

Embracing Sustainability: A Survey of US Small and Medium-Sized Enterprises

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Studies on sustainability strategies of small and medium-sized enterprises (SMEs) have primarily been done on European firms and less on those in Asia and Latin America. Fewer research is done on US SMEs to show the factors that have motivated or hindered their embracing sustainability. We bridged this gap by surveying over 600 New York SMEs. Results indicated that owners'/managers' values, awareness, and sustainability education emerged as the key factors influencing their adoption of sustainability. Government regulations or financial incentives to coerce or encourage sustainability played a lesser role. Significant barriers were the cost of implementation and the firm's limited resources.

Keywords: small and medium-sized enterprises, SMEs, sustainability practices, motivations and barriers to sustainability, SMEs sustainability strategy, United States SMEs

INTRODUCTION

In recent decades, few topics have evoked as much attention, debate, activism, and response by companies, consumers, and governments alike as sustainability. While this movement started and continues to be emphasized for its environmental significance, its social and economic aspects have risen as top agenda for companies and governments as manifested by such overarching themes and global initiatives as EMS certification standards (ISO 14001, 26000, 20400), Social Accountability (SA) 8000 and the 2030 UN Sustainable Development Goals, to name a few (Social Accountability, 2022; UN COP 27, 2022). Recently, governments and large corporations gathered at the UN Climate Change Conference (COP 27) in November 2022 to put forward plans for a more environmentally sustainable future on earth (UN COP 27, 2022).

As large corporations have expanded their environmentally friendly operations, evidenced by their regular sustainability reports, SMEs have also implemented more sustainable solutions. This is especially significant as the latter, defined as businesses with less than 500 employees, play an important role globally in creating jobs and promoting economic development. According to the U.S. Small Business Administration, in 2020, small businesses generated nearly 59 million jobs, or about 47.1% of the overall U.S. employment in the private sector. Similarly, between 2000 and 2019, SMEs accounted for 65.1% of the new jobs, generating 10.5 million new jobs. Large businesses, for comparison, created 5.6 million jobs (SBA Office of Advocacy, Oct. 2020). According to the International Labor Organization, SMEs make up

90% of the number of firms around the globe, 70% of employment, and drive up to 70% of global GDP (ILO, 2019). Their important economic role and contributions notwithstanding, SMEs' negative environmental impact is noteworthy as 64% of the pollution in Europe is attributed to them. At the global level, SMEs are responsible for 60% and 70% of all the carbon dioxide and industrial waste generated, respectively (Ashton et al., 2017).

Most of the earlier research on SME sustainability practices comes from outside of the United States (Triguero et al., 2016; Caldera et al., 2019; Afolabi et al., 2022). Triguero et al. (2016) focused on the 'greenness' of innovation in a sample of over 3800 European SMEs. Caldera et al. (2019) examined the factors enabling or preventing the "lean and green" sustainability record of 13 Australian SMEs. Afolabi et al. (2022) interviewed 26 British SME owners/managers about their practices and views on a greener economy and the government's net zero carbon emissions goal.

Bakos et al. (2020) did a meta-analysis of over 120 research on SMEs' sustainability practices, published between 2013-19, and showed 41% focused on European firms, 22% on Asian SMEs, and 19% on South American small businesses. Martins et al. (2022) reviewed 42 studies published between 2000-2022 on SMEs sustainability practices from around the world. Most (74%) of such studies were focused on developed countries, with a sizeable number (53%) of research on Europe (UK, Germany, and Italy in particular).

As for the few research on US SMEs, Becherer & Helms's (2014) study of 240 small businesses found environmental business decisions being affected by firm size and industry type. Research by Ashton et al. (2017) covering nearly 60 SMEs found that most of the firms' sustainability measures were influenced by cost and competitiveness considerations rather than pressures from the government or customers. Overall, compared to European countries, research on US SMEs' sustainability is inadequate given their role in the US economy. Furthermore, previous studies on US SMEs are scant and typically industry specific.

Our study aims to contribute to the dearth of information on the US SMEs' sustainability through a deeper examination of the motives for engagement and barriers they have encountered in undertaking or expanding their sustainability programs. We were also interested in learning about owners'/managers' perceptions of whether such initiatives had paid off financially and competitively by boosting their brand reputation, sales, or other management objectives such as reducing their adverse environmental impact and waste.

To our knowledge, our study is the first in its foci conducted in New York (NY) state and one of the largest on SMEs sustainability strategies ever done in the US. This is important as less research has focused on US SMEs than other countries, as noted earlier. While the US is one of the top two polluters, after China, less than 5% of the research over the last decade has focused on the US SMEs compared to more than 40% in Europe (Bakos et al., 2020). There is a need to undertake more research in this field in the US.

Our study contributes to the extant literature on SME sustainability engagement by examining a broader spectrum of SMEs' sustainability adoption, their motivations, and the hurdles experienced by about 600 such firms in the US who participated in our survey. The responding firms in our study were located in small and big cities and were spread out between different industries, manufacturing, and services. As some of the sustainability regulations or incentives vary between states in the US, this study focuses on New York, home to our educational institution, that we are more familiar with, studying the variations in SMEs' behavior across counties with different constituencies.

The rest of the paper starts with findings of the significant meta-analyses of the extant literature on the motivators and barriers to sustainability adoption among SME managers in various countries. Next, we describe the study's methodology, followed by sections on our findings and a discussion of our results. The last section highlights our main conclusions and this study's limitations and outlines a few areas for further research.

LITERATURE REVIEW

Our focus in this section is to provide highlights of the meta-analyses of studies conducted on SME sustainability engagement in the last three decades. Walker et al. (2008) literature review encompassed 351

studies of factors that influenced and barriers encountered by SMEs in managing their environmental impact. They classified barriers into three groups: a. varying characteristics of the SMEs in terms of industry, firm size, and managers' educational background, among others, leading to difficulties in communication and coordination of technical assistance; b. availability and cost of resources as the principal obstacle to embracing sustainability; c. knowledge or interest of owners/managers in adopting environmental management, leading them to believe that their operations did not have any negative environmental impact or any such effect was minimal.

Parker et al. (2009) review covered about 50 studies and found the main drivers and barriers experienced by SMEs related to such factors as environmental regulations, consumer demand, management environmental commitment, education, and environmental knowledge, among others.

Johnson and Schaltegger (2015) reviewed 112 studies on SMEs' sustainability experiences. They found the barriers included managers' lack of awareness, knowledge, or expertise on sustainability issues, not seeing any perceived benefits in them and not having adequate financial and human and financial resources, and absence of sufficient external drivers and incentives, among others.

Alvarez et al. (2019) reviewed 46 frequently cited studies on barriers encountered by SMEs focused on their sustainability initiatives. They found the initial cost of implementing sustainability, lack of resources, and insufficient expertise as the main barriers, particularly among small businesses in Germany, Italy, the United Kingdom, Malaysia, and Romania.

Bakos et al. (2020) reviewed 122 studies published from 2013 to 2019 which were focused on SMEs from both developed and developing countries: Europe (41%), Asia (22%), and South America (19%). They noted that SME managers' sustainability knowledge, awareness, and pressures from stakeholders, were the major influences driving the pursuit of environmental sustainability. Also noteworthy were gaining competitive pressures and the existence of environmental regulations that pushed SMEs to adopt sustainable practices. Barriers most frequently encountered included resource constraints, insufficient knowledge, particularly among SMEs in developing countries, and the absence of government support.

Martins et al. (2022) reviewed 42 studies published over the 2000-2022 period on SMEs sustainability practices from around the world and classified them into four thematic areas: some centered on SMEs' performance, others on environmental management issues encountered, some related to the impact of social and cultural problems on firms' sustainability policies; while others focused on values, skills, and capabilities of those SMEs. With eight areas as directions for future research.

Our study aims to fill the literature gap by expanding the existing knowledge about the drivers and barriers to the US SMEs' adoption of sustainability practices.

METHODOLOGY

We conducted this research in two phases. First, we started learning about the sustainability behavior and strategies of SMEs in NY State by interviewing 75 randomly selected managers/owners. The interview instrument was developed after reviewing existing literature on sustainability strategies of SMEs in the United States and abroad, informed by discussions with several SME sustainability experts in NY state. To ensure representation, we interviewed businesses across various industries, including manufacturing, retail, farming, restaurant, and health care. Companies were chosen through referrals by regional experts or by the researchers' knowledge of their operations. Many businesses were also contacted through recommendations from Chambers of Commerce offices in western, central, or eastern NY state and online directories of such companies. Findings from these interviews and extensive additional literature review helped inform the design of our online survey instruments, which we piloted with several small business owners across different sectors to clarify the questions asked.

The study's second phase involved contacting SMEs in NY state through channels such as Chambers of Commerce, business alliances, and sustainability advocacy groups. We also used the SBA's database, which provides contact information based on location criteria, i.e., those in NY state with 250 or fewer FTEs. We invited over 20,000 owners/managers of SMEs across the 62 counties in NY State via e-mails, either individually or in groups, and had 678 participating SMEs. We removed 110 responses from the

dataset for participants whose responses to the survey questions were 10% or less, resulting in inadequate data to analyze, leaving 568 SMEs with usable information.

FINDINGS

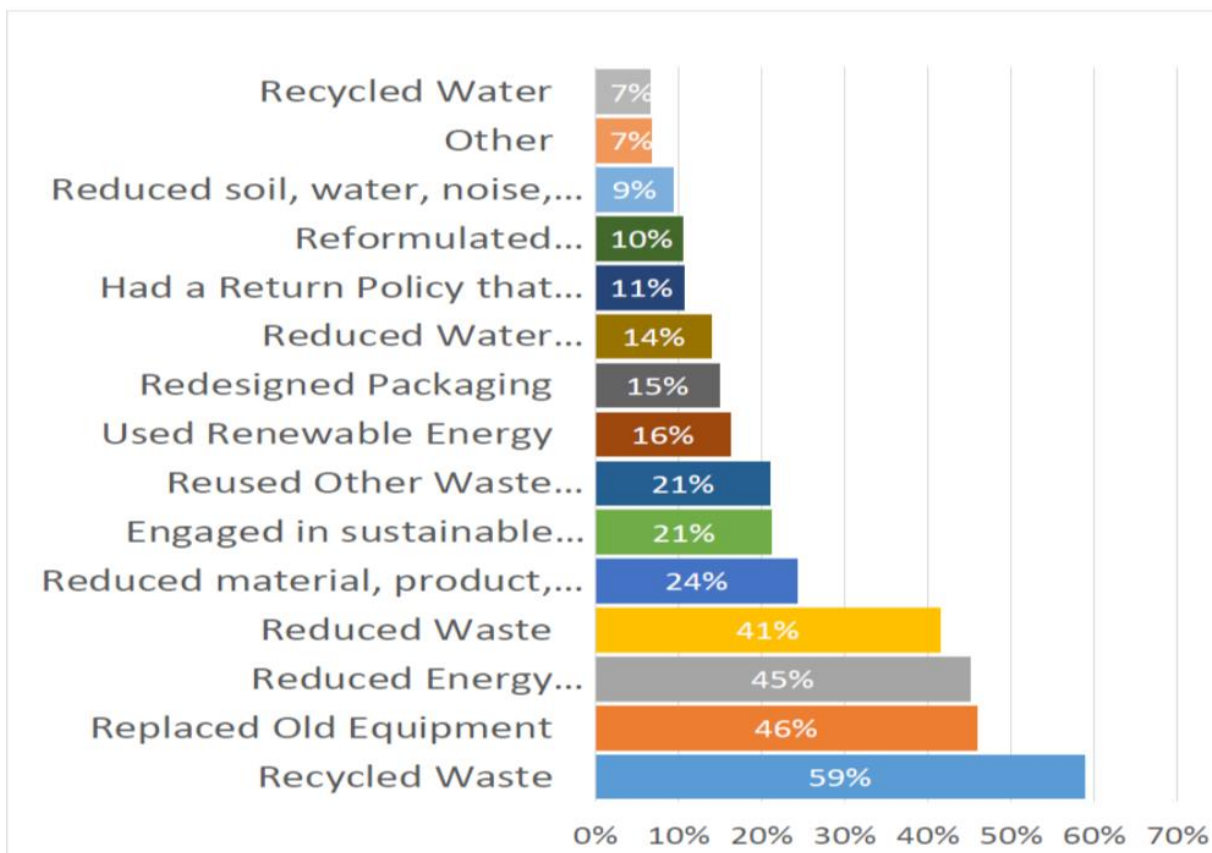
About 2/3 of the respondents were owners of SMEs; about 20% and 10% were top or middle managers, respectively. Most of the SMEs were businesses that were founded more than 25 years and came from a broad cross-section of sectors: 9% in construction, 19% in manufacturing, 22% in Professional, Scientific, and Technical Services, and the rest (50%) dispersed across a range of other sectors.

The geographical distribution of SMEs that reported their locations was as follows: 23% in New York City, 8% in Rochester, 7% in Ithaca, 5% in Albany, 5% in Buffalo, 4% in Syracuse, and 2% in Binghamton.

Most Widely Used Sustainability Solutions

SMEs were asked about their adoption of a list of 15 different solutions, such as changes in the design of their products or services, reusing and recycling of materials, renewable energy, and many more. Figure 1 shows the complete list of the programs adopted and associated frequencies.

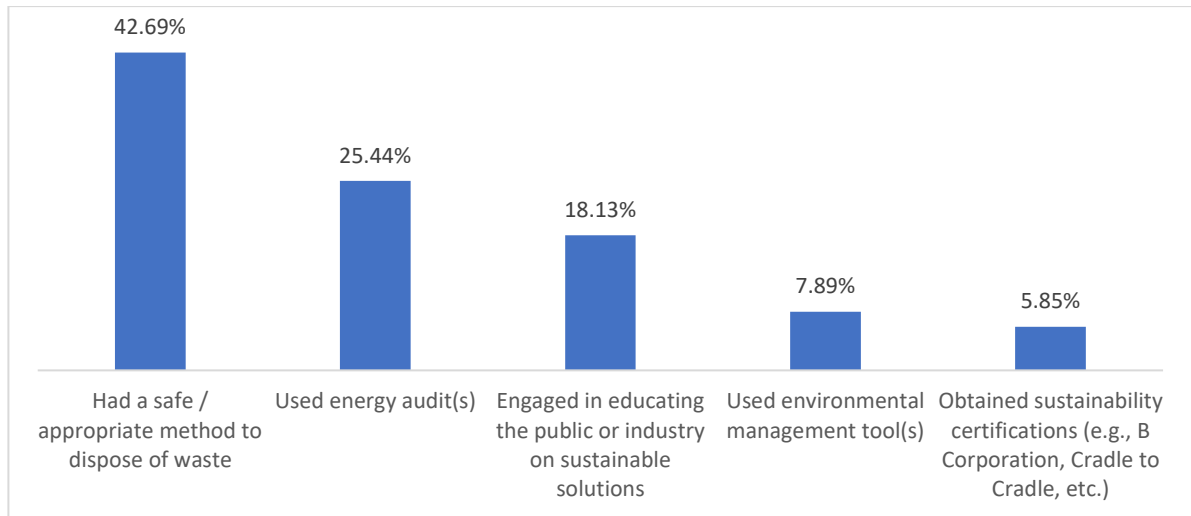
**FIGURE 1
FREQUENCY OF ADOPTED SUSTAINABILITY PROGRAMS**



Recycling waste was the most frequently used solution with a nearly 60% adoption rate. The next popular sustainability solutions were replacing the older equipment with more environmentally friendly alternatives and reducing energy consumption, closely behind with 46-45% of the respondent reporting them, in that order; reducing waste was mentioned by 42% of the SMEs.

SMEs were also asked about their implementation of another five types of sustainability solutions (Figure 2), among which having a safe/appropriate method to dispose of waste (43%) and energy audits (25%) were more frequently cited by the responding SMEs.

**FIGURE 2
MORE SUSTAINABILITY SOLUTIONS**



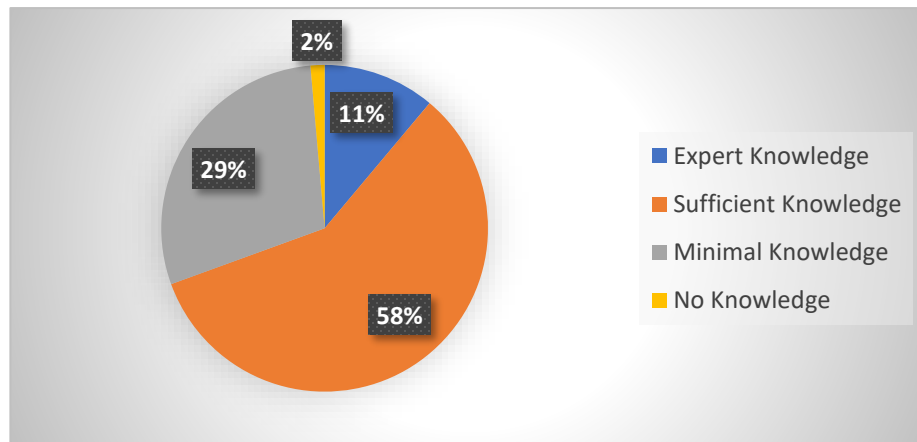
Key Drivers of Sustainability Engagement

Awareness, values, and education of the owners/managers were the key drivers of sustainability adoption by our participating SMEs (Figure 3). Furthermore, most respondents believed regulatory compliance and financial incentives were not critical in their decision to incorporate and enhance sustainability in their operations.

Awareness

Most (71%) of the owners/managers had “sufficient” to “expert” knowledge about various sustainable solutions. About 60% of the responding SMEs agreed or strongly agreed to the link between their understanding of and engagement with different sustainability measures they had adopted.

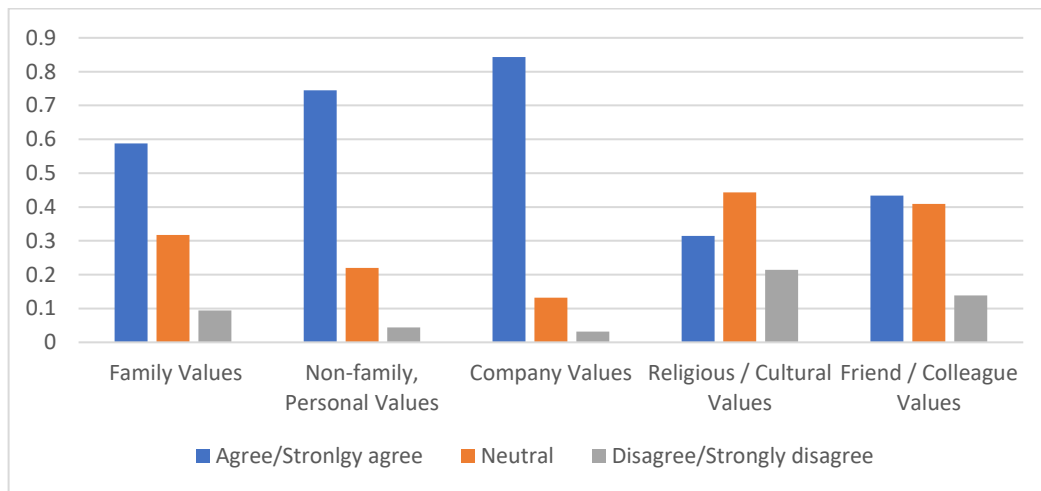
**FIGURE 3
AWARENESS OF SUSTAINABILITY AMONG SMES**



Values

The participating SMEs were asked if their values influenced their sustainability decisions. Several influencers of such value formation were presented to them, such as religious/cultural, friends, and company/organization. Respondents had to mark any such influences, ranging from “strongly disagree” to “disagree” on one end and “agree or strongly agree” on the other, with a neutral category in between (Figure 4). Most (84%) of the SMEs agreed or strongly agreed that the company values and culture, along with the owner/manager’s family and personal values (59%), had influenced their business decision to adopt sustainable solutions. The SMEs also mentioned that friends’/colleagues’ views (43%) and religious/cultural values (31%) had some impact on their adoption of sustainability programs.

FIGURE 4
VALUES IMPACT ON SUSTAINABILITY ADOPTION



Education

To understand how owner/managers’ educational level may have influenced their sustainability decisions, several sources of such education were identified (K-12, college/university, workshop/conference/presentation, and media/ads), and the participating SMEs were asked to mark any such sources on the same Likert scale used for values. About 50% of the respondents believed that the sustainability education they gained through attending various workshops, conferences, media exposure, or acquired as part of the owners’/managers’ college education impacted their decisions to implement sustainable solutions.

Regulatory Requirements and Government Incentives

Most NYS SMEs believed regulatory compliance was not a key consideration in embracing sustainability. Regulatory compliance was considered by 45% of the responding SMEs but not by most (55%). SMEs who believed regulations were impactful indicated that state and federal-level regulatory requirements were more critical than those imposed by the municipality and county governments.

Financial incentives offered by NY State topped the list of incentives SMEs used to adopt sustainable solutions. Among the seven types of financial incentives received, shown in Figure 5, 27% of the responding firms stated tax credits and deductions as the most frequently received, followed by 24% who received rebates and 15% who received grants and awards. Subsidies and loans were not as expected.

As for the level of governments offering the incentives (Figure 6), 39% came from the state, followed by 27% from local municipalities, 18% from the federal, and 16% from counties.

Regarding the possible push of their competitors' sustainability strategies on their decision to embrace sustainable practices, about 19% of the responding SMEs agreed or strongly agreed with such impact, 34% disagreed or strongly disagreed and 47% indicated no agreement or disagreement.

FIGURE 5
FINANCIAL INCENTIVES BUSINESSES RECEIVED TO ADOPT SUSTAINABLE SOLUTIONS

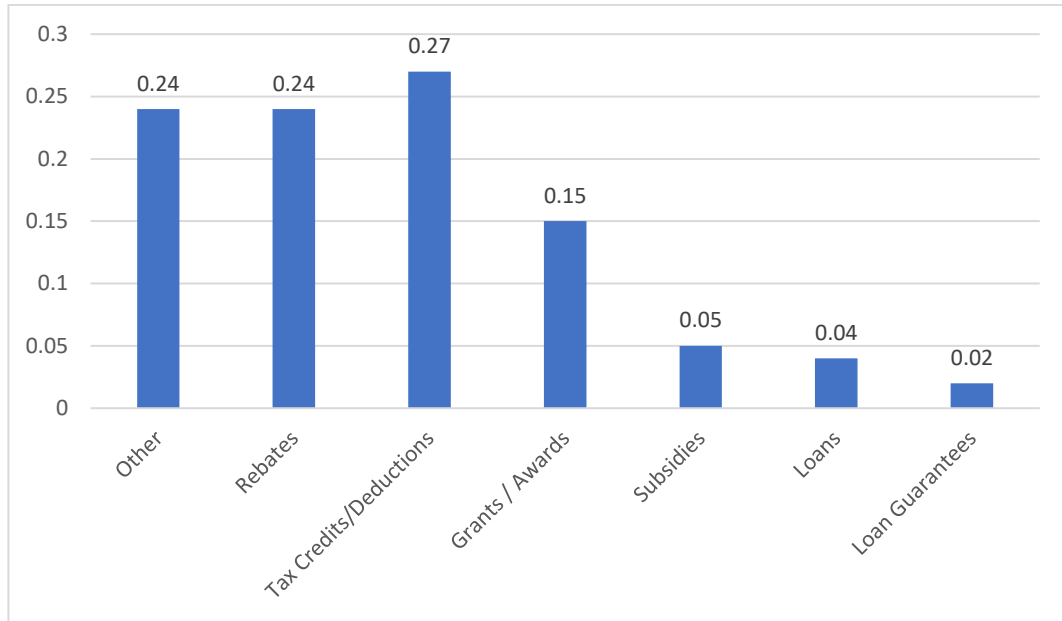
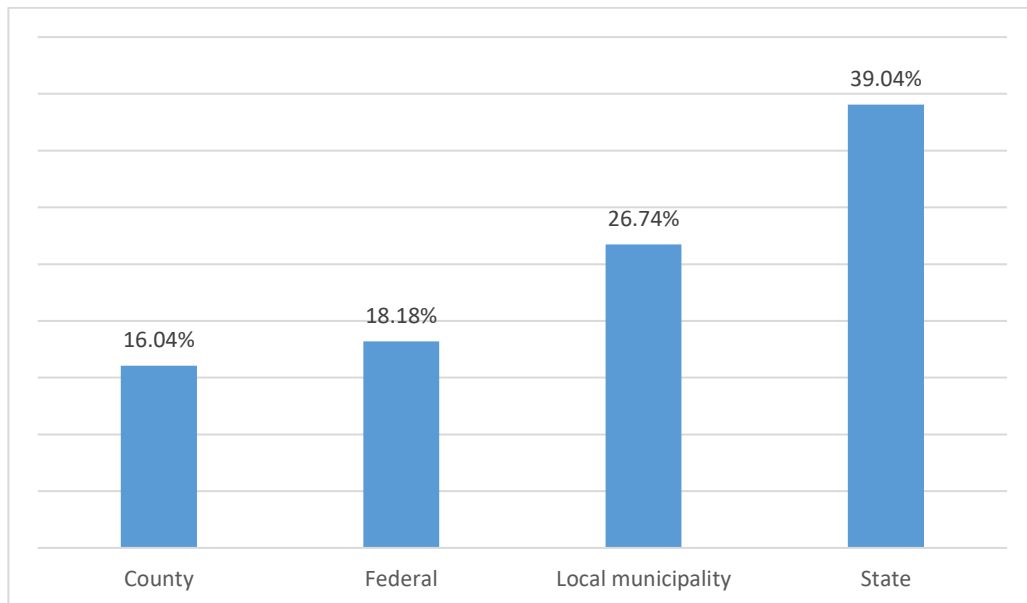


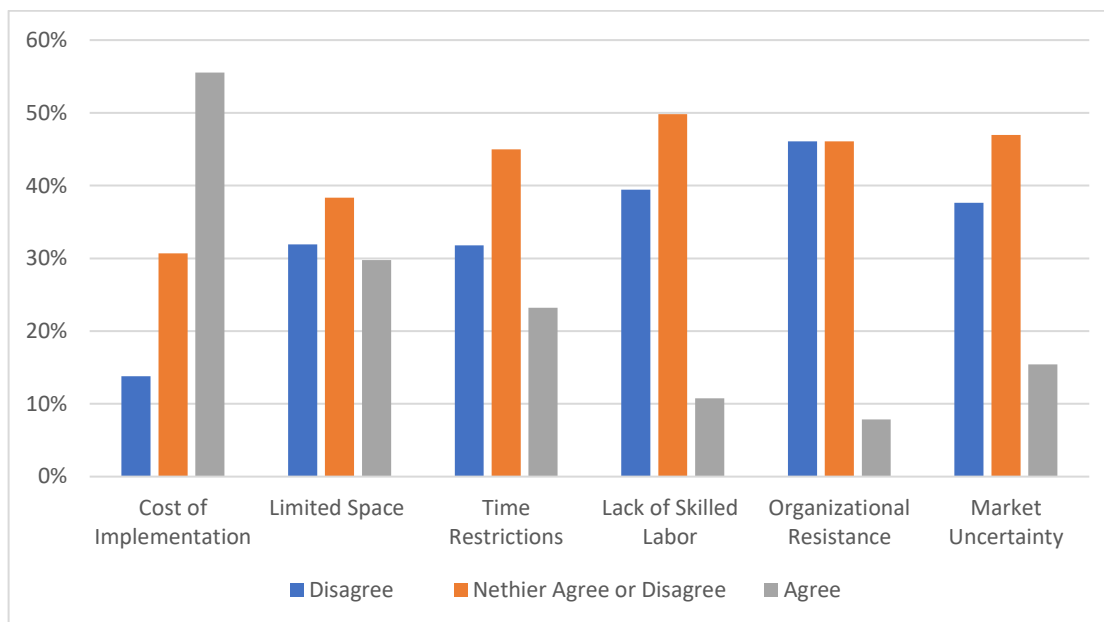
FIGURE 6
GOVERNMENT BODIES SMES RECEIVED SUPPORT FROM



Barriers to Sustainability Engagement

As for hurdles in embracing sustainable solutions, limited space (30%) and time constraints (23%) topped the list. At the same time, many respondents, as shown in Figure 7, viewed resource constraints (i.e., limited physical space and time, shortage of skilled labor, and organizational resistance) or market uncertainty (15%) as neither necessary nor unimportant factors impacting their decision to undertake sustainable solutions. Implementation costs appear to have influenced SMEs' sustainability decisions, with 56% of the businesses agreeing or strongly agreeing with their relevance, and a much smaller number (14%) disagreed or strongly disagreed.

FIGURE 1
BARRIERS TO THE ADOPTION OF SUSTAINABILITY



Did Sustainability Adoption Payoff?

About 40% of the responding SMEs agreed or strongly agreed that sustainability had paid off, 14% disagreed or strongly disagreed, and about 35% neither agreed nor disagreed; for 11% of SMEs, it was too soon to tell! The most positive payoffs (slightly, moderately, or significantly) were perceived to relate to employee satisfaction (44%), cost (39%), profit (36%), and brand image (36%).

DISCUSSIONS

Our results validated some of the findings of earlier studies on internal and external motives and barriers to SMEs' sustainability engagement. Our research also provided more profound insights into the variety of solutions adopted by NY state SMEs and extended knowledge of the perceived impact of such arrangements on profitability, market growth, and customer/employee satisfaction.

Several earlier studies have identified owners'/managers' environmental knowledge as an important factor influencing SMEs' adoption of sustainability solutions (Walker et al., 2008; Meqdadi et al., 2012; Giri et al., 2015). Indeed, education is effective in making small businesses know about their operations' impact on the environment (Johnson, 2017). Bakos et al.'s (2020) review of the literature on sustainability strategies of SMEs across continents also shows that awareness of sustainable solutions and education are keys to adopting sustainability in small businesses. Our survey responses confirm this unequivocally.

As for the role of values, while some of the earlier studies found management perceiving environmental issues or the urgency to contain their adverse impact as significant or relevant for their business, some other studies found environmental improvement proactively to be among companies' social responsibilities (Baden et al., 2009; Johnson, 2015; Westman et al. 2018; Schaefer et al., 2020). Schaefer et al. (2020) study of SMEs in England shows that managers' and employees' values on sustainability increase firms' engagement in sustainable practices. Our survey participants expressed commitment by owners/managers as an essential consideration as to why they engaged and continued their sustainability practices.

Earlier studies that investigated the role of compliance with environmental regulations or incentives offered to entice SMEs' interest in sustainability practices have come with different findings. Parker et al. (2009) found punitive regulations and financial rewards to minimize SMEs' adverse environmental impact or embrace sustainability solutions effectively. Other studies, however, found governments' absence of support or limited financial incentives to promote SME sustainability to be significant deterrents (Johnson and Schaltegger, 2015; Aghelie, 2017). Most SMEs in our study did not identify regulations as a key factor in their sustainability decisions.

Bartolacci et al. (2020) and Martins et al. (2022) literature review found a positive relationship between SMEs' sustainability and financial performance. In our study, while 40% of the owners/managers perceived positive payoffs from their sustainability adoption, 35% of them did not have any opinion one way or the other.

Along with the various motives for SMEs sustainability adoption, earlier studies have also noted several barriers that inhibit sustainability implementation with cost and limited resources (financial, time, staff, technology expertise, organizational) being the most frequently cited, followed by unclear or delayed payback (Shields and Shelleman 2017; Alvarez et al. 2019; Bakos et al.; 2020). Among our respondents, implementation costs emerged as the key factor impacting SMEs' decision to adopt sustainability solutions.

CONCLUSION

Our study noted owners'/managers' sustainability awareness, education, and environmental/social values as key drivers of their company's sustainability practices. Regulatory compliances or financial incentives offered by state and local governments were deemed not as important influencers of sustainability adoption strategies by our participating SMEs. Further analysis of these findings may assist public policymakers in reevaluating the effectiveness of those regulations and incentive programs to advance SMEs' sustainability efforts. This is important for companies and government officials in their attempts to promote SMEs' sustainability. Management's awareness of the latest technological advances in environmental, social, or economic sustainability is critical in promoting sustainable strategies. To achieve this, governments can play a crucial role by providing the necessary education or offering meaningful financial incentives through grants or tax reductions to reduce costs. Industry associations can also be highly effective through peer-to-peer mentoring and educational workshops.

Our study's findings are limited by the survey method used and the scope of the analysis. All participating SMEs are from New York State, which might limit the generalizability of our results. Replicating this study in multiple states and analysis of the results by firms' sector, size, and stage of sustainability adoption could provide interesting and actionable insights into promoting sustainability among SMEs which are essential engines of growth in the US economy.

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