward, starting from the end-users of FMCGs all the way to the companies that produce them. This analysis mapped how they could emulate a similar ecosystem for diarrhea medicines.

As the catalyzing process progressed, it brought some necessary actions within the ecosystem. For example, at the beginning of the distribution chain, instead of Coca-Cola's bottler, ColaLife brought in a local pharmaceutical industry actor called Pharmanova. Also, instead of Coca-Cola's consumers, they had to learn more about the caregivers of children. As

part of this process of engaging with local actors, ColaLife designed Kit Yamoyo – an anti-diarrhea treatment kit co-packaging ORS and zinc, as recommended by the WHO – which was gradually tested and adapted to the needs, aspirations, and limitations of end-users, but also integrating well to the contingencies of the FMCG's distribution chain.

Since the medicine could be purchased and dispensed at home by caregivers, they had to pay special attention to aspects related to the product's availability, awareness, affordability, and assimilability. As pointed out by one of ColaLife's co-founders: *"You have to start by designing something people will value and you don't know what people will value until you ask them. You cannot build a value chain for a product or service based on what you think people need. You have to start with something that you know they want" (CL1).* The process thus involved examining the characteristics, behaviors, desires, and expectations of caregivers; designing products and packages that are desirable by the end-users; providing information (e.g., labels, instructions) that can be easily assimilated; designing medicines and packages that meet the contingencies of the supply chain and regulatory needs; and maximizing usability, aesthetics/sensory appeal, symbolic value, and product differentiation.

Thanks to the knowledge and networks developed throughout the trial, ColaLife could systematically tap into the existing capabilities and resource flows, engaging with a wide range of local players to scale up access to diarrhea treatment across the country. This was possible because, since ColaLife did not aim to be part of the ecosystem, it was not seen as a potential threat to the operations of local individuals or organizations. As described by a co-founder:

> *"[We have] a different institutional model. We harness philanthropic funds and expertise and we channel them through the envelope that is Cola Life. But it goes through, the intellectual property doesn't stick to us, the knowledge and the data doesn't stick with us, it's not protected, there's no wall around it, the funding doesn't stick with us, we take very little of the funding because it is best spent strengthening what is there… We've stuck to that principle, that made us a non-threatening partner, we talked right from the beginning about being a trusted intermediary". (CL2)*

The knowledge, design, and technologies to produce the treatment were licensed for free to the local pharmaceutical company, Pharmanova, acting both as an incentive and to ensure local production and distribution. With funding from international organizations, ColaLife drew from the experiences and networks of their trial. At that point, they gained sophisticated and experiential knowledge of which actors should be engaged, which authorities and regulations must be complied with, how different players should be connected, and the set of skills they need to be provided with to realize the tractable vision.

After the trial, and now with the ambition of scaling across the country, the focus remained on local actors who integrated the ecosystem, but they had also realized that the provision of diarrhea treatment through public and private channels was critical to scale. While a larger number of children can be treated across the country through the public sector, the private sector is essential to reach the ones living far from healthcare facilities. As described by a healthcare official who works on the distribution of medicines: "*I won't have to walk 5 kilometers to a clinic if…I find this treatment available in that shop, I'll buy that, then I can start treatment"*. This means that they aimed to expand the geographical coverage of the product and how the treatment can be made available – since it now included access both through the public and private sectors. In the private sector, the kits are sold by trained urban and rural shopkeepers, in addition to more traditional outlets, such as pharmacies and supermarkets. The treatment is freely dispensed to caregivers in health posts, clinics, hospitals, and community health workers in the public sector.

Having developed a model for the scaling up of medicine, Colalife also had to solve the problem of how to make these medicines perennially available, which as mentioned earlier was a key strategic objective that will allow ColaLife to dissolve as a catalyst. To do this, they constantly engaged with the ecosystem actors whose involvement could expand access to treatment, and monitored data to test what works and quickly adapt accordingly. Based on this

close engagement with all local ecosystem actors, the treatment flows through between the pharmaceutical company and the caregivers. They have also occasionally benefited from the collaboration with local and international players who were peripherally located in the ecosystem, who could provide funding and other sorts of tangible and intangible resources until the local actors became fully autonomous.

Cultivating autonomy

Gradually, throughout the consolidation and expansion of an ecosystem for diarrhea treatment, ColaLife focused on cultivating the autonomy of its members. The principle was that when the ecosystem acquires a shared vision, actors are empowered and firmly connected, and when each actor can capture enough value, ColaLife could withdraw and leave a self-sustaining legacy.

It was particularly critical to make the local ecosystem actors robust enough, progressively more independent of international support, and capable of expanding access across the country more organically and autonomously. Capacity building was thus seen as crucial to ensure perennial access; otherwise, the ecosystem could collapse when ColaLife was gone. In the words of one of ColaLife's cofounders, *"It is much harder to build capacity than just come and do it yourself,"* but this was critical because they *"wanted to leave Zambia in a self-sustaining way."*

They had a particular focus on the most fragile actors within the ecosystem. ColaLife worked in tandem with a 'local champion,' i.e., Keepers Zambia Foundation, to nurture the most fragile actors within the ecosystem. Actors in the public and private sector (e.g., such as rural shopkeepers and community health workers liaising with public clinics) were trained on basic skills in different areas, ranging from the stocking of medicines to their posology (i.e.,

how the medication should be prepared and taken), to ensure they captured value, but also that they delivered enough value to other ecosystem members.

Furthermore, it was crucial to assist the pharmaceutical company in offering the product with the required scope and scale. Besides providing a free, non-exclusive license of the intellectual property of Kit Yamoyo to Pharmanova, which allowed the company to have full ownership of the product, ColaLife helped them with the product's design, marketing, and packaging. In the words of one of Pharmanova's employees: "*ColaLife supported all that, for that matter, even [importing] sealing machines [for us].*" ColaLife has thus identified and addressed bottlenecks within Pharmanova's production to ensure that ORS+zinc could be locally produced with the quality and quantity needed to meet public and private sector demands.

ColaLife also invested in making the ecosystem more diverse and modular – and, as a result, more resilient. If the ecosystem relied heavily on only a few actors to perform a critical function, the flow of medicines becomes more susceptible to undesired events. This means they wanted as many relevant players involved as possible and worked towards increasing the number of involved ecosystem players, like wholesalers, retailers, pharmacies, shopkeepers, and community health workers. By diversifying the actors that can perform similar functions, they could build 'excess capacity' if a few actors failed. They also wanted local actors to have multiplex ties to avoid dependency – if connections were not modular enough, important value flows could be interrupted, consequently jeopardizing access to the medicine. For example, if a supermarket were to go bankrupt, retailers should be able to purchase the treatment from other supermarkets and wholesalers.

Besides building capacity and diversifying the ecosystem, ColaLife had to ensure that the ecosystem worked for all members. This included, for example, experimenting with the product features to test what works best for all actors. They tried, for example, new treatment packages

which could simultaneously bring the price down (so it could be procured in higher quantities both through the public and private sectors), fit better for transportation within the supply chain, and provide a vessel for the correct dispensation of the medicine.

An essential component of the cultivation of autonomy was to ensure that all local actors benefited directly from the flow of diarrhea treatment. Each local ecosystem actor had to capture value, from the manufacturing company to the caregivers – otherwise, they would not have incentives to keep performing their roles. Also, they progressively gained a feeling of shared ownership because they were motivated by a shared purpose. Towards the end of the projects, ColaLife observed that "*key players, like Ministry of Health, local health facilities and the manufacturer, [now] speak of Kit Yamoyo as 'our product,' 'proudly Zambian' rather than it being a gift from the people of X aid agency.'*"

Ensuring that all actors benefited was challenging because it required "*the balance of maintaining affordability among end-users – many of them poor – while maintaining a profitable product for the manufacturer, all along the value chain, without subsidy and while maintaining high quality" (CL1).* Value could be tangible and intangible, and expectations varied according to actors. For example, value for community health workers was the satisfaction of promoting healthcare in their communities. For a public clinic, it was meeting the targets defined by the Ministry of Health. For the pharmaceutical company (and other players in the private sector), it was mainly profit. In the words of an employee at Pharmanova: *"[It is critical that] the whole value chain is satisfied… [for us, if] making healthy profits… and ensuring that it is 100% controlled by local partners, [we know that] sustainability will definitely be there".*

At the end of 2018, 6 years after the start of the trial in Zambia, ColaLife considered that the local ecosystem actors were empowered, satisfied, and well connected. ColaLife's capacity-building activities became unnecessary, and, therefore, they left the country and started working

towards disseminating their knowledge, experiences, and frameworks. As pointed out by one of ColaLife's cofounders, "*there is real potential and interest in constructing models which could be adopted or adapted [by others, elsewhere].*" In 2020, they launched the "ColaLife Playbook." This document condenses their experiences and works as a "*guide for individuals and organizations wishing to transform access to diarrhea treatment in a specific region, country, or state.*"

DISCUSSION

Our research investigated how social entrepreneurs scale up social impact while simultaneously scaling away their organizations. Building on emerging qualitative insights, as well as on literature on entrepreneurship and on ecosystems, this section offers a grounded model of *Ecosystem Catalyst,* fleshing out the mechanisms through which ColaLife acted as a temporary and trusted intermediary to catalyze social impact alongside the ecosystem actors.

Conceptualizing the *Ecosystem Catalyst*

ColaLife described themselves as a *catalyst* performing a key role in scaling the production, delivery, and uptake of diarrhea treatment in Zambia. Guided by our data, we flesh out the foundational dynamics of this catalyst approach, specifically on three key dynamics: instilling a shared purpose, leveraging existing capabilities and resources, and enhancing the autonomy of local players. By examining these foundational dynamics, how they are interconnected, and the roles that ColaLife played across them, we offer the conceptual model of the *Ecosystem Catalyst*, as represented in Figure 3.

Insert Figure 3 about here

ColaLife took a temporary, deliberately non-threatening stance throughout the catalysis process to allow the actors within the ecosystem to both flourish and trust in the process. The premise was that ecosystem members had to become progressively more robust and autonomous, capable of capturing and exchanging value, in liaison with other ecosystem members. ColaLife had to extract itself from the ecosystem by gradually making itself redundant before permanently leaving the country, doing so while simultaneously promoting the autonomy of local actors to take on more responsibilities: including roles and responsibilities that ColaLife performed in the early stages of the catalysis process.

This seemingly paradoxical connection of scaling away ColaLife to scale up social impact in an ecosystem was key to connecting the purpose of the ecosystem actors and the autonomy of its members, and ultimately reflects a different view on organizational purpose. In the words of one cofounder: "*most NGOs are working on a solvable problem, and yet they have no intention whatsoever of not existing in 10 years' time, and that is a contradiction. Is what you are working with solvable or never to be solved? If it is solvable, where is your plan for your own demise?*" (CL1).

Consistent with ColaLife's intention to *scale away* from the ecosystem, our interviewees were critical of the conventional approach of international development organizations, which often bring a solution from abroad but also create dependence in a way that when they leave the country or the project ends, "*everything they had done collapses*" (CL2). Therefore, the ethos of the Catalyst was bound to the ecosystem from the outset by prioritizing local actors, and mobilizing them "*around the same vision, instead of around a single organization or project*" (CL1) in a way that their own demise is inevitable and hence long-term dependence on ColaLife was never an option for ecosystem actors.

The *ecosystem catalyst* stimulates a local, self-organizing, and self-sustaining ecosystem, and to help achieve that ColaLife ensured that local actors acquired the skills needed to capture

and exchange value with others in the ecosystem. ColaLife repurposed what already existed and harnessed the existing ecosystem for the commercialization of fast-moving consumer goods, such as Coca-Cola. Since ColaLife was never a member of the local ecosystem, and never intended to be, it saw its role as purely *catalytic:* they enacted and agitated change but not in the form of a permanent actor in the ecosystem. In the words of one of the co-founders, they "never intended to be a permanent part of the solution"; if they were, they would "become part of the problem too" (CL1).

ColaLife worked towards *nurturing* a local pool of tangible and intangible capabilities and resources throughout the catalysis, with the premise that the actors possessing these resources had to become gradually more autonomous. Ensuring that all actors captured value was particularly relevant because, if actors benefitted from their participation in the flow of medicines, they had incentives to keep performing their respective functions within the ecosystem. These actors' abilities to exchange value were important, too, because each only contributes partially to the materialization of the value proposition. In other words, individual actors could not capture value without others, and the flow of medicines would be interrupted.

When ColaLife started the ecosystem catalysis in Zambia, the average uptake of the correct diarrhea treatment in the intervention districts was about 1%. Starting from such a low baseline, their efforts revolved around materializing a new value proposition (Adner, 2016): making the medicine perennially and widely available across the country. The idea of a local solution to a local problem was at the core of realizing this value proposition. Suppose the focus was simply on short-term product provision rather than scaling social impact in an ecosystem: in that case, they could have opted, for example, to purchase the medicine from outside of Zambia. However, according to our ColaLife interviewees, doing so would not have ensured the resilience of product provision.

Building resilience through the catalyzing process meant that ColaLife could foster a self-sustained ecosystem instead of simply scaling temporary access. This goal translated into various efforts to ensure that the local actors were well synchronized and committed to a shared purpose. In the early stage of their efforts, ColaLife's *synchronization* efforts consisted of working with all actors in the ecosystem. Throughout time, however, the actors became better connected and more engaged with the shared purpose; hence, ColaLife gradually reduced its synchronization efforts until it believed it was no longer necessary. It is the local actors who would most likely remain in the country and who were interested in maintaining the value exchange with other local actors, so ColaLife sought to mobilize and empower them, and withdraw without negative consequences due to issues of dependency typical of development and aid programs.

Contributions and Opportunities

The *Ecosystem Catalyst* model offers four key contributions to theory and some avenues for future research. First, we provide a fresh perspective that reconciles scale with finitude, challenging the conventional idea that a social venture inevitably must grow to expand its social impact (Shepherd and Patzelt, 2020). Unlike the dominant view that organizations should aim to scale operations and size, the *Ecosystem Catalyst* in our study 'scaled away' their organization to 'scale up social impact.' These findings are at odds with the dominant view of 'scale' in commercial and social entrepreneurship literature (Eisenmann and Wagonfeld, 2012; Desantola and Gulati, 2017; Bloom and Skloot, 2010; Seelos and Mair, 2017), as they have overlooked the nuances of 'scale' when the unit of analysis is an ecosystem instead of single organizations (Shepherd and Patzelt, 2020), and they have recurrently equated scale of social impact with the scaling up of the social venture. We thus invite researchers to explore different

institutional and organizational models for 'scale' from organizations with an intentionally finite strategy seeking to address complex social problems.

Second, our work offers a different model of intermediaries working through ecosystems, valuing autonomy and "abundance" instead of "absence" (Mair et al., 2012; Sen, 2001) in efforts to materialize a new value proposition (Adner, 2017). With a more dynamic and nuanced view of ecosystems, we join and build upon recent efforts to shift social entrepreneurship literature away from its recurrent inflation of the 'agency' of hero-like entrepreneurs (Nicholls, 2010) that portray journeys of all-empowered entrepreneurs, especially those from the West (Munoz and Kimmitt, 2018), as if their journeys happened in spaces of absence and inertia. Instead, we shed light on contextual abundance and the co-evolution of multiple agentic efforts, offering a more empowered and empowering way of thinking about actors and the ecosystems within which they exist. We thus encourage others to build on this research and investigate the different roles social entrepreneurs can play in ecosystems, starting from the premise of building on abundance instead of filling a void.

Third, our study expands upon Adner's (2017) definition of ecosystem-as-structure to provide empirical evidence of the process of 'scaling social impact' in an ecosystem. We define 'scale of social impact' in an ecosystem as the development of alignment structures for the partial and distributed contributions that are needed to materialize the new focal value proposition. The core assumption of ColaLife was that the ecosystem, once strengthened, develops itself more organically and resiliently because what is needed for the materialization of the value proposition becomes gradually more self-organized. Therefore, our model unpacks new possibilities for purposeful and practical action, which value the self-organizing, mutually reinforced, and self-sustaining dynamics of ecosystems (Willis, 1997), and gives primacy to purpose-based value propositions. This contributes to a more dynamic view of 'scale'; one that sees different layers of constraints and possibility, and that values fragmented activities and

different 'actor positions' in these fields of activities. We particularly encourage future research that explores other 'scale' models built on the convergence of partial contributions in distributed and, possibly, disputed fields of activity.

Finally, we introduce an undertheorized model for pursuing long-lasting change, which is particularly relevant for the individuals and organizations committed to offering a permanent institutional fix to a social problem (Santos, 2012; Mair and Martí, 2009; McMullen, 2011). The essence of the *ecosystem catalyst* is to be temporary and to leave a permanent, self-sustaining impact. For that, it focuses on the enablers of activity – in our case, the articulation and synchronization of local resources and capabilities, the nurturing of autonomy rather than dependence, and the mobilization of actors around a shared purpose. Working on enablers of ongoing activities (Dodd and Anderson, 2007; Adner, 2016) contributes to theory by making it more attentive to the amalgam of possibilities for entrepreneurial activity that are made visible through the alignment of distributed activities connected across the ecosystem. We thus invite scholars to explore other enablers of disparate activity within ecosystems, which may be elicited in different contexts and conditions.

Limitations

As a single case study, we make no generalizability assumptions, particularly on whether ColaLife can reappear in a new ecosystem and produce similar results. The mechanisms for *ecosystem catalysis* that we revealed in this study haven't been investigated in other contexts where an organization seeks to scale a solution while intentionally making itself obsolete in that ecosystem. Furthermore, the catalyzing process assumes that necessary resources and capabilities exist in a functioning ecosystem and that these can be reassembled into tractable solutions to complex situations. However, typical of intractable problems is that their parameters are constantly changing, and hence there are different ways of interpreting and

acting on them (Grewatsch et al., 2021; Mount et al., 2020). Exploring the generalizability and replicability of the core assumptions of this model requires further rigorous and systematic research in an array of contexts to determine whether context changes the nature of the mechanisms, or if other mechanisms emerge in addition or instead of the ones we have described in this paper.

CONCLUSION

At the core of the concept of 'scale' are the assumptions of organizational growth, size and longevity (Eisenmann and Wagonfeld, 2012; Desantola and Gulati, 2017; Du and Temouri, 2015). This article offers a grounded theory of *ecosystem catalyst* through a theoretically puzzling case study: an organization that scaled up a solution to a social problem while gradually and intentionally making itself redundant. We reveal that *ecosystem catalysis* happens as a function of three interconnected processes: instilling a shared purpose; leveraging existing capabilities and resources; and enhancing the autonomy of local players. This leads to a more nuanced and value-based conceptualization of scale when the unit of analysis is the value created, exchanged, and captured within an ecosystem, instead of the conventional emphasis on the size and growth of single organizations.

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TABLES AND FIGURES

Table 1: Overview of our primary qualitative data

Method	Stakeholder Category	Actor	Location	Nº	Collective time (hours)
Semi-structured interviews	Ecosystem Catalyst	ColaLife	Lusaka, London	3	8.4
	Local Champion	Keepers Zambia Foundation (KZF)	Lusaka, Chipata	8	6.6
	Community-based retailers	Rural and peri-urban shopkeepers	Lusaka, Chipata, Lundazi, Chirundu, Kafue, Chilanga	16	1.7
	Community members	Community Health Workers and Caregivers	Chipata, Chirundu	2	0.6

	Public Health Officials	Administrative staff, Doctors, Midwives, Nurses and Technicians of Clinics, Hospitals and Health posts	Lusaka, Chipata, Lundazi, Chirundu, Kafue, and Chilanga	11	1.6
	Wholesalers and large retailers	Pharmacies, Supermarkets and Wholesalers	Lusaka, Chipata, Chirundu and Kafue	10	1.8
	Governmental organisations	Ministry of Health, Zambian Regulatory Agency (ZAMRA), Centre for Infections Disease Research in Zambia (CIDRZ), and Medical Stores Limited	Lusaka and Chipata	4	4.5
	Pharmaceutical company	Pharmanova	Lusaka	2	0.73
Participant observation (group meetings)	Catalyst and Local Champion	ColaLife and KZF	Lusaka	5	4,5
	Pharmaceutical company, Ecosystem Catalyst and Local champion	Pharmanova and ColaLife	Lusaka	3	2,5
		Pharmanova, ColaLife and Keepers Zambia Foundation	Lusaka	3	2,5
	International Organisations, Ecosystem Catalyst, and Local Champion	UK Department for International Development and ColaLife	Lusaka	1	2 (not recorded for privacy reasons)
		USAID, ColaLife and Keepers Zambia Foundation	Lusaka	1	1 (not recorded for privacy reasons)

Figure 1: The Ecosystem for Diarrhea Treatment in Zambia

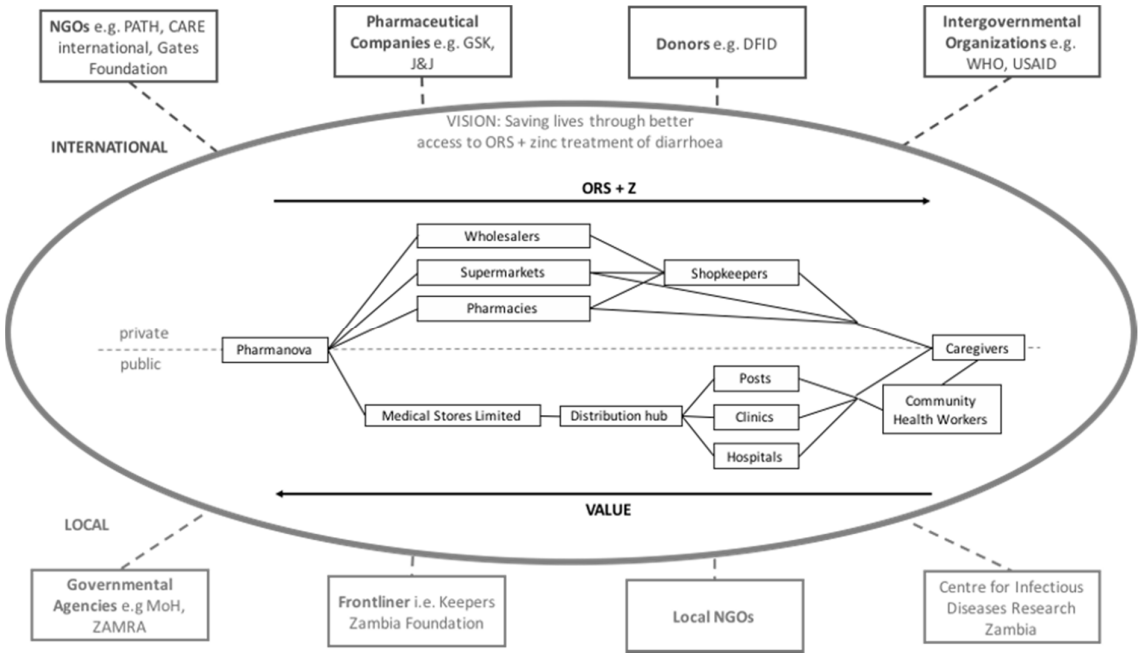

Table 2: Direct observation and archival data

	Data Source	Use in the Analysis
Direct Observation	• Observations and participation in the activities of key staff in multiple districts of Zambia • Meetings with key stakeholders (e.g. health officials, community members, non-profits, wholesalers, retailers, intergovernmental organizations, pharmaceutical company and Ministry of Health) • Presentations given to relevant stakeholders, both in Zambia and in the United Kingdom	• Identify organizational guiding principles • Identify possible untold tensions and controversies • Understand how they relate with each other and with key stakeholders • Establish a timeline in events
Archival Data	• Website description (www.colalife.org) • Approximately 50 blog posts with updates, written by the founders • A wide range of internal documents prepared by ColaLife or other key stakeholders (e.g., spreadsheets of medicines dispensed by district, memos on meetings and workshops, and slide decks) • Sample of products and description of features • Media coverage on CNN, BBC, and other media • Documentary The Cola Road	• Triangulate information obtained from interviews • Obtain complementary information which could lead to follow-up interviews • Establish a timeline in events • Understand how they publicly portrayed themselves

	• PhD thesis by Ramchandani (at John Hopkins School of Public Health) written on CL's quasi-experimental trial • Documents describing the systemic problems of diarrhea and the Last Mile, prepared by international organizations and by the Zambia Ministry of Health • Awards and recognitions (e.g., from Save the Children, GlaxoSmithKline, and Johnson and Johnson) • The ColaLife Playbook, elaborated by the founders, and made openly available to contributors	• Understand how they are publicly seen and endorsed

Figure 2: Resulting structure of data axial coding

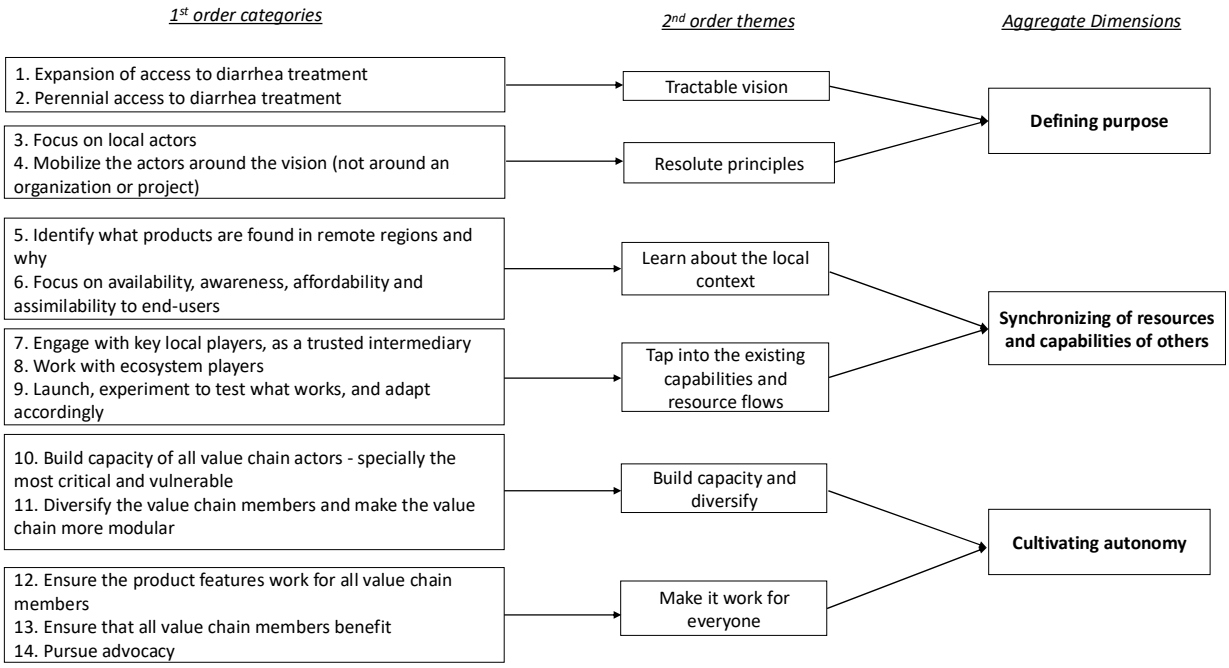

Table 3: Illustrative Quotes per 1st Order Category

1st order categories	*Illustrative quote*
Expansion of access to diarrhea treatment	"The key thing about a smart network is that at the centre of the network is the vision, not ColaLife. So, the vision is to transform access to diarrhea treatment… and everyone subscribes to it." (ColaLife1)

Perennial access to diarrhea treatment	"Not inserting yourself, as ColaLife, into the system, as part of the solution, [is fundamental] because that's not sustainable, we're not going to be here [Zambia] forever. There are lots of programs that start, five-year programs, and they transform the landscape for five years, and then they go, and things get back to what it was before if not worse than before." (ColaLife2)
Focus on local actors	"People from outside the country coming into the country with THE solution, never, ever, ever, works, but it's still what happens to this day. So, a philosophy right from the beginning was to look what was there, what was already working, and then try to nudge that so it worked for children's health." (ColaLife1)
Mobilize the actors around the vision (not around an organization or project)	"The concept of convening people around a vision [i.e. access to diarrhea treatment] rather than around a particular 'lead' organization or a project is a powerful one: it means people are empowered to participate and contribute, within the role that they are already supposed to be doing. It gives them a voice, to be listened to, to deploy their responsibility – rather than the funded project taking over that responsibility from them, for a time-limited and action-prescribed period." (ColaLife1)
Identify what products are found in remote regions and why	"The logistics pathway for Coca-Cola, for cooking oil, exists… all you have to do is maybe use that same framework to move this product [diarrhea treatment]." (KeepersZambiaFoundation1)
Focus on availability, awareness and assimilability to end-users	"You have to start by designing something people will value and you don't know what people will value until you ask them. You cannot build a value chain for a product or service based on what you think people need. You have to start with something that you know they want." (ColaLife2)
Engage with local players, as a trusted intermediary	"[We have] a different institutional model. We harness philanthropic funds and expertise, and we channel them through the envelope that is Cola Life. But it goes through, the intellectual property doesn't stick to us, the knowledge and the data doesn't stick with us, it's not protected, there's no wall around it, the funding doesn't stick with us, we take very little of the funding because it is best spent strengthening what is there… We've stuck to that principle, that made us a non-threatening partner, we talked right from the beginning about being a trusted intermediary." (ColaLife2)
Work with ecosystem players	"We've stuck to that principle, that made us a non-threatening partner, we talked right from the beginning about being a trusted intermediary. We were just the glue. We didn't see ourselves as a thing, we saw ourselves as a glue that helped others things that were already there to stick together. We were just the glue. We didn't see ourselves as a thing, we saw ourselves as a glue that helped other things that were already there to stick together." (ColaLife2)

Launch, experiment to test what works, and adapt accordingly	"Our objective at that point [the trial] was not to save as many lives as we possibly could. Our objective was to generate robust evidence that this idea that we had does or does not work." (ColaLife1)
Build capacity of all value chain actors – specially the most critical and vulnerable	"It is much harder to build capacity than just come and do it yourself… [but we always wanted to] leave Zambia in a self-sustaining way." (ColaLife1)
Diversify the value chain members and make the value chain more modular	"Our team is doing a lot of training for retailers. ORS and Zinc doesn't require license for dispensing. So we are doing that, we want to make sure it's accessible and reachable in rural areas. But the other one is the chain stores have taken it up, such as Shoprite and Spar and Pick and Pay, so all the key chain stores have taken it up. Somebody can go there and buy as a retailer, or somebody can buy for re-selling, like people are doing for bread and cooking oil." (KeepersZambiaFoundation2)
Ensure the product features work for all value chain members	"The balance of maintaining affordability among end-users – many of them poor – whilst maintaining a profitable product for the manufacturer, all along the value chain, without subsidy and whilst maintaining high quality." (ColaLife1)
Ensure that all value chain members benefit	"[It is critical that] the whole value chain is satisfied… [for us, if] making healthy profits… and ensuring that it is 100% controlled by local partners, [we know that] sustainability will definitely be there." (Pharmanova1)
Pursue advocacy	"There is real potential and interest in constructing models which could be adopted or adapted [by others, elsewhere]." (ColaLife1).

Figure 3: Conceptualization of the Ecosystem Catalyst