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Aalto University publication series
BUSINESS + ECONOMY 1/2024

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ISBN 978-952-64-1679-3 (pdf)
ISSN-L 1799-4810
ISSN 1799-4810 (printed)
ISSN 1799-4829 (pdf)
<http://urn.fi/URN:ISBN:978-952-60-6916-6>

Unigrafia Oy
Helsinki
2024

Finland

SUSTAINABLE DEVELOPMENT GOAL TARGETS AS STARTUP BUSINESS OPPORTUNITIES

Lauri Järvillehto, PhD
Professor of Practice, Aalto University

ABSTRACT

The purpose of this paper is to explore the viability of the United Nations Sustainable Development Goal targets as business opportunities for startups. The SDGs are split into 169 specific targets that, if successfully reached, will have significant impact on the most pressing social and ecological global challenges. A startup is a subtype of an entrepreneurial venture that aims to generate exponential growth through fast and iterative innovation. A startup is typically run by a data-driven process consisting of a series of experiments whose purpose is to solve a problem in a way that can service a scalable market.

Drawing from theoretical work on sustainable entrepreneurship, stakeholder theory and the Lean Startup theory and methodology, I argue that startups are ideal organizations to solve SDG-related problems. If the transactions that generate the startups' revenue are based on solving an actual problem connected to an SDG target, its impact and business become identical. Given the exponential business potential of startups, identifying business opportunities within the scope of SDG targets will also lead to exponential impact. Startups can play a central role in solving some of the most pressing problems for humanity while generating significant financial value.

INTRODUCTION

Recent decades have seen unprecedented growth in addressing pressing social and ecological issues, ranging from a radical drop in global poverty to advances in medicine, from educational outreach in developing countries to technological innovation to curb climate change. However, even without the current COVID-19 crisis, humanity faces massive challenges. The traditional ways of solving these challenges through subsidies and investments by governments, non-governmental organizations and corporations is not enough.

A great deal of scientific literature has been written in the recent decades about the notion of *sustainable entrepreneurship*. Sustainable entrepreneurial ventures can complement the efforts taken by non-profit organizations and corporations in addressing ecological and social issues. Sustainable entrepreneurship is often considered to be an umbrella term for various forms of entrepreneurship driven by something beyond the profit motive, such as the ecologically motivated “ecopreneurship,” socially motivated social entrepreneurship or the politically motivated institutional entrepreneurship. (Schaltegger and Wagner 2011.)

Startups are a subtype of entrepreneurial ventures, characterized by significant uncertainty, external funding, striving towards exponential growth through radical innovation and often employing a data-driven approach to validate new types of products and markets. While the term is used liberally in both popular media and scientific literature, there is no standardized academic definition of a startup (Cockayne 2019). The most prominent features attributed to startups in particular in the literature generated by startup entrepreneurs themselves typically concern fast growth, external funding and data-driven product and market innovation (See eg. Ries 2011; Blank 2012; Thiel 2014). While there is a large body of literature on sustainable entrepreneurship in general, the contribution of the present paper is to explore the opportunities of startups as a specific subtype of entrepreneurial venture in leveraging Sustainable Development Goal targets as business opportunities.

Sustainable Development Goals

The Sustainable Development Goals (hereafter SDGs) are seventeen development goals defined in 2015 in the United Nations Agenda 2030 (United Nations, 2015). They are split into 169 targets that can be used to drive action towards quantifiable results in meeting ecological and social challenges, ranging from basic human needs to the well-being of the ecosystem, from climate issues to human rights.

SDGs have become a guideline for many organizations in targeting their resources and sustainability efforts. Traditionally, many of the issues covered by SDGs, such as global poverty and hunger as well as education and sanitation in the developing countries (SDGs 1, 2, 4 and 6) have been addressed by non-governmental organizations and donated funds either by individuals, organizations or wealthier governments. Others, such as renewable energy or city development (SDGs 7 and 11) have also been treated as business opportunities. However, in the current situation, even with a number of commercial operators working in fields related to SDGs, there is still a gap of 2.5 trillion dollars annually to reach the SDGs (United Nations, 2018). These funds cannot realistically be gathered through donations or taxation, but require more novel innovation in business models and practices.

SDGs have been, of course, widely adopted by businesses. In addition to non-governmental organizations such as the United Nations, the Red Cross or the World Bank that are addressing the SDGs head on, the goals have been at least ostensibly adopted by corporations, ranging from Shell (Shell, s/a) to Patagonia (The United Nations Environmental Programme, 2019). In addition to corporations, numerous entrepreneurs have chosen to start their companies not motivated by profit and lucrative exits, but rather by the impact on an ecological or social issues. Sustainability is, however, a troubled concept in business. Often the concrete impact of so-called sustainability efforts is lackluster (The Economist 2021). For many organizations, their sustainability and financial operations are separate from one another, and thus if the latter suffers, the former is likely to be cut.

A potential solution is to encourage companies to seek business opportunities within the SDGs. This would mean that an activity that creates solutions for SDG-related problems would also create the revenues and profits for the organization. This is, however, challenging for several reasons. Firstly, while some of the SDGs such as above mentioned SDG 7 (affordable and clean energy) or SDG11 (sustainable cities and communities) may lend themselves to some immediate business and growth opportunities, for a great many of them, in particular SDGs 1 (no poverty) and SDG 2 (zero hunger), there simply don't seem to be viable enough initial markets to cater for. Secondly, most established organizations have few incentives to redefine their profit centers. The market dictates where they should invest their efforts, and often there is more money to be made in catering for wealthy demographics rather than the needs of the poor.

Startups are, however, a type of an entrepreneurial venture that could benefit a great deal from building business operations by catering to SDG targets, and in so doing generate significant growth both financially and with regards to progress towards the SDGs.

The Startup Opportunity

Startups are newly founded organizations that typically consist of a series of experiments whose purpose is to solve a problem in a way that can service a scalable market. In other words, startups are not yet companies in their traditional form, generating profits from revenue streams, but rather organizations seeking new types of revenue streams by servicing markets that are underserved by present business operators.

A startup's success hinges on identifying a real problem that isn't being serviced by existing solutions and that concern markets that are significantly scalable. SDGs, by definition, address real problems at scale, therefore offering opportunities to pursue both the startups' problem-solving and scaling activities. SDGs have also indicators attached to them that can function as metrics to evaluate a startup's success towards reaching its specific SDG targets.

It is the purpose of this paper to investigate the opportunity of leveraging SDG targets as business opportunities for startup organizations, measurable by SDG indicators. I will first describe in greater detail central questions concerning sustainable entrepreneurship, focusing in particular on the development of corporate social responsibility and stakeholder theory, holistic sustainable business theories in the context of SDGs and theoretical work on sustainable entrepreneurship. Second, I will outline the basic properties and processes of a startup organization in the context of the Lean Startup theory and methodology and learnings from Scandinavian leading startup entrepreneurs. Thirdly, I will analyze possibilities in adopting SDG targets or problems related therein as business opportunities for startups and measuring the progress in reaching them using SDG indicators.

SUSTAINABLE ENTREPRENEURSHIP

Traditionally, sustainability has been addressed by companies either through the paradigm of Corporate Social Responsibility (hereafter CSR), or in the context of the more recent ideas extending the value generation of a business organization beyond shareholder profits to various stakeholders involved with the organization's operations. In the former case, sustainability issues have been addressed by setting aside a fraction of the organization's profits to social and environmental causes, functionally separate from the organization's strategy and business model. In the latter cases, sustainability operations have been incorporated into corporate strategy.

In addition to the shareholder- and stakeholder-centric approaches, more holistic approaches have been introduced in the recent years involving an all-encompassing approach to the sustainability responsibilities of businesses, including the theories concerning sustainable entrepreneurship as a means to forward pressing social and ecological challenges. Such holistic approaches are also well aligned with SDGs as a way to coordinate sustainability efforts.

Corporate Social Responsibility and Stakeholder Value

Before sustainability became a key issue for businesses, many business leaders adhered to Milton Friedman's (1970) doctrine that the sole corporate social responsibility of a company was to generate profits for shareholders. In the recent decades, as pressure for sustainable operations has grown, many businesses have directed some part of their profits towards ecological and social issues.

To answer to the call for sustainability efforts, many businesses, in particular larger corporations, have contributed to sustainability and other social issues through diverting some of their profits into a CSR fund. This money has then been used to support for example non governmental organizations such as UNICEF or the Red Cross. Running a CSR fund has been seen as a separate function from the core operations of the company, although its benefits for business has been recognized as well; it has been shown that CSR activities have a positive effect on a company's financial performance (Busch & Friede, 2018).

Criticizing the single-minded profit motive, the stakeholder theory, first introduced by R. Edward Freeman in 1983, holds that companies have multiple purposes of operation, not simply the single-minded generation of profits for shareholders. In addition to their financial responsibilities, all organizations have also responsibilities to their *stakeholders*, that is to say, their customers, employees and the society at large (Freeman 2010). The move from shareholder to stakeholder focus has given rise to various models of strategic corporate sustainability. Two prominent recent models are the notion of the triple bottom line, or TBL, introduced by John Elkington (1998) and the Creating Shared Value, or CSV, model introduced by Michael Porter and Mark Kramer (Porter & Kramer, 2006).

The triple bottom line concerns the quantification of the environmental and social effects of an organization in addition to the financial bottom line. The gist of it is to encourage businesses to “track and manage economic (not just financial), social, and environmental value added — or destroyed.” (Elkington, 2018) To contrast with the traditional Friedmanian idea of shareholder value creation as the sole purpose of a business, and perfectly in line with Freeman’s theory, Porter and Kramer emphasized the role the employees of the company and any other groups affected by the company’s operations in strategic decision making (Porter & Kramer, 2011). Shared value creation should affect the well-being of all the relevant groups involved with its operations. While the CSV model has been criticized for its lack of novelty and unattributed debt to the stakeholder theory (Crane et al., 2014), Porter and Kramer have introduced the concepts central to stakeholder theory into mainstream corporate decision making through their model.

Both TBL and CSV, however, often end up being simply additional structures on top of the financial goals of an organization, whose main business is to cater to a customer need totally unrelated to ecological or social challenges. Even Elkington himself issued a “recall” of his model to rescue it from being just an accounting model and to issue the call to build something

where sustainability would be more deeply ingrained in the business operations themselves (Elkington, 2018). Therefore, a more holistic approach to business sustainability is called for.

Planetary Boundaries, Social Foundation and the Doughnut Economy

All organizations have a sustainability impact, whether they want it or not, due to their exploiting the “Earth system” (Steffen et al., 2015). The question is, how could that impact become net positive. These exploitation opportunities are limited by planetary boundaries – nine crucial areas concerning the planetary ecosystem that humanity must respect so that the biosphere can continue to exist and prosper on the planet, such as climate change, biodiversity loss and chemical pollution (Whiteman et al., 2013).

In addition to planetary boundaries – the physical constraints for life to continue existing on Earth – business operations also concern the social foundation of our societies. This concerns access to water, food, healthcare, education and other amenities critical for human wellbeing. Currently the availability and access to these amenities is wildly unequal across the planet. Developing countries suffer from the lack of quality services the most, but also in developed countries access to many basic services such as healthcare varies greatly depending on an individual’s socio-economical status.

There have been calls for a paradigm shift in sustainable business. One such novel approach was introduced by Kate Raworth, whose idea of the “doughnut economy” defines boundaries for sustainable business (Raworth, 2017). Here, sustainability efforts are not separated from the business operations, but rather defined within the boundaries of the ecological ceiling (or the planetary boundary) and the social foundation.

SDGs concern most of the areas covered by Raworth’s doughnut economy, even if the two models are not completely interchangeable. While SDGs do not differentiate between the issues of social foundation and planetary boundaries, SDGs target directly issues relevant to both categories, for example SDGs 1–6, 8, 10 and 16 targeting the social foundation and SDGs 7, 9,

11–15 concerning the ecological ceiling. A successful organization focused on servicing the SDGs contributes, therefore, directly to the doughnut economy.

Sustainable Development Goals, and more specifically, the targets defined for each of them, provide opportunities to build sustainable business. For existing organizations it is by and large not realistic to assume that they would redirect their operations towards SDGs and abandon their existing lucrative profit centers, but even for them studying opportunities found with the SDG targets may provide new innovation opportunities. New organizations, however, can build their entire business framework around solving an SDG target related problem.

Sustainable Entrepreneurship and Impact

Schaltegger and Wagner (2011) present a classification matrix of sustainable entrepreneurship. They define sustainable entrepreneurship as “the realization of sustainability innovations aimed at the mass market and providing benefit to the larger part of society” (Schaltegger & Wagner, 2011, p. 225). According to them, sustainable entrepreneurship can be classified in two ways. First, the authors use the concept as an umbrella term, covering all forms of entrepreneurship involved in non-financial goals related to sustainability. Second, they present a taxonomy, where four forms of entrepreneurship can be classified as sustainable. In line with the TBL thinking, the authors regard ecological and social entrepreneurship separately. In addition, they introduce the notion of institutional entrepreneurship, i.e. regarding changing institutions as a direct goal (ibid., pp. 223–224). Finally, they treat the concept of sustainable entrepreneurship itself as a more integrated form of entrepreneurship, as an “innovative, market-oriented and personality driven form of creating economic and societal value by means of break-through environmentally or socially beneficial market or institutional innovations” (ibid., 2011, p. 226).

Sustainable entrepreneurship thus defined, in other words, concerns not only being mindful of the ecological and social impact of an organization, but discovering business opportunities that are themselves conducive towards advancing ecological and social issues.

Drawing from the TBL model, Belz & Binder (2017) present a convergent process model, where sustainable entrepreneurship arises from a process that consists of six phases:

- 1) Recognizing an ecological or social problem.
- 2) Recognizing an ecological or social opportunity.
- 3) Developing a double bottom line solution, ie. ecological and economical, or social and economical.
- 4) Developing a triple bottom line solution.
- 5) Funding and forming the company.
- 6) Creating or entering a sustainable market.

Here also, sustainability and business operations are interlinked. According to Belz & Binder, innovating directly with a focus of all three of the TBL components becomes overly complicated. Therefore successful companies must at first focus on one or the other of the sustainability aspects of TBL to be able to create a mass-marketable product. They back their theorizing with empirical case studies from four sustainability-focused companies: Coffee Circle, Fairnopoly, Globe Hope and Polarstern. (Belz & Binder, 2017, p. 5.)

While there is an increasing number of entrepreneurs who build their ventures to solve an ecological or social problem, startups may in fact be an ideal type of organization to solve sustainability challenges, in particular when directed by the SDG targets.

STARTUP ENTREPRENEURSHIP

A startup should be regarded as a specific subtype of an entrepreneurial venture, identified by expectation of significant month-on-month growth, financial instability subsidized by external capital, radical innovation both with respect to product and market opportunity and significant unpredictability. As Felin et al. (2020, p. 1) argue, entrepreneurs are increasingly viewed “as actors engaged in quasi-scientific experimentation.” Most emphatically this applies to startups, which due to their instability and unpredictability must engage with constant experimentation and tinkering to adjust their product to fit an intended market, or to adjust their market position.

The Startup Process

As a startup doesn't have initial revenue, it needs to support its operations by raising external funding through venture capital, grants and government subsidies. Venture capitalists in particular expect the startup to reach significant month-on-month growth in order to warrant the significantly higher risk profile of the investment compared to the general market. In order to service a new kind of a market and generate high growth, startups need to engage in radical innovation both with respect to their product as well as their market potential. Both the choice of product and market, in turn, require identifying a concrete problem to solve.

Based on numerous interviews conducted with leading Scandinavian startup entrepreneurs, we have identified four stages in the startup process (Hellström et al., 2019). The first question a startup needs to resolve is: *What is the problem it is addressing?* The problem drives customer need and therefore demand for the product. If the problem is not real for the target customer, the startup will eventually fail. The second question a startup needs to answer is how they intend to solve the problem. In other words: *What is the product or service of the startup?* Third, the startup needs to find an appropriate market that is within their reach and that has enough purchasing power for their solution to be a commercial success: *Who is the customer?* And ultimately, in particular if the startup has attracted external capital, the startup will also need to figure out how to scale their business either by expanding to new demographics, new geographies or new products or features.

Thus, the startup process can be described by addressing four key questions:

- 1) Finding the problem
- 2) Identifying the problem–solution fit
- 3) Identifying the product–market fit; and
- 4) Scaling the market.

While the model outlined above resembles other entrepreneurial process models, such as the convergent sustainable entrepreneurship process model developed by Belz & Binder described above, it should be noted that for the startup, the process of reaching a market with a viable product does not happen linearly. Rather, a startup advances through iterative cycles of building an initial prototype, or “minimum viable product,” testing it with target customers, gathering data about its performance and adjusting either the product or the target market according to the data. This model has been popularized in the book *The Lean Startup* by Eric Ries (2011).

The Lean Startup

The Lean Startup methodology is based on the concept of a Build–Measure–Learn loop (Ries 2011, p. 75). The startup entrepreneurs will first form a hypothesis about a potential solution to an identified problem. Then they will launch an initial version of the product to the market, dubbed by Ries as the “Minimum Viable Product,” to gather data about customer behavior. Based on this data, the entrepreneurs will then develop the product further, target a different market, or in case neither is a viable option, perform a “pivot,” that is to say, redirect their efforts to a different type of product.

According to Felin et al. (2020), the Lean Startup methodology is challenged in particular by its not providing the entrepreneur with viable hypotheses to start testing in the first place, as well as by overt reliance on observable data. Responding to the critique, Bocken & Snihur (2020) point out that the methodology is not intended for the ideation of novel hypotheses, but simply for

testing them; for ideation, other tools are needed, such as distant search and analogies (Bocken & Snihur 2020, p. 3).

The Lean Startup methodology outlines an empirically sound generalization of entrepreneurship under markedly uncertain conditions that has been corroborated by numerous startup entrepreneurs and is being taught in leading entrepreneurial education programs around the world, including Stanford University, UC Berkeley and Aalto University. It works as a good starting point for outlining startup operations, especially once it is augmented by some such pre-hypothesis tools, such as setting a compelling vision and using business model innovation to generate the first testable hypotheses (Bocken & Snihur 2020, p. 3).

Coming up with an initial product hypothesis that addresses an actual problem is a widely recognized challenge for early stage startups. Equally difficult is identifying metrics and sources of data that are firstly reliable enough to measure successfully, and secondly actually meaningful to the business operations of the startup.

SDGs can provide startups a starting point to resolve both of these challenges. SDG targets outline a number of clearly defined problems that concern millions, if not hundreds of millions of people, any of which can contribute into a startup's initial hypothesis. SDG indicators, in turn, provide metrics to measure the efficacy and progress of the startup's operation with respect to the chosen SDG target. Finally, if the startup can identify business transactions that are conducive towards improving an SDG indicator, the sustainability and business operations of the venture become equal.

BUSINESS OPPORTUNITIES FOR SDG STARTUPS

The UN estimates that SDGs provide business opportunities up to 12 trillion USD in (United Nations, 2019, p. 2). The pressure to innovate that is required to solve SDG-related problems, coupled with the drive towards significant growth, makes SDG targets a very compelling platform to seek new startup market opportunities. Given that the entire startup ecosystem already caters for a total market of 3 trillion USD (Startup Genome, 2021), startups definitely command the type of innovative and financial firepower that solving SDG-related problems requires.

Business Model Innovation and SDGs

Business model innovation concerns new ways of constructing an organization's business operations. This means all the aspects of the organization's operations, such as research and development, production, sales and marketing, human resources, financial operations, legal operations and leadership. A startup is a type of organization where all the aspects of its business model are fluid and dynamic, as it, by the definitions adopted above, is an organization whose purpose is to *discover* a new type of working business model. In other words, the central task of any startup is business model innovation.

In order to find a real problem to solve, to create a solution to solve the problem, to bring the solution to a target market and to grow the business operation at scale, startups can turn to SDGs as a starting point. As said above, there are a total of 169 targets concerning the 17 SDGs. Each SDG target has also indicators attached to them to enable monitoring progress towards reaching the targets, in total 231 (UN, 2017). There are a great many startups already operating in areas related to SDGs, whether explicitly or implicitly. These include, only to name a few, startups working on circular economy (Schroeder et al., 2018), sharing economy (Govindan et al., 2020), mobile banking, health supply carrying drones and organic waste conversion (Surana et al., 2020) as well as Internet of Things, blockchain and the measurement of SDGs themselves (Villiers et al., 2021). Many SDGs also enable the entrepreneur to cater not only for developing

countries, but also more affluent geographies, for example by creating novel innovations in education (SDG4) or clean energy (SDG7).

TABLE 1
Examples of SDG Targets and Indicators

SDG	Targets	Indicators
SDG 1 No Poverty	<p>1.1. Eradicate extreme poverty</p> <p>1.3. Implement social protection systems for all</p> <p>1.5. Build resilience to environmental, economic and social disasters</p>	<p>1.1.1 Proportion of population below the international poverty line</p> <p>1.3.1. Proportion of population covered by social protection floors/ systems</p> <p>1.5.1. Number of deaths, missing persons and directly affected persons attributed to disasters</p>
SDG 2 Zero hunger	<p>2.1. Ensure access to all people to safe, nutritious and sufficient food all year round</p> <p>2.4. Ensure sustainable food production systems</p>	<p>2.1.1. Prevalence of undernourishment</p> <p>2.4.1. Proportion of agricultural area under productive and sustainable agriculture</p>
SDG 5 Gender Equality	<p>5.1. End all forms of discrimination against women and girls everywhere</p> <p>5.B. Enhance the use of enabling technology</p>	<p>5.1.1. Promote, enforce and monitor equality and non-discrimination on the basis of sex</p> <p>5.B.1. Proportion of individuals who own a mobile telephone, by sex</p>
SDG 7 Clean and Affordable Energy	<p>7.1. By 2030, ensure universal access to affordable, reliable and modern energy services</p> <p>7.3. Double the global rate of improvement in energy efficiency</p>	<p>7.1.1. Proportion of population with access to electricity</p> <p>7.3. Energy intensity measured in terms of primary energy and GDP</p>
SDG 13 Climate Action	<p>13.1. Strengthen resilience and adaptive capacity to climate related hazards</p> <p>13.B. Promote mechanisms for raising capacity for effective climate change-related planning and management</p>	<p>13.1.1. The number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population</p> <p>13.B.1. The number of least developed countries and small island developing states that are receiving specialized support</p>

There are at least four reasons why SDGs are promising as potential business opportunities for startups. First of all, they offer clearly defined targets that can be used to generate the initial business hypothesis that can then be tested. Second, SDG indicators work as metrics that can be used to measure the progress towards the targets and thus the sustainability efficacy of the startup, as seen in Table 1. Third, SDG targets concern substantial target demographics, measured in millions, if not hundreds of millions of potential customers. Fourth, each of the targets offers also immediate access to further research and information about how the problems related to the target could be structured, derived from the research being performed on the SDGs, such as the specifically company-directed SDG Compass toolkit developed by the Global Reporting Initiative (<https://sdgcompass.org>).

Startup Business Opportunities from SDGs

Madsen (Madsen, 2020, p. 1) argues that business models have been historically built using linear concepts, resulting in hierarchical and siloed organizations. Startups need to have more dynamic business models, and to this end she presents a new framework called the Ecosystem View of Business Model Innovation. Instead of traditional conceptualizations focusing on product, market and expenses, Madsen suggests focusing on three components concerning value: value creation, value delivery and value capture (Madsen, 2020, p. 2). Value creation concerns the products and/or services provided, as well as their value proposition. Value delivery concerns how value is delivered, meaning the key activities and resources needed. Value capture links to profits and benefits to stakeholders.

By addressing an SDG target with the startup's product or service, immediate value is created and delivered to the target customer. Value is captured for the shareholders through either profitability, or as is more typical to a successful startup, significant growth in the valuation of the company. Ultimately, by virtue of servicing immediate social or ecological needs of the target customer base, this leads also to significant stakeholder benefits.

In addition to product innovation, the challenges with many SDGs concern matching of production overheads with the purchase power of the target customer. In many of the SDGs – most explicitly SDGs 1 and 2 – the purchase power of the individual customer is negligible. However, here also, the sheer volume of potential customers may create profitable business opportunities. Even with the most challenging SDGs, through experiments and innovation, startups can create viable solutions based on a negligible unit price, but that would yet lead to a significant business opportunity through the sheer scale of the problem. For example, the definition of absolute poverty is having less than \$1.90 to spend daily. As of 2021, there are 750 million people falling into this category (Schoch, Jolliffe, & Lakner, 2020). In other words, while the purchase power per capita is negligible, as a total market opportunity this figures in the ballpark of 1.5 billion dollars. If a startup were to offer, say, financial services enabling their customers to increase their access to capital, a business opportunity could be discovered without the need to subsidize the cost by a non-profit oriented party.

Furthermore, the World Bank has introduced the notion of Societal Poverty Line (SPL) (Jolliffe & Prydz, 2021). The purpose of this metric is to measure more accurately actual poverty, as the costs of living vary highly from country to country. In 2017 the global average SPL was \$7.20 and the number of people falling below this line was 2 billion (Schoch, Jolliffe, & Lakner, 2020). In other words, there is the ostensible opportunity to cater for a market up to 14,4 billion USD, if a startup can offer services that first of all address the issue of poverty, and secondly do so at a price point accessible to the people living below SPL. While SDGs 1 and 2 will almost certainly need funds from the global community that are provided by NGOs and governments, here too, startup organizations may be able to create novel ways to address the issues of poverty and hunger.

For other SDGs, creating innovative business opportunities should not be quite as challenging. For example, SDG 6 addresses issues concerning waste disposal and clean water, problems which lead to the death of almost a million people annually (World Health Organization, 2019). If a startup were to design a cost-effective waste disposal system with a price point within the

purchase power limits of poor communities in developing countries, it could sell the solution directly to the end user, instead of the installations needing outside subvention as is currently the case. Each sale would lead to the waste disposal issue being resolved, which would lead to less cases of diarrhea, which would lead to less deaths. In other words, by growing and scaling up its operations, it would simultaneously scale up its revenues and its impact, the two being inseparable from one another. Each sales transaction would save lives.

SDGs give startup entrepreneurs insight throughout all the four pillars of the startup process. SDG targets are either themselves problems to be solved, or indicate some such problems that are pressing for millions of people. SDG-related research can inform the startup on the types of products and solutions that could be viable to solve the problem. The market opportunities are indicated by the relevant demographics concerning the SDG targets and indicators. And finally, given the sheer scale of the phenomena covered by the SDGs, most if not all of the SDG targets also offer the potential for significant scalability and growth.

SDGs offer startups clearly defined problems to solve. By product and service innovations, startups can design new ways to create value. By analyzing viable markets and deploying the product or service to the market, they can deliver value, and by growing through expanding to other geographies or demographics, by expanding the product or service features or by creating new products for existing customers, the startups can capture value and scale up their operations. If the business transactions of the startup arise from advancing an SDG indicator, growth in its revenues will also lead to growth in its sustainability impact, the two being functionally inseparable.

CONCLUSION

In this paper, I set out to explore how startups could be a transformative force in reaching the UN Sustainable Development Goals. The planet is facing tremendous challenges involving our social and environmental issues. Many of these challenges have been codified by the UN in Agenda 2030 as the 17 Sustainable Development Goals. While governments and non governmental organizations seek to direct funding to meeting these goals, this alone is not enough; the efforts of the private sector are needed too.

Businesses are rising to the sustainability challenge in increasing numbers. In addition to the more traditional shareholder- and stakeholder-centric approaches of sustainable business, more holistic approaches have gained support in recent years. Most notably, the doughnut economy that requires business operations to adhere to the social foundation and the ecological ceiling is a framework that is highly compatible with SDGs.

Theoretical work on sustainable entrepreneurship indicates that entrepreneurial ventures should move towards seeking business opportunities in directly catering to the ecological and social challenges themselves. If the business of an entrepreneurial venture is defined through ecological or social goals, such as codified in SDG targets, financial and sustainability motives collapse together.

Following the Lean Startup theory and methodology, as well as learnings from the global startup ecosystem, a startup is a subtype of an entrepreneurial venture whose function is to perform data-driven experiments to discover a new, scalable business model. When a startup is successful, the scope of growth can be markedly higher than average market growth, as is seen again and again with such successes as Facebook, Snapchat or Supercell, where a company has gone from zero to a multi-billion-dollar valuation in a matter of a few years. Once this phenomenon is extended to sustainability-directed efforts, its impact will be significant. By using SDG targets as a starting point, startups can discover business opportunities in servicing SDG-driven markets while measuring their sustainability efficacy by the attached SDG indicators.

There are several empirical questions that need to be addressed to understand these opportunities better. More comprehensive research on the number and performance of startups that are explicitly working with SDG targets is needed, especially exploring financial and sustainability synergies. SDG targets need to be analyzed from the point of view of their viability as interfaces for actual business opportunities, for example by evaluating purchase power of the target customers and actual market sizes. The suitability of various existing business models should be explored at depth to generate a deeper understanding of what are the most promising starting points for an SDG-directed startup. Such research would benefit both our understanding of the business opportunities within SDGs as well as generate valuable data for aspiring startup entrepreneurs looking into solving SDG-related problems.

If a startup grows through servicing an SDG target, its financial and sustainability success will be intrinsically connected. Growth in revenues will lead also to growth in impact, measurable with the appropriate SDG indicators. Given the outlier growth potential of the most successful startups, this is a worthy goal to consider within the entire startup ecosystem when looking for new ideas for a business venture.

Reaching the Sustainable Development Goals requires significant effort from all types of organizations. By virtue of their product and market innovation, data-driven market validation and significant growth potential, startups can be some of the most powerful organizations in generating momentum to reach the SDGs. In doing so, SDG-driven startups can truly cash in on the Silicon Valley promise of making the world, in this case quite literally, a better place.

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ISBN 978-952-64-1679-3 (pdf)
ISSN 1799-4829 (pdf)

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