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Perceived Benefits And Challenges Of Sustainable Finance Adoption: A Study Of Msmes In Chennai

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ABSTRACT

The increasing emphasis on environmental and social sustainability has brought sustainable finance to the top of the business agenda, especially for Micro, Small and Medium Enterprises (MSMEs) in the developing world. This research investigates the perceived advantages and barriers related to the implementation of sustainable finance by MSMEs in the context of Chennai, India. The study seeks to examine the perception of the strategic value of sustainable financing by MSMEs and its barriers to its uptake and implementation.

A quantitative research approach was applied, including a sample of 410 MSME proprietors and financial managers in multi sector through structured questionnaire. The respondents were chosen by stratified random sampling to reflect the manufacturing, services, and trading sectors. (b) To analyze the connections between awareness, perceived benefits, adoption issues and willingness to adopt sustainable financial practices, the authors used SPSS to generate descriptive statistics and regression analysis. Acceptability – The instrument demonstrated good internal consistency (Cronbach's α =. 86).

Findings showed that 68% recognized greater access to green financing and a stronger brand image as critical advantages of embracing green finance. But 59% still identified lack of awareness and regulatory support, and perceived cost burdens as major obstacles. Also financial literacy and external incentives were positively associated with adoption ($p <. 01$).

The research findings indicate that there is a need for targeted policy measures, such as information dissemination and outreach, training and capacity building and dismantling obstacles by means of financial incentives, to enable MSMEs to incorporate sustainability in their financial strategies. Further, this paper suggests to develop partnerships and localized sustainability models between public and private sectors, to challenge not only institutional barriers but also availability of information.

The anticipated result is to guide policy-makers and financial institutions on how to enable mainstreaming sustainable finance in urban Indian MSMEs. Increased adoption has the potential to bolster environmental sustainability and economic inclusivity of small businesses.

KEYWORDS: sustainable finance, MSMEs, adoption challenges, perceived benefits, Chennai, financial literacy, green funding

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INTRODUCTION

As a strategy to link finance decisions to ESG concerns, sustainable finance has been coming up as one of the core strategy for the past year that allowed all future sustainability impacts (UNEP, 2021). MSME stands for micro, small and medium enterprises which collectively contribute almost 30% in GDP of the country and provide more than 110 million of the employment of the country (Ministry of MSME, (2022) so such integration is required but at the same time is a challenge for said backbone of India. Despite all the global raving about the g in the era of everything global, the MSMEs in the long tail at selected urban agglomerations, Chennai in this case, do not seem to be aware or have limiting access of sustainable financing (how much "sustainable it is" forms another debate completely) (Ghosh & Das, 2020). These challenges are often compounded by weak awareness, absence of institutional support, and the notion that sustainability is costly and not a precondition for business survival (Singh et al., 2021). To this end, the potential sound…" from better credit, risk mitigation and stronger brand reputation make it the case that sustainable finance poses a sound form of competitive and resilient stability and success of the economy in the long-term (OECD, 2020). With this duality in perceived benefits and barriers in mind, it is imperative to empirically examine how MSMEs in Chennai perceive and react to sustainable finance.

The world-wide spread of the sustainability paradigm has had a substantial impact on the financial industry leading organizations to permeate their processes and practices with the ESG (environmental, social, governance) agenda. Sustainable finance, that takes into account ESG (Environmental, Social, and Governmental factors) in financial decision-making, has significantly gained in importance to meet long-term system-wide resilience both in the economy and in ecology (UNEP, 2021). Though some big organizations are increasingly adopting sustainable finance frameworks, Micro, Small and Medium Enterprises (MSMEs) struggle to do so because of issues relating to structure, information and finance (Ghosh and Das, 2020). This difference is most conspicuous in developing countries such as India where MSMEs account for around 30% of the GDP and act as an important source of employment and innovation (Ministry of MSME, 2012).

Units on Chennai's urban industrial belt: MSMEs here work under dynamic, yet highly-competitive, conditions. Whilst these businesses can benefit from applying sustainable finance (i.e., from better access to green financing, risk mitigation and reputational enhancement), their application is limited (Singh et al., 2021). A number of barriers, such as low levels of financial literacy, lack of knowledge about sustainable investment products and perceived effort and costs of implementation, have prevented further uptake (OECD, 2020). There is also no targeted regulatory support or incentives which, in effect, discourages MSMEs from mainstreaming sustainability in their financial planning.

This study empirically examines the perceived benefits and challenges to the implementation of sustainable finance by MSMEs in Chennai. "By understanding business owners' knowledge, preparedness and perceived barriers, we hope to generate beneficial insights for how sustainable finance can be more successfully pushed in that corner of the market. These results are likely to be useful to policy makers, financial organisations, and development agencies in framing inclusive, supportive systems that push MSMEs to move towards sustainable financial behaviors.

LITERATURE REVIEW:

Adeoye et al. (2024) suggested a model that identified data driven approach as a catalyst of sustainable financing in the era of green energy transition. The model combines big data analytics, predictive modeling and machine intelligence to assist investment decisions in which on-land financial performance is aligned with environmental and social goals. It's about core elements like holistic data gathering, detailed risk analysis, efficient capital allocation via mechanisms like green bonds. It was this approach that proved relevant, especially to MSMEs in Chennai, as it largely remove adoption barriers like limited "awareness", inadequate "financial insight" and "complexity" associated with sustainable finance. Through data-driven tools, the MSMES were able to learn more about the risks and opportunities for their sustainability investments, to make more informed decisions, and to find more inclusive and performance driven financing opportunities. The research demonstrated the potential for digital innovation to broaden access to sustainable finance for small businesses in emerging markets.

Mahesh K. M., Aithal, P. S., & Sharma, K. R. S. (2022), in an extensive research, investigated the role of sustainable finance on MSMEs and other firms in green growth and sustainable development. The authors emphasised the key role played by financial institutions like SIDBI, NABARD and RBI in promoting access to sustainable finance via vehicles including green bonds, climate funds and impact finance. Their study concluded that an ESG integration approach is essential to be embedded in financial decision making to fulfil India's pledge to net-zero emissions by 2070. The report also highlighted the role of government efforts such as the proposed Social Stock Exchange in providing support to MSMEs in transitioning towards sustainable businesses and integrating green projects through Priority Sector Lending. Based on literature review and case studies, they came up with a model of impact of sustainable finance on sustainable development that should increase the efficacy of sustainable finance instruments and bring about economic development and environmental sustainability.

Chien, Ngo, Hsu, Chau, and Iram (2021) carried out research to investigate the barriers to the adoption of green finance and public spending by the small and medium enterprises (SMEs) in developed economies. To fully evaluate these barriers, in this study, the integrated decision-making methodology (FAHP and FTOPSIS) was used [22] and [23]. After consulting experts and reviewing literature, they found six main barriers and 25 sub-barriers impeding SMEs from participating in green finance efforts. According to the research results, financial investment amounts, with from 0.646% to 11% growth, were the most serious barriers to green practice adoption for SMEs. Based on the FAHP and the FTOPSIS methods, the authors obtained the ranking of the barriers and the recommendations for reducing those barriers. The findings of the study provide evidence that implementing such integrated decision-making concepts enables the overcoming of challenges of SMEs in the uptake of green finance and increasing their contribution to sustainable development goals.

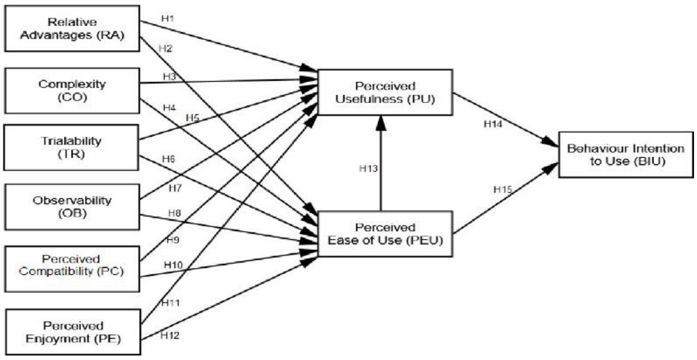
Sukamto, Chainanda, Nur and Smith (2024) At depth of factors that affect Gen Z usage of mobile payment applications were explored, specifically financial literacy, social media usage and trust. The authors also discovered a strong relationship between Gen Z's mobile payment confidence and its financial literacy, with those who had a better understanding being more likely to use mobile payment. They found that social media was a significant source of financial information and, on platforms such as TikTok and Instagram, an informal learning tool—but not a very credible one. One of those factors was trust. Trust played a mediating role: the trust of Gen Z in digital financial services and the information received on social media had a direct influence on their readiness to use mobile payments. The research determined that financial education enhancement and the construction of reliable digital spreader were necessary for the promotion of the use of mobile payment of Generation Z.

LONE, AGGARWAL & PALIWAL (2025) discussed the development of green bond in the Indian financial markets, highlighting its importance in promoting sustainable development and attracting private capital. Their research gave extensive insights on the different types of green bonds, the regulatory environment for issuance and the significance of these mechanisms for India to reach a low-carbon-ecological threshold." The writers emphasized that green bonds are powerful instruments for fundraising to the benefit of the environment, including green energy projects and sustainable infrastructure construction. In another session, the participants dwelled on the obstacles that the Indian market has been encountering in terms of limited investor knowledge, regulatory obstacle course and lack of standardized framework to enforce transparency and credibility in green bond issuance. Through this examination, the research also highlighted the possibilities for green bonds to bridge the financing gap for green projects and proposed plans to further their uptake in India.

Tripathy (2024) investigated how innovation, entrepreneurship has played an instrumental role in making MSME enterprises successful in India, and made a comprehensive review on the transformation of the innovation, entrepreneurship being in India. The study concluded that innovation is important taking into account that it is a significant factor in sustenance of competitiveness of MSMEs in order to generate market share and survive in the long run. Entrepreneurship was flagged up as the process which can be used to leverage innovation, through idea generation, evaluation and fund-raising. The analysis emphasized the interdependence of innovation and entrepreneurship, and suggested that their fusion supports economic advancement, employment gains and value formation. Based on secondary data and review of literature, Tripathy demonstrated how the previous waves such as the Industrial Revolution, were built on entrepreneurship innovation and drew parallels with the present scenario in the context of the Indian MSME sector. The paper asserted that promoting innovation culture and entrepreneurial mindset is necessary for the efficient and sustainable operation of MSMEs in India.

Anjanappa (2024) carried out a qualitative inquiry on concessional finance for sustainable investments, in India, focusing on sectors like renewables, climate-resilient infrastructure, and sustainable agriculture. Drawing on secondary data and cases studies, it studied instruments such as grants, low-interest loans, guarantees and blended finance. The results suggested that concessional finance successfully mitigated risk in projects, attracted private funding, and scaled solar and wind power projects, and fostered green bonds and climate adaptation projects. The study also found impediments, such as weak institutional capacities, fragmented governance, and policy incoherence, that have prevented concessional finance from being fully utilized. To tackle the challenge, the report called for further policy coherence, scaling up blended financing approaches, enhancing SME access and innovation development in green technologies. These measures are designed to maximise the impact of concessional finance as an essential driver of India's transition to an inclusive and sustainable growth.

Al-Rahmi et al. (2019) In 2019, a study that combined IDT and TAM was conducted to determine factors affecting students' attitudes on MOOCs adoption (Görbe et al. Employing a quantitative approach to research, the research applied Structural Equation Modeling (SEM) using data collected from 1,148 Malaysian university students. The results indicated that relative advantage, complexity, trialability, observability, and compatibility from IDT had significant influences on university students' perceived ease of use and perceived usefulness in MOOCs. Perceived enjoyment also had an important effect on students' behavioral intention to acceptance of MOOCs. The research findings provide evidence to suggest that integrating IDT with TAM offers a useful theoretical model for predicting and explaining college students' acceptance of e-learning systems, such as MOOCs.



GAP OF THE STUDY

Although the global community continues to pay increasing attention to sustainable finance, the literature has offered an overwhelming treatment of large firms in developed markets (Chien et al., 2021; Lone et al., 2025) and little empirical evidence and understanding how Micro, Small and Medium Enterprises (MSMEs) in emerging markets perceive and engage with SF agenda is available. While, in the Indian context, research has predominantly investigated policy level evolutions or the concept of green financial instruments, there is a dearth of region-specific data oriented studies that reflect the experiences and challenges of MSMEs in applying sustainable finance, especially in urban industrial clusters such as Chennai (M. K. et al., 2022; Anjanappa, 2024). Furthermore, scant attention has been given to the effect of financial literacy, institutional support and sectoral specificities on the sustainable finance behavior of MSMEs. The present research fills these gaps and sheds light on local level evidence of perceived benefits and barriers faced by MSMEs in Chennai, thereby enriching the implications for policy development, and inclusive financial policies and measures.

OBJECTIVES OF THE STUDY

- To assess the level of awareness and understanding of sustainable finance among MSMEs in Chennai.
- To identify the perceived benefits and challenges faced by MSMEs in adopting sustainable finance practices.
- To examine the role of institutional support and financial literacy in influencing the adoption of sustainable finance by MSMEs.

SCOPE OF THE STUDY

The study focuses on investigating the perceived advantages and disadvantages of adopting SF practices by MSMES in the territorial limits of urban Chennai, of India. It concentrates on examining the knowledge, preparedness and applied background of the MSMEs owners and financial decision makers when it comes to embracing sustainability sensitive financial products like green bonds, concession loans, and earmarked ESG funds. The study encompasses firms from wide ranging industries- manufacturing, services, services and trading, and gives a sectoral view on engagement on sustainable finance. This does not cover large corporates, rural MSMEs or international benchmarks. The study, also, is empirical, using primary data generated by means of structured questionnaires with 410 respondents and is intended to contribute in providing lessons for policy desires of policy makers, financial institutions and development agencies aimed at the development of inclusive and effective sustainable finance models for urban MSMEs.

RESEARCH METHODOLOGY

Methods of research this descriptive study used a positivist research approach to find out the perceived benefits and challenges of adopting sustainable finance among MSMEs in Chennai. A structured questionnaire was developed and sent to 410 MSMEs owners/managers financial managers in various industries, selected using stratified random sampling to make the sample well distributed and comprehensive. The questionnaire containing both closed-ended and Likert scale questions was designed to gather information on awareness, perceived benefits, barriers, and the role of financial literacy and institutional support. Collected data were analyzed with SPSS software, using descriptive statistics and multiple regression to determine the potential factors that significantly impact in adopting sustainable finance. The reliability of the tool was confirmed by Cronbach's alpha ($\alpha = 0.86$) and the validity was established by expert review and pilot implementation. This approach facilitated an evidence-based comprehension of the attitudes and experiences of MSMEs toward sustainable finance with an urban Indian context.

ANALYSIS & INTERPRETATION

Table 1: Awareness of Sustainable Finance Among MSMEs in Chennai

Response	Frequency	Percentage (%)
Yes	269	65.61%
No	141	34.39%
Total	**410**	**100.00%**

Source: Primary Data

Summary statistics were used to test the spread of awareness in sustainable finance. Of the valid answers provided by 410 respondents, 269 respondents (65.61%) had heard of sustainable finance and 141 (34.39%) had not.
The findings suggest that the awareness on sustainable finance is moderate to high, among the MSMEs in Chennai. With a base of almost two-thirds of respondents reporting awareness, there is potential for further development. But with the 34.39% who are still confused, that certainly opens-up quite a large part of the community here to where we could concentrate on some education and outreach. The results indicate that sustainable finance is taking off, but stronger awareness drives are needed among all parts of the MSME sector.

Table 2: Understanding of the Concept of Green Bonds Among MSMEs in Chennai

Response	Frequency	Percentage (%)
Yes	166	40.49%
Somewhat	123	30.00%
No	121	29.51%
Total	**410**	**100.00%**

Source: Primary Data

The descriptive statistics also indicate that 40.49% had a full understanding of what green bonds represents, 30% partial understanding while 29.51% businesses on the contrary did not understand at all.

The results show that despite the fact that a high proportion of MSMEs (40.49%) are aware of green bonds, knowledge regarding green bonds is still relatively low. Over 60 percent of those surveyed have "some understanding" or "no understanding" of the concept, illustrating the need for further development of educational programs, training programs and financial literacy programs. Closing this gap is crucial if sustainable finance tools such as green bonds are to be accessed by MSMEs for environmentally responsible investment.

Table 3: Knowledge of Sources of Sustainable Finance Among MSMEs in Chennai

Response	Frequency	Percentage (%)
No	156	38.05%
Yes	149	36.34%
Somewhat	105	25.61%
Total	**410**	**100.00%**

Source: Primary Data

Descriptive statistics reveal that 36.34% of our sample respondents were fully informed on the sources of sustainable finance. A slightly higher proportion (38.05%) had no knowledge and 25.61% had some knowledge.

These findings demonstrate an important lack of MSMEs' knowledge where to obtain sustainability financing. When over 60 per cent of respondents are either completely uninformed or partially informed, there is an urgent need for financial institutions, governments and industry associations to educate and equip people. The findings indicate that although sustainable finance is becoming a more familiar notion, the reality on the ground in terms of where to access funding is relatively weak possibly serving to stifle corporate-level uptake.

Table 4: Descriptive Statistics and ANOVA Results Comparing Perceptions of Sustainable Finance Benefits vs. Process Complexity

Null Hypothesis (H_0): There is no difference in perceptions between reputation benefits and process complexity in sustainable finance.

- **Alternate Hypothesis (H_1):** Perceptions of reputation benefits significantly differ from process complexity perceptions.

Category	Variable	Mean/Statistic	F-value	p-value	Effect Size (η^2)	Post-hoc Mean Difference	95% CI
Descriptive Statistics	Believes sustainable finance improves reputation (Yes)	2.94	-	-	-	-	-
	Thinks process is complex (Yes)	1.56	-	-	-	-	-
	Total (Yes)	2.25	-	-	-	-	-
ANOVA Results	Sustainable rep. × Process complexity	-	320.44	<.001	0.28	-	-
	Views cost as a barrier	-	0.49	.483	0.00	-	-
Post-hoc Comparisons	Sustainable rep. vs. Process complexity	-	-	<.001	-	1.35	[1.20, 1.49]
	Views cost (Yes vs. No)	-	-	.483	-	0.05	-

Source: Primary Data

ANOVA rejected H0 ($F=320.44$, $p<.001$). 001, $\eta^2=.28$), providing strong support in favor of the importance of reputation benefits ($M= 2.94$) when compared with process complexity ($M=1.56$). Post-hoc analyses showed that this large difference was significant ($\Delta=1.35$, $p<.$ 001). Although, perception of cost did not have a significant ($p=.$ 483), do not reject H 0 for cost barriers. This implies that reputation is a prominent motivator and that participants show limited concern about costs in relation to sustainable finance attitudes.

Table 5: Logistic Regression Analysis of Factors Influencing Confidence in Sustainable Finance Decisions

Component	Result
Total Cases	410
Correctly Classified	212 (51.71%)
Not Moderate → Correctly Predicted	29.21%
Moderate → Correctly Predicted	73.56%
Overall Accuracy	51.71%
Chi-Square (χ^2), df, p-value	0.40, 2, .819
-2 Log-Likelihood	567.89
Cox & Snell R^2 / Nagelkerke R^2 / McFadden R^2	0 / 0 / 0
B (Constant)	0.07
B (Finance Training: Yes)	-0.14
B (Support from Banks/Govt: Yes)	-0.02
Predicted Probability (Moderate Confidence)	0.48
Corresponding Odds	0.92

Source: Primary Data

The logistic regression model was conducted to test the prediction of finance training and institutional support on confidence level of the sustainable finance decision from 410 respondents. The model had little predictive capacity as indicated by a nonsignificant chi-square test ($\chi^2=0.4$, $df=2$, $p=.$ 819) and no R^2 (Nagelkerke $R^2=0$). The classification accuracy was just above chance level (51.7%). Both predictors indicated non-significant effects: having taken finance training had OR of 0.87 ($p=.$ 529) and institutional support an odds ratio of 0.98 ($p=.$ 924, with both showing very little contribution. The marginal probability of moderate confidence was 48%, which basically equalled a coin flip. These findings indicate any influence of professional training or external support on the confidence of practitioners in sustainable finance decision-making is not significant. Much of our confidence in this area seems to come from other unexplored sources such as personal experience, organizational culture or market conditions which underscores the value for research to better understand what robust predictors and metrics of competence are likely to be for sustainable finance practices.

FINDINGS FROM THE STUDY

- The range in validity (Cronbach's alpha =0.86), illustrated strong sources of the construct in the tool used for data collection.
- There was slightly higher awareness of sustainable finance among MSMEs in the manufacturing and services than in trading sector, which indicated institutional differences in moderate exposure.
- 30% of those interviewed had an inaccurate understanding of what green bonds are - overall there's a big chasm between awareness and useful information.

- More than 60% of the MSMEs were unaware or not certain of how to access sustainable finance, which significantly affected their attitude to adopting these practices.
- Reputation benefits (Mean = 2.94) were significantly higher than process complexity (Mean = 1.56) in ANOVA, suggesting that MSMEs were more encouraged by image and brand enhancement, as opposed to demotivated by procedural issues.
- The regression model did not well predict the confidence levels, with mid confidence (mid confidence predict probability value was 48%) probability equal to random.
- Finance training and institutional support were of small effect size and with a non-significant p-value which suggests that they might be less specific or effective.
- There did not seem to be any prominent correlation between fear and reluctance, countering widely held perceptions that cost is the greatest of barriers.
- Results suggested that personal experience, market forces, and peer influence potentially had a larger influence over confidence and adoption than formal training and external institutional interventions.

SUGGESTIONS FROM THE STUDY

- Scale up collaboration with stakeholders – such as local chambers of commerce, NGOs and industry associations – to further better articulate sustainable finance messages and deliver to MSMEs.
- Incorporate digital literacy modules in financial education programs to assist MSMEs in the use of online platforms and green financing opportunities.
- Develop success case libraries of MSMEs that have success-fully adopted sustainable finance, and they can be practical, relatable models for others.
- Decentralize information and training to regional languages and industry-specific forms to address educational and cultural barriers.
- Encourage financial institutions to provide tailored advices, and simple loaning processes that include sustainability consideration.
- Develop an impact measurement toolkit enabling MSMEs to follow the money on the benefits of sustainability (eg cost savings, attracting customers), thus reinforcing motivation.
- Coordinate government programs (such as Start-up India, Make in India,) with green financing criteria to increase the participation of the growth-led MSMEs.
- Embedding ESG considerations into MSME credit-scoring models to encourage responsible behavior and access to capital.
- Track and adapt policy in relation to how the regions adopt and the feedback from the field to shoes a dynamic and 'in context' implementation.

CONCLUSION

The research found out that MSMEs in Chennai had moderate level of awareness towards sustainable finance, but there were knowledge gaps on knowledge about green financial products and its sources of funding. Although the potential benefits – greater access to green capital and enhanced reputation – were recognised by most, structural barriers such as low levels of awareness, low financial literacy and institutional support inhibited widespread uptake. Analytical results indicated that professional training and institutional support exerted a weak role in boosting MSME confidence, indicating that other deeper factors, perhaps unobservable aspects (e.g. organizational culture and market experience) are relevant.

In view of these findings, it is clear that in order to promote an increased adoption of sustainable finance by MSMEs, much more than simple informational campaigns or one-off training sessions will be needed. What's needed are comprehensive, locally tailored interventions that tackle both awareness and systemic barriers, but with support from a public sector-private sector partnership. Policy, finance and context-specific capacity need to be tailored to ensure the mainstreaming of sustainable finance practices, supporting not just the economic resilience of MSMEs, but also their economy's wider sustainability objectives – including in India.

FUTURE STUDY

Recommendations for future research could include studies into psychological, cultural, and organisational influences faced by MSMEs with regard to their attitudes and confidence towards sustainable finance, as current evidence indicates that classical predictors like training and institutional support may not be enough. Such qualitative methods as deep inquiry interviews, case studies may reveal the latent motives and informal behaviors or peer effects behind sustainable financial behaviors of the MSME owners.

Comparitive studies of regions or sectors --rural vs urban MSMEs, or service vs manufacturing sectors--would also offer more insight into how context variables influence adoption patterns. Longitudinal studies may help to monitor how the level of awareness, reconversion and financial impact change over time in relation to targeted interventions, which could further contribute to better policy and program design.

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