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Leveraging Dynamic Capabilities to Overcome Financing Barriers and Drive Sustainability of Solar Social Enterprises in Kenya

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Abstract

This study examined how financing and dynamic capabilities, affect the sustainability of solar social enterprises (SSEs) in Nairobi County, Kenya. Against the backdrop of persistent energy access challenges in sub-Saharan Africa, the research aimed to find out how SSEs navigate financing barriers and leverage dynamic capabilities to achieve sustainable growth. Employing a qualitative case study approach, the study draws on in-depth interviews with SSE founders and managers, triangulated with business documents and sectoral reports. Key findings reveal that SSEs face significant obstacles in accessing finance, including perceived bias, banks' risk aversion, and rigorous due diligence requirements - challenges that disproportionately affect locally owned enterprises. The study found entrepreneurial alertness, strategic agility and resource orchestration as the entrepreneurial dynamic capabilities enabling SSEs to mobilize resources, adapt to market shifts, and sustain operations. The study concludes that adapting financing models to local contexts and supporting the development of dynamic capabilities are vital for the long-term growth of SSEs. Interventions fostering inclusive investment and capacity-building are

recommended to advance sustainable growth in Kenya's dynamic solar sector.

Keywords: Dynamic capabilities, social enterprises, financing, sustainability, social entrepreneurship

Introduction

Access to affordable and sustainable energy remains a critical challenge for about 600 million people in sub-Saharan Africa, with significant implications for economic development, social equity, and environmental sustainability (ESMAP et al., 2024) In Kenya, where a substantial proportion of the population resides in rural, peri-urban, and off-grid communities, the lack of reliable energy solutions continues to hinder progress toward the United Nations Sustainable Development Goals, particularly those related to poverty reduction, quality education, health, and gender equality. In response to these persistent challenges SSEs have emerged as innovative actors leveraging business acumen and social missions to deliver clean, affordable lighting and energy solutions to underserved communities (McEachran, 2013). These organizations not only address critical gaps in energy access but also contribute to inclusive growth, poverty alleviation, and the empowerment of marginalized groups, including women and youth (British Council & Social Enterprise UK, 2022).

The rise of social enterprises in Kenya reflects a broader global trend in which privately owned, mission-driven organizations - spanning for-profit, non-profit, and hybrid models - employ entrepreneurial strategies to achieve social objectives (World Bank, 2017). Social enterprises are increasingly recognized for their capacity to foster innovation, generate employment, and respond nimbly to emerging opportunities, thereby acting as significant drivers of sustainable development (OECD, 2017). In Kenya, social enterprises comprise a diverse ecosystem of micro, small and medium enterprises (MSMEs), cooperatives, and non-governmental organizations, estimated to number approximately 44,000 entities (British Council, 2017). Notably, these organizations are more frequently led by women compared to conventional businesses, underscoring their role in advancing gender inclusivity and social justice (British Council & Social Enterprise UK, 2022; White, 2022).

Despite their promise, SSEsand the broader social entrepreneurship sector in Kenya face formidable challenges that threaten their long-term sustainability and impact. Access to finance remains a pervasive obstacle, with limited capital available for early-stage ventures and insufficient funding for businesses seeking to scale (Intellecap, 2015). The entrepreneurship ecosystem, while robust - comprising over 176

organizations providing financial and non-financial support (Kyalo et al., 2023) - is characterized by gaps in relevance, affordability, and navigability, particularly for enterprises operating outside Nairobi or in specialized sectors such as the green economy (Intellecap, 2019; Hain & Jurowetzki, 2018). Furthermore, government policies and regulatory frameworks have exerted a significant influence on the growth trajectories of SSEs over the past decade, both enabling and constraining their operations.

Against this backdrop, this article examines the interplay between financing, dynamic capabilities, and the performance of SSEsin Kenya. Drawing on recent empirical studies and sectoral analyses, the paper situates SSEs within the evolving entrepreneurship ecosystem, highlighting their contributions, constraints, and adaptive strategies in navigating a complex and often fragmented support environment (Spigel, 2017; Breznit & Taylor, 2014; Arruda et al., 2013). By focusing on the dynamic capabilities that enable SSEs to innovate, access resources, and scale impact, the article aims to provide nuanced insights into the mechanisms through which these enterprises drive sustainable development in contexts marked by resource scarcity and institutional uncertainty. Ultimately, the study contributes to the growing body of literature on social entrepreneurship and entrepreneurship ecosystems in Africa, offering policy and practical recommendations to strengthen SSEsand, by extension, inclusive and sustainable growth in Kenya.

Literature Review

Entrepreneurship Ecosystem and Social Enterprises

In the past decade, both academic researchers and policymakers have increasingly focused on the entrepreneurship ecosystem, recognizing its role in fostering improved economic outcomes (Spigel, 2017; Breznit & Taylor, 2014; Arruda et al., 2013). The Global Entrepreneurship Index (GEI), introduced in 2009, provides a comparative assessment of entrepreneurship ecosystems across 137 countries by evaluating entrepreneurial attitudes, abilities, and aspirations, with data available through 2020 (Acs et al., 2019; Acs et al., 2021). The GEI consistently ranks countries in North America, Europe, and Australia among the top ten globally. In the 2019 GEI report, South Africa emerged as the leading nation in sub-Saharan Africa, positioned 52nd worldwide, followed by Botswana at 66th and Kenya at 86th (Acs et al., 2021). Nonetheless, critiques have emerged regarding the GEI's applicability to developing economies, arguing that its foundational pillars are derived from data more accessible in developed contexts, which may not be available or sufficiently comprehensive in many developing countries (Ullah, 2019).

Social enterprises (SEs) have been defined in various ways, reflecting their diverse forms and functions. The World Bank (2017) characterizes social enterprises as privately owned organizations - whether for-profit, non-profit, or hybrid entities - that employ business strategies to pursue social objectives. Historically, some of the earliest social enterprises in Africa and Asia emerged as faith-based institutions, which delivered affordable healthcare and education during the colonial period. Subsequent developments saw the rise of cooperatives, particularly within the agricultural sector (World Bank, 2017).

Recent estimates suggest that approximately 11 million businesses worldwide may be classified as social enterprises (British Council & Social Enterprise UK, 2022). Notably, these organizations are more frequently led by women than conventional businesses and play a pivotal role in advancing inclusivity. Social enterprises actively support marginalized populations, including disadvantaged groups, minorities, youth, women, and environmental initiatives, thus contributing to broader social and economic development.

Kyalo et al. (2023) indicates that Kenya's green entrepreneurship ecosystem comprises more than 176 organizations, with 92 offering financial support and 166 providing a range of other support services. Notably, approximately 86% of small and medium-sized enterprises (SMEs) operating within the green economy are headquartered in Nairobi, enabling them to access critical business services and establish connections with advisors, investors, and partners (Kyalo et al., 2023). The multifaceted nature of Kenya's entrepreneurship ecosystem has been the subject of several studies, which have explored domains such as technology-focused start-ups, the ICT sector, and social enterprises (Bramann, 2017; Chaux & Okune, 2017; Intellecap, 2015; Park et al., 2017; World Bank, 2017). Notably, Park et al. (2017) employed network analysis to examine the ecosystem supporting technology start-ups in Nairobi, identifying key shortcomings in areas such as regulatory frameworks and access to finance.

Entrepreneurship has been demonstrated to be one of the major drivers of sustainable development due to its ability to promote innovation and create jobs (Mason & Brown, 2017). In Kenya, the jobs created by small and medium enterprises (SMEs) are more than those created in the formal sector (KNBS, 2017). British Council (2017) notes there were about 44,000 social enterprises in in the country consisting of micro, small and medium enterprises (MSMEs) cooperatives, and non-governmental organisations.

Social enterprises are a great driver of sustainable development because they generate employment, can respond to emerging opportunities much faster than larger firms, embrace innovation and generally contribute to more inclusive growth (OECD, 2017). White (2022) adds that sustainable

development focuses on the capacity of enterprises to foster human creativity, aspirations, realisation of rights and social justice. Similarly, the emergence of entrepreneurship ecosystems to address the challenges that social enterprises encounter is regarded as sustainable development. However, social enterprises face significant challenges that affect their sustainability (Sottini et al., 2020).

Solar social enterprises are businesses that sell solar products to rural, peri-urban and off-grid communities. These businesses use a blend of social mission and business savvy to reach the low-income population (McEachran, 2013). This hybrid nature also makes the business model of SSEs potentially unstable (Sottini et al., 2020). However, these enterprises provide clean and affordable lighting, and other benefits to people who are mostly poor and vulnerable. They deliver best-fit technology, market establishment, growth strategies and business models in the local context, but also face key challenges related to access to finance, policy and support services (Miller Center, 2017).

According to Intellecap (2019), Kenya has over 70 support services providers, the highest in East Africa. Some of the challenges observed with these services include assistance going to the same set of enterprises and businesses and receiving the same services regardless of their needs or sector (Hain & Jurowetzki, 2018). In addition, Intellecap (2015) found four gaps in Kenya's entrepreneurship ecosystem: limited capital available for early-stage businesses, insufficient capital for businesses in the growth phase, business support services that are either irrelevant or not affordable, and an entrepreneurship ecosystem that is difficult for entrepreneurs to navigate. Furthermore, government policies have had significant influence on the growth of SSEs over the last 10 years.

Dynamic Capabilities and Social Enterprises

Teece et al., (1997) conceptualize dynamic capabilities as an organization's capacity to integrate, build, and reconfigure both internal and external competencies in response to rapidly changing environments. This perspective is rooted in the resource-based view of the firm. Teece (2007) later elaborated this framework, characterizing dynamic capabilities as comprising three core activities: sensing, seizing, and transforming. Sensing involves identifying and generating new opportunities, seizing refers to capitalizing on these opportunities through the development of products, processes, or services, and transforming entails the ongoing realignment of the organization's tangible and intangible assets to maintain relevance and competitiveness.

Empirical studies have established a strong association between dynamic capabilities, competitive advantage and performance of

multinational enterprises (Luo, 2009; Riviere et al., 2020; Teece, 2014), as well as small and medium-sized enterprises (Dejardin et al., 2022; Fabrizio et al., 2021; Hernández-Linares et al., 2020; Rashid & Ratten, 2021). Regarding social enterprises, Bhardwaj and Srivastava (2021) identified specific dynamic capabilities that support their growth and long-term sustainability. Furthermore, in the context of entrepreneurship ecosystems, Roundy and Fayard (2018) applied the dynamic capabilities framework to develop a theoretical model that explains the mechanisms through which entrepreneurship ecosystems impact entrepreneurial processes.

Solar home systems are identified as the most cost-effective solution to reach people located far away from the grid or in remote and sparsely populated areas, many of whom fall in the low-income bracket (Phillips et al., 2020). According to Ireri and Shirley (2021), $6.5 billion is required for such people in SSA to access electricity by 2030. For this to be achieved, donor agencies need to provide the early-stage funding that attracts other private players to make investments. Additionally, SEs usually go through several phases as they evolve, the main ones being start-up and growth. It is at the growth phase that SEs need more funding from philanthropists, foundations, governments and impact investors for their capital needs and for sustainability to be realised (Busch & Barkema, 2019).

The problem of access to finance is prevalent in Kenya. A countrywide survey by the Kenya National Bureau of Statistics, found that up to 29.6% of entrepreneurs close their businesses due to lack of operating funds. This stems from increased operating expenses, declining income, business losses and diversion of returns and operating capital to other uses. In the case of female entrepreneurs, some of them close their businesses due to social obligations like childcare (KNBS, 2017).

Sustainability in Social Enterprises

However, despite the presence of many actors in the entrepreneurship ecosystem, enterprises in Kenya are still struggling. Moreover, studies on the entrepreneurship ecosystem in Kenya have mostly focused on the geographical location (Park et al., 2017). Other studies have also noted the scarcity of research on social enterprises and the entrepreneurship ecosystem in Kenya (Alvaden & Boschma, 2017, Littlewood & Khan, 2018; Sottini et al., 2020; Wurth et al., 2021). This study fills a contextual gap by expanding the understanding of how the financing domain of the entrepreneurship ecosystem and dynamic capabilities affect the sustainability of SSEs in Nairobi County, Kenya.

For SSEs that use the PAYG business model, taxes increase the need for working capital. For solar systems sold with a repayment plan spread over many months, the provider incurs the full cost of providing the system

upfront but can only recover the revenue associated with that asset over time, meaning that they must cover this delay in cashflow through working capital loans. This need is increased where taxes are paid at the point of importation but only gradually recovered from the end-users (ACE TAF, 2021, p. 14).

Theoretical Integration

Teece (2007) defines dynamic capabilities as: a) *sensing* which involves identifying and assessing opportunities; b) *seizing* that consists of mobilising resources to address opportunities and the value that comes because of that; c) *transforming* where resources are renewed and redeployed so that future opportunities can be pursued.

Bhardwaj and Srivastava (2021) used the meta synthesis approach to identify the dynamic capabilities that enable SEs to achieve continuous growth and attain financial sustainability. The study found bricolage, alliance building, government support, effectuation and learning capability as some of the dynamic capabilities that drive the achievement of their social and financial mission.

Roundy and Fayard (2018), used the dynamic capabilities theory to identify the entrepreneurship ecosystem forces that influence entrepreneurship. First, an enterprise's sensing capabilities are influenced through searching and learning. This is achieved through activities such as observing best practices, joining professional associations, and gathering economic information on environments and operations. Second, an enterprise's sensing capabilities are influenced through support services and access to finance. Access to a pool of financiers and support services increases the ability of an enterprise to seize identified opportunities. Third, in thriving entrepreneurship ecosystems there is timely market information, which improves an enterprise's ability to perceive the need to transform its business model, resources, routines and products, as the external environment changes. The theoretical approach espoused by Roundy and Fayard (2018) is used for this study.

Methodology

A qualitative case study was conducted to examine how financing and dynamic capabilities affect the long-term growth of SSEs in Nairobi County, Kenya. Using a case study helped to 'unpack the complex and institutional factors embedded in African entrepreneurship' (Mafimisebi & Asiamah, 2021). The research took place in Nairobi due to several factors. Firstly, Nairobi is the birthplace of the innovative PAYG business model used by many SSEs, which has now been scaled to other parts of the world, but there is a lacuna on what makes this business model successful in some places and not in others (Adwek et al, 2019; Park, 2021). Secondly, Nairobi

is regarded as having favourable economic policies and an established start-up ecosystem, earning the moniker *Silicon Savannah* (Chirchietti, 2017). Kenya is also identified as one of the biggest markets for solar in Africa (Cross & Murray, 2016). Thirdly, most SSEs in Kenya have the head office in Nairobi with branches in other parts of the country. The SSEs use Nairobi as a vantage point to access the resources in the entrepreneurship ecosystem (Asoko, 2020). Obtaining a better understanding of how SSEs identify and utilize financing for long-term growth was important for entrepreneurs, investors, support services providers and policy makers.

The grounded theory approach was used given limited theory development on entrepreneurship in Africa and calls for research on entrepreneurship theories in context (Bruton et al., 2018; Shephard et al., 2020).

The sample size was determined by theoretical sampling. Data was collected from SSE founders and managers using a semi-structured interview guide until saturation was reached at 20 interviews. Data from the interviews was triangulated with reports from company websites, news articles and industry reports.

Data analysis

The data collected was analyzed using the Gioia methodology that is suitable for inductive theory building and narrative approach (Gioia et al., 2013). The narrative data collected was inductively coded into first-order categories using the NVivo software, abstracted to second-level themes and then aggregated.

The structured approach to qualitative data analysis outlined by Gioia et al. (2013) was employed. Initially, first order categories were developed based on information gathered from interview participants. During this stage, the collected data was annotated and preliminary labels were assigned to transcribed interview material related to government support, financing, and support services (Corbin & Strauss, 2015). Concurrently, data from annual reports and websites was used to corroborate findings from the interview data. Over time, these preliminary labels were consolidated into first order categories.

In the second step, second-order themes were developed based on theory and through an iterative process comparing the first-order categories with relevant literature. The first-order categories were grouped and consolidated into second-order themes. This process included systematic comparison of emerging constructs with existing concepts in the literature, with labels adjusted as needed. Ultimately, these labels were merged into second-order themes (Gioia et al., 2013; Strauss & Corbin, 1998). For instance, codes such as ‘funding generally available’, ‘unfavourable

financing options', 'perceived bias towards certain enterprises, 'banks are averse' and 'rigorous requirements' were combined under 'difficulties accessing financing.' In the third step, connecting the second-order themes provided an overall framework derived from the data. For example, themes like 'networking' and 'diversification' were consolidated into 'entrepreneurial alertness.' A data structure was created to illustrate the first-order categories, second-order themes, and aggregate dimensions.

Trustworthiness

Trustworthiness in this study was systematically achieved through a combination of pre-testing, validity, reliability, and reflexivity. First, the research instrument - the semi-structured interview guide – was pre-tested. Two managers from separate SSEs, participated in pilot interviews. Their feedback was instrumental in refining the interview questions, ensuring clarity, and highlighting any gaps that could reveal critical insights relevant to the research topic. This process also strengthened the dependability of the instrument.

To enhance validity, the study employed triangulation by collecting data from multiple sources: in-depth interviews with SSE managers, analysis of business documents such as annual reports, and review of publicly available information including news articles and websites. This triangulation ensured a more comprehensive understanding of the entrepreneurship ecosystem and allowed for meaningful and credible inferences to be drawn from the data. A detailed audit trail was maintained, documenting each step from data collection to analysis, further supporting the transparency and traceability of the findings.

Reliability was reinforced through several measures. The pre-tested interview guide promoted consistency in data collection, while meticulous transcript review during data cleaning minimized transcription errors. During the coding phase, particular attention was paid to maintaining consistent definitions for codes, with cross-checks conducted by another researcher to ensure agreement and prevent coding drift. The use of NVivo software facilitated uniform coding practices and enabled systematic data management throughout the analysis process.

Reflexivity played a crucial role in safeguarding objectivity and minimizing bias. The researcher consciously reflected on personal, cultural, and theoretical assumptions that could influence data interpretation. Reflexivity was particularly important when engaging with SSE managers of diverse backgrounds, enabling the researcher to remain sensitive to different perspectives and experiences. Overall, these strategies collectively ensured that the study's findings were trustworthy, credible, and firmly grounded in the data collected.

Findings

Financing barriers

Access to financing for social enterprises (SEs) remains a subject of considerable debate within Kenya, across Africa, and in broader international discourse. To better understand the financing landscape, the study explored how SSE managers perceive the availability and accessibility of funding within Nairobi's entrepreneurial ecosystem. Among those interviewed, four founders expressed the view that financing opportunities were present, though not without certain obstacles. For instance, Founder (E11) explained, "Nairobi's financing landscape is better than most of Africa, but it is still hard to access anything more than seed capital." Founder (E13) further noted that, "There are more opportunities available today than ten years ago."

In addition, Founder (E4) highlighted the favorable funding environment for SHS companies in earlier years remarking that, "The period between 2010–2017 was good for companies selling SHS. During this period, proof of concept funding was easily available from incubators and international donors. The global market had green funds for on-lending to the solar sector. The monies were usually channeled through banks and microfinance institutions" (August 21, 2024).

Together, these perspectives illustrate that while Nairobi offers relatively more financing options compared to other regions, SSEs continue to face significant challenges, particularly in securing capital beyond the seed stage. The evolution of the funding landscape - marked by periods of increased availability and targeted support for sectors such as renewable energy - has shaped the experiences and strategies of SSE founders operating in the city. All three positive responses were from founders whose enterprises were registered between 2010 and 2015. Two founders argued that more funding was available in the earlier days of pay-as-you-go. Other managers had different opinions.

A total of twelve SSE managers described significant obstacles in accessing financiers or obtaining favorable financing terms. One founder (E2) remarked candidly, "Accessing capital in Kenya is difficult. We do not know what opportunities are there or whom to approach." This sentiment was echoed by another founder (E11), who stated, "Access to finance and the players is always difficult." Manager (E7) further substantiated these difficulties, noting, "Accessing financiers is a challenge due to the rigorous due diligence processes." Manager (E8) added that, "Approaching financiers can be somewhat difficult or problematic given that the market competition is rather stiff coupled with requirements from most investors that are very demanding."

Concerns regarding nationality emerged as a recurrent theme. Founder (E12) observed, "It is hard to secure funding from outside Kenya if

you do not have a co-founder from Europe or USA." This perspective was expanded upon by founder (E13), who explained,

> "It is easier for graduates from western countries to attract funding than local founders. The process is complicated. Impact funders have a checklist – they ask for a pitch deck, financials that are presented in a specific way, and take a keen look at the management structure. That is the standard in the west where most impact investors come from. In fact, all founders from the west tick all the boxes on that checklist. However, for local founders if you don't tick the first box, you are done. We need to be aware, learn and adapt (September 4, 2024).

The perception of difficulties in accessing financing mainly came from local founders and managers. In addition, most large SSEs that have foreign founders raise capital from international investors, who may or may not have offices in Nairobi. Managers also shared experiences with banks and venture capitalists.

Banks

Managers further identified specific categories of financiers when discussing the landscape of funding for social enterprises in Nairobi. As Manager (E10) explained, "Accessing financing from banks is difficult because they prefer to lend to the government. Credit for small and medium enterprises in Kenya is expensive." This sentiment was echoed by Manager (E16), who noted, "Access to finance continues to be a challenge due to high interest rates of above 15% on loans provided by banks." Similarly, Manager (E15) highlighted, "Access to financiers is a challenge because of a competitive funding environment and bureaucratic processes. Conventional financial players like banks approach solar companies as inherently risky and hence numerous credit checks and expensive interest rates." The perspective of Manager (E6) reinforced this view: "Banks and microfinance institutions are a good source of scalable credit though their criteria appear to be very selective."

Taken together, these findings indicate that banks and microfinance institutions remain the predominant sources of capital for enterprises across different sizes and industries in Kenya. Nonetheless, the accounts of managers reveal a consistent set of obstacles - namely elevated interest rates, stringent and selective lending criteria, as well as bureaucratic hurdles - that significantly impede access to financing. Beyond these institutional challenges, managers also highlighted notable difficulties in securing investment from venture capital firms. These insights underscore the

persistent and multifaceted barriers within Kenya's financial ecosystem, which continue to constrain the growth and long-term sustainability of social enterprises.

Venture Capital

Challenges in accessing venture capital were highlighted by several SSE founders and managers in Nairobi. As founder (E11) noted, "they tend to have more confidence in enterprises with some or all founders from Europe or the USA. Moreover, they recognize degrees from western universities than those from local institutions." This perspective underscores the prevalence of nationality-based biases within the venture capital funding landscape. Founder (E13) further elaborated on the difficulties encountered, stating, "Access to financiers is difficult because of the conditions that need to be met. Even with impact investors, there has been little improvement. There are high expectations from the business, yet it takes a lot of time and due diligence."

Manager (E15) commented on the expectations set by venture capital firms, observing that, "Venture capitalists have high expectations for rapid growth and significant equity stakes which can be detrimental to long term business control." The challenges have been compounded in recent years, as manager (E19) explained, raising funds for business expansion has become increasingly difficult. Drawing on both investor conversations and direct experience, manager (E19) reported that funding rounds are taking considerably longer to complete than in the pre-pandemic period, with investors demonstrating greater reluctance to commit capital.

The preceding paragraphs reveal that managers and founders encountered complex barriers to accessing finance, with nationality emerging as a significant factor influencing investor confidence and funding opportunities. Respondents noted that investors - especially those from venture capital and impact funding circles - often favored enterprises led by founders from Europe or the USA and recognized qualifications from Western universities over those from local Kenyan institutions. These nationality-based advantages in turn shaped how local founders approached fundraising, prompting them to prioritize strategies such as cultivating warm introductions to international investors or acquiring accelerator credentials to bolster credibility. Additionally, these responses highlight that the broader funding landscape is characterized by rigorous due diligence, selective lending criteria, and high expectations from financiers, which collectively reinforce the need for local entrepreneurs to adapt their fundraising tactics to overcome both institutional and perceptual biases. Other responses focused on contextual factors.

Contextual factors

Manager (E14) emphasized that access to financing is often contingent upon both the developmental stage of the enterprise and the stipulations set by financiers. Specifically, early-stage startups frequently encounter difficulties in securing loans from traditional banks due to rigorous collateral requirements. Complementing this view, Manager (E15) highlighted a pronounced scarcity of financial institutions possessing in-depth sectoral knowledge - particularly within the solar industry - which further complicates the process for social enterprises seeking growth capital. These perspectives collectively suggest that founders and managers of SSEs in Nairobi perceive notable biases and face significant obstacles in navigating the broader entrepreneurial finance ecosystem. Against this backdrop, the current study explored how SSEs leverage dynamic capabilities to adapt and secure resources, despite the persistent barriers within the funding landscape.

Deployment of Dynamic Capabilities

Financing is critical for SSEs because they purchase inventory in advance and sell it through credit using the pay-as-you-go model. This means SSEs need much more working capital compared to businesses that sell products on cash. The financing frictions above therefore constrain inventory and ultimately affect the long-term growth of SSEs. Dynamic capabilities enable SSEs to sense, seize and transform resources from financiers despite the challenges.

Networking

In examining how SSE managers identify and pursue financing opportunities within Kenya's entrepreneurial ecosystem, a recurrent theme emerged around the strategic deployment of networks. These networks compassing those that facilitate information sharing, grant access to potential financiers, and support execution through partnerships - are instrumental in navigating financial constraints. As Manager (E6) articulated, "Social capital comes in with money but also advice that helps in setting out strategies that support sustainability goals." Similarly, Founder (E11) emphasized, "Networking plays a big role. I research capital firms, their interests and location. I then develop a plan on how to access them, either during events or through introduction by people who already know them." Such insights illustrate the deliberate efforts by SSE leaders to cultivate relationships that enhance credibility and open doors to capital, often by leveraging industry events or warm introductions.

Early engagement with financiers was also highlighted as a critical tactic, as Founder (E1) explained, "We build early relationships with

financiers." Existing industry relationships provide further leverage, with Manager (E9) noting, "We leverage our existing relationships in the industry." The value of prior experience and robust connections was underscored by Manager (E8): "Prior successful experience and good connections go a long way in making the process easier." Founder (E12) further reflected on the importance of a strategic approach:

> You need to be very strategic when fundraising by getting into a lot of local and international networks. For me, I attend events where I can access financiers such as Sankalp. I also receive financing information from incubators (August 26, 2024).

Support organizations play a pivotal role in disseminating information about funding opportunities. According to Manager (E8), "We identify financing opportunities through market research, networking and updates from incubators." Founder (E1) similarly pointed to the utility of specialized organizations:

> Organizations such as the Global Collective Distributors, Miller Center for Social Enterprises and the Global Off-Grid Lighting Association (GOGLA) have databases with funding opportunities which we look at from time to time. Approaching the financiers is usually the challenge because cold calling does not work. When you are introduced, it is easier (April 8, 2024).

Beyond informational networks, some managers described orchestrating partnerships to enhance access to capital and markets. As Manager (E15) stated, "We focus more on private sector partnerships and international grants." Founder (E2) added, "We have partnered with donors operating in the country to expand to the counties that they prioritize." Manager (E8) also noted, "We also partner with local companies that have existing distribution networks in areas that we want to reach." Nevertheless, the efficacy of networking is not guaranteed; as Manager E12 reflected, 'You can spend a lot of time networking and have nothing to show for it even after two years.'

A total of ten SSE founders and managers acknowledged the essential role of networking, partnerships, and relationship-building in identifying potential funders, though one manager pointed to the limitations that arise when there is a misalignment between business needs and investor interests. The findings suggest that even with robust engagement in networks, SSEs must be strategic to maximize outcomes.

The various forms of networks identified - information networks (such as mailing lists, incubator newsletters, and membership databases), access networks (facilitating introductions and relationship-building), and partnership networks (enabling resource-sharing and market entry) - collectively serve as mechanisms for sensing and seizing financial opportunities. These approaches are central to securing the working capital necessary for SSEs to advance sustainability objectives. Notably, respondents emphasized the importance of agility and adaptability in seizing identified opportunities, underscoring the dynamic and strategic nature of resource mobilization within the social enterprise sector.

Agility

When examining how SSE managers capitalize on identified opportunities, several strategies emerge centered around operational enhancements, investor readiness, and the demonstration of organizational impact. Managers reported that these efforts enable them to apply for and secure financial resources from a variety of sources, including banks, microfinance institutions, accelerators, impact funds, and venture capitalists. With respect to investor readiness, manager (E6) highlighted that this involves "continuous improvement of our business model, investing in new technologies, and building a strong track record of financial performance." Echoing this, manager (E7) emphasized the importance of "preparing comprehensive business plans, financial projections and pitch decks." Similarly, manager (E9) noted the value of preparing "financial models, present[ing] robust business cases and demonstrat[ing] impact," while manager (E10) underscored the need to "demonstrate our previous achievements and promising future." Manager (E14) further elaborated that preparation includes compiling "comprehensive business plans, financial statements and projections," and building "a strong portfolio that highlights the unique value proposition of our solar solutions." Collectively, these perspectives suggest that investor readiness is multifaceted and demands agility, as SSEs must align with the varying expectations and requirements of diverse investors.

Beyond investor-facing activities, operational improvements were also identified as critical for seizing opportunities. Founder (E12) observed that, "When we get funding, we allocate some of it to improve our networks, contacts and pay for events etc." Manager (E14) described their approach as "optimizing our operational processes and investing in capacity-building initiatives." Manager (E16) added that regular "review[s] of risks and costs" are essential to ensure organizational efficiency and the capacity to "swiftly capitalize on exciting opportunities as they arise." In addition, two respondents highlighted the strategic acquisition of expertise to enhance

organizational capacity. Manager (E17) reported, “Hired consultants to support in financial modelling,” while founder (E13) shared that they “participated in specific accelerator programs to improve their investor readiness.” Such operational improvements and investments in capacity building provide a foundation for enhanced efficiency and long-term adaptability, with capacity building reflecting a proactive - rather than reactive - form of agility.

A further dimension of agility relates to organizational structure. Manager (E8) described the benefit of maintaining “organization structures that are fluid so that we can easily adapt to the available opportunities.” In a similar vein, manager (E9) discussed the practice of “continually reviewing our business strategy in light of changing market conditions and financing opportunities.” Manager (E17) elaborated on the importance of monitoring the external environment by stating, “we stay ahead of the competition by monitoring market trends and piloting new products that meet the needs of our customers. Successful pilots result in realignment of our business strategy and create new fundraising opportunities.”

Despite these adaptive strategies, some managers pointed to significant challenges. Manager (E15) explained, “The reconfiguration and deployment of resources is hampered by rigid organizational structures and lack of strategic flexibility. Redeployment efforts are often undermined by insufficient financial reserves and limited access to external funding.” Manager (E12) echoed these barriers, noting, “It is expensive to mobilize resources to pursue financing opportunities, it can take even three to five years.”

The preceding responses illustrate that the nature of organizational structures - whether fluid or rigid - significantly influences agility, with flexible structures being conducive to growth and adaptation, while rigid ones may lead to stagnation and reduced competitiveness, particularly in the rapidly evolving solar sector. Overall, agility emerges as a critical dynamic capability, conferring clear advantages for SSEs that successfully implement it. Nevertheless, as manager (E12) observed, limited financial resources may restrict the extent to which enterprises can exercise agility. A key driver for this necessity is the ongoing requirement for consumer finance, underscoring the importance of adaptive capabilities for sustained organizational success.

Evolving consumer finance

The mobilization of resources and the provision of consumer finance emerged as significant themes in the responses of nine participants, particularly in discussions centered around financing strategies for SSEs. As Founder (E11) noted, “SSEs typically do retail business and provide consumer financing because they serve low-income households who can

only afford products when they are sold through a lending model like PAYG." The integration of consumer financing has been foundational to the PAYG (pay-as-you-go) business model adopted by many SSEs. Expanding on this, Founder (E3) explained,

> "The cost of distribution in the pay-as-you-go business model is high, making the business capital intensive while it has low profit margins. That is why the first-generation SSEs (those that were set up by 2014) received a lot of patient capital but are yet to prove they are commercially sustainable despite raising nine figure amounts in funding. This is partly attributed to governance challenges. Most boards did not understand the long repayment periods for SHS and impact on the enterprise's cashflow. They just encouraged more sales leading to high default rates." (June 21, 2024).

The initial achievements of SSEs are largely attributed to their innovative approaches in addressing affordability barriers. Early-stage SSEs undertook detailed analyses of the paraffin purchasing patterns among their target customers to determine optimal payment intervals - such as daily or weekly - for solar home systems (SHS). They further leveraged emerging technologies, including mobile networks and mobile money platforms, to facilitate incremental payments for SHS, thereby enabling low-income households to overcome the prohibitive upfront costs that previously hindered adoption. The PAYG consumer finance model not only accelerated the expansion of electricity access in rural and remote areas but also attracted significant investment in SSEs, especially during the period from 2010 to 2018.

However, after 2019, there was a noticeable decline in the share of financing directed toward SSEs. During the height of PAYG-driven energy access initiatives, there was optimism that sub-Saharan Africa could achieve universal electricity coverage in the near future. This optimism led SSEs to prioritize scaling sales, often at the expense of assessing customers' ability to pay. Consequently, operational costs associated with distribution, logistics, and after-sales service increased, while default rates rose as some households struggled with repayments. As a result, the complexities of scaling the PAYG model became apparent, and investor confidence in SSEs began to wane. Despite these challenges, the need for consumer finance within SSEs remained strong, prompting organizations to explore alternative financing mechanisms. As founder (E11) observed,

> "Private equity for SSEs dried up in 2016 after Mobisol declared bankruptcy bringing into focus the commercial sustainability of the PAYG business model. Consequently, the

> first-generation SSEs found a new way of raising consumer financing – securitization, to keep their businesses afloat." (June 24, 2024)

According to Power Africa (2023), securitization refers to "The process of pooling contractual debt such as consumer loans and selling their related cash flows to third party investors as securities, which may be in the form of bonds or other instruments." While securitization has long been a feature of the U.S. housing market since the 1960s, its application in the PAYG sector is relatively recent, first appearing in 2015 when Bboxx secured $500,000 from Oikocredit (Clover, 2016). Other SSEs, such as d.light and Sunking, have also accessed financing through securitization. Notably, only first-generation SSEs have leveraged this approach to raise consumer finance. Simultaneously, consumer finance mechanisms have evolved in tandem with the diversification of solar products available in the market. This evolution has been driven by the necessity for SSEs to broaden their product portfolios in response to a contracting SHS market.

Diversification

In examining how SSE managers approached the transformation, reconfiguration, and redeployment of resources to capitalize on future financing opportunities, a clear emphasis on experimentation and diversification emerged. Founders highlighted the underlying factors driving this shift. For example, Founder (E11) noted, "By 2020 the number of SSEs operating in Kenya was more than the addressable market. As a result, several enterprises exited the country, others were acquired and others closed." Founder (E12) pointed to macroeconomic pressures, stating, "The Covid-19 pandemic, price hikes, inflation and instability of the Kenya currency have contributed to the reduction of SSEs in the country." An analysis of the sector in Kenya further illustrates these trends: Mwezi and Pawame were acquired by Ignite Solar in 2023, Mobisol was acquired by Engie in 2019, and Sun Transfer ceased operations. Founder (E3) provided additional context, explaining that,

> "First-generation SSEs initially benefited from substantial concessional and commercial financing between 2010 and 2015, as off-grid energy access was prioritized by international development agencies. However, the landscape shifted as private equity investment declined after 2017, a trend partly attributed to Mobisol's bankruptcy in 2015, which unsettled investors. The Covid-19 pandemic further redirected investor attention toward products with greater

potential for carbon emissions reduction, such as electric motorcycles and electric vehicles" (June 21, 2024).

Larger SSEs - with staff numbers exceeding 200 and annual sales above Ksh 20 million - were particularly engaged in experimentation and diversification, responding to evolving market dynamics and broader ecosystem challenges. As manager (E9) observed, 'We continually review our business strategy in light of changing market conditions and financing opportunities." Media analyses (from sources E17, E18, and E19) corroborate that these organizations expanded beyond solar home systems (SHS) to offer an array of new products and services. These included additional solar-powered items like televisions and water pumps, the provision of cash loans to existing customers, and the sale of smartphones and motorcycles via buy-now-pay-later lending models. Notably, a pioneering enterprise that once specialized exclusively in SHS now describes itself as "a fintech platform that provides affordable financial and digital products to 'Everyday Earners.'" Another established SSE characterizes its current portfolio as encompassing "clean energy, clean cooking, mobile technology and accessible financing solutions."

By contrast, smaller SSEs have only recently begun to diversify, constrained by limited financial resources. Collectively, these findings indicate that diversification has become both a survival mechanism and a growth strategy, predominantly pursued by first-generation SSEs with robust financial and operational foundations.

Sustainability Outcomes

Solar social enterprises highlighted several five sustainability outcomes resulting from access to financing. Six managers reported increased sales, attributing growth to enhanced inventory and expanded marketing efforts. Manager (E18) emphasized, "The funds were used to purchase new inventory including SHS and essential appliances such as fridges and phones." Manager (E14) reinforced this, stating, "By providing the capital needed for marketing and sales expansion, financiers have enabled us to reach a broader customer base and increase revenue."

Financing also broadened reach to vulnerable populations; ten managers noted expanded access to underserved groups. As manager (E18) observed, "After raising a round of funding in 2022, 80% of the people we sold solar products to were in rural areas and majority were using torches, wood or kerosene, as their main source of lighting." Similarly, manager (E20) noted, "Our first local currency loan from a bank and guaranteed by an impact fund enabled us to bring low cost and safe energy to communities in remote parts of Kenya, working through the KOSAP program." However,

some concerns remain, with manager (E15) cautioning, “Financiers often prioritize profitable ventures over socially impactful ones, limiting outreach to vulnerable populations.”

Job creation was another prominent outcome, with eight managers citing expanded teams due to funding. Founder (E5) remarked, “Support from our investors has allowed us to expand our operations, leading to the creation of new jobs.”

Geographic expansion was facilitated by external capital, with eleven managers reporting entry into new markets. Manager (E14) stated, “Investment from venture capitalists and impact investors has supported our entry into new geographic markets, allowing us to serve a wider market.” Nonetheless, some managers, like (E15), reported that “Geographic expansion has been hampered by inadequate funding and support.”

During the Covid-19 pandemic, eight SSEs received critical financial support, including grants and emergency funding. As founder (E1) shared, “We received grant and debt from international investors, without the funding our business would have been seriously affected.” This support was essential for operational continuity and adaptation during the crisis.

Access to financing enabled SSEs to increase sales, reach underserved rural populations, and create new jobs. External capital also facilitated geographic expansion, though some organizations faced funding-related challenges. Financial support during the Covid-19 pandemic was crucial for maintaining operations. However, concerns remain that financiers may prioritize profitability over social impact, limiting outreach to vulnerable groups.

Discussion

The challenges associated with accessing financing, that is, perceived bias, banks’ aversion to lending to small businesses and rigorous requirements affect the growth and sustainability of smaller enterprises that are mostly locally owned. Perceived bias as described by SSE managers is a persistent challenge. Village Capital (2017) found that 90% of the investments in East Africa between 2015 and 2016 went to a small group of foreign-owned enterprises. This phenomenon has been discussed by other authors (Hain & Jurowetzki, 2018; Mungai & Peacock, 2019; Sanyal et al, 2020). Moreover, limited financing has been shown to constrain growth and long-term survival of SEs (British Council, 2017, KNBS, 2017). Hain and Jurowetzki (2018), show how funding flow into Africa evolved from aid to foreign direct investment and more recent venture capital. This evolution contributed to the ability of large SSEs to attract huge amounts of patient capital.

Banks' aversion to lending to smaller enterprises is not new. According to Manwari et al (2017), one of the widely documented challenges that businesses like SSEs face in accessing finance are being perceived as high-risk customers by banks. In fact, Bhamidipati et al., (2021) found that only three out of 15 Kenyan solar entrepreneurs they interviewed in Nairobi had accessed financing from banks or impact investors.

On rigorous due diligence, Hellqvist and Heubaum, (2024), argue that the stringent requirements are in part due to the globalisation of renewable energy in Kenya. While the PAYG model attracted international funding which was instrumental in accelerating energy access it was not adapted for local conditions. Therefore, adapting the current financing model to account for the nature of smaller locally owned enterprises could make a difference.

Practical Implications

Bhardwaj and Srivatava (2021) in a meta synthesis of the dynamic capabilities that enable SEs to achieve growth found that networking enabled SEs to mobilize resources and overcome institutional constraints. However, Sanyal et al., (2020) observed that impact fund managers were mainly from western countries with limited knowledge of African markets and hence invest in entrepreneurs from their own social or business networks. This practice perpetuates perceived bias and at the same time isolates locally owned SSEs. Impact fund managers could employ Kenyans with knowledge of the local entrepreneurship dynamics to bridge knowledge gaps and level the playing field for locally owned SEEs. Networking and monitoring opportunities as described by the SSE managers demonstrate entrepreneurial alertness (Tang et al., 2012).

Responses of SSE managers showed there was a difference between seizing agility and transforming agility. Seizing agility was required to take advantage of short-term opportunities like funding windows, while transforming agility was essential for long-term adaptability. The goal of seizing agility was to capture immediate gains from ecosystem opportunities while transforming agility sought to achieve sustainable growth and resilience. This underscores the need for seizing and transforming agility if SSEs are to achieve sustainability in dynamic solar markets. Siezing and transforming agility combined becomes strategic agility. Doz and Kosonen (2010) expanded the work on dynamic capabilities by Teece (2007) and identified strategic agility as one of the three meta-capabilities necessary for transformational change in enterprises.

Consumer finance lies in the broader area of resource orchestration. The PAYG business model relies heavily on capital to buy the solar products that are paid for over several months by consumers (Adwek et al., 2019).

Previous studies also found that resource constraints were more pronounced for smaller and locally founded SSEs (Busch & Barkema, 2019; Sanyal et al., 2016). In such resource constrained settings, resource orchestration becomes paramount.

Diversification and experimentation are some of the strategies SE use to remain relevant even in adverse situations (Littlewood & Holt, 2017). The portfolio health of SSEs has been declining. According to ESMAP et al. (2024) the mean collection rate of SSEs dropped from 67% in 2019 to 62% in 2021. During the same period, the write-off ratio increased from 11% to 20%. This signals an increase in the number of customers who lost access to SHS due to defaults. According to one of the founders, the Covid-19 pandemic, prolonged drought and inflation affected customers' ability to make regular payments. Diversifying products to serve new market segments can help reduce the impact of write-offs on the overall growth of SSEs. Diversification reflects entrepreneurial alertness, as entrepreneurs actively scan for new opportunities.

Conclusion

This study highlights the persistent challenges that locally owned small solar enterprises (SSEs) face in accessing financing, including perceived bias, banks' risk aversion, and stringent due diligence requirements. These barriers not only constrain growth but also perpetuate inequalities in the distribution of capital, favoring foreign-owned and larger enterprises. The evolution of funding in Africa, while increasing overall investment, has not sufficiently addressed the unique needs of smaller, locally embedded SSEs. The findings underscore the importance of adapting financing models to local contexts to foster equitable growth and sustainability.

The analysis of managerial responses reveals that the development of dynamic capabilities - specifically entrepreneurial alertness, resource orchestration, and strategic agility - is critical for SSEs to navigate complex entrepreneurial ecosystems. Networking emerges as a key enabler, allowing SSEs to mobilize resources and overcome institutional barriers. However, the dominance of foreign impact fund managers, with limited local knowledge, underscores the need for inclusive investment approaches, such as employing local staff to bridge knowledge gaps and expand networks.

Furthermore, the declining portfolio health of SSEs, exacerbated by external shocks like the Covid-19 pandemic and economic instability, highlights the necessity for diversification and ongoing experimentation. Strategic agility, encompassing both seizing immediate opportunities and transforming long-term resilience, is essential for sustainable enterprise growth. Ultimately, the grounded theory model developed in this study

demonstrates that the effective deployment of entrepreneurial dynamic capabilities can facilitate positive outcomes, not only for the enterprises themselves but also for the broader communities they serve. Policy interventions and funding mechanisms that recognize and support these capabilities are vital for the sustained impact and scalability of locally owned SSEs in dynamic markets.

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