

Sustainable Business Models in China's GreenTech

Xing Lei ^a; Qasim Hamakhurshid Hamamurad ^{b*}; Nor Hidayati Zakaria ^c

^a Azman Hashim International Business School, Universiti Teknologi Malaysia - Kampus Kuala Lumpur · Kuala Lumpur, Federal Territory of Kuala Lumpur, MY.

Pinghu Normal School, Jiaxing University, Jiaxing 314041, China.

^{b*} Management-Information System, Universiti Teknologi Malaysia · Skudai, Johor, MY

^c Azman Hashim International Business School, Universiti Teknologi Malaysia - Kampus Kuala Lumpur · Kuala Lumpur, Federal Territory of Kuala Lumpur, MY

*Corresponding author: Qasim@graduate.utm.my

Abstract

Sustainable business model innovation is now essential for the success of high-technology businesses internationally, notably in emerging economies like China. Integrating sustainability into core operations is becoming increasingly vital for startups within China's dynamic tech sector because of regulatory, market, and social demands. GreenTech Solutions, a Shenzhen high-tech startup, is the focus of this study, which analyses its systematic shift to an Sustainable Business Model Innovation (SBMI)-aligned business model. Using a framework emphasising transformation across value proposition, creation, delivery, and capture, this study analyses GreenTech Solutions' integration of sustainability into its core strategy and operations. This case study highlights both the potential and difficulties faced by Chinese startups using SBMI within their vibrant innovation ecosystem, providing practical advice for similar ventures.

Keyword: Sustainability; Business Model Innovation; High-Tech Startups; Value Proposition; Value Capture; GreenTech

1. INTRODUCTION

Growing global environmental and social issues are forcing businesses worldwide to reconsider their value creation and delivery methods. Business model innovation (BMI) is a key tool for incorporating sustainability into a company's strategic goals Boons & Lüdeke-Freund, 2013; Moving beyond incremental improvements to existing processes, SBMI involves reimagining the entire business architecture to simultaneously address economic, environmental, and social objectives (Evans et al., 2017). China highlights the importance of this imperative. Significant benefits have come from rapid economic development and industrialisation, yet severe environmental consequences have also emerged. China's response includes ambitious sustainability goals, targeting carbon neutrality by 2060. Simultaneously, consumers, investors, and civil society are increasingly urging corporate contributions to sustainable development. Sustainable business models are key to China's GreenTech sector's environmental and corporate achievements. Aligning sustainable business models and green technology innovations is key to superior sustainable corporate performance, according to (Mansour, 2023; Zhou et al., 2023) Zhou et al. (2023). China's manufacturing sector especially benefits from this alignment, as innovative business models can boost green development and carbon neutrality goals (Han & Zhang, 2022). High-tech startups play a critical role in China's innovation-driven economy and are well-positioned to drive sustainability transitions (Lei et al., 2024). Despite this, they contend with limited resources, uncertain markets, and intricate regulations (Xue et al., 2023). Thus, investigating effective SBMI implementation in these firms holds both academic and practical value. This paper details a case study focusing on GreenTech Solutions, a Shenzhen startup specialising in smart home technology. Utilising a structured SBMI framework, this study examines business model transformation across three key aspects: value proposition, creation and delivery, and capture (Abbas et al., 2020; Ferlito & Faraci, 2022). This paper adds to the existing research on SBMI by examining GreenTech Solutions' experience and offers useful advice for tech startups globally, including those in China.

2. LITERATURE REVIEW

The importance of BMI in achieving competitive advantage and corporate renewal has grown significantly (Teece, 2010). A sustainability focus allows BMI to help companies generate new value that promotes long-term ecological and social well-being (Boons & Lüdeke-Freund, 2013). Based on this, SBMI highlights incorporating sustainability into how businesses generate, provide, and receive value (Geissdoerfer et al., 2018). In contrast to conventional Corporate Social Responsibility CSR programmes that typically remain separate from core operations, SBMI aims to integrate sustainability directly into its business model (Evans et al., 2017). Recent SBMI frameworks highlight the need for a holistic, multidimensional approach to business model design. Three interconnected domains are highlighted by a very useful framework: (1) A statement of the firm's value proposition, outlining its purpose and the value it offers to customers and stakeholders; (2) Value creation and delivery includes the processes, resources, and relationships allowing the firm to deliver its value proposition; (3) value capture, which outlines how the company creates economic gains while also providing social and environmental benefits (Mansour, 2023; Weinstock, 2015; Zhou et al., 2023). China's SBMI imperative is driven by regulation and market forces. Green innovation and sustainable industrial transformation are promoted by national policies like "Made in China 2025" and the "Dual Carbon" goals (Gan et al., 2023; Ma, 2024). Meanwhile, younger city dwellers are showing more interest in sustainable products and services (Ali et al., 2023). However, startups encounter specific obstacles to SBMI, such as limited resources, insufficient organisational capacity, and inconsistent sustainability criteria (Kwasi Sampene et al., 2023). While they are a significant need to understand how high-tech startups in China overcome the obstacles they face, the number of empirical studies investigating this remains surprisingly limited. To address the gap in understanding the SBMI journey, this case study delves into a detailed analysis of a specific firm's experience, offering valuable insights and a comprehensive exploration of the process.

3. CASE STUDY: GREENTECH SOLUTIONS

3.1 Company Background

Originating as a spinoff from a research laboratory based at Shenzhen University, GreenTech Solutions was established in the year 2020. This groundbreaking startup company sharply focused on the Internet of Things (IoT) sector, is wholeheartedly committed to creating and developing meticulously engineered and designed state-of-the-art devices and software applications to significantly improve household energy efficiency and promote a more environmentally sustainable consumer lifestyle. The company aims to use smart technologies to help people and communities lessen their environmental effects. Its leading product line features AI-powered smart thermostats, energy monitoring plugs, and a complete home energy management system. In 2025, GreenTech Solutions had 85 employees and over 250,000 customers in major Chinese cities.

3.2 Value Proposition

GreenTech Solutions' value proposition, focused on sustainability, is clearly and distinctly defined. Instead of focusing just on tech or cost, the company highlights how its products promote sustainable living.

Key aspects of the value proposition are:

- **Energy efficiency:** Smart devices can help households reduce energy usage by as much as 30% through optimisation.
- **Carbon footprint awareness:** GreenTech app users receive live updates on their energy savings and the related decrease in carbon emissions.
- **Community engagement:** A shared sense of purpose is fostered within the company by providing users with tools to monitor and share their environmental effects.

Stakeholder engagement is key to the firm's value proposition. GreenTech openly communicates with customers, investors, regulators, and civil society using ongoing sustainability reports, community activities, and participatory workshops. The Stakeholder Engagement Plan provides a formal framework

for interaction, ensuring diverse perspectives are integrated into product development and strategic decision-making. A comprehensive Code of Ethics guides the company, emphasising transparency, data privacy, social responsibility, and environmental protection.

3.3 Value Creation and Delivery

Achieving sustainability goals led GreenTech Solutions to restructure its value creation and delivery processes.

Product Design and Lifecycle

From beginning to end, the company's products are designed with circularity in mind to reduce their environmental footprint. Easy upgrades and longer-lasting products are ensured by the devices' modular and repairable design. Material selection is guided by durability, recyclability, and low toxicity.

The packaging, made entirely from recyclable materials, uses only biodegradable inks. The firm collaborates with external companies on product recycling and take-back schemes to minimise electronic waste.

Operations and Supply Chain

In a commitment to sustainability, GreenTech utilises 80% renewable energy sources to power its manufacturing processes, and they are actively working towards a 100% renewable energy target by 2027. To promote responsible sourcing and environmental stewardship, the company collaborates closely with suppliers, mandating ISO 14001 certification for key partners. An internal Green Operations Taskforce oversees initiatives aimed at reducing water and waste within the company, as well as promoting a circular economy in our internal operations.

Customer Engagement and Services

GreenTech aims to foster enduring customer connections while advocating for environmentally responsible practices.

- Visualising environmental gains, the GreenTech app offers tailored energy-saving advice.
- Gamification features motivate users to join energy-saving challenges and share their progress in an online community.
- The company works with local governments and energy companies to include its technology in smart cities and clean energy projects.

Sustainable value delivery critically depends on privacy and data security. The company uses strong data protection and is open with users about how it handles their data.

3.4 Value Capture

GreenTech Solutions uses new ways to create value that support its commitment to sustainability.

Revenue Models

The company uses a Hardware-as-a-Service (HaaS) model, providing device and platform access through subscriptions. This model incentivises the firm to prioritise product durability, software upgrades, and ongoing customer engagement.

Additional revenue streams include:

- Environmentally focused analytics for premium households and businesses.
- We partner with utilities and municipalities to provide demand-side energy management solutions.

Cost Optimisation

GreenTech saved significantly on costs by investing in energy efficiency and sustainable supply chains. As an example, manufacturing energy costs have been reduced by 25% over three years because of renewable energy adoption. Resource efficiency and waste management costs improved thanks to process advancements guided by lifecycle assessments.

Investor Relations

GreenTech's SBMI leadership has drawn significant attention from impact investors and green venture capitalists. Sustainability-focused investment firms contributed 35% of the Series B funding in 2024. Aligning with sustainable capital markets gives the company a competitive edge in fundraising and enhances its reputation.

4. DISCUSSION

Implementing SBMI in a Chinese high-tech startup: GreenTech Solutions' experience reveals both benefits and drawbacks.

Strategic and Competitive Benefits

The company's holistic SBMI approach has allowed them to:

- Set its brand apart in the competitive IoT market.
- Develop robust, trusting relationships with customers and stakeholders.
- Tap into fresh revenue through energy and smart city partnerships.
- Find investors and partners whose missions align with ours.

These benefits prove sustainability boosts innovation, growth, and resilience in even resource-limited startups.

Challenges and Tensions

Although GreenTech has been successful, it still faces challenges:

- Smaller upstream suppliers pose a significant challenge to our sustainability standard alignment efforts.
- Conflicting sustainability rules and unclear regulations lead to complicated compliance.
- Profitability, alongside ambitious sustainability, requires a delicate balance between immediate financial demands and long-term mission alignment.

Continued investment in organisational capabilities, stakeholder partnerships, and policy advocacy will be critical to addressing these challenges.

5. CONCLUSION

GreenTech Solutions provides valuable lessons on effective SBMI for Chinese high-tech startups. Through strategic adjustments to its value chain, the company proves sustainability enhances, not hinders, business success. China's focus on sustainable development driven by policymakers, investors, and consumers will make integrating sustainability into business models crucial for competitiveness. High-tech startups, with their agility, innovation, and mission focus, are ideally suited to drive this transformation. Future studies need to investigate how SBMI can be applied to different sectors and create tools to help startups succeed.

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