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Framing Entrepreneurial Ideas for Sustainability: How Do Purpose-Driven Startups Include the Sustainable Development Goals in Their Pitches?

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ABSTRACT

This paper investigates how entrepreneurs frame the sustainability of their business ventures when pitching their business prospects and sustainability approaches to investors. Drawing on framing theory, this research explores the classification and application of sustainability-related frames employed in business pitches. A qualitative multiple case study methodology is applied to collect and analyze data from startup pitches presented at the startup event Slush, which is held annually in Finland. The sample consists of active startups and those that did not survive following the pitching event. The Need–Approach–Benefit–Competition (NABC) pitching model and the UN's Sustainable Development Goals serve as frameworks for systematically analyzing the content of the verbal pitch presentations. We disentangle how entrepreneurs formulate business ideas within frames related to sustainability themes on the micro, meso, and macro levels using cognitive, strategic, technological, and institutional frames. The resulting model distinguishes between different combinations of sustainability framing elements applied in startup pitches.

1 | Introduction

Sustainable entrepreneurs and purpose-driven technology ventures play a key role in achieving the United Nations' (UN's) Sustainable Development Goals (SDGs) (Barberá-Tomás et al. 2019; Horne et al. 2020; Mair and Martí 2006), in supporting the European Green Deal (European Commission 2019), and in driving sustainability and climate neutral practices through new business models (Aagaard 2019; Aagaard, Lüdeke-Freund, and Wells 2021; Klein, Spieth, and Heidenreich 2021; Tiba, van Rijnsoever, and Hekkert 2021). In the sustainable entrepreneurship literature, startups are considered to be especially adept when it comes to advancing the sustainability transition in new business models and innovations because of their agility and

possibilities to adopt bold visions and their new ways of working that enable them to bring disruptive innovations to the market (Caputo, Schiocchet, and Troise 2022). However, startups focusing on solutions that address the SDGs may have challenges securing funding from global investors. The integration of environmental, social, and governance (ESG) investing into mainstream investments is often hindered by factors such as the business case, quality of data, absence of clear definitions, short-term business vision, and lack of knowledge on the part of the investors (Friede 2019).

When seeking funding through pitching, sustainable entrepreneurs need to frame their business ideas in a way that aligns with investors' existing mental business and financial frames while targeting the SDGs. However, we currently lack an

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understanding of how different forms of language are used in entrepreneurial communication, such as pitches, hence leading to calls for further empirical research (Clarke, Cornelissen, and Healey 2019; Troise and Tani 2020). Previous entrepreneurship research has primarily focused on theoretical assumptions regarding specific forms of linguistic framing and their effectiveness (Parhankangas and Renko 2017). Therefore, the present paper investigates how startups attempt to solve this tension between wanting to “do good” and selling their business ideas to conventional investors, who still tend to prioritize growth and profit maximization (Jung, Lee, and Hwang 2022; Spence 2002). Prior research has applied signaling theory to analyze how startups and companies publicize business ideas and value propositions and to describe the process of attracting funding from investors (Jung, Lee, and Hwang 2022; Spence 2002). We expand this stream of the literature by drawing attention to the framing of sustainability concerns in the business pitches presented during stakeholder encounters. Here, the rhetoric in the pitches refers to how language and different concepts are used in a live presentation to inform, motivate, and persuade audiences—a research topic that is currently gaining momentum in the entrepreneurship communication literature (Tomlinson 2020; van Werven, Bouwmeester, and Cornelissen 2019; Vitanova 2023).

When startups present their business ideas to investors, they grapple with the ambiguity inherent in conveying the potential of their venture (Clingsmith and Shane 2018; Maxwell, Jeffrey, and Lévesque 2011). In these circumstances, startups may apply different framing, rhetorical, and communication tactics (Clarke, Cornelissen, and Healey 2019; Coulson 2001; Snihur et al. 2022; Werner and Cornelissen 2014). Appropriate framing of the business idea in startups' pitches can help resolve information asymmetry between the startup entrepreneurs and investors (Connelly et al. 2011). Entrepreneurs working with sustainability have also been found to reframe the sustainability paradigm when developing the microlevel practices of entrepreneurial ecosystems (Pankov, Schneckenberg, and Velamuri 2021). When presenting the meaningfulness and innovativeness of a new business venture to attract investors, entrepreneurs frame their venture ideas by concentrating on specific aspects that they believe to be the most relevant to investors (Snihur et al. 2022). These aspects could include the distinctiveness of their solution (McKnight and Zietsma 2018) and the environmentally friendly purpose of their venture (Rossolini, Pedrazzoli, and Ronconi 2021; Weber, Heinze, and DeSoucey 2008). There is a strong value orientation associated with the choice to focus on tackling societal problems and creating a positive societal impact with sustainable products and services (Horst, Järventie-Thesleff, and Perez-Latre 2020). To build credibility and legitimacy for sustainable business ideas, entrepreneurs also test new frames (Clarke, Cornelissen, and Healey 2019).

Framing theory has been introduced as an applicable theory, for example, in the marketing literature focusing on customer value-based marketing and, more specifically, value-based selling (VBS) (Keränen et al. 2023). Even though VBS is not directly related to pitching to investors by purpose-driven startup entrepreneurs, it does have similarities in the idea of not focusing purely on selling the products and services but also using frames that support broader business values; here, the entrepreneurs need to have in-depth knowledge of the business models and strategic objectives of their customers. However, customer value-based marketing

neither considers the environmental and social sustainability perspectives nor the economic perspective. Framing theory is one of the eight theories that Keränen et al. (2023) consider relevant to B2B marketing phenomena; they propose the following research question that could be derived from framing theory in the context of VBS, which is pertinent to our study: When and how can alternative framing strategies complement or replace value quantification? This is specifically relevant for individual-level decision-making based on the value sales communication and the messages used to frame information to influence the audience (Goffman 1974). Hence, Keränen et al. (2023) call for more theoretically grounded research on the VBS of ideas in different contexts. In addition, other researchers focusing on the framing of social movements have called for further studies on how factors other than profits are framed to envision a just world and create action instead of just protests (Himick and Ruff 2019).

However, research on the rhetoric used in framing novel business ideas in startups' pitches to investors remains scarce (van Werven, Bouwmeester, and Cornelissen 2019). One of the main challenges that startup entrepreneurs encounter is persuading the relevant audiences (i.e., investors) to financially support their business ventures (Falchetti, Cattani, and Ferriani 2022). Although this is true for entrepreneurs in general, the challenge is even more acute for entrepreneurs pursuing sustainable venture ideas (Johnson and Schaltegger 2020). These emerging enterprises encounter significant challenges in securing financial backing from conventional channels, particularly in the aftermath of global crises (Bruton et al. 2015; Troise and Tani 2020). To this day, there has been a notable scarcity of research dedicated to exploring environmental and social sustainability—as well as the underlying purpose—of business venture pitches (Caputo, Schiocchet, and Troise 2022). Within the limited number of studies that exist, the predominant emphasis has been on the investigation of crowdfunding initiatives (Rossolini, Pedrazzoli, and Ronconi 2021). Thus, we aim to contribute to filling this research gap by exploring how startups pitch their business ideas linked to sustainability while using framing theory to conduct a qualitative framing analysis of how startups pitch sustainability in their business ventures. The research question addressed in the present paper is the following: *How do purpose-driven startups frame the environmental and social sustainability of their business ideas when pitching to investors? More specifically, how do purpose-driven startups apply the popular Need–Approach–Benefit–Competition (NABC) pitching structure and UN's SDGs to frame the environmental and social sustainability of their business?*

The current paper suggests that utilizing framing theory is suitable for conducting a more in-depth examination of how NABC elements and SDGs are integrated into pitches (Huang et al. 2021). This allows us to analyze—on the business pitch level—the actual content of the business idea and value propositions because there is a need to analyze the style and language used to frame the business idea. Theoretically, our study contributes to advancing the understanding of sustainability entrepreneurship (Harlin and Berglund 2021; Tiba, van Rijnsoever, and Hekkert 2021) and the way technology startups frame and communicate their purpose-driven ventures with sustainability targets (Harlin and Berglund 2021; Johnson and Schaltegger 2020). Furthermore, we contribute to expanding knowledge on the sustainability framing tactics used in pitches to investors

(van Werven, Bouwmeester, and Cornelissen 2019) and the literature on rhetoric and framing in entrepreneurship (Clarke, Cornelissen, and Healey 2019; Lounsbury and Glynn 2001). Using empirical pitching data, we demonstrate the evolving nature of the NABC pitch structure through the processes of frame blending and frame shifting, as described by Werner and Cornelissen in their 2014 study. This evolution encompasses the integration of sustainability components derived from the SDGs into newly emerging sustainability frameworks.

The implications arising from the current study for startups are that they will gain an understanding of different ways to frame sustainability when pitching business ideas to attract funding. The present study is exploratory and contributes to the initial mapping and identification of new sustainability framing levels applied in purpose-driven startups. With respect to framing theory (Clarke, Cornelissen, and Healey 2019; Coulson 2001), we highlight the role of frame blending and frame shifting when introducing purpose-driven technology ventures to investor audiences who are typically accustomed to business ideas being primarily framed in terms of the economic dimension (Cornelissen and Werner 2014). Accordingly, the current paper addresses a current research gap in understanding how technology startups pitch business ideas with a sustainability element (Harlin and Berglund 2021; Johnson and Schaltegger 2020).

2 | Theoretical Background

Our theoretical background comprises aspects of framing theory and explains how it enhances the understanding of sustainable entrepreneurs' and startups' business pitches while also offering a framework for conducting a deeper framing analysis of the sustainability elements used in the pitches. The first section provides background on purpose-driven sustainable entrepreneurship as a phenomenon of growing importance in startup scenes. Thereafter, we explore how framing theory can be applied in the context of pitching sustainable business ideas. The final section covers the role and structure of pitches to describe how a live presentation at a pitching event serves as an important communication method for startup entrepreneurs.

We initiated the research by conducting a literature search on framing theory, startup entrepreneurship, and pitching to find the latest research relevant to our research question and to justify the research framework (see Table 1). In the beginning, we reviewed the literature on framing theory in general. We also conducted a comprehensive literature review on existing research regarding the application of framing theory in entrepreneurship and sustainability research. Papers that applied the framing theory in the context of consumers, for example, in the case of adoption of green energy (Arroyo and Carrete 2019), were excluded.

2.1 | Sustainable Entrepreneurship and Purpose-Driven Startups

There is a growing movement toward sustainable and purpose-driven entrepreneurship, where entrepreneurs have the business objective of building a sustainable business and making “a

difference in the world” (Bosma et al. 2020). Previous research on sustainable entrepreneurship indicates that there are differences in the way startups are oriented toward environmental innovation and in their capacities to bring about a sustainability transformation in the markets (Olteanu and Fichter 2022). In the case of startups, the venture can be purpose driven from the beginning, and one subset of sustainable entrepreneurship activities is that involving green entrepreneurs or ecopreneurs, who tend to be value driven and focus on environmental issues, that is, current market failures, can help in developing more sustainable businesses (Kouri and Clarke 2014; Saari and Joensuu-Salo 2019). In addition, social innovation can be used for leveraging technological innovation so that novel technologies are utilized to develop products, services, and processes to solve soci(et)al and environmental problems (Gardner, Acharya, and Yach 2007; Millard and Carpenter 2014).

Social technology startups and purpose-driven startups focusing on environmental issues differ from other high-tech startups in how they focus on developing and launching technology-driven solutions targeted to respond to soci(et)al and environmental needs and in how they are financially sustainable (Desa and Kotha 2006). Some of the primary objectives of this type of startup are maximizing material and energy efficiency, creating value from waste, using renewables, employing natural processes, and repurposing business for society and the environment (Aagaard, Saari, and Mäkinen 2021; Antikainen and Valkokari 2016; Bocken et al. 2014).

When pitching sustainable business ideas, purpose-driven startups and sustainable entrepreneurs often refer to the UN's SDGs for explaining how they deliver sustainable value through the venture (Tiba, van Rijnsoever, and Hekkert 2021). This trend is bringing sustainability elements into the startup pitch. Thus, greater focus and consideration are given to environmental and soci(et)al elements in business idea development, business models, and product idea development (Harlin and Berglund 2021). However, there is still a research gap in understanding how sustainable entrepreneurs pitch business ideas with sustainability targets and dimensions (Harlin and Berglund 2021; Johnson and Schaltegger 2020).

2.2 | Applying Framing Theory in the Context of Pitching

Framing theory was initially introduced by Burke (1937) when assessing attitudes toward history, was further popularized by Goffman (1974), and later spread into other contexts, such as linguistics, sociology, and behavioral economics (Tversky and Kahneman 1985). According to framing theory, a frame is a way to describe the world with a “schemata of interpretation” and “by rendering events or occurrences meaningful, frames function to organize experience and guide action, whether individual or collective” (Snow et al. 1986, 464). In the context of management and organization research, framing theory has been applied to various cognitive, linguistic, and cultural processes in different organizational and institutional settings (Cornelissen and Werner 2014). Framing theory has also been applied in the context of social movements, where the objective has been to examine what profit has meant for activists in social

TABLE 1 | Summary of studies on framing theory in the context of entrepreneurship.

Author	Context	Methodology	Major contribution	Call for research
Bourblanc (2014)	Sociology of collective action and environmental policy making. Social movement theory and framing theory applied to study influence of affective aspects on strategic aspect.	Social sciences—highlighting certain episodes of this definitional process.	Highlights ways an environmental NGO constructed a public problem of agricultural pollution of water resources. Shows difference between the “perceived” problem and opportunistic framings in policymaking. Useful for policymakers on understanding the real problem at stake for entrepreneurs.	Test and systematize conceptual distinction in similar contexts, where ta perceived problem is at odds with surrounding paradigms. Also need for a typology of situations where conceptual distinction could be applied; need for determining how environmental issues are framed in such a problematization.
Figueroa-Armijos and Berns (2022)	Composite social responsibility and framing theory used to examine how vulnerability influences fund raising in a prosocial crowdfunding.	Multilevel logistic regressions, sample of microloans allocated to ventures in 64 countries.	Theory building in ethical crowdfunding, linking individual social responsibility and framing to form a composite theoretical framework. Suggests that prosocial crowdfunding could support the vulnerable and poor with a framing mechanism.	More primary data from entrepreneurs and crowdfunders to examine the driving factors of entrepreneurship and funding outcomes.
Kouri and Clarke (2014)	Green job markets and sustainable development in the workforce.	Literature review and qualitative framing analysis.	Presents five frames for different types of green jobs.	Role of an environment–economy bridge frame in global, regional, and cultural contexts
Nielsen and Binder (2021)	Entrepreneurship—crowdfunding	Replication of reward-based crowdfunding to study the causal effect of values frames on individual pledging behavior; web experiment method.	Found that altruistically framed campaigns can succeed better in acquiring funding compared to campaigns emphasizing egoistic or environmental motives, and that message framing should be aligned with personal values of the backing individuals. Links to research on resource mobilization in social movements and crowdfunding.	Focused only on the US context and calls for studies in other countries, and especially in Scandinavian countries that are considered to be globally advanced in CSR sustainability leadership.
Rosolini, Pedrazzoli, and Ronconi (2021)	Examines the impact of message framing, green emphasis, and quantitative information on green crowdfunding campaigns’ success.	Crowdfunding campaigns published between 2015 and 2020 on the Indiegogo platform; in-depth qualitative content analysis of the projects and empirical examination of the funding causes.	Study identifies new campaign success determinants and provides evidence for the moderating role of project category. Furthermore, the study highlights the need to develop different communication strategies for social and environmental-oriented projects.	Analysis of the combination of technology and green attributes that can increase green crowdfunding. Consider different types of framing in crowdfunding campaigns by combining empirical and experimental methodology.

(Continues)

TABLE 1 | (Continued)

Author	Context	Methodology	Major contribution	Call for research
Defazio, Franzoni, and Rossi-Lamastra (2021)	Prosocial framing—role of prosocial orientation in the context of mobilizing for-profit-related resources.	Prosocial framing analyzed by linguistic cues with Computer-Aided Text Analysis (CATA) for a sample of 8631 projects on the Kickstarter.com platform.	Contributes on crowdfunding, expands framing theory and methodology. Findings suggest that crowdfunding backers value the prosocial orientation of products, when it is an additional aspect but not replacing other product functionalities.	Study on the impact of other frames (not only prosocial one) in reward-based contexts, for example, ones focusing on environmental issues. More textual analysis including the impact of linguistic style to assess how different aspects are emphasized and communicated in fund raising initiatives.

movements (Bourblanc 2014) and how narratives about the suffering of others are framed in an endeavor to create a more just world (Himick and Ruff 2019). Recently, framing has gained popularity in entrepreneurship research, for example, in the study of socially responsible investing (Glac 2009), crowdfunding businesses with a prosocial orientation (Defazio, Franzoni, and Rossi-Lamastra 2021; Nielsen and Binder 2021), and investors' ethical investment intentions (Figuroa-Armijos and Berns 2022; Liu and Peifer 2022). There has also been a focus on how linguistic framing configurations can be used to persuade resource acquisitions (Stroe et al. 2022).

Framing has been defined as the selection, combining, and organizing of information about an item, for example, a product, service, problem, or solution that allows the target audience to better understand it (Fiss and Hirsch 2005, 30). Framing offers additional information about the topic presented, thus aiding in explaining it so that it becomes more understandable to an audience within the expected schema of interpretation (Cornelissen and Werner 2014). In essence, framing facilitates a more coherent and organized representation of the topic (Fiss and Hirsch 2005).

So-called *prosocial framing* is linked to positive outcomes, and research shows that customers and employees appreciate such framing in such a way that it can even boost companies' performance (Bhattacharya, Korschun, and Sen 2009). For example, the launch of eco-friendly products can be improved by more positive attitudes arising from *green framing* (Olsen, Slotegraaf, and Chandukala 2014). This also applies to a growing number of investors (Rodgers, Choy, and Guiral 2013). In crowdfunding projects, framing has been found to influence individuals' decision-making processes by distinguishing or *demarkating* items, for example, by framing a product as eco-friendly compared with other products that are more harmful to the environment (Defazio, Franzoni, and Rossi-Lamastra 2021). This approach could be used to gain the interest of environmentally conscious investors. Another way framing has been used in crowdfunding projects is to motivate and prompt support from the target audience, especially in the case of social movements (Defazio, Franzoni, and Rossi-Lamastra 2021). The research by Defazio, Franzoni, and Rossi-Lamastra (2021) focuses on prosocial framing, and they have called for further research on other framing contexts that go beyond just reward-based ones and have asked for more research on the impact of frames other than the prosocial frame.

A framing approach focusing on *distinctiveness* can be created by presenting an easily recognizable identity through consistent framing choices over time (Pontikes 2012). Framing has also been linked to *sense-making* because it involves aspects of explaining and defining. Both concepts suggest that reality cannot be easily conveyed directly through raw data; instead, reality is constructed using various schemas with predefined vocabularies (Fiss and Hirsch 2005). In the more recent entrepreneurship research on value alignment with the crowdfunding campaigns' objectives, Nielsen and Binder (2021) have utilized strategic linguistic framing to show how a message can be framed to significantly impact the backers' interest in supporting the campaign. They also refer to the concept of "frame resonance," which describes the need for an overlap between the values of

the campaign and its framing with the values of the individuals in the audience (Nielsen and Binder 2021).

Cornelissen and Werner (2014) have analyzed the main research traditions relating to framing processes and the different levels of analysis. They categorize framing according to the level of analysis into micro, meso, and macro levels that help to differentiate the scopes of the frames with reference to organizations, developed technologies, strategies, and institutions. In our exploration, we apply four-frame constructs and levels of analysis (Cornelissen and Werner 2014) that we have adapted to the sustainability context in business pitches:

- *Cognitive frames* refer to the micro level, focusing on the knowledge structure used in startup and business contexts when pitching.
- *Technological frames* are used at the meso level when a company is developing and introducing new technology to solve a problem.
- *Strategic frames* refer to the meso or macro levels, describing the need to change because of global challenges.
- *Institutional frames* link to the macro level and are used to show the connection of the business venture to a socioeconomic context that requires change.

Werner and Cornelissen (2014) also present two discursive framing tactics: frame shifting and frame blending. *Frame shifting* refers to rewriting and reorganizing the existing information and principles used in existing schemata to create a new, changed context with a new frame (Cornelissen and Werner 2014; Coulson 2001). As individual actors attempt to shift to a new frame, they employ critique and question prevailing institutionalized schemata by creating an altered frame with restructured content, information, and expectations that offer new interpretations (Werner and Cornelissen 2014). Frame shifting can occur as a result of a process of sense-breaking (Pratt 2000), or changes in meaning for individual actors when existing institutionalized schemata are no longer meaningful in practice (Seo and Creed 2002). In a frame shifting process, individual actors can include elements from alternative discourses, novel values, and perspectives that have not yet been applied in the existing schema (Werner and Cornelissen 2014).

Frame blending is the combination of two different schemata that share an abstract structure, and it can also include placing words and elements from one schema into another (Coulson 2001). In frame blending, the contrast, here compared with an earlier schema, is not as clear and distinct. Instead, there can be alignment and integration of multiple schemata on the conceptual level to create a hybrid schema that is then applied when introducing changes into a familiar schema (Werner and Cornelissen 2014). This kind of approach could also be applied by some businesses in a transition phase as old frames are still the expected norm while some new perspectives are gradually being incorporated into the language. To the best of our knowledge, the two discursive framing tactics proposed by Werner and Cornelissen (2014, 1457) have not been previously applied in the context of the business pitches of purpose-driven sustainable entrepreneurs.

2.3 | Startups Pitching Business Ideas to Investors

Startup entrepreneurs typically first introduce their business ideas orally in a short pitch to investors in an effort to obtain direct equity investments for their business venture (Maxwell, Jeffrey, and Lévesque 2011). To capture the attention of investors and pique their interest in learning more about a startup, a pitch or business narrative must convey a compelling and credible message that aligns with the audience's expectations. This underscores the essential importance of effective rhetoric in attracting investors' attention (van Werven, Bouwmeester, and Cornelissen 2019). Effective and informative pitching plays a critical role for startups looking to engage in meaningful conversations with prospective investors who swiftly discern between strong and weak business concepts.

When pitching business ideas to investors, startups need to decide how to deal with the uncertainty underlying novel venture ideas and how to convey their venture's potential (Clingingsmith and Shane 2018). Entrepreneurs work in uncertain contexts where they do not necessarily have experience or evidence of the potential success of their venture (Johansson 2004). Because of the lack of data on and evidence of potential success factors, they need to build their storylines on narrative-based structures and frameworks that are familiar to the audience and convey the expected information—the type of data investors would normally apply to assess investment opportunities (Higgins and Gulati 2006).

There are diverse market actors and interactions for different value propositions presented by startups, and different investor types have varying motivations and approaches for screening startups' business ideas (Muñoz and Cohen 2017). Venture capitalists usually offer the most sought-after source of financing for conventional startups, and they are typically focused on business models, including new technology that is easily scalable (Lockett, Murray, and Wright 2002). However, there are also so-called impact investors who want to invest in startups that have a positive impact on society and the environment, in addition to being able to provide financial return on their investment (O'Donohoe et al. 2010). The focus of impact investors can vary: Some concentrate more on the social impact of the business idea, others on the environmental impact, and some seek both social and environmental impacts (Muñoz and Cohen 2017; O'Donohoe et al. 2010).

For sustainable entrepreneurs seeking investments, the level of novelty in the business can significantly impact its ability to attract funding (Jung, Lee, and Hwang 2022). Newly established startups—particularly hybrid ones that are social tech startups with value-based missions (including social and environmental impact as well as business objectives)—can face challenges because of the difficulties the customers and investors may have in identifying a clear value proposition (Le and Suh 2019). Previous research has suggested that pitch training for entrepreneurs does not have an impact on the quality of actual business ideas. To deliver a good pitch, the venture idea needs to be of a certain quality (Clingingsmith and Shane 2018). However, there is a gap in the literature on the way environmental and social sustainability can be integrated into the content of a pitch.

3 | Methodology

Given the explorative nature of the research and the limited number of existing studies on the topic, a qualitative multiple case study approach was applied (Yin 2014). This approach enables us to build a theoretical understanding of the phenomenon in a realistic setting. By combining the literature on framing theory and sustainable entrepreneurship literature with empirical findings from the business pitches of startups that served as case studies in this research (Dubois and Gadde 2002), we were able to build such theoretical understanding of the phenomenon. In the first stage of the case selection, all the pitches of the startups participating in the Slush pitching competition in 2017 and 2018 were analyzed. Slush is a leading startup event that takes place annually in Helsinki, Finland. It provides an ideal context for studying our phenomenon in real life and across different cases. In the second stage, pitches for more in-depth analyses were selected using purposive sampling (Moser and Korstjens 2018). By selecting active startups for the final analyses, the focus was on successful cases (Patton 1990); however, these were also compared with startups that were no longer active in business.

The entrepreneurship literature shows that linguistic analysis can be applied to analyzing business ventures' narratives and pitching (Larty and Hamilton 2011). A commonly used narrative structure for startup pitches is the NABC approach, originating from the Stanford Research Institute (SRI International) (Carlson, Polizzotto, and Gaudette 2019). Here, the reference is to customer *needs* (N) and the *approach* to solve a customer need or problem (A); it also introduces the idea of *benefits* over cost of the new offered solution (B) and presents potential *competition* and market opportunities for the business solution (C).

We apply a qualitative textual analysis research approach and linguistic methods to study the expressions applied and how they are organized and constructed (Lacity and Janson 1994). For the categorization of linguistic expressions, NABC pitching model elements were selected (Carlson, Polizzotto, and Gaudette 2019) combined with the UN's SDGs (UN 2022), which were applied as the sustainability lens. The textual elements were mapped using the cognitive, technological, strategic, and institutional frames adapted from Cornelissen and Werner (2014). In the analysis, we adopted an abductive logic

while using the systematic combining approach to allow for an adjustment of the developed framework according to findings from the empirical data (Dubois and Gadde 2014). Systematic combining is a nonlinear process of matching efforts with the ultimate objective of matching theory and reality by going back and forth from frameworks to data and back to analysis (Dubois and Gadde 2002).

The qualitative textual analysis methodology was applied first to illustrate the use of the NABC pitching framework in the analysis of pitches and to analyze how the NABC elements are linked to the SDGs in the NABC framework. This allowed us to identify patterns of NABC elements and how they are linked to SDGs and highlighted by startups in the content of the pitches. In this stage, we went through all 136 pitches from the Slush 2017 and 2019 events and categorized them based on the way they addressed environmental and social sustainability (Figure 1). Next, 10 successful and active and 10 unsuccessful startups were selected for a more detailed textual analysis according to the NABC framework (see Tables 2–4). Finally, further data collection was conducted by interviews with some active startups to examine the way the startups had experienced the Slush event. The interviews were structured and consisted of six questions on the pitching experience and current financing of the startups to track how successful they had been in raising funding later and if they were still in business (see Appendix 1).

To enhance the validity and reliability of the findings, we triangulated the data collected from the pitches with secondary data from the startups' websites to check whether the startups were active at the time when the analyses were done and to further investigate their sustainability targets (see Appendix 2). Triangulation is a validation approach in which data drawn from various sources at different times can be combined (Flick 2004). We further analyzed how active startups have continued developing sustainability elements in their business ventures by verifying the content on their home pages. Sustainable business aspects are the new elements that may be hard to present as part of the traditional NABC model, where the perspective is primarily on company-level activities, targets, and achievements. Therefore, sustainability perspectives that have a strong emphasis on SDGs need to be framed in a novel way. This becomes evident through how startups have formulated more profound

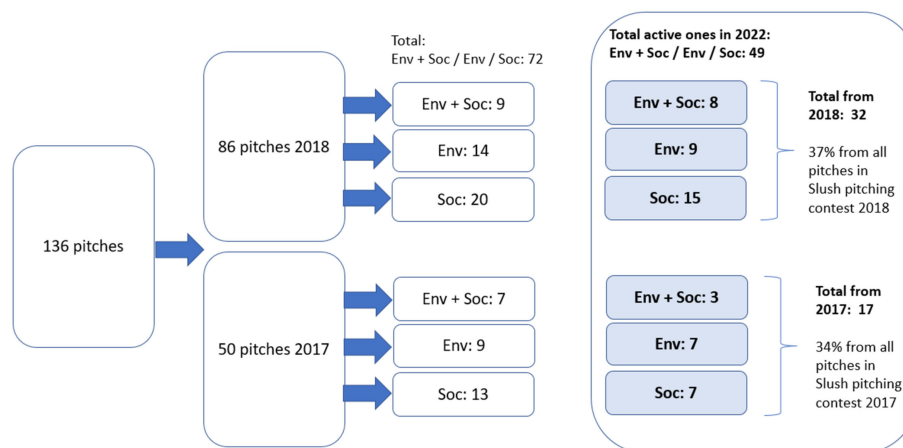






FIGURE 1 | Process for selecting the pitches to be analyzed.

TABLE 2 | Active startups—Structural analysis of the used NABC elements and their links to sustainability.

Startup type and stage of startup	Industrial sector of startup	Illustrative quotes from pitches (sustainability elements highlighted)	NABC structure of pitch	NABC sustainability elements	Framing constructs (Werner and Cornelissen 2014)	Aggregate themes—Emerging sustainability frames	Topics covered in the questions from the jury of investors
Active Startup 1/a	Analytics and big data (financial and insurance and property and construction tech)	“However, <i>our service, it will give you all that plus technical risks and costs, energy consumption and emissions, property value forecasting</i> ...”	N-A-B-N-C-B/S-C 	Sustainability benefit	T	Technologically enabled sustainability Sustainability analytics	Types of clients, data on traction from revenue perspective, data collection method, business model
Active Startup 2/a	Cleantech, energy, and transport and automotive	“... it has <i>invented a revolutionary battery technology based on a brand-new innovation, ... to store energy</i> ... it's actually extremely high-performance ... We also have <i>simple manufacturing, ...</i> ”	C-N-A/S-B/S-C-B/S-C-A 	Sustainable approach Sustainability benefit	T	Technologically enabled sustainability Energy related	Testing at scale or in lab, question on size of largest battery, has solution been shared with large companies and what was their feedback, plan now in the next 6–9 months, the team, business model, the final product, do you sell it to clients or is them selling it, what is the core innovation, how easily can the invention be copied, patent
Active Startup 3/b	Industrial internet and IoT, energy, and transportation and mobility	“If you look at <i>charging infrastructure, one of the key challenges we have is, we need to charge because all the (—) that come out we need to choose. Today charging is a highly fragmented and isolated space, chargers are almost use case specific (—), we want to solve this fragmentation problem</i> ”	A-N/S-A/S-C-B-A-C 	Need for sustainable approach	CTSI	Sustainable infrastructure development	Who is the solution sold to, explain additional revenue, what is the app, questions on use of product



(Continues)

TABLE 2 | (Continued)

Startup type and stage of startup	Industrial sector of startup	Illustrative quotes from pitches (sustainability elements highlighted)	NABC structure of pitch	NABC sustainability elements	Framing constructs (Werner and Cornelissen 2014)	Aggregate themes—Emerging sustainability frames	Topics covered in the questions from the jury of investors
Active Startup 4/a	Cleantech, manufacturing and materials, and property and construction tech	<p>1. "... currently infrastructure is threatened by extreme weather we have soil erosion landslides we have sea level rising on coastal zones and all this requires extensive ground stabilisation."</p> <p>2. "It's not magic it's chemistry and, ... <i>technology stimulates an organic mechanism that nature had millions of years of evolution to bring to perfection, so we bring it from nature, we upscale it, and we provide industrial applications.</i>"</p> <p>3. "reduce 7 (-tons) in CO₂ emissions which is the equivalent of Austria's 10 % annual CO₂."</p>	A-N/S-A/S-B-C-B/S 	Need for sustainability Sustainable approach Sustainability benefit	CIT	Sustainable infrastructure development Technologically enabled sustainability	Use cases, economics of the product—cost of conventional material compared to solution, cost of manufacturing, business model, market launch approach, licensing option
Active Startup 5/b	(Agricultural tech and cleantech) manufacturing and materials	<p>1. "But for our scale-up production we see <i>great potential of this material in the solar energy industry.</i>"</p> <p>2. "Quite recently we also showed ... that this material can be utilized to enhance the capacity of batteries quite significantly."</p> <p>3. "This material is also produced in an <i>extremely environmentally friendly</i> way while we are <i>treating waste water</i> ..."</p>	A-B-N/S-C/S-- B/S-C-B-A/S 	Need for sustainability Competitive sustainability Benefit sustainability Sustainable approach	CTSI	New sustainable approach with environmentally friendly benefits Renewable materials	Proof of mass scale production, status of production currently, real possibility for market entry to three different markets, economies of scale, cost of production for 1g of product


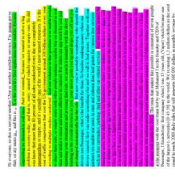
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TABLE 2 | (Continued)

Startup type and stage of startup	Industrial sector of startup	Illustrative quotes from pitches (sustainability elements highlighted)	NABC structure of pitch	NABC sustainability elements	Framing constructs (Werner and Cornelissen 2014)	Aggregate themes—Emerging sustainability frames	Topics covered in the questions from the jury of investors
Active Startup 6/b	Cleantech, manufacturing and materials, and property and construction tech	<p>“We’re solving some of the biggest problems on the planet, construction industry takes half of global natural resources, it makes half of carbon emissions, its waste contributes to half of landfill. We solve these problems by using renewable materials, by not only insulating buildings but also by having (innate) storage of carbon in the plant materials and, there’s no waste to landfill. Unlike them [competitors], we do not use petrochemical plastics, we are a 100% plant-based and, we can sell for as low as half the cost, if needed ... and importantly for me we are purpose driven, want to make the biggest global impacts, on the climate and the environment.”</p>	<p>A-N/S-A/S-C/S-A-C-B/S</p> 	<p>Need for sustainability Sustainable approach Competitive sustainability Sustainability benefit</p>	CTSI	<p>New sustainable approach with environmentally friendly benefits Technologically enabled sustainability Solving global societal-level challenges Renewable materials</p>	<p>Business model—self manufacturing or licensing, material functionality compared to traditional materials, first use cases, how marketed, pilots, what products produced first/prototypes</p>
Active Startup 7/a	Analytics and big data, artificial intelligence and machine learning, and transportation and mobility	<p>1. “our unique patented technology, analyses the data coming from the sensors embedded in the smartphone, such as the accelerometer, to, capture how its users moves.” 2. “we automatically calculate the (personal) carbon footprint of the citizens in these cities, based on their mobility.”</p>	<p>A-N-A/S-C-B/S-N-B-A</p> 	<p>Sustainable approach Benefit sustainability</p>	T	<p>Technologically enabled sustainability Sustainability analytics</p>	<p>How technology works, how is data collected from different sources (e.g., smartphone and cars)</p>


(Continues)

TABLE 2 | (Continued)

Startup type and stage of startup	Industrial sector of startup	Illustrative quotes from pitches (sustainability elements highlighted)	NABC structure of pitch	NABC sustainability elements	Framing constructs (Werner and Cornelissen 2014)	Aggregate themes—Emerging sustainability frames	Topics covered in the questions from the jury of investors
Active Startup 8/b	Analytics and big data, AI, and AR	“Our analytics are able to tell us what’s the <i>future of cities</i> so we can actually forecast the <i>building environment</i> .”	A-N-A-B/S-C 	Sustainability benefit	IS	Sustainability analytics Solving global societal-level challenges	How is citizen engagement measured, data fields, type of analytics, openness of data, scalability, kind of AI used for data collection (algorithms), incentivization for people to participate, platform role in data collection
Active Startup 9/a	Cleantech, on-demand services, and transportation and mobility	1. “So did you know that more than <i>80% of all rides conducted every day are completely passengerless or empty, and it’s actually one of the world’s most unused resources</i> .” 2. “existing vehicle capacity, to create a <i>more environmentally friendly and a cost-effective means of transportation</i> .” 3. “And that’s clearly visible in the pricing so not only are we <i>a lot cheaper than ... [X]</i> ... we are also more environmentally friendly option.”	A-N/S-A-B-C/S 	Need for sustainability Competitive sustainability	CTSI	New sustainable approach with environmentally friendly benefits Mobility	Is the service live already, traction, how people can find the ride, supply and demand of service

(Continues)

TABLE 2 | (Continued)

Startup type and stage of startup	Industrial sector of startup	Illustrative quotes from pitches (sustainability elements highlighted)	NABC structure of pitch	NABC sustainability elements	Framing constructs (Werner and Cornelissen 2014)	Aggregate themes—Emerging sustainability frames	Topics covered in the questions from the jury of investors
Active Startup 10/a	Cleantech, energy, and transport and automotive	<p>“... we foresee a major problem; because car usage is set to double by 2040. And why, because one billion are going to rise to the same prosperity level as we are, the lucky ones, right now. So in order to do this, reduce this, caused by cars every major automaker is going to be electric. Or we could create a car which charges itself. And we are solving this—problem by making a car which is ready for every corner of this planet.”</p>	<p>N/S-C/S-N/S-- A/S-B/S-C-A</p> 	<p>Need for sustainability Sustainable approach Competitive sustainability Sustainability benefit</p>	<p>CTSI</p>	<p>New sustainable approach with environmentally friendly benefits Technologically enabled sustainability Mobility Solving global societal-level challenges</p>	<p>Why is the product created and not just technology, what markets are reservations for the product coming from, where is product commercialized, competitor advantage, where are the IPRs</p>

Note: stage of startup: a = working on a product/seed funding, b = going to market/series A funding, c = growth and scale/series B funding. Color coding: Need, Approach, Benefit, Competition. Abbreviations: A/S = sustainable approach, B/S = benefit sustainability, C = cognitive, C/S = competitive sustainability, I = institutional, N/S = need for sustainability, S = strategic, T = technological.

sustainability statements on their websites. Here, the sustainability and mission of the startup tend to be highlighted, and the focus is on having a positive impact.

3.1 | Data Collection

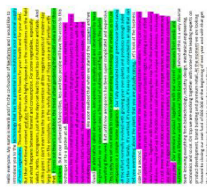

The full data set for the research includes startup pitches ($n = 136$) presented by entrepreneurs to investors participating at the Slush startup event in Helsinki, Finland, in the years 2017 and 2018 (www.slush.org). The pitches lasted 3 min, and they were conducted orally in English in front of a jury of investors and a broader audience at the Slush events. The pitches were recorded at the event and then transcribed. In addition, we made use of secondary sources (i.e., company websites and news coverage) to triangulate the data set and status of the startups and categorize them as active (in business) and inactive (out of business) as of 2022. There are two primary reasons for using startup pitches as empirical data. First, even though 3-min pitches are rather short, they represent the very first impression that investors get from a startup and form the basis for forming an almost-instant conclusion about the viability of the business idea (Huang et al. 2023); this is also the starting point for the initial investor's potential interest in the startup and its business case (Markowitz et al. 2022). Second, if a startup is purpose driven, the purpose and mission are aspects that entrepreneurs bring up as important elements in sustainable business model innovation and as part of a novel sustainable value creation logic. In this case, the venture is categorized as a sustainable business.

The filtered dataset, which was extracted from the complete dataset for comprehensive textual analysis, is concentrated on startup pitches that explicitly emphasize sustainability aspects. From these, we further analyzed the pitches to tease out the sustainability dimensions and how they are referred to on the different levels (micro, meso, and macro) and with reference to the frame constructs (cognitive, technological, strategic, and institutional). These were then aggregated into the emerging sustainability themes or frames identified in the pitches. Further details and background information were included from the materials provided by the Slush team. In addition, we looked at the current state of the startups 3–4 years after the pitch. This was verified from open records on active startups' websites and other official websites. From a total of 136 startup pitches (50 in 2017; 86 in 2018), we selected for further deeper analysis those pitches that contained elements of sustainability—social, environmental, or both—in addition to the conventional business perspective on economic sustainability, which resulted in a total of 72 pitches (see Figure 1): 49 from active startups and 23 from nonactive startups.

3.2 | Data Analysis


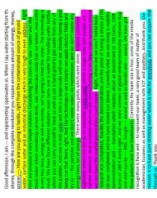
Data analysis was conducted using a qualitative content analysis approach, as described by Kuckartz and Rädiker (2019), using MAXQDA 2018 software. First, the codebook was defined, which was derived from the conceptual framework and followed the logic described below. Coding followed a deductive approach so that the codes were developed before thoroughly analyzing and classifying the data. A deductive coding approach is

TABLE 3 | Inactive startups—Structural analysis of the used NABC elements and their links to sustainability.

Startup type and stage of startup	Industrial sector of startup	Illustrative quotes from pitches (sustainability elements highlighted)	NABC structure of pitch	NABC sustainability elements	Framing constructs (Werner and Cornelissen 2014)	Aggregate themes—Emerging sustainability frames	Topics covered in the questions from the jury of investors
Inactive Startup 1/c	Analytics and big data and food and nutrition	<ol style="list-style-type: none"> 1. “the negative aspects of modern-day large farming on the ecosystem, on the whole planet ...” 2. “It turns out there’s a solution, the trend urban gardening that could solve a lot of those problems ...” 	<p>B-N-N/S-A/S- C-A-B-C-A</p> 	<p>Need for sustainability Sustainable approach</p>	IS	Solving global societal-level challenges	<p>Business model, use case, average price for users, technology and patent, current stage, go-to-market plan, combining with other products or as stand-alone product, direct sales or distributors, competitors among incumbent producers—why have not any product on market for this</p>
Inactive Startup 2/c	Cleantech and energy	<ol style="list-style-type: none"> 1. “Buildings are responsible for 40% of CO₂ emissions in EU. As a result, the construction sector is the most important to achieve the European energy goals ...” 2. “... it provides top technical performances, as you can see around 30, 70% of energy saving and low cost ...” 3. “... are still produced with higher chemical, hazardous chemicals, high percentage of chemicals, high CO₂ emission for the transport because they transport air, packaging ...” 4. “give the opportunity to live in healthier indoor environments” 5. “... best performance ... of the world in ... while using half of the material” 6. “Less chemicals, less, 80% of logistics because we do not ... transport air ...” 	<p>N/S-C-B/S-N/S-A/S- C-A-C/S-B/S-C</p> 	<p>Need for sustainability Sustainable approach Sustainability benefit Competitive sustainability</p>	IST	<p>Sustainable infrastructure development Technologically enabled sustainability</p>	<p>Use of product, functionality in wet conditions, who is the customer, scope of testing so far, already in use, policy and legal requirements on market</p>


(Continues)

TABLE 3 | (Continued)

Startup type and stage of startup	Industrial sector of startup	Illustrative quotes from pitches (sustainability elements highlighted)	NABC structure of pitch	NABC sustainability elements	Framing constructs (Werner and Cornelissen 2014)	Aggregate themes—Emerging sustainability frames	Topics covered in the questions from the jury of investors
Inactive Startup 3/b	Cleantech and manufacturing tech and materials	<p>1. "... we have a lot of poultry in the world and we are generating tons and tons of waste feathers. Disposal options are limited. Currently most of it is turned into a low-grade animal feed."</p> <p>2. "But feathers are an amazing natural material, strong, lightweight and thermally insulating ..."</p> <p>3. "Polystyrene packaging ... generating tons of this and we all know their environmental impact is devastating ..."</p>	<p>N/S-B/S-N/S-A/S-C-C/S-N/S</p> 	<p>Need for sustainability</p> <p>Sustainable approach</p> <p>Sustainability benefit</p> <p>Competitive sustainability</p>	<p>IS</p>	<p>Solving global societal-level challenges</p> <p>Renewable materials</p>	<p>Price and comparison to competing unsustainable product's price (eco-) quality of product—degradability and product life length, disposal, durability, how long can it be used—use cycles, key selling point to customers, is sustainability resonating with potential customers, IPR, feedback from large players on customer side—how promising</p>
Inactive Startup 4/a	Cleantech, industrial internet and IoT, and social entrepreneurship	<p>1. "... the contaminated source of ground water, surface water and an industrial discharge ... very tough to even address ..."</p> <p>2. "The technology is novel. We have three different solution cases here ..."</p> <p>3. "And the technology is very simple ... and we do not waste water, no membranes, and we do not waste any energy here ..."</p> <p>4. "Our mission is to have pure drinking water which is vital for everybody ..."</p>	<p>N/S-A/S-C-N-B/S</p> 	<p>Need for sustainability</p> <p>Sustainable approach</p> <p>Sustainability benefit</p>	<p>IST</p>	<p>Technologically enabled sustainable</p> <p>New sustainable approach with environmentally friendly benefits</p> <p>Solving global societal-level challenges</p>	<p>Competitive advantage—regarding cost and technology, uniqueness of technology, type of water contaminations</p>

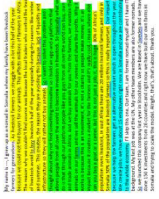
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TABLE 3 | (Continued)

Startup type and stage of startup	Industrial sector of startup	Illustrative quotes from pitches (sustainability elements highlighted)	NABC structure of pitch	NABC sustainability elements	Framing constructs (Werner and Cornelissen 2014)	Aggregate themes—Emerging sustainability frames	Topics covered in the questions from the jury of investors
Inactive Startup 5/a	Enterprise software, industrial internet and IoT, and impact	<p>1. "... we are on a mission to reduce food waste ... our smart way is preventive, how to avoid food products of expiring ..."</p> <p>2. "Food waste is a global problem. As the figures indicate, ... there is also non-financial motivators such as sustainable image, ethical responsibility, stakeholder relations and waste regulations ..."</p> <p>3. "The whole ecosystem and chain needs better tools to be more efficient ..."</p> <p>4. "The world is changing and so is the food industry. The mega trends and the consumer demands are definite in driving the change we see today. We believe that there is a need and upcoming trend of transparency in this industry ..."</p> <p>5. "Also we are in parallel diving deeper into a transparency of ... the whole chain and going deeper towards the consumer."</p>	<p>A/S-N/S-C-A/S</p> 	<p>Need for sustainability</p> <p>Sustainable approach</p>	<p>CIS</p>	<p>Sustainable infrastructure development</p>	<p>What is the product, how it fits in customers' workflows, "nice challenge you are trying to solve," background of team, sales strategy, who are the focus of sales (in addition to presented companies), what kind of people in companies are in the focus and where in the organization does the product fit.</p> <p>"So almost all really successful startups have a good answer to the question why now, why before, why is stated that sustainability is a huge business opportunity in this revolution ongoing now. There is a lot of companies working with food waste all in all."</p>

(Continues)

TABLE 3 | (Continued)

Startup type and stage of startup	Industrial sector of startup	Illustrative quotes from pitches (sustainability elements highlighted)	NABC structure of pitch	NABC sustainability elements	Framing constructs (Werner and Cornelissen 2014)	Aggregate themes—Emerging sustainability frames	Topics covered in the questions from the jury of investors
Inactive Startup 6/b	E-commerce and online marketplaces, impact, and social entrepreneurship	<p>1. "... livestock farmers, ... could <i>not find buyers for ... animals</i>. This affects <i>millions of farmers in Africa</i> ... the local traders who control the trade of livestock avoid to buy livestock ... especially during dry seasons like winter and summer."</p> <p>2. "80% of Africa's population owns livestock, in east Africa there are 20 million livestock farmers and only in Somalia 50% of the population are livestock farmers so this is really important."</p> <p>3. "Our impact is because we <i>help the farmers get an alternative market which is open throughout the year</i>."</p> <p>4. "We create jobs; we have about 15 employees right now in Somalia and we are contributing to the whole economy."</p> <p>5. "And we buy animals for you from the farmers, we maintain the animals on our farms and we sell the animals for our owners and share the profits. Why it works is because this is an investment, it's not a charity so people make money."</p>	<p>N/S-A /S-N-B/S</p> 	<p>Need for sustainability</p> <p>Sustainable approach</p> <p>Sustainability benefit</p>	CIS	Sustainable infrastructure development	<p>Platform functionality, how does customer use it, infrastructure and maintenance of platform, "how does this make money"—profitability, scalability of business, fraud prevention, status reporting to users, ROI for investments in camels, marketing strategy, how to find users who will invest with app</p>

(Continues)

TABLE 3 | (Continued)

Startup type and stage of startup	Industrial sector of startup	Illustrative quotes from pitches (sustainability elements highlighted)	NABC structure of pitch	NABC sustainability elements	Framing constructs (Werner and Cornelissen 2014)	Aggregate themes—Emerging sustainability frames	Topics covered in the questions from the jury of investors
Inactive Startup 7/c	Manufacturing and materials and property and construction tech	<ol style="list-style-type: none"> 1. <i>“So fossil fuels and global warming, and blackout, and pollutions, who wants to pass the situation to the future generation, to your son, who wants to do that? No-one, so what should we do if we want to solve these issues, please find us.”</i> 2. <i>“buildings were energy powerplant, so building can save energy and we can use any kinds of, devices from building and furthermore, electric vehicle can charge from the building.”</i> 3. <i>“And our solution for that is energy wall, it can save energy with our high efficiency insulation ... and we can harvest energy from the surface.”</i> 4. <i>“smart energy city solution”</i> 5. <i>“if you want to save the world, please, find me and”</i> 	<p>N/S-A/S-B/S-C-A</p>	<p>Need for sustainability</p> <p>Sustainable approach</p> <p>Sustainability benefit</p>	<p>CTSI</p>	<p>Sustainable infrastructure development</p> <p>New sustainable approach with environmentally friendly benefits</p> <p>Solving global societal-level challenges</p>	<p>Core client, real target customer, identified building types, competitors, go-to-market strategy</p>

(Continues)

TABLE 3 | (Continued)

Startup type and stage of startup	Industrial sector of startup	Illustrative quotes from pitches (sustainability elements highlighted)	NABC structure of pitch	NABC sustainability elements	Framing constructs (Werner and Cornelissen 2014)	Aggregate themes—Emerging sustainability frames	Topics covered in the questions from the jury of investors
Inactive Startup 8/no info	Biotech and cleantech	<p>1. “The first 500 m of a car ride pollutes such as much as the next 5000 km provided that the vehicle is driven non-stop. But why does your car emit so much during these first 500 m. Well because the catalytic converter in your car is not warm enough to clean the emissions.”</p> <p>2. “At this point you might be thinking would not this be solved with the electric cars. Sure. The electric cars are coming but it will take until 2040 before half of all sold cars are electric. Car manufacturers are today sharing more money than ever on cleaning emissions to handle legislation that gets tougher for each year.”</p> <p>3. “We have a solution that works in low temperatures when the catalytic converter in your car does not. With our solution we can lower the emissions of those first 500m by up to 50%.”</p> <p>4. “Another area where pollution is a problem is within water. Water is one of the most important resources that we have but because of environmental changes by 2025 half of the world's population will be living in water-stressed areas. We need to use our water in a more efficient way and in order to do so we need to be able to clean it.”</p>	<p>N/S-B/S-N/S-A/S</p>	<p>Need for sustainability Sustainability benefit Sustainable approach</p>	<p>ST</p>	<p>Solving global societal-level challenges</p>	<p>Capability to manufacture in high volumes or prototype, plans to scale production</p>

(Continues)

TABLE 3 | (Continued)

Startup type and stage of startup	Industrial sector of startup	Illustrative quotes from pitches (sustainability elements highlighted)	NABC structure of pitch	NABC sustainability elements	Framing constructs (Werner and Cornelissen 2014)	Aggregate themes—Emerging sustainability frames	Topics covered in the jury of investors
Inactive Startup 9/a	E-commerce and online marketplaces, food and nutrition, and transportation and mobility	<p>1. "Who wants to remove the plastic packaging out of the food chain supply?"</p> <p>2. "Why Styrofoam is so bad. In the first place it's very toxic on high temperature and very expensive for recycling. It's banned in some countries and what is most important it needs between five hundred and one million year for decomposing in a landfill or (steam)."</p> <p>3. "70% of all wool is low quality wool without the market. So the people are burning or throwing away."</p> <p>4. "Compared to the packaging made from Styrofoam it's 30% cheaper."</p> <p>5. "It's very recyclable and regarding the cost of transportation it's very low if you are talking of B2B approach."</p>	N/S-A-N/S-A/S-- B/S-C/S-C	<p>Need for sustainability</p> <p>Sustainable approach</p> <p>Sustainability benefit</p> <p>Competitive sustainability</p>	CS	<p>New sustainable approach with environmentally friendly benefits</p> <p>Solving global societal-level challenges</p>	<p>Stage in manufacturing— manual or automated, production quantities, defensibility (competition), recyclability</p>
Inactive Startup 10/a	Cleantech, energy, and manufacturing and materials	<p>1. "first ever, transparent (solar cell) with more than, 10% efficiency."</p> <p>2. "And also we made a (—) of this (high deficiency) lightweight that (-solar cells), for charge mobile devices and, many application (maybe aviation)."</p> <p>3. "And, we can make printers for, materials and devices that (—), or, we can make printer for, materials that, offer (—) company."</p>	B-A-A/S-B	Sustainable approach	T	Technologically enabled sustainability	Manufacturing scale and volumes, or prototype, plans to scale production

Note: Stage of startup: a = working on a product/seed funding, b = going to market/Series A funding, c = growth and scale/Series B funding. Color coding: Need, Approach, Benefit, Competition. Abbreviations: A/S = sustainable approach, B/S = benefit sustainability, C = cognitive, C/S = competitive sustainability, I = institutional, N/S = need for sustainability, S = strategic, T = technological.

TABLE 4 | Comparison of the framing elements applied by active and inactive startups.

	Number of active startups	Number of inactive startups
Individual frame elements		
T	9 3 in stage a 6 in stage b	5 2 in stage a 2 in stage c 1 no info
C	6 3 in stage a 3 in stage b	4 2 in stage a 1 in stage b 1 in stage c
I	7 3 in stage a 4 in stage b	7 2 in stage a 2 in stage b 3 in stage c
S	6 2 in stage a 4 in stage b	9 3 in stage a 2 in stage b 3 in stage c 1 no info
Frame combinations used		
CTSI	5 2 in stage a 3 in stage b	1
CIT	1 in in stage a	—
IS	1 in in stage b	2
CIS	—	2 1 in in stage a 1 in in stage b
IST	—	2 1 in in stage a 1 in in stage c
ST	—	1 no info on stage
CS	—	1 in stage a

Abbreviations: C = cognitive, I = institutional, S = strategic, T = technological.

recommended when there is a conceptual framework and when the research is theory driven with the aim of classifying specific themes and categories (Saldaña 2021).

The starting point in the analysis was framing theory and how it can be applied to real-life startup pitches in the context of the sustainable business initiatives of purpose-driven entrepreneurs. The first coding round of the transcribed pitches focused on tagging the wording and elements used in the pitches referring to sustainability keywords and themes, with sustainability lenses focusing on environmental and social sustainability topics derived from the 17 UN's SDGs.¹ In the second round, the technology startups that used clear sustainability arguments

in their business pitches were selected for further analysis. In the textual analysis, these were then mapped according to the themes linking them to the existing knowledge structure frequently used in startup pitches: the NABC structure. Although the NABC structure has become a commonly used pitch structure, it typically focuses on potential economic profit for investors without necessarily referring to a wider environmental or societal focus or purpose. The NABC approach was applied to analyze the content and structuring logic of the pitches. Here, the reference is to customer needs, an approach to solving a customer need or problem, introducing the benefits of the new offered solution over costs, and presenting potential competition and market opportunities for the business solution (Carlson, Polizzotto, and Gaudette 2019).

The further categorization of sustainability elements is based on four framing level constructs in the typology of Cornelissen and Werner (2014): (i) *cognitive frame* (micro level, with a focus on knowledge structures), (ii) *strategic frame* (macro level, describing the need to change because of global challenges), (iii) *technological frame* (meso level, introducing new technology to solve problems), and (iv) *institutional frame* (macro level, connecting to a socioeconomic context that requires changes). These framing levels are also used in the structural analyses. Hidden sustainability potential is not analyzed in the current study. Instead of using a method for identifying metaphors in discourse (Pragglejaz Group 2007), as used by Clarke, Cornelissen, and Healey (2019), we focused only on direct references to sustainability (Figure 2).

Consistent with the data analysis process described above, we have applied a two-level abductive tree structure for the pitches of active startups. In the phrase level and thematic analysis, the objective was to identify the overtly sustainability-oriented content elements and then assess which framing level the elements have been linked to—cognitive, technological, strategic, or institutional. Based on the initial mapping, those startups that included information about either the environmental and/or social dimensions of sustainability in their pitch were selected for further analysis of the concepts.

In the second coding round, the phrases were linked to second-level concepts referring to the NABC business pitch elements. These were then combined to form aggregate themes for the overarching sustainability framing dimensions used in startups' pitches. At this stage, all the pitches were analyzed. To further compare the pitches by entrepreneurs from currently active startups (Table 1) with pitches by entrepreneurs from currently inactive startups (Table 2), 10 pitches were selected to be presented in detail from both categories based on references to sustainability themes in their pitches. Compared with the active startups, the nonsurvivors generally tended to use sustainability framing more extensively, and in some business ideas, the sustainability aspect was shown to be the main driver for business development. As the analysis proceeded, it became evident that the environmental sustainability dimension was the focus of most of the analyzed startups. For this reason and using the sustainability lens, the terminology was mostly related to those SDGs referring to environmental problems and environmentally friendly solutions. These SDGs will be presented in more detail in Section 4.

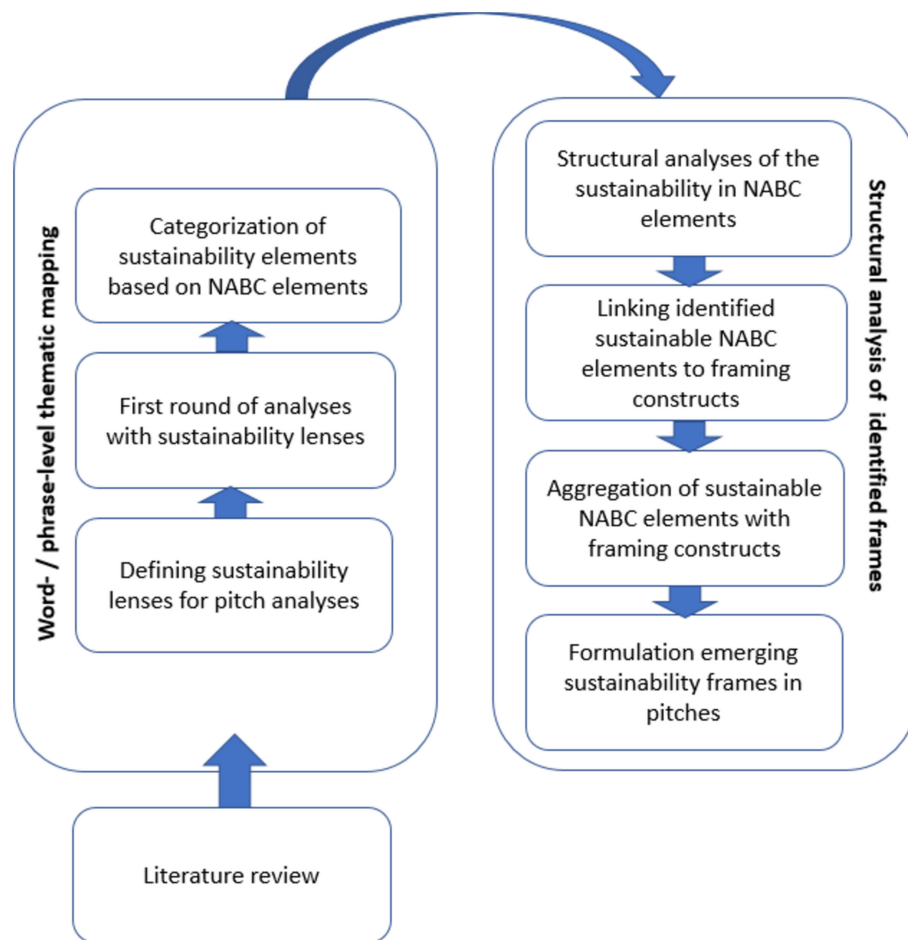


FIGURE 2 | Data analysis process.

To verify our results, we contacted 10 of the active startups and conducted phone interviews with them in the autumn of 2022. We asked the entrepreneurs what they now thought about the Slush events held back in 2017 and 2018 and how they reflected on the pitching of their business idea during the contest. The structure and questions in the phone interview conducted with the 10 active startups were the following: (1) Thinking back about Slush 2017/2018 or based on what you have heard from others, how did the pitching of your startups' business idea go in the pitching contest? (2) What was the feedback you received after the pitch like? (2A) What was the feedback you received from the jury and (2B) from potential direct contacts with investors? (3) Did your startup get financing from Slush? (4) Did you get some other financing? (5) Did the investors have requirements on you to update your business model (Appendix 1)?

The stage of the startup was also considered in the analysis, and the startups were divided into three categories based on the stage of startup reported by the entrepreneurs when they signed up for the pitching event. The stages are (a) working on a product/seeking seed funding, (b) going to market/seeking Series A funding, and (c) growth and scaling/seeking Series B funding.

4 | Results

Startups developing new, environmentally friendly technology typically require more funding than socially oriented startups, which is why they are more predominant in our sample. When registering to pitch, the startups were categorized based on their industrial sectors. The cleantech sector is well represented among both active and inactive startups, with six active and five inactive cleantech startups. The transport, automotive, and mobility sectors are represented by five active startups and no inactive ones. The energy sector includes three active startups and one inactive startup, while the analytics and big data sector also has three active startups and one inactive startup. In contrast, the e-commerce and online marketplace sectors are represented by only two inactive startups. In addition, the categories of social entrepreneurship and food and nutrition are represented by two inactive startups each. Further analysis of the sectors in which the startups operate shows that the active startups are part of sectors that typically require technology that enables the development of new products and services.

The way the NABC elements are framed for sustainability, with reference to the deterioration of the environment or societal-level problems, is an additional dimension introduced

by purpose-driven sustainable startups. The *sustainability NABC elements* are not typically incorporated in the NABC model but could be mapped as a *need for sustainability (N/S)*, *sustainable approach (A/S)*, *benefit to sustainability (B/S)*, and *competitive sustainability (C/S)*. To outline how sustainability elements are positioned in the actual text, a structural analysis was conducted, which used the NABC elements and their links to sustainability. From the findings, we identified three active startups (Table 1, Startups 5, 6, and 10) and three inactive startups (Table 2, Startups 2, 3, and 9) covering all the NABC elements with a sustainability perspective. These startups focus on developing novel technological solutions; the primary industries they represent are: cleantech, manufacturing and materials, energy, transport and automotive, and mobility. All the inactive startups present a sustainable approach (A/S) in their pitch (10/10), while the A/S element is in 7 out of 10 of the active startups' pitches. Most of the active startups also manage to present a sustainability perspective for the benefit (B/S) (8/10 pitches) and need for sustainability (N/S) (5/10 pitches). In these cases, the startups represent a wider range of industries introducing new technologies. However, less than half of the active startups (4/10 pitches) and inactive startups (3/10) address competitive sustainability (C/S), which is crucial information for investors. The fact that only a few of the startups refer to all NABC elements with a sustainability perspective hints at the challenge of shifting the frame in business pitches toward a sustainability focus. Most of the analyzed pitches address sustainability aspects only to a limited degree.

When analyzing the pitches based on the framing constructs proposed by Werner and Cornelissen (2014), the technological frame is the one most frequently used by the active startups in association with the NABC elements of approach and benefit. The institutional frame is applied when referring to environmental degradation (e.g., extreme weather, soil erosion, landslides, and rising sea levels) and the cognitive frame for individual- and industrial-level applications of the solutions (such as benefiting from solar energy). The cognitive frame is mainly used to refer to a sustainability need.

For the active startups, from the emerging sustainability contexts for sustainability-oriented frames, the most prominent ones relate to technologically enabled, sustainability-oriented solutions, such as analytics or the energy sector. In addition, contributing to sustainable infrastructure development is a clear example of referring to a sustainability context and frame. In addition, there is some frame blending and frame shifting occurring, where startups are introducing business ideas with a new sustainable approach or a unique, patented technological solution.

The framing construct that most (9 out of 10) of the active startups used is what we label the T frame (i.e., technology-enabled sustainability). However, among the inactive startups, only 5 out of 10 use this frame (see Table 3). This indicates that it may be vital for startups to provide relevant information in their pitches on how the venture aims to apply technology to enable environmental and/or social sustainability. In addition, the inactive startups use several combinations that are not used by the active startups at all (namely, IST, CIS, ST, and CS). This suggests that these combinations have failed to attract interest from

investors. For example, the combination IST (used by IA2 and IA4) does not incorporate information on competition despite competitiveness being a crucial element for sustainable business ideas (Bocken et al. 2014). Combinations lacking technology elements, such as CIS (IA5 and IA6) and IS (IA1 and IA3), fail to convince investors who are often looking for new technology-enabled solutions that are easily scalable (Lockett, Murray, and Wright 2002). In addition, the combination of technology- and societal-level challenges may not be fully convincing to investors as prior research has shown that social entrepreneurship faces challenges in attracting funding from conventional investors and these entrepreneurs may need to resort to crowdfunding (Pabst, Wayand, and Mohnen 2021). Nonetheless, among the active startups, one startup (A9) is in the B funding stage and uses in its pitch an IS framing approach for the sustainability aspects of their business idea. In addition, with a combination of frame elements C and S (used by an inactive startup), competitiveness, and global challenges on a macro level, startups are not necessarily successful.

A recurrent pattern in the active startups' pitches is that technologically enabled sustainability (6/10) is combined with another sustainability context and frame (see Table 4). The inactive startups' pitches, instead, tend to include the sustainability context and frame of solving global, societal-level challenges (6/10) more than the active startups' pitches (3/10). Emerging sustainability frames applied by both active and inactive startups are listed in Table 5.

The results from the phone interviews of the active startups show that half of the startup representatives believed that Slush was a good experience and that the pitching went well (Appendix 1). One of the startups managed to get into the top 10 in the pitching contest, winning the category of "startup that raised the most money" at Slush. We also asked about the feedback they received after the pitch from the jury and other possible investors. One of the startups commented that they got lots of talk but no action

TABLE 5 | Emerging sustainability frames applied by startups.

Emerging sustainability frames	Applied by active startups	Applied by inactive startups
Energy related	1	
Mobility	2	
Renewable materials	2	1
Technologically enabled sustainability	6	3
Sustainable infrastructure development	2	4
Sustainability analytics	3	
New sustainable approach with environmentally friendly benefits	4	3
Solving global, societal-level challenges	3	6

or funding. The rest of the active startups said that they received good feedback from the jury. Regarding the question of whether the startup received financing through Slush, the answers were divided—most of the startups did not get funding, here in contrast to one startup managing to raise the highest amount of funding at Slush, as mentioned above. Most of the startups received some other financing shortly after Slush. We also asked whether the investors demanded that the entrepreneurs update their business models. Here, again, the responses were divided: Some startups thought that the feedback from the investors was arrogant and too demanding while others said that they were open to feedback and had changed their business models based on it, especially after COVID-19 slowed down many businesses. For those startups offering technological solutions with improved data handling, businesses have started to grow and become even more successful after COVID-19; the business models of these startups have also been tailored and adapted to customer needs. The startups that could not be reached were verified by checking their websites to ensure that they were actively present on the internet with up-to-date content on their company website. It should be acknowledged that startups may be struggling with their business and the entrepreneurs are stressed, and for this reason, we contacted the startups that were active only once, and later with a reminder, and if they did not respond by then, we decided to not disturb them but allow them to concentrate on their business.

5 | Discussion and Conclusions

Although a 3-min verbal pitch may seem brief for introducing a new business concept, it serves as the initial opportunity for investors to form their first impression of startups. Their judgment of the business idea's feasibility and their interest in further exploration hinges on this concise presentation (Huang et al. 2023; Markowitz et al. 2022). As our in-depth textual analyses of the pitches of purpose-driven startups indicate, SDG-related elements can be combined with the more traditional NABC pitching elements to frame the sustainability perspectives and build messages that make sense to investors. A startup that is purpose driven tends to also present the sustainability of its business model innovation as an integral part of a novel sustainable value creation logic to be true to its purpose-driven mission.

The framing tactic most commonly used by active startups is a *frame blending* approach (Coulson 2001; Werner and Cornelissen 2014), in which the frame is still strongly rooted in the NABC logic with a sound sustainability logic in the sense-giving message. Based on our findings, we can see how purpose-driven sustainable startup entrepreneurs are blending familiar pitch structure elements from the NABC model with sustainability themes derived from the SDGs.

The findings show that those startups using all NABC elements with a sustainability perspective could build convincing business pitches and that they are still active and in business 4–5 years after the pitching events. In contrast, sense-giving framed mostly on sustainability messages does not meet the criteria receivers expect in the sense-making process, as exemplified in that this is more prevalent with firms not active after 4–5 years.

In the pitches, the SDGs most often referred to are sustainable infrastructure (SDG9), sustainable cities and communities (SDG11), sustainable mobility linked to renewable energy (SDG7), and sustainability analytics to measure climate action (SDG13). Solutions relating to sustainable consumption and production (SDG 12) refer to new sustainable or natural materials and the unique or patented sustainability-oriented technology development of the startups.

5.1 | Theoretical Contributions

The main theoretical contribution of the present research is to the sustainable entrepreneurship literature, specifically literature on how technology startups envision, frame, and communicate their purpose-driven ventures with sustainability targets and dimensions (Harlin and Berglund 2021; Johnson and Schaltegger 2020). Our study contributes to expanding knowledge on the sustainability framing tactics used in the framing of purpose-driven technology ventures in pitches to investors (van Werven, Bouwmeester, and Cornelissen 2019) drawing on the popular NABC pitching structure (Carlson, Polizzotto, and Gaudette 2019). The study also theoretically contributes to our understanding of business pitch framing and the literature on rhetoric and framing in entrepreneurship (Clarke, Cornelissen, and Healey 2019; Lounsbury and Glynn 2001). This is illustrated by the way the NABC pitch structure is changing via frame blending and frame shifting (Werner and Cornelissen 2014), with sustainability elements being incorporated into new, emerging sustainability contexts and frames on different levels (see Figure 3).

These results suggest some emerging sustainability contexts and frames without a direct link to the NABC elements (Figure 3). These frames have their foundation in the framing constructs based on Werner and Cornelissen (2014): cognitive frame, technological frame, strategic frame, and institutional frame. The way some startups frame their sustainable business ideas indicates that a degree of frame shifting is happening (Coulson 2001; Cornelissen and Werner 2014). In these cases, the startups have a clear mission to solve a sustainability issue with their business idea, which, in most cases, is based on a technological solution, and the startups have linked it to a particular sustainability theme emerging from the SDGs. Based on our findings, we propose a development process according to which purpose-driven startups apply frame blending and frame shifting in the content of their pitches; they start by using a one-frame approach with the technological frame and then gradually expand it to a two-, three-, and then four-frame approach (Figure 4). These approaches include varying combinations of the sustainability NABC elements and framing construct combinations (CTSI), and they have references to different emerging aggregate sustainability contexts based on the SDGs. The framing approaches include varying combinations of the sustainability NABC elements and framing construct combinations (CTSI).

We contribute to framing theory by showing how information on new business ideas is structured with new NABC elements that include sustainability elements inspired by the SDGs and how new frames are introduced from which new aggregate sustainability contexts and frames are emerging. This is in

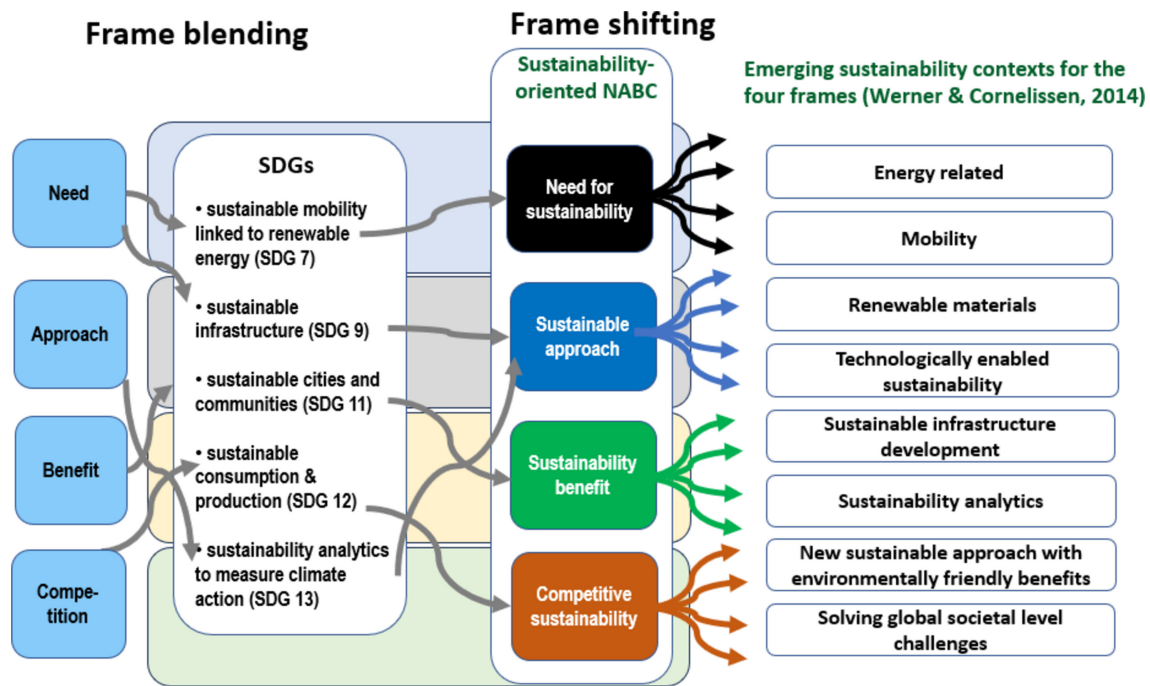


FIGURE 3 | NABC elements used in the frame blending and frame shifting of emerging sustainability frames.

line with previous research showing that entrepreneurs test new frames when attempting to build credibility and legitimization of their sustainable business ideas (Clarke, Cornelissen, and Healey 2019). The results of our study show how entrepreneurs are striving to convey how their businesses can have a positive impact on society and the environment while still making a profit. The emerging aggregate sustainability contexts and frames in our research indicate the growing complexity of purpose-driven startups' more sustainable business models.

We propose that the four-frame constructs and levels of analysis derived from Cornelissen and Werner (2014) can be applied when analyzing and designing startups' business pitches. The startups that are still in business have combined the different dimensions of sustainability to form a multidimensional frame containing all the elements commonly expected from a business pitch (i.e., the NABC elements). The findings on the active startups' pitches suggest that the technological frame and combination of all the frames (CTSI) in particular are important for startups that want to stay in business. In contrast, our findings from the pitches of unsuccessful startups suggest that the combinations found in frames CIS, IST, ST, and CS might be less promising.

The fact that the technological frame is crucial for startups attempting to get financing is in line with previous research indicating that venture capitalists are primarily interested in business models that incorporate new technologies that are easily scalable (Lockett, Murray, and Wright 2002). However, having sustainability as the main focus without the further framing of other dimensions emphasizing the connection to NABC does not appear to be convincing to investors. References to the institutional frame were used equally by both active and inactive startups.

We provide further evidence on the way entrepreneurs utilize framing tactics to introduce more sustainable business ideas to investors. Thereby, we respond to the research gap regarding the phases of introducing sustainable solutions (Demirel et al. 2019) and the resource needs of purpose-driven technology ventures. Our study also contributes to understanding how attaining the required resources for purpose-driven technology ventures could be facilitated by the appropriate framing of pitches to investors. We can see that, in the pitches, both frame blending and frame shifting occur to the extent to which sustainability elements linked to an existing pitching structure, here the NABC model, tend to apply new kinds of frames (Cornelissen and Werner 2014). Frame blending has been defined as the combination of two different schemata sharing abstract structures and elements to form a hybrid schema for introducing changes into a familiar schema (Cornelissen and Werner 2014; Coulson 2001). This is an approach we found to be applied by startups where the conventional NABC frames are still the expected norm but into which some new sustainability perspectives can also be incorporated. The occurrence of frame blending is shown in the way the NABC elements are combined with sustainability elements derived from the SDGs. There is also evidence that some frame shifting occurs in pitches in the form of reorganizing existing information and principles used in existing schema into a new changed context with a new frame (Cornelissen and Werner 2014; Coulson 2001). The more purpose-driven startups with sustainable business ideas are attempting to shift businesses in new directions by using altered frames with novel restructured content, information, and business opportunities. Frame shifting occurs as a process of sense-breaking (Pratt 2000), where the introduced novel business ideas offer distinct changes from the conventional NABC structure with new combinations of frames. In our study, this happened more among startups that were currently inactive and out of business. The inactive startups applied frame combinations—CIS, IST,

ST, and CS—that were not used at all by active startups. Instead, active startups applied the CTSI frame combination in half of the cases. However, we could also see some frame shifting in the active startups' pitches. This might explain why they have been able to stay in business because they were creatively introducing new schemata while making sure that they also adhered to existing frames and did not introduce entirely novel business ideas that did not seem to be meaningful in practice in the eyes of investors. We found that entrepreneurs in active startups used frames to resolve asymmetry on their part when delivering sustainability-related information about business and, thus, elaborated the information about the characteristics of their products and services (Maxwell, Jeffrey, and Lévesque 2011; Moss, Neubaum, and Meyskens 2015).

Inactive social tech startups with value-based missions appeared to struggle because of their lack of a clear value proposition that would benefit the paying customer, which is not appealing to conventional investors. This is a real challenge for startups focusing on solving global societal challenges as they attempt to find financing, which is also a major challenge in the field of new sustainable businesses trying to become more socially and environmentally sustainable (Le and Suh 2019).

5.2 | Managerial Implications

The managerial implications of the findings indicate differences in the ways startups link their businesses to the various dimensions of sustainability, here depending on the purpose-driven mission, the industrial sector, and the technological complexity of the solution. First, startups that aspire to receive funding for more sustainable business ideas benefit from using a rhetoric that combines sustainability elements with the NABC structure

and that applies all four framing tactics (CTSI) with a link to sustainability. Second, startup entrepreneurs with a purpose-driven business model should also focus on developing an effective pitch that frames the sustainability of their business idea in a manner that is understandable and acceptable by potential investors. Depending on the solution created by the startup, there are different ways to combine the frames with the sustainability NABC elements for different sustainability contexts (based on SDGs). Based on the pitches of successful active startups, these can be seen to develop from a one-frame approach to a two-, three-, and four-frame approach (Figure 4).

Depending on the solution and ambition level of the startup, technology startups can use the technological frame on their own and combine it with a sustainability benefit and sustainability approach. This works for technological solutions developed for sustainability analytics or related to saving or using energy efficiently. In the case of a two-frame approach, the combination of strategic and institutional frames works for solutions offering sustainability benefits that could solve global societal challenges. Here, sustainability analytics could also be the solution offered. The three-frame approach (technological, institutional, and cognitive) is applicable for technology-enabled sustainability solutions that also help in sustainable infrastructure development. In this case, the pitch should focus on bringing up the sustainability-related need, approach, and competitiveness of the sustainable solution. Finally, the most effective and used framing approach is the four-frame approach. Even though this may seem more challenging and complex to build in a pitch, the purpose-driven startups that manage to do this are the most successful and can secure their business, and even if they would not always get the funding from the pitching contests, they still have a viable and sustainable business case helping them forward. In the four-frame approach, all of the frames (technological,

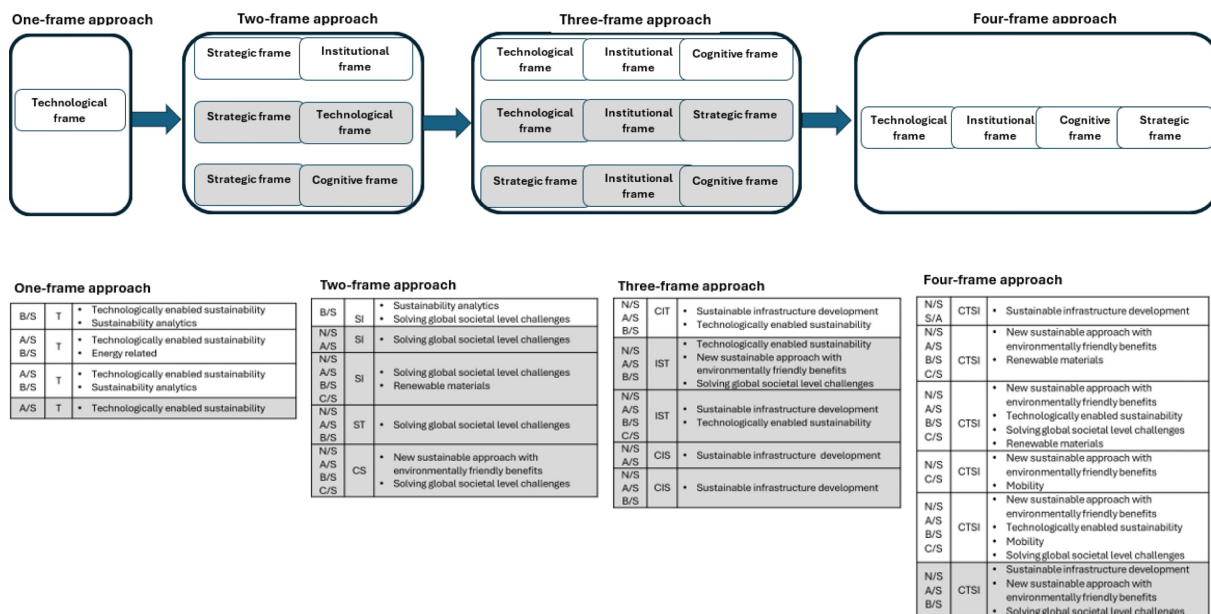


FIGURE 4 | Development process for applying sustainability NABC elements and framing approaches in different sustainability contexts. *Note:* The white areas are based on the results from the analyses of active startups' pitches, and the gray areas are based on inactive startups' pitches. *Sustainability NABC elements:* N/S = need for sustainability, A/S = sustainable approach, B/S = benefit sustainability, C/S = competitive sustainability. *Framing constructs* based on Werner and Cornelissen (2014): C = cognitive frame, T = technological frame, S = strategic frame, I = institutional frame.

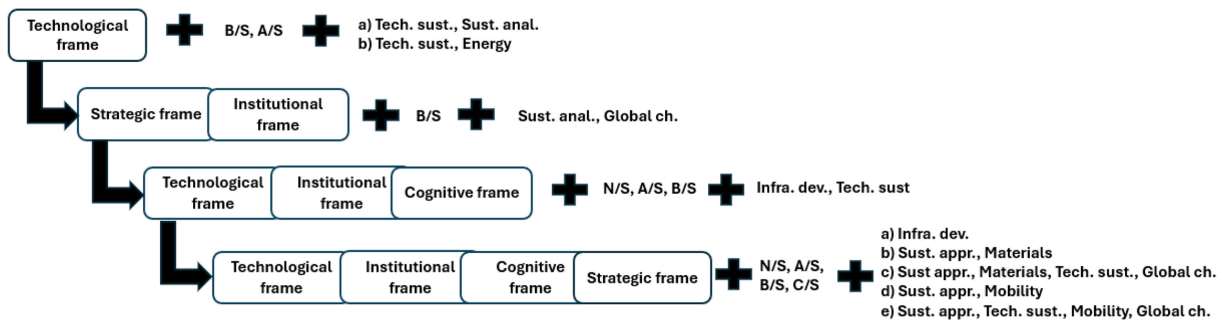


FIGURE 5 | Recommended development process for combination of frames for successful purpose-driven startups' pitches. *Note: Framing constructs based on Werner and Cornelissen (2014): C=cognitive frame, T=technological frame, S=strategic frame, I=institutional frame. Sustainability NABC elements: N/S=need for sustainability, A/S=sustainable approach, B/S=benefit sustainability, C/S=competitive sustainability. Sustainability contexts based on SDGs: Energy=energy related, Mobility, Materials=renewable materials, Tech. sust.=technologically enabled sustainability, Infra. dev.=sustainable infrastructure development, Sust. anal.=sustainability analytics, Sust. appr.=new sustainable approach with environmentally friendly benefits, Global ch.=solving global societal-level challenges.*

institutional, cognitive, and strategic) can be applied in various combinations with the sustainability-oriented NABC elements and sustainability contexts (Figure 5).

Upon examination of the pitches under consideration, social issues and environmental crises serve as potent catalysts for transformation. Furthermore, technology-oriented solutions and concepts frequently feature prominently in presentations to potential investors. However, a growing number of startups are becoming hybrids in the way they offer social and environmental innovations that leverage technological innovation, and novel technologies are being used to solve social and environmental problems (Gardner, Acharya, and Yach 2007; Millard and Carpenter 2014). Active, purpose-driven technology startups differ from other high-tech startups in the way they align their business strategies with the SDG themes; they concentrate on, for example, renewable materials, sustainable infrastructure development, sustainability analytics, sustainable mobility, and energy efficiency. However, because of the limited time for delivering a business pitch, entrepreneurs do not typically need to refer to the SDGs in the pitches, only to the topics and themes of them.

5.3 | Limitations and Further Research

Because the emerging sustainability frameworks for pitching are built on a limited sample, further research and a larger sample are key for understanding how purpose-driven and sustainable startups adapt and employ these frameworks across different contexts. A further limitation regarding the research data is that the explored pitching activity happened live in front of a panel of investors and an audience, and this can be stressful for entrepreneurs who do not have earlier experience in performing in front of investors and large audiences. In addition, this could influence the presentation; the presenter might experience difficulties with their speech, overlooking certain points, sticking to the known and “safe” elements of their pitch, or generally struggle to effectively convey the pitch. This may also have occurred in the pitches analyzed in the current study. Thus, future research could combine different sources of data from different types of written and oral pitching activities and live events, exploring how startups' framing of their pitches evolves and how

they perform over time. The societal-level impact for companies introducing a unique technological solution may be hard to track on the individual and market levels; therefore, the sustainability benefits may be difficult to validate, especially in a short 3-min business pitch to investors. Thus, this could also be assessed more in future research exploring how startups validate or verify the level of sustainability in their pitching.

Furthermore, future research could investigate those startups that have sustainability potential but which are not (yet) able to express or frame it and how they could learn and improve their pitching “efficiency” related to the framing strategies of the startups. To better understand the kinds of details and information that investors notice as missing from the pitches, the questions of the investors to the pitchers could be analyzed more in depth. This could also be done in the context of Slush pitches to analyze how both the startup entrepreneurs and investors participate in a joint activity where both parties are searching for vital contacts.

In addition, a more symmetrical approach that models communication as a joint activity between entrepreneurs and investors could also be a site for future research and contribute to the investment decision-making literature. More research is also called for to better understand the nuances in sustainability framing and differentiation; this would also provide a better overview of the evolution of purpose-driven entrepreneurship in the context of pitches. The increasing complexity of sustainability-oriented business models of purpose-driven startups is difficult to incorporate in a typical pitch targeted at investors; therefore, purpose-driven startups need to frame their business ideas with familiar pitch structures, such as the NABC; in this case, the NABC framing has shifted to more sustainability-oriented NABC frames. This complexity could be investigated in future research.

Finally, further research could explore how startups can leverage sustainable development more effectively through digitalization and within the framework of the twin transition (TT) concept (Aagaard and Vanhaverbeke 2024), as advocated by the European Commission in its Green Deal Industrial Plan and the European Green Digital Coalition (European Commission 2024). This research could examine the strategies,

challenges, and best practices for startups in integrating sustainability and digitalization into their business models and pitching practices, which could offer valuable insights into fostering and funding environmentally conscious and digital entrepreneurship in driving radically innovative green and digital startups.

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Conflicts of Interest

The authors declare no conflicts of interest.

Endnotes

¹ The sustainability themes include the following: No Poverty (SDG1); Zero Hunger (SDG2); Good Health and Well-being (SDG3); Quality Education (SDG4); Gender Equality (SDG5); Clean Water and Sanitation (SDG6); Affordable and Clean Energy (SDG7); Decent Work and Economic Growth (SDG8); Industry, Innovation and Infrastructure (SDG9); Reduced Inequality (SDG10); Sustainable Cities and Communities (SDG11); Responsible Consumption and Production (SDG12); Climate Action (SDG13); Life Below Water (SDG14); Life on Land (SDG15); Peace, Justice and Strong Institutions (SDG16); and Partnerships for the Goals (SDG17) (UN 2022).

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Appendix 1

Results From Short Phone Interviews With Representatives From the Active Startups That Could Be Reached After Two Contact Attempts (Listed in the Same Order as in Table 1)

Active startup No.	Interviewee/contacted person	How did the pitching of your business idea go?	Feedback from (a) jury and (b) potential investors?	Did the startup get financing from Slush?	Did the startup get some other financing?	Did the investors require updates in the startup's business model?	Is the startup that participated at Slush still in business today? If not, what is the situation with your business idea currently?
1	CEO	Generally it went well.	There was good feedback from the jury.	I cannot remember	4–5 rounds of funding	Business model has been updated according to customers' requirements	In growth stage—the need for more information is increasing as well.
2	CEO	Went well	(a) Lots of talk, no action (b) Lots of talk, no action	Not directly, but indirectly	Yes	They always do. It's best to just ignore them. By and large, they are arrogant, ignorant thieves.	Yes, we are still in business.
3	CTO, founder						
4	Managing director						
5	CEO						
6	CEO						
7	CEO	I got a good feeling about it	Good feedback from the jury	No	In 2019, we had a self-financing round	After the start of COVID-19, we have modified our business model.	Yes, we are still in business. Growth has slowed down.
8	CEO	It went ok, we were in the top 10	There were two competition categories—pitching contest and who raised most funding—we won the most funding at Slush	No	Business Finland and three different grants for R&D innovations	Board and shareholders give feedback and check that we are on track. The team is open to change.	Doing good—COVID times were difficult for us, but we managed to reduce costs. As we are in the data analytics sector, COVID can also boost the use of our product.
9	COO						
10	CEO	It went well	Nothing special	Not directly	Funding: \$5M Series A	No	Yes

Appendix 2

Analysis of the Active Startups' Website Content With a Sustainability Focus and Purpose-Driven Mission

Sustainability focus	Examples from startups' website content
Sustainability as a mission	<ul style="list-style-type: none"> • “To help turn all existing and future ... sustainable through our ... platform that increases energy efficiency, profitability, ... and quality of life.” • “We want to make our ... platform equally accessible to all ... companies everywhere on this Earth.” (S1) • “joining ... other low carbon companies on the journey to net-zero” (S6) • “We are a mission-driven company”; “focused on creating positive change for planet and people”; “We believe that growth, enabled by the right technology, is possible for everyone without harming our planet”; and “off-the-grid, clean, and convenient mobility solution” • “to encourage you to move around, independently and guilt-free” and “... towards clean mobility for everyone, everywhere, and be part of the future ...” • “focus on positive impact” (S10)
Unique sustainable technology development	<ul style="list-style-type: none"> • “... is a technology company developing revolutionary new ... to power the future green economy.” (S2) • “More than just an EV charge controller—provides unique solutions to set up your charger” (S3) • “... patented technology to produce high-quality, environmentally friendly ... solution ...” and “Ready-to-deploy system ... within few hours which improve drastically the properties of ...” • “... its unique vehicle architecture and technology” and “consume ... less energy than any other electric vehicle on the market today.” (S10) • “... the first of its kind to ... utilize ... at large scale for ... efficiency enhancing applications ...” (S5) • “We have already made high performance lab samples and are now commercializing the technology for next generation ...” (S2) • “... leading the way to a bio-based and circular industry ...” (S5) • “innovative leader in bio-based materials and construction products”; “use leading science and traditional crops ...”; and “bring industrial-scale change to the climate, the environment and people's health.” (S6)
Sustainability features Sustainable materials Natural solution from renewable source	<ul style="list-style-type: none"> • “Increased range/use time, Longer lifetime, Reduced cost, Improved environmental friendliness” (S2) • “Taking care of your planet, your health and your bills ...”; “... capture a net amount of carbon, ... made from local ... crops and result in zero waste”; and “durable and soft they are healthy to build with.” (S6) • “Advanced Materials from ... replaces harmful and less efficient chemicals ... while cleaning our oceans ...” (S5) • “... in harmony with nature ...” and “... material's production process is climate-positive ...” (S5) • “... Natural fibre ...” and “Made from traditional ... crops” (S6)
Sustainable mobility	<ul style="list-style-type: none"> • “you can reduce the time and effort spent on setup and maintenance, ...” and “Faster and professional go-to-market ...” (S3) • “carpool ... and make your commute simple, green and valuable ...” (S9) • “Empty cars are one of the worlds most unused resources.” • “... contribute to the environment ... by carpooling with other people who would've made the same trip as you” (S9) • “Drive for months without charging” and “Clean and convenient.” (S10)
Sustainable infrastructure development	<ul style="list-style-type: none"> • “... building chargers for today and tomorrow, ... running smoothly with all publicly available vehicle models” (S3) • “Critical infrastructures face intensifying damages from natural hazards and extreme weather” (S4)
Data analytics for sustainable development:	<ul style="list-style-type: none"> • “measuring all forms of mobility of individual users and ... the carbon footprint produced ...” (S7)
Sustainable cities Community level engagement	<ul style="list-style-type: none"> • “Vision: By 2041 we ... have become the world's leading providers in predictive ... solutions who guide entire industries towards more reasonable societies on this planet and beyond.” (S1) • “... platform to ... cities” and “mobility solutions allowing individuals, companies, and cities to be more sustainable and citizen friendly.” (S7) • “... possibility for the user to join different communities”; “Communities can be set up for different user groups, ... and purposes ...”; and “... enables community creation and shared experience” (S7) • “... development and economic growth of liveable cities depend on—people-focused decisions”; “higher degree analysis for your investment decisions while creating sustainable cities”; and “foresee change with AI-powered population forecasts ...” (S8)