

Role Of Non-Banking Financial Institutions Towards Sustainable Development of Small and Medium Enterprises

Ms. Gauri Singh Bhadauria

Assistant Professor,
School of Business Management
Chhtrapathi Shahuji Maharaj University, Kanpur Kalyanpur,
Kanpur, Uttar Pradesh 208012
gaurithakur.mercy@gmail.com

Abstract

Introduction: In this essay, we will discuss some of the major challenges that NBFIs face in promoting the sustainable development of SMEs.

Literature review: This section discusses that SMEs face many kinds of issues while accessing finance from traditional financial sources, including high collateral needs, complex loan systems, and limited credit histories.

Methodology: It can be identified that non-financial institutions can design and conduct the targeted financial products that can fulfill the specific requirements of SMEs with the help of primary quantitative data collection and SPSS. These methods will allow the stakeholders to promote sustainable practices and create a completely inclusive environment for SMEs to thrive.

Findings: This section highlights how non-banking financial companies play a critical role in encouraging the overall sustainable growth of both small and medium businesses and SMEs by providing access to finance as well as other financial operations.

Discussion: NBFIs have increasingly focused on encouraging sustainable finance practices that will align with sustainable development goals. Some NBFIs have initiated green financing programs for supporting SMEs in growing and conducting environmentally sustainable projects.

Conclusion: NBFIs play a critical role in promoting the sustainable development of SMEs by promoting sustainable finance development practices. This section discusses the as SMEs continue to develop and contribute to economic development, the effectiveness of nonfinancial institutes has become more significant in assuring their financial inclusion as well as overall sustainable growth.

Keywords- Simplified application processes, non-collateralized financing options, Sustainable Development Goals, financial inclusion, sustainable growth.

Introduction

Non-banking financial institutions have a crucial role in the sustainable growth of both small or startups and medium business industries or enterprises. SMEs are known as the main backbone of the economy, and it plays a significant role in accommodating significant employment opportunities as well as contributing to Gross Domestic Product. However, non-banking financial institutions often face many risks and issues in accessing finance from conventional banking institutions and making it tough to expand and sustain their business. Moreover, non-banking financial institutions or NBFIs can solve this issue by supporting SMEs with the essential financial resources for supporting their business development.

One of the primary roles of non-banking financial institutions is it supports SMEs to provide access to finance and also offer a wider range of financial products and services and services, such as invoice financing, loans, or leases which SMEs can utilize at the time financing of their business operations. Along

with this, non-banking financial institutions can also help to credit guarantees, and thus support SMEs to protect their financing process from banks to other financial associations.

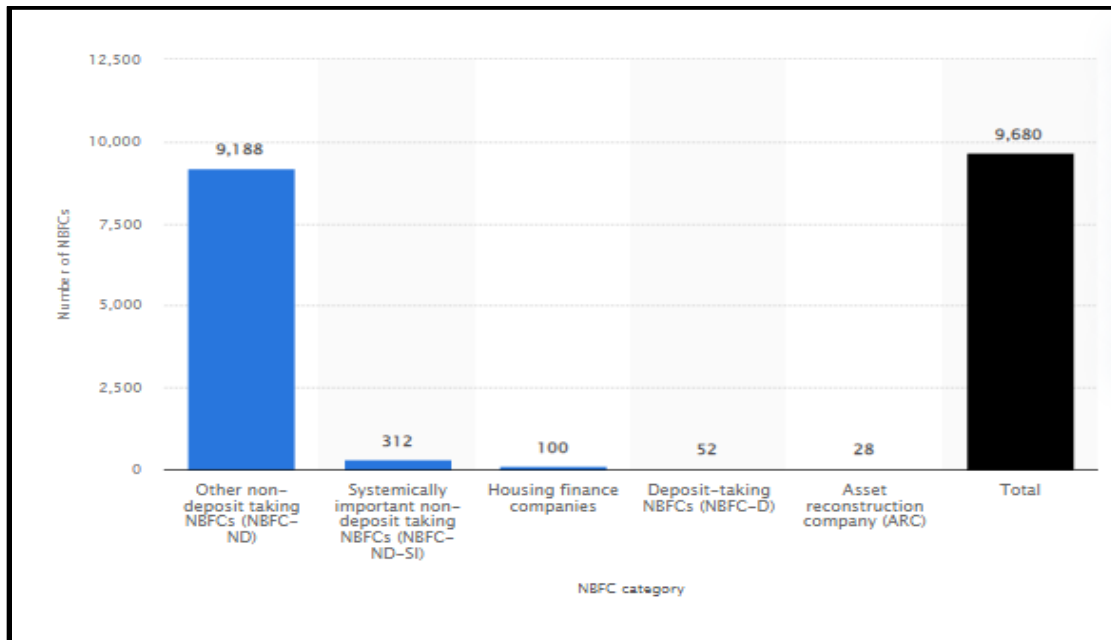


Figure 1: Number of non-banking financial companies in India 2021
(Source: Statista, 2021)

The above figure is showing the number of non-banking financial companies or NBFCs in India by category by the year December 2021. It has been observed that, as of the 2022 financial year, almost 9500 non-banking financial institutions belong to the non-deposit-taking category according to their liabilities. Along with this, the statistical graph is showing that the amount was nearly about 9680 NBFCs which are registered with the RBI.

Non-banking financial companies also face several issues that negatively affect their capability toward sustainable development. Some challenges are limited access to funding, lack of regulatory oversight, inadequate risk management, limited financial literacy as well as limited infrastructure. It has been observed that non-banking financial institutes face many problems when they are accessing huge amounts of funding which make it hard to extend credit to SMEs. However, this becomes challenging for the smaller financial companies that lack the scale as well as reduce financial strength that affects investor retention.

Research Aim

The aim of the study is to identify the role of nonbanking financial companies in the sustainable development of both the small and medium business industries.

Research Objectives

- RO1: To assess the role of nonbanking financial companies in the sustainable development of SMEs
- RO2: To measure the significant factors of nonbanking financial companies that are affecting the sustainable development of SMEs
- RO3: To understand the significant issues of NBFIs in SMEs' sustainable development
- RO4: To analyze the feasible ways to solve the issues reloaded to NBFIs in case of SMEs' sustainable development

Research questions

RQ1: To assess the effectiveness of NBFi in the case of SMEs' sustainable development

RQ2: To analyze the critical factors of NBFi that are influencing the sustainable development of SMEs

RQ3: To critically discuss the most common issues of nonbanking financial companies in small and medium enterprise's sustainable development

RQ4: To critically evaluate the recommended ways for mitigating the challenges of nonbanking financial companies in case of SMEs' overall sustainable growth

Literature review

Assess the effectiveness of NBFi in the case of SMEs' sustainable development

NBFIs play a critical role in encouraging and advancing financial inclusion by supporting small and medium enterprises in underserved regions and helping them with a wider range of financial products and services. As per the suggestion of Sohn & Ju (2023), this is mainly important in developing countries where the traditional banking sectors do not have any presence in remote areas. It has been noted that non-banking financial institutions can help in poverty reduction as well as economic development by accommodating extended financial services to SMEs in these regions. Another critical role NBFIs in the case of SMEs is it helps in providing technical assistance and business advice. As per the comment of Tanaya & Ekyawan (2020), NBFIs provide a wealth of experience as well as expertise in many other industries, which they can use in SMEs business development process. This involves financial management, advanced marketing, and advanced business planning.

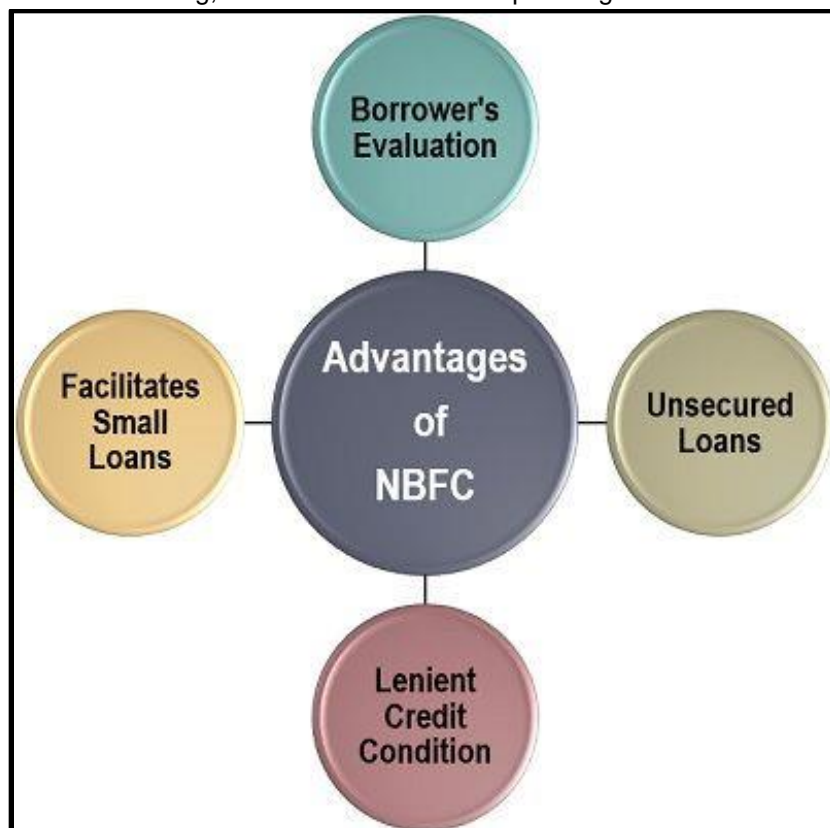


Figure 2: Role of nonbanking financial institutions in the case of SMEs' sustainable growth

(Source: Odoom et al. 2019)

Thus, it can be deduced that nonbanking financial institutions support small and medium industries to improve their business operations and become one of the most competitive industries, which can

contribute to their overall growth and sustainable development with the help of technical assistance and business advice. On the other hand, NBFIs are not equal to the same level of regulatory oversight as traditional banks. However, this makes it tough to assure that the companies are effectively managing risks and concurring with sustainable lending practices.

Critically analyze the challenges of nonbanking financial institutions toward sustainable development of small and medium enterprises

Nonbanking financial institutions play a crucial role in the sustainable growth of startups and medium enterprises. There are many issues that non-financial banking institutes can face while reaching their goal. As per the opinion of Laila et al. (2022), one of the critical challenges that the non-financial banking institutes or NBFIs face is a lack of awareness and lack of information about SMEs' sustainable practices. However, many SMEs do not know about the importance of sustainability and they also may not have sufficient resources for implementing sustainable practices in their business. As per the findings of Ibrahim (2020), NBFIs require to invest more in understanding or learning about the benefits of sustainable practices as well as provide them with the essential and sufficient resources for implementing these practices. Hence, NBFIs need to work closely with the governments, and other financial institutions, as well as SMEs for creating an active environment that helps SMEs in their sustainable development.

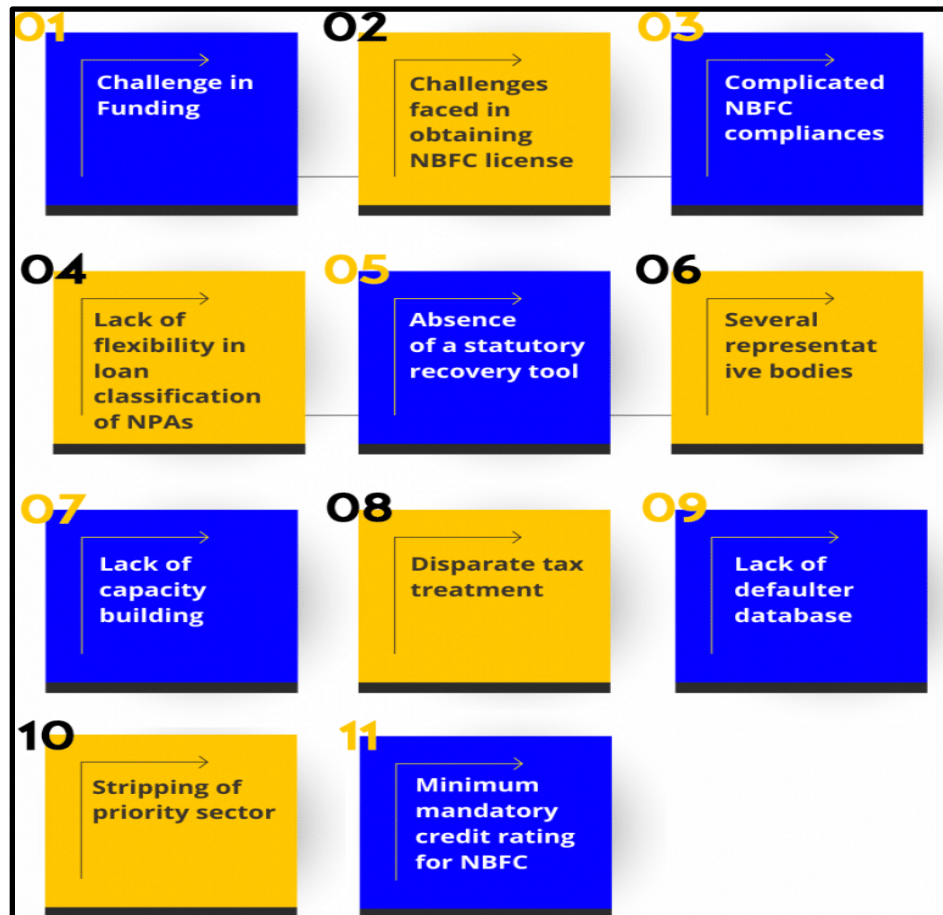


Figure 3: Challenges faced by NBFCs

(Source: Ihomeje et al. 2020)

Another significant challenge is the lack of access to finance for SMEs that non-financial institutes may face. It has been noted that SMEs often have to struggle for accessing finance from traditional finance

companies or banks due to their limited collateral and credit history. As per the opinion of Irungu, Kibuine & Muhoho (2019), NBFIs can play a vital role in delivering alternative sources of finance for SMEs. Therefore, it can be deduced that non-financial institutes require to develop new and innovative financial services and products that are tailored to the particular demands of SMEs.

Methodology

Primary quantitative data collection can help non-financial institutions to accumulate reliable and accurate data regarding the financial requirements, issues, as well as preferences of SMEs. As per the suggestion of Ademosu (2022), this data can be accumulated by surveys, questionnaires, and structured interviews as it helps to provide clear insights into the financial products that small and medium enterprises require and their willingness and capability of paying for them.

On the other hand, SPSS can be useful for the study of NBFIs as it can help to evaluate and interpret the collected numerical data, as well as enable them to recognize the patterns, trends, and correlations that may not be currently apparent. As per the statement of Arfah & Samiha (2020), SPSS can also be helpful for performing statistical tests and effective calculations, like regression analysis, for validating their findings and drawing profound conclusions.

Hence, these two methods can help to encourage sustainable growth by enhancing access to finance, helping in job creation, as well as enhancing the entire competitiveness of small and medium enterprises.

Findings

Demographic

What is your gender?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	53	62.4	62.4	62.4
2	24	28.2	28.2	90.6
3	8	9.4	9.4	100.0
Total	85	100.0	100.0	

Table 1: Gender

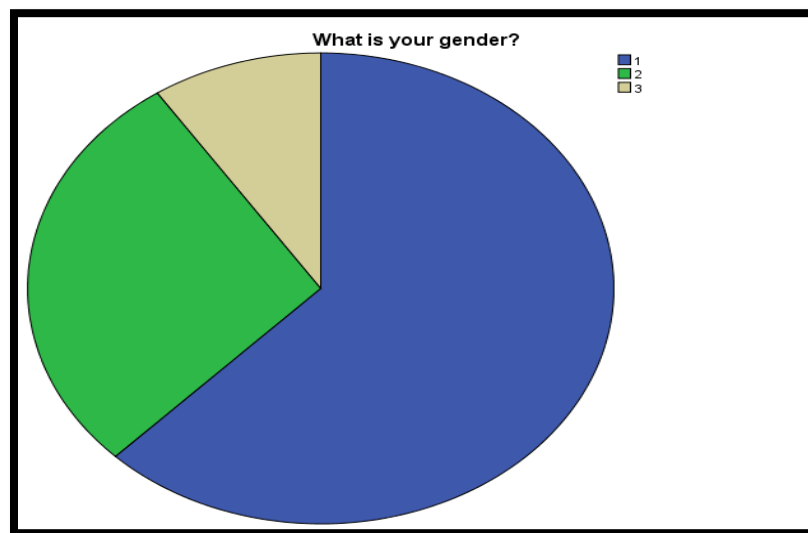


Figure 4: Gender

Table 1 showed the data on the respondent's gender and there was 62 percent were from the group of males. On the other hand, 28 percent of the respondents are from the group of females.

What is your age?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	32	37.6	37.6	37.6
	26-33	16	18.8	18.8	56.5
	34-41	14	16.5	16.5	72.9
	42-49	14	16.5	16.5	89.4
	50 above	9	10.6	10.6	100.0
	Total	85	100.0	100.0	

Table 2: Age

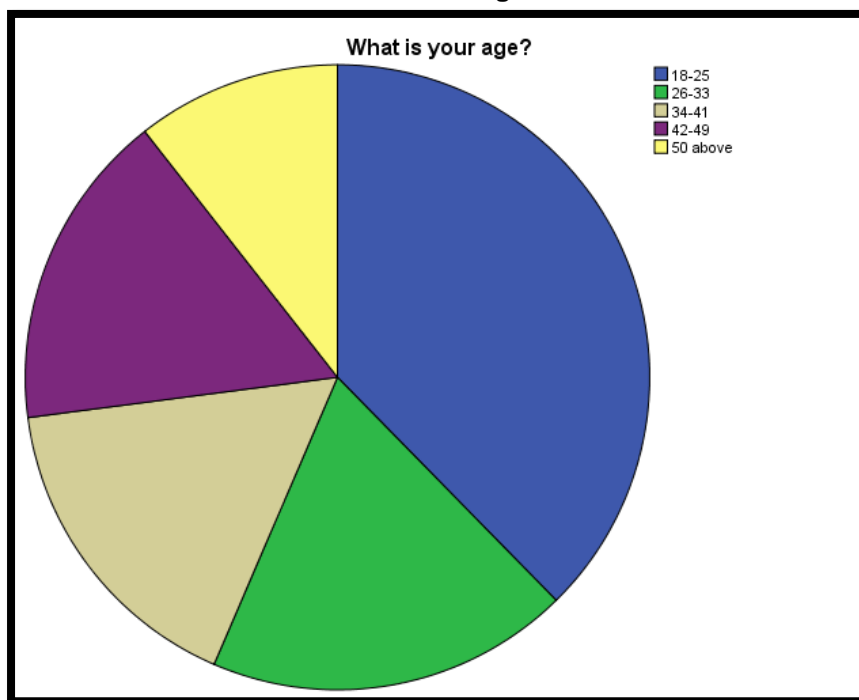


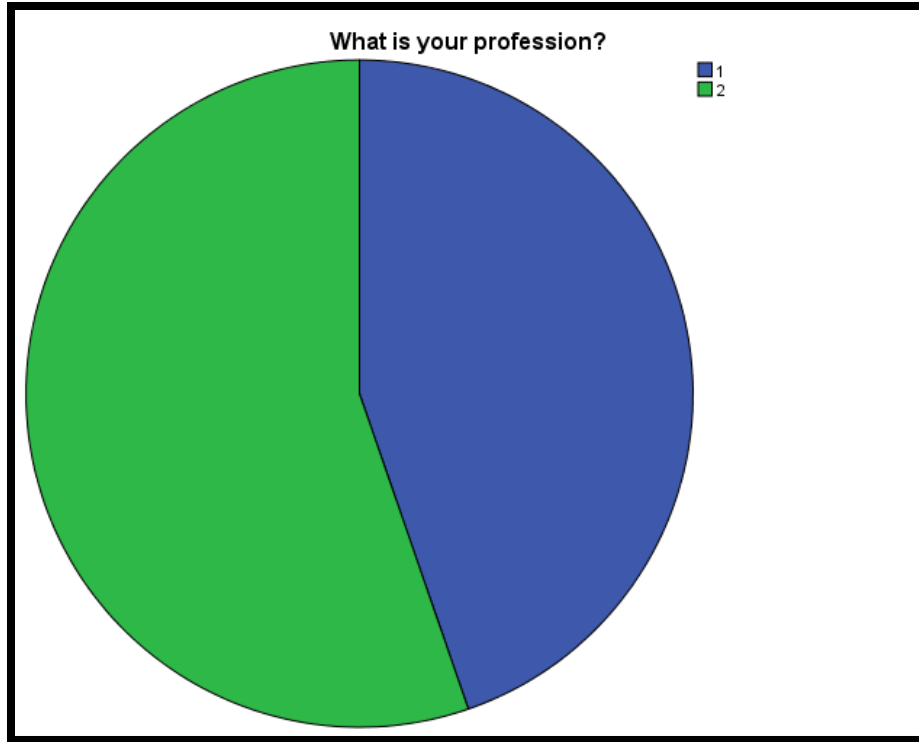
Figure 5: Age

Table 2 is showed the data on respondent's age where 37 % respondents were from 18 to 25 age group, 18% were from the age group of 26 to 33, 16 percent are from 34 to 41 and 42 to 49 years. Additionally, only 10 percent are from 50abive age group.

What is your profession?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	38	44.7	44.7	44.7
	2	47	55.3	55.3	100.0
	Total	85	100.0	100.0	

Table 3: Occupation



The table 3 represents the data on participant's occupation where 44 percent are from business group and 26 percent are from service group.

Figure 6: Occupation

Descriptive statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Government policies can support the role of NBFIs in promoting sustainable development among SMEs	85	1	5	2.32	1.274	1.624	.932	.261
NBFI's can provide to SMEs to promote their sustainable growth	85	1	5	3.61	1.166	1.359	-1.039	.261
NBFI's have successfully supported sustainable development among SMEs	85	1	5	2.65	1.453	2.112	.570	.261

Nonbanking financial institutions play a significant role in the sustainable development of small and medium enterprises	85	1	5	2.41	1.208	1.459	.979	.261
People are familiar with non-banking financial institutions (NBFi)	85	1	5	3.07	1.343	1.804	-.343	.261
Valid N (listwise)	85							

Table 4: Table of descriptive statistics

Table 4 showed descriptive statistics and quantitative analysis of the collected numerical data where the mean value is comparatively greater than the value of standard deviation. Hence, it can be identified that the outcomes are completely dispersed or clustered around the mean value.

Hypothesis 1: This indicates a positive link between the nonbanking and sustainable development of small and medium enterprises.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.281 ^a	.079	.068	1.403	.079	7.128	1	83	.009	1.072

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.031	1	14.031	7.128	.009 ^b
	Residual	163.380	83	1.968		
	Total	177.412	84			

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.713	.382		4.489	.000
	People are familiar with non-banking financial institutions (NBFi)	.304	.114	.281	2.670	.009

Table 5: Registration table for Hypothesis 1

Table 5 mainly stands or hypothesis 1 and in this table the significance value is almost around 0.09. Therefore, the hypothesis 1 is fully supported by the result.

Hypothesis 2: There is an optimistic relation between NBFi and new markets expand their existing markets.

Model Summary^b					
Model	Change Statistics		Durbin-Watson		
	df2	Sig. F Change			
1	83	.000	1.804		

ANOVA^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	92.268	1	92.268	89.944	.000 ^b
	Residual	85.144	83	1.026		
	Total	177.412	84			

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.555	.246		2.251	.027
	Nonbanking financial institutions play a significant role in the sustainable development of small and medium enterprises	.868	.091	.721	9.484	.000

Table 6: Registration table for Hypothesis 2

Table 6 showed data on regression for hypothesis 2 and here the significance value is almost around 0. Thus, the hypothesis 2 is fully supported by the outcomes.

Hypothesis 3: This indicates an optimistic connection between Nonbanking financial institutions and social and environmental sustainability of SMEs.

Model Summary^b					
Model	Change Statistics		Durbin-Watson		
	df2	Sig. F Change			
1	83	.000	1.528		

ANOVA^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	56.159	1	56.159	38.442	.000 ^b
	Residual	121.253	83	1.461		
	Total	177.412	84			

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.160	.273		4.244	.000
	Government policies can support the role of NBFIs in promoting sustainable development among SMEs	.642	.103	.563	6.200	.000

Table 7: Registration table for Hypothesis 3

In Table 7 the significance value is less than 0.05 which means hypothesis 3 is highly supported by the research outcomes.

Hypothesis 4: There is a positive link between NBFIs and financial gap.

Model Summary^b

Model	Change Statistics		Durbin-Watson
	df2	Sig. F Change	
1	83	.041	.797

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.748	1	8.748	4.305	.041 ^b
	Residual	168.664	83	2.032		
	Total	177.412	84			

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.938	.375		5.163	.000
	Nonbanking financial institutions can play a role in promoting social and environmental sustainability among SMEs	.216	.104	.222	2.075	.041

Table 8: Table of regression for Hypothesis 4

In Table 8 the significance value is 0.041. Therefore, it indicates that the hypothesis 4 is fully supported the research outcomes and survey analysis.

Discussion

It has been observed that NBFIs can also support small and medium enterprises to access global business markets by trading financial services and providing export financing. As per the statement of Khairunnessa, Vazquez-Brust & Yakovleva (2021), NBFIs allow SMEs to expand their business areas and customer base as well as increase their revenues by investing more in export activities. Along with this, nonbanking financial institutions play a critical role in encouraging sustainable growth by combing environmental, social, as well as governance considerations into their business strategy and business operations. As per the findings of Trisha (2019), nonbanking financial institutions can also be available or organizational financial resources for supporting startups and medium industries that are highly committed to sustainable practices, including encouraging social justice and reducing carbon footprint from their business operation. (Habib, 2019) Therefore, it can be deduced that this helps to create a completely sustainable economy, which benefits small and medium enterprises and the wider community.

On the other hand, NBFIs of sometimes face different kinds of regulatory issues while promoting sustainable practices among the small and medium business industries. As per the opinion of Khairunnessa, Vazquez-Brust & Yakovleva (2021), regulations may not be always supportive in the case of sustainable practices as well as not being effectively enforced. However, NBFIs requires to work more closely with the organizational regulators for developing policies and effective regulations that are useful for sustainable practices as well as encourage the sustainable growth of SMEs. Besides this, non-banking financial companies may lack the essential risk management process and evaluate the creditworthiness of small and medium business industries. Therefore, this can result in a high default rate as well as increased risk exposure.

Other than this, SMEs sometimes lack financial literacy which is highly important to manage their finances and access credit. Moreover, non-banking financial companies often have an insufficient amount of resources or expertise to deliver this kind of support to their customers. It has been noted that NBFIs may also have poor to effectively support SMEs. Therefore, it can be identified that this includes advanced technological infrastructure and sufficient human resources like trained personnel for supporting SMEs. Besides this, NBFIs allow small and medium enterprises to invest more in expanding their business areas, investing more in new equipment, as well as hire additional employees who can contribute to their overall development or sustainable growth.

Conclusion

From the overall study, it can be concluded that NBFIs play a crucial role in promoting the sustainable development of SMEs. The study also discusses that nonbanking financial institutions face several issues in achieving their goals, such as the lack of awareness, the lack of access to finance, different types of regulatory issues, the lack of cooperation and collaboration among the stakeholders, and issues in measuring impact. The paper illustrated that NBFIs require identifying all these challenges for promoting the overall sustainable development of small and medium enterprises as well as contribute to the achievement of sustainable development goals.

The paper also highlights a primary quantitative and SPSS has been used to analyze the numerical data ethically and these appropriate measures are taken for protecting the privacy and confidentiality of the collected data.

References

- [1] Ademosu, A. (2022). The Impact of the Financial System and its Channels on SMES' Access to Financing: A Nigerian Perspective. https://scholarworks.gsu.edu/cgi/viewcontent.cgi?article=1181&context=bus_admin_diss
- [2] Arfah, A., & Samiha, Y. T. (2020). Community empowerment as effort to strengthening the SME capacity. *Point of View Research Economic Development*, 1(3), 30-38. <http://journal.accountingpointofview.id/index.php/POVRED/article/download/97/70>
- [3] Habib, S. M. A. (2019). Financial Sector in Bangladesh Recent Trends and Benchmarking for the Government. <https://think-asia.org/bitstream/handle/11540/11305/CPD-Working-Paper-128-Financial-Sector-in-Bangladesh.pdf?sequence=1>
- [4] Ibrahim, A. B. (2020). Microfinance and Performance of SMES in Bawku Municipality (Doctoral dissertation, University of Cape Coast). <https://ir.ucc.edu.gh/xmlui/bitstream/handle/123456789/6880/IBRAHIM%2C%202020.pdf?sequence=1&isAllowed=y>
- [5] IHEMEJE, J. C., OKON, E. U., ALPHONSUS, U. E., OKAFOR, M. C., & MAKOJI, E. E. (2020). Achieving Sustainable Development in Business Productivity in Nigeria: An Equity Financing Model Approach. *International Journal of Economics and Financial Research*, 6(1), 1. https://www.researchgate.net/profile/Udeme-Efanga-2/publication/345440061_Achieving_Sustainable_Development_in_Business_Productivity_in_Nigeria_An_Equity_Financing_Model_Approach/links/5fa6df7e299bf10f732d3274/Achieving-Sustainable-Development-in-Business-Productivity-in-Nigeria-An-Equity-Financing-Model-Approach.pdf
- [6] Irungu, J. M., Kibuine, M., & Muhoho, J. (2019). Receivables factoring and performance of private finance companies in Kenya: A case of private finance companies in Nairobi City County. *International Academic Journal of Economics and Finance*, 3(3), 356-368. http://iajournals.org/articles/iajef_v3_i3_356_368.pdf
- [7] Khairunnessa, F., Vazquez-Brust, D. A., & Yakovleva, N. A. (2021). Review of the Recent Developments of Green Banking in Bangladesh. *Sustainability* 2021, 13, 1904. https://researchportal.port.ac.uk/files/26670093/Green_Banking_in_Bangladesh.pdf
- [8] Laila, N., Ratnasari, R. T., Ismail, S., Mohd Hidzir, P. A., & Mahphoth, M. H. (2022). The intention of small and medium enterprises' owners to participate in waqf: the case of Malaysia and Indonesia. *International Journal of Islamic and Middle Eastern Finance and Management*. https://repository.unair.ac.id/118702/1/RirinTR_Artikel-T107_the-intention-of-small.pdf
- [9] Odoom, D., Oppong Fosu, K., Ankomah, K., & Birago Amofa, M. (2019). Exploring the contributions of microfinance institutions to the Ghanaian economy: a study at Takoradi. <https://repository.gij.edu.gh/xmlui/bitstream/handle/gijdr/525/Exploring%20the%20Contributions%20of%20Microfinance%20Institutions%20to%20the.pdf?sequence=1&isAllowed=y>
- [10] Principal, S. H. M., Mishra, A., Sharma, J. K., Aarif, M., & Arwab, M. SMART AND INNOVATIVE IDEAS TO PROMOTE TOURISM FOR GLOBAL TRADE AND ECONOMIC GROWTH.
- [11] Ebrahimi, M., Attarilar, S., Gode, C., Kandavalli, S. R., Shamsborhan, M., & Wang, Q. (2023). Conceptual Analysis on Severe Plastic Deformation Processes of Shape Memory Alloys: Mechanical Properties and Microstructure Characterization. *Metals*, 13(3), 447.
- [12] J. K. S. Al-Safi, A. Bansal, M. Aarif, M. S. Z. Almahairah, G. Manoharan and F. J. Alotoum, "Assessment Based On IoT For Efficient Information Surveillance Regarding Harmful Strikes Upon Financial Collection," 2023 International Conference on Computer Communication and Informatics (ICCCI), Coimbatore, India, 2023, pp. 1-5, doi: 10.1109/ICCCI56745.2023.10128500.

- [13] Khan, S.I., Kaur, C., Al Ansari, M.S. *et al.* Implementation of cloud based IoT technology in manufacturing industry for smart control of manufacturing process. *Int J Interact Des Manuf* (2023). <https://doi.org/10.1007/s12008-023-01366-w>
- [14] M, Arun and Alalmal, Ali and Aarif, Mohd, Student's Anticipation in Procuring Post Graduation Programme in Hotel Management through Distance Learning (March 1, 2022). ANWESH: International Journal of Management & Information Technology (2022), Available at SSRN: <https://ssrn.com/abstract=4072674>
- [15] Tidake, Vishal & Mazumdar, Nilanjan & Kumar, A. & Rao, B. & Fatma, Dr Gulnaz & Raj, I.. (2023). Sentiment Analysis of Movie Review using Hybrid Optimization with Convolutional Neural Network in English Language. 1668-1673. 10.1109/ICAIS56108.2023.10073750.
- [16] Kaur, C., Panda, T., Panda, S., Al Ansari, A. R. M., Nivetha, M., & Bala, B. K. (2023, February). Utilizing the Random Forest Algorithm to Enhance Alzheimer's disease Diagnosis. In *2023 Third International Conference on Artificial Intelligence and Smart Energy (ICAIS)* (pp. 1662-1667). IEEE.
- [17] Kandavalli, S. R., Wang, Q., Ebrahimi, M., Gode, C., Djavanroodi, F., Attarilar, S., & Liu, S. (2021). A brief review on the evolution of metallic dental implants: history, design, and application. *Frontiers in Materials*, 140.
- [18] C. Kaur, T. Panda, S. Panda, A. Rahman Mohammed Al Ansari, M. Nivetha and B. Kiran Bala, "Utilizing the Random Forest Algorithm to Enhance Alzheimer's disease Diagnosis," 2023 Third International Conference on Artificial Intelligence and Smart Energy (ICAIS), Coimbatore, India, 2023, pp. 1662-1667, doi: 10.1109/ICAIS56108.2023.10073852.
- [19] M. A. Tripathi, R. Tripathi, F. Effendy, G. Manoharan, M. John Paul and M. Aarif, "An In-Depth Analysis of the Role That ML and Big Data Play in Driving Digital Marketing's Paradigm Shift," 2023 International Conference on Computer Communication and Informatics (ICCCI), Coimbatore, India, 2023, pp. 1-6, doi: 10.1109/ICCCI56745.2023.10128357.
- [20] Siddiqua, A. Anjum, S. Kondapalli and C. Kaur, "Regulating and monitoring IoT controlled solar power plant by ML," 2023 International Conference on Computer Communication and Informatics (ICCCI), Coimbatore, India, 2023, pp. 1-4, doi: 10.1109/ICCCI56745.2023.10128300.
- [21] Zahid, A., Mukhtar, Z., Qamar, M. A., Shahid, S., Ali, S. K., Shariq, M., ... & Sher, M. (2023). Synthesis of Mn-Doped ZnO Nanoparticles and Their Application in the Transesterification of Castor Oil. *Catalysts*, 13(1), 105.
- [22] Mazumdar, N., Sharma, J. K., Shavkatovich, S. N., Uike, D., Kadam, S., Verma, M., ... & Al Ansari, M. S. (2023). Application of distinct multi criteria decision analysis techniques in the manufacturing sector: A comprehensive review. *Materials Today: Proceedings*.
- [23] M. Lourens, A. Tamizhselvi, B. Goswami, J. Alanya-Beltran, M. Aarif and D. Gangodkar, "Database Management Difficulties in the Internet of Things," 2022 5th International Conference on Contemporary Computing and Informatics (IC3I), Uttar Pradesh, India, 2022, pp. 322-326, doi: 10.1109/IC3I56241.2022.10072614.
- [24] Pal, Y., Nagendram, S., Al Ansari, M. S., Singh, K., Gracious, L. A., & Patil, P. (2023, February). IoT based Weather, Soil, Earthquake, and Air Pollution Monitoring System. In *2023 7th International Conference on Computing Methodologies and Communication (ICCMC)* (pp. 1212-1217). IEEE.
- [25] Dhas, D. S. E. J., Raja, R., Jannet, S., Wins, K. L. D., Thomas, J. M., & Kandavalli, S. R. (2023). Effect of carbide ceramics and coke on the properties of dispersion strengthened aluminium-silicon7-magnesium hybrid composites. *Materialwissenschaft und Werkstofftechnik*, 54(2), 147-157.
- [26] Alkhalaf, Q., Suri, A. R. S., Chandel, S. S., Thapa, S., & Al Ansari, M. S. (2023). Performance investigation of a Scheffler solar cooking system combined with Stirling engine. *Materials Today: Proceedings*.

- [27] Prabha, C., Arunkumar, S. P., Sharon, H., Vijay, R., Niyas, A. M., Stanley, P., & Ratna, K. S. (2020, March). Performance and combustion analysis of diesel engine fueled by blends of diesel+ pyrolytic oil from *Polyalthia longifolia* seeds. In *AIP Conference Proceedings* (Vol. 2225, No. 1, p. 030002). AIP Publishing LLC.
- [28] Abd Algani, Y. M., Caro, O. J. M., Bravo, L. M. R., Kaur, C., Al Ansari, M. S., & Bala, B. K. (2023). Leaf disease identification and classification using optimized deep learning. *Measurement: Sensors*, 25, 100643.
- [29] Ratna, K. S., Daniel, C., Ram, A., Yadav, B. S. K., & Hemalatha, G. (2021). Analytical investigation of MR damper for vibration control: a review. *Journal of Applied Engineering Sciences*, 11(1), 49-52.
- [30] Abd Algani, Y. M., Ritonga, M., Kiran Bala, B., Al Ansari, M. S., Badr, M., & Taloba, A. I. (2022). Machine learning in health condition check-up: An approach using Breiman's random forest algorithm. *Measurement: Sensors*, 23, 100406. <https://doi.org/10.1016/j.measen.2022.100406>
- [31] Mourad, H. M., Kaur, D., & Aarif, M. (2020). Challenges Faced by Big Data and Its Orientation in the Field of Business Marketing. *International Journal of Mechanical and Production Engineering Research and Development (IJMPERD)*, 10(3), 8091-8102.
- [32] Ruban, S. R., Jayaseelan, P., Suresh, M., & RatnaKandavalli, S. (2020, December). Effect of textures on machining of carbon steel under dry cutting condition. In *IOP Conference Series: Materials Science and Engineering* (Vol. 993, No. 1, p. 012143). IOP Publishing.
- [33] Naidu, K. B., Prasad, B. R., Hassen, S. M., Kaur, C., Al Ansari, M. S., Vinod, R., ... & Bala, B. K. (2022). Analysis of Hadoop log file in an environment for dynamic detection of threats using machine learning. *Measurement: Sensors*, 24, 100545.
- [34] Suman, P., Bannaravuri, P. K., Baburao, G., Kandavalli, S. R., Alam, S., ShanthiRaju, M., & Pulisheru, K. S. (2021). Integrity on properties of Cu-based composites with the addition of reinforcement: A review. *Materials Today: Proceedings*, 47, 6609-6613.
- [35] Kandavalli, S. R., Rao, G. B., Bannaravuri, P. K., Rajam, M. M. K., Kandavalli, S. R., & Ruban, S. R. (2021). Surface strengthening of aluminium alloys/composites by laser applications: A comprehensive review. *Materials Today: Proceedings*, 47, 6919-6925.
- [36] Sharma, Nisha, Anil Kumar Yadava, Mohd Aarif, Harishchander Anandaram, Ali Alalmai, and Chandradeep Singh. "Business Opportunities And Challenges For Women In The Travel And Tourism Industry During Pandemics Covid-19." *Journal of Positive School Psychology* (2022): 897-903.
- [37] Raja, R., Jegathambal, P., Jannet, S., Thanckachan, T., Paul, C. G., Reji, S., & Ratna, K. S. (2020, November). Fabrication and study of Al6061-T6 reinforced with TiO₂ nanoparticles by the process of friction stir processing. In *AIP Conference Proceedings* (Vol. 2270, No. 1, p. 030002). AIP Publishing LLC.
- [38] Kumar, B., & Kumar, P. (2022). Preparation of hybrid reinforced aluminium metal matrix composite by using ZrB₂: A systematic review. *Materials Today: Proceedings*.
- [39] Kandavalli, S. R., Khan, A. M., Iqbal, A., Jamil, M., Abbas, S., Laghari, R. A., & Cheok, Q. (2023). Application of sophisticated sensors to advance the monitoring of machining processes: analysis and holistic review. *The International Journal of Advanced Manufacturing Technology*, 1-26.
- [40] Aarif, Mohd, and Ali Alalmai. "Importance of Effective Business Communication for promoting and developing Hospitality Industry in Saudi Arabia." *A case study of Gizan (Jazan)* (2019).
- [41] Abd Algani, Y. M., Ritonga, M., Kiran Bala, B., Al Ansari, M. S., Badr, M., & Taloba, A. I. (2022). Machine learning in health condition check-up: An approach using Breiman's random forest algorithm. *Measurement: Sensors*, 23, 100406. <https://doi.org/10.1016/j.measen.2022.100406>
- [42] Mourad, H. M., Kaur, D., & Aarif, M. (2020). Challenges Faced by Big Data and Its Orientation in the Field of Business Marketing. *International Journal of Mechanical and Production Engineering Research and Development (IJMPERD)*, 10(3), 8091-8102.

- [43] Aarif, Mohd. "A STUDY ON THE ROLE OF HEALTHCARE INDUSTRY IN THE PROMOTING OF HEALTH TOURISM IN INDIA." *A CASE STUDY OF DELHI-NCR* (2018).
- [44] Naidu, K. B., Prasad, B. R., Hassen, S. M., Kaur, C., Al Ansari, M. S., Vinod, R., ... & Bala, B. K. (2022). Analysis of Hadoop log file in an environment for dynamic detection of threats using machine learning. *Measurement: Sensors*, 24, 100545.
- [45] Ravikumar, K., Chiranjeevi, P., Manikanda Devarajan, N., Kaur, C., & Taloba, A. I. (2022). Challenges in internet of things towards the security using deep learning techniques. *Measurement: Sensors*, 24, 100473. <https://doi.org/10.1016/j.measen.2022.100473>
- [46] Sohn, S. Y., & Ju, Y. (2023). Mission Efficiency Analysis of For-Profit Microfinance Institutions with Categorical Output Variables. *Sustainability*, 15(3), 2732. https://www.e3s-conferences.org/articles/e3sconf/pdf/2020/62/e3sconf_icenis2020_03022.pdf
- [47] Kaur, C., Kumar, M. S., Anjum, A., Binda, M. B., Mallu, M. R., & Al Ansari, M. S. (2023). Chronic Kidney Disease Prediction Using Machine Learning. *Journal of Advances in Information Technology*, 14(2).
- [48] Statista, 2021. *Number of registered non-banking financial companies (NBFC) in India as of December 2021, by category*. Available at :<https://www.statista.com/statistics/1243950/number-of-nbfc-india/> Available on : 17.04.2023
- [49] Tanaya, D. R., & Ekyawan, F. (2020). Empowerment strategy on micro, small, and medium enterprises (MSMEs) during covid-19 pandemic in Indonesia: A case study of BRI microfinance center. In *E3S Web of Conferences* (Vol. 202, p. 03022). EDP Sciences. https://www.e3s-conferences.org/articles/e3sconf/pdf/2020/62/e3sconf_icenis2020_03022.pdf
- [50] Trisha, H. K. (2019). How to improve efficiency of SME division in IDLC Finance Limited. http://dSPACE.bracu.ac.bd/xmlui/bitstream/handle/10361/13616/15104038_BBA.pdf?sequence=1