

Degree of Sustainability Maturity SME's Based on Demographic and Spirituality

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ABSTRACT

This study aims to analyze the level of sustainability maturity of micro, small, and medium enterprises (MSMEs) based on demographic characteristics and spirituality. The research employed an online survey method involving 414 MSME owners in Bali, with hypothesis testing conducted using Analysis of Variance (ANOVA). The findings indicate that there are significant differences in sustainability maturity levels across business categories, income levels, and eco-spirituality. These results suggest that both demographic factors and spiritual dimensions play an important role in shaping sustainability orientation and practices among MSMEs. This study contributes original value by being among the first to measure MSME sustainability maturity through the integration of demographic and spirituality-based factors.

Keyword: Sustainability Maturity, MSMEs, Business Category, Income Level, Eco-spirituality

INTRODUCTION

There is growing concern among both practitioners and academics regarding environmental sustainability issues arising from corporate economic activities (Arshad et al., 2023; Gerged et al., 2023; Latifah & Soewarno, 2023; Tjahjadi et al., 2023). A substantial body of research has focused on environmental issues in large corporations, which are often considered the primary contributors to environmental degradation (Biondi et al., 2002). However, research on small and medium-sized enterprises (SMEs) from an environmental sustainability perspective remains limited. This gap presents an opportunity for new contributions, as SMEs may collectively exert a significant impact on the environment.

Globally, SMEs account for approximately 90% of all businesses and represent a substantial share of gross domestic product (GDP) and employment (Salvador et al., 2023; Vásquez & Puertas, 2023). Moreover, in the Asia-Pacific region, SMEs constitute about 98% of all enterprises (Iqbal et al., 2019). According to the ASEAN Investment Report released by the United Nations Conference on Trade and Development (UNCTAD) in September 2022, Indonesia has the largest number of SMEs in the ASEAN region. Indonesian SMEs employ 97% of the workforce, contribute 60.3% to GDP, and account for 14.4% of national exports. This proportion of employment absorption is the highest in ASEAN, exceeding 95% of total jobs (Maksum et al., 2020). In response, the Indonesian government has begun shifting its economic development approach toward strengthening the local economy through micro, small, and medium enterprises (MSMEs). The success of SMEs can reduce dependence on specific sectors and help establish a resilient economic foundation that is responsive to global changes. Given the extensive role of SMEs in the economy, public concern has increasingly emerged regarding their contribution to environmental degradation (Iqbal et al., 2019). Policymakers have recognized that achieving improvements in global environmental performance requires serious consideration of SMEs (Sohns et al., 2023). SMEs must therefore play a critical role in identifying reliable solutions to achieve environmental sustainability. Previous studies have examined SME sustainability performance by linking it to innovation (Biondi et al., 2002), strategy (Arshad et al., 2023; Sohn et al., 2023; Tjahjadi et al., 2023), and management accounting practices (Latifah & Soewarno, 2023). However, no prior research has attempted to assess the maturity level of SMEs in sustainability-related activities. By understanding their

current maturity position, SMEs can design more effective strategies to contribute to environmental sustainability (Vásquez et al., 2021).

This study examines the sustainability maturity level of SMEs by considering extrinsic factors, namely demographic characteristics, and intrinsic factors, namely spirituality. Differences in SME demographic conditions—such as business category, firm age, and income level—may influence their engagement in environmentally sustainable business activities. Furthermore, researchers argue that, beyond extrinsic conditions, environmental sustainability is also driven by intrinsic motivation, particularly spirituality (Dhiman & Marques, 2016; Karakas, 2010; Luetz & Nunn, 2023; Suriyankietkaew & Kantamara, 2019). This study specifically explores spirituality in the environmental context through the concept of ecospirituality. Ecospirituality views nature and the environment as sacred, and environmental preservation is considered an integral part of human spiritual responsibility (Lestar & Böhm, 2020; Suganthi, 2019). Ecospirituality can serve as a driver of proactive actions and value formation that support environmental conservation and reduce negative impacts on ecosystems (Billet et al., 2023; Winslow, 2023).

The measurement of sustainability maturity employs the Sustainability Maturity Model for MSMEs (SMMM), which serves as a comprehensive framework for assessing, measuring, and improving sustainability practices among Micro, Small, and Medium Enterprises (Vásquez et al., 2021). This model comprises a structured set of stages or levels that reflect an organization's evolutionary journey in adopting sustainability practices. The model is divided into four maturity levels that integrate environmental knowledge management compliance, environmental practices, and management systems. In this study, the sustainability maturity levels of SMEs are compared based on demographic factors and levels of spirituality. Variations in sustainability maturity are examined in relation to business type, firm age, income level, and spirituality.

To address these objectives, the study focuses on SMEs in Bali for several reasons. First, Bali hosts a wide range of SMEs that support the tourism sector. Second, the diversity of creative enterprises that continue to employ traditional practices provides a context that may strengthen the role of spirituality in sustainability. This is because traditional ways of thinking are closely associated with spirituality and sustainability (Bastien et al., 2023; Boiral et al., 2020; Breidlid & Krøvel, 2020; Pullanikkatil & Hughes, 2023). Third, Bali is currently facing challenges related to waste management and environmental degradation; therefore, this sustainability maturity mapping is expected to provide insights into the contribution of SMEs to environmental preservation in Bali.

The findings indicate differences in sustainability maturity levels based on SME types. In addition, income level and spirituality are identified as important factors in the implementation of sustainability strategies. This study contributes to the literature and practical understanding of sustainability maturity in Micro, Small, and Medium Enterprises (SMEs) by emphasizing the roles of spirituality and demographic characteristics. By exploring the relationships between spiritual values, demographic attributes, and sustainable business practices, this study identifies key factors influencing sustainability maturity among SMEs. The findings also offer guidance for stakeholders, business practitioners, and policymakers in developing more effective strategies to enhance SME sustainability by considering the unique spiritual and demographic contexts involved.

This paper is structured as follows. The next section presents a review of the relevant literature and the development of hypotheses. This is followed by an explanation of the research methodology. The subsequent section discusses the research findings and discussion. The contributions of the study are then outlined. Finally, the paper concludes with limitations and directions for future research.

LITERATURE REVIEW

Sustainability Maturity Model for MSMEs (SMMM)

A maturity model represents a staged process toward the development of best practices to achieve a desired state (Lacerda & von Wangenheim, 2018). An organization's activities can be assessed in terms of both capacity and maturity. Capacity refers to the ability to achieve or contribute to the fulfillment of required objectives, whereas maturity indicates the extent to which an organization has consistently implemented processes with a clearly defined scope in pursuing those objectives (Froger et al., 2019; Von Rosing et al., 2014). Numerous studies have developed various maturity models that can be applied to a wide range of corporate and organizational activities.

In the context of environmental sustainability within management and operational processes, sustainability maturity models enable the measurement of progress in a firm's economic, social, and environmental activities. Moreover, sustainability measurement has been linked to a firm's key performance indicators (Vásquez et al., 2021).

The sustainability maturity model for SMEs is a comprehensive framework designed to assess, measure, and enhance sustainability practices within Micro, Small, and Medium Enterprises (SMEs). The model consists of a structured series of stages or levels that reflect an organization's improvement trajectory in adopting sustainability practices (Vásquez et al., 2021). Beginning with an initial awareness of sustainability, the model progresses through stages that evaluate the implementation of sustainable practices, the organization's capacity to measure and monitor sustainability performance, and ultimately a focus on optimization and innovation in sustainability efforts. By applying this model, SMEs gain insights into their current level of sustainability maturity, identify areas for improvement, and encourage innovation. The model serves as a guiding tool, enabling SMEs to gradually enhance their sustainability contributions. In addition, it allows organizations to track progress over time, benchmark against industry standards, and align with best practices, thereby promoting a sustainable and adaptive approach to sustainability.

The level of sustainability activities varies across firms according to their demographic characteristics. Firm demographics refer to the characteristics and distribution of enterprises within a particular region, industry, or market. Manufacturing firms tend to face higher environmental risks than other sectors because production processes require more intensive resource use and generate larger carbon footprints (Sohns et al., 2023). Furthermore, financial capacity is also an important factor, as firms with higher income levels may be better able to allocate resources to sustainability initiatives.

H1a: There are differences in sustainability maturity levels across SME business categories.

H1b: There are differences in sustainability maturity levels across SME income levels.

Spirituality and Sustainability

Contemporary sustainability imperatives have intensified the search for approaches capable of preserving the environment and mitigating the negative impacts of human activities. Scholars acknowledge that technology alone is insufficient to realize the sustainability transition required to address current ecological challenges (Choné, 2017). The dominance of Western sustainability paradigms has not yet demonstrated sufficiently significant outcomes, thereby opening space for alternative perspectives, one of which is spirituality. Spirituality has been recognized as a holistic, value-laden, and inimitable resource that can support sustainability efforts (Dhiman & Marques, 2016; Luetz & Nunn, 2023).

Spirituality and sustainability are closely interconnected concepts with profound implications for human life and the natural world. Some scholars argue that sustainability

cannot be fully achieved without spirituality, as spirituality shapes values, meanings, and ethical orientations toward nature (Dhiman & Marques, 2016). Spirituality refers to an individual's relationship with something greater than the self, while sustainability concerns the preservation of natural resources and the environment for future generations. Through spiritual awareness, individuals may develop a stronger sense of responsibility for protecting the planet (Sulphrey, 2022). At present, there is increasing opportunity to incorporate spiritual and metaphysical perspectives across academic disciplines, as modern societies are progressively integrating these dimensions into everyday life (Müller et al., 2023). Within the business context, spirituality may encourage organizations to develop innovative business models that enhance sustainability performance.

At the individual level, the emergence of the concept of ecospirituality is closely linked to the ongoing ecological crisis. Addressing such challenges requires not only material and technological solutions, but also spiritual reflection and meaning-making as fundamental dimensions of human existence (Choné, 2017). This perspective has given rise to the concept of ecospirituality, which posits that ecology has an inherent spiritual dimension and that spirituality cannot be separated from ecological concerns (Billet et al., 2023). Suganthi (2019) defines this interconnection between spirituality and the environment as ecospirituality. Through deep spiritual awareness, SMEs may cultivate a sense of interconnectedness with nature and other living beings. Such an approach may be reflected in environmental policies, ethical consumption practices, nature conservation efforts, and broader social responsibility.

H2: There are differences in sustainability maturity levels across levels of ecospirituality.

RESEARCH METHOD

This study examines the entire population of SMEs in Bali, totaling 439,382 enterprises. Of this number, only 107,656 are formally registered, while the remaining 295,934 operate informally or do not yet possess a Business Identification Number (Nomor Induk Berusaha/NIB). The research instrument, in the form of a Google Form questionnaire, was distributed through SME WhatsApp groups and associations registered with the Bali Provincial Office of Cooperatives and SMEs. Based on data collection conducted between August and December 2025, Table 1 presents the profile of the SMEs included in this study.

Tabel 1. Demography

Item	Category	Frequency	Percentage (%)
Category	Culinary	186	45%
	Craft	62	15%
	Fashion	38	9%
	Cosmetics	32	8%
	Agribusiness	26	6%
	Automotive	70	17%
	Total	414	100%
Revenue	Turnover < 170 million per month	245	59%
	Turnover of 170 million to 1.25 million per month	112	27%
	Turnover 1.25M to 4.16M per month	57	14%
	Total	414	100%

This study examines three variables: sustainability maturity, business demographics, and spirituality. The measurement of each variable is described as follows.

Sustainability maturity is measured using the Sustainability Maturity Model for MSMEs (SMMM) developed by Vásquez et al. (2021). The assessment is based on three components:

(i) environmental knowledge management, (ii) environmental strategy and best practices, and (iii) environmental management systems. Each component is operationalized through a set of specific characteristics, which are scored dichotomously: a score of 1 if the characteristic is fulfilled and 0 if it is not fulfilled. Based on the total score obtained, SMEs are classified into four maturity levels, with higher levels requiring a greater number of fulfilled characteristics. Level 1 requires fulfillment of 5 characteristics, Level 2 requires 14 characteristics, while Levels 3 and 4 require fulfillment of 27 and 37 characteristics, respectively.

Business demographics are measured based on SME business category and income level. Business categories follow the classification of the Bali Provincial Office of Cooperatives and SMEs and include the culinary, craft, fashion, cosmetics, agribusiness, and automotive sectors. These sectors were selected based on their prevalence among SMEs in Indonesia. Income level is categorized based on average monthly sales. Score 1 represents monthly turnover below IDR 170 million (or up to IDR 2 billion annually), Score 2 represents monthly turnover between IDR 170 million and IDR 1.25 billion (or IDR 2–15 billion annually), and Score 3 represents monthly turnover between IDR 1.25 billion and IDR 4.16 billion (or IDR 15–50 billion annually).

Ecospirituality is measured using 10 questionnaire items derived from the indicators of Dwelling, Caring, Revering, Experiencing, and Relating (Billet et al., 2023; Suganthi, 2020). Responses are recorded on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

To evaluate differences in sustainability maturity levels across demographic characteristics and spirituality, this study employs Analysis of Variance (ANOVA). ANOVA enables the examination of whether statistically significant differences exist in sustainability maturity levels among the observed variables. Prior to conducting the analysis, it is necessary to ensure that the collected data satisfy the required assumptions, including normality and homogeneity of variance. If these assumptions are not met, alternative non-parametric statistical tests, such as the Kruskal–Wallis test, may be considered. Post hoc analyses, including Tukey's Honestly Significant Difference (HSD) test, can be applied to identify the specific groups in which significant differences occur (Tukey, 1949). Through this approach, the study aims to obtain a more comprehensive understanding of variations in sustainability maturity levels across business categories, income levels, and spirituality.

RESULTS AND DISCUSSION

Table 2. Descriptive Analysis of SME Sustainability Maturity by Business Category

Sustainability Maturity Level ^a	Business Category					
	Cullinary (n=186, 45%)	Craft (n=62, 15%)	Fashion (n=38, 9%)	Cosmetics (n=32, 8%)	Agribusine ss (n=26, 6%)	Automotives (n=70, 17%)
	Mean (Std)	Mean (Std)	Mean (Std)	Mean (Std)	Mean (Std)	Mean (Std)
Insufficient (Level 1)	10.251 (1.221)	12.945 (1.111)	8.456 (1.456)	7.121 (1.018)	13.412 (1.456)	8.123 (1.867)
Basic (Level 2)	23.018 (1.194)	26.068 (1.124)	22.847 (1.975)	18.912 (1.511)	26.891 (1.012)	17.224 (1.124)
Developing (Level 3)	35.897 (1.025)	36.117 (1.535)	29.421 (1.013)	27.155 (1.347)	36.812 (1.042)	27.993 (1.456)
Consolidated (Level 4)	39.782 (1.287)	42.787 (1.212)	37.091 (1.085)	37.014 (1.676)	44.124 (1.164)	37.111 (1.918)

Note (s): ^aItems are assessed using a binary scale, where 0 indicates absence and 1 indicates presence.

Table 2 presents the descriptive statistics of SME sustainability maturity levels across demographic factors, particularly business categories. Six business categories are examined: culinary, craft, fashion, cosmetics, agribusiness, and automotive. Sustainability maturity levels range from Level 1 to Level 4. The descriptive results indicate differences in the mean sustainability maturity levels across business categories; however, further statistical testing is required to assess the significance of these differences.

Table 3 presents the descriptive statistics of sustainability maturity levels across demographic factors, specifically business income levels. Three income categories are examined, with sustainability maturity levels ranging from Level 1 to Level 4. The descriptive results indicate differences in the mean sustainability maturity levels across income categories; however, further statistical testing is required to determine the significance of these differences.

Table 3. Descriptive Analysis of SME Sustainability Maturity by Income Level

Sustainability Maturity Level ^a	Income Level		
	Turnover < 170 million per month (n=245, 59%)	Turnover of 170 million to 1.25 million per month (n=112, 27%)	Turnover 1.25M to 4.16M per month (n=57, 14%)
	Mean (Std)	Mean (Std)	Mean (Std)
Insufficient (Level 1)	7.121 (1.218)	10.751 (1.321)	13.892 (1.117)
Basic (Level 2)	17.912 (1.211)	23.918 (1.294)	26.779 (1.321)
Developing (Level 3)	27.051 (1.647)	35.397 (1.325)	35.112 (1.542)
Consolidated (Level 4)	37.012 (1.376)	39.682 (1.187)	42.124 (1.964)

Note (s): ^aItems are assessed using a binary scale, where 0 indicates absence and 1 indicates presence.

Table 4 presents the descriptive statistics of sustainability maturity levels across levels of spirituality. Three spirituality categories are examined, with sustainability maturity levels ranging from Level 1 to Level 4. The descriptive results indicate differences in the mean sustainability maturity levels across spirituality levels; however, further statistical testing is required to assess the significance of these differences.

Table 4. Descriptive Analysis of SME Sustainability Maturity by Ecospirituality Level

Sustainability Maturity Level ^a	Ecospirituality				
	Very High (n=259, 63%)	High (n=115, 28%)	Medium (n=18, 4%)	Low (n=12, 3%)	Very Low (n=10, 2%)
	Mean (Std)	Mean (Std)	Mean (Std)	Mean (Std)	Mean (Std)
Insufficient (Level 1)	13.921 (1.127)	12.142 (1.167)	10.651 (1.221)	7.221 (1.618)	6.221 (1.518)
Basic (Level 2)	26.979 (1.521)	25.219 (1.331)	23.918 (1.594)	17.312 (1.611)	14.912 (1.411)
Developing (Level 3)	36.212 (1.842)	34.512 (1.562)	32.397 (1.125)	27.951 (1.147)	27.051 (1.647)
Consolidated (Level 4)	45.224 (1.164)	42.624 (1.914)	39.682 (1.287)	37.912 (1.576)	37.012 (1.276)

Note (s): ^aItems are assessed using a binary scale, where 0 indicates absence and 1 indicates presence

Table 5 presents the results of the hypothesis testing. Three variables—business category, income level, and ecospirituality—are compared based on sustainability maturity levels. The results indicate that business category, income level, and ecospirituality all have p-values below 0.05, suggesting statistically significant differences in sustainability maturity levels across these variables. Accordingly, hypotheses **H1a**, **H1b**, and **H2** are supported.

Table 5. Univariate Analysis of Sustainability Maturity (SMMM) by Demographics and Spirituality

Group	df	Sum of squares	Mean Square	F	p-value (< 0,05?)	Hipotesis
Demographics	1	161.986	161.862	118.291	Yes	H _{1a} Accept
Income	1	137.067	137.055	96.112	Yes	H _{1b} Accept
<i>Ecospirituality</i>	1	142.963	142.621	122.211	Yes	H ₂ Accept

This study analyzes the sustainability maturity levels of SMEs in Bali. The findings indicate that sustainability maturity levels vary across SMEs in Bali and are generally positioned at the development stage (Level 3). This suggests that sustainability has not yet become a top priority, but is instead in a phase of gradual development. SMEs perceive that their employees possess environmental management knowledge, which may result from adequate investments in human resources, technology, and physical assets.

Further analysis was conducted by categorizing sustainability maturity levels based on demographic factors and ecospirituality. The results show significant differences in sustainability maturity levels across business categories, income levels, and ecospirituality. These findings suggest that business type, financial capacity, and the degree to which spiritual and environmental values are integrated (ecospirituality) are associated with varying levels of sustainability maturity. This analysis highlights the important role of these factors in shaping sustainability practices within organizations (Billet et al., 2023; Suganthi, 2020; Tjahjadi et al., 2023). A deeper understanding of these differences can provide more comprehensive insights into how sustainability is implemented across diverse sectors and economic contexts.

Based on the findings, this study offers several contributions to the sustainability literature. First, it provides a comprehensive understanding of sustainability maturity levels among SMEs. By integrating demographic factors—such as business category and income level—with spirituality, which encompasses ethical values, social responsibility, and sustainability orientation, this study offers deeper insights into the factors that influence and drive sustainability maturity at the organizational level of SMEs.

Second, this study reinforces existing research on the role of spirituality in enhancing sustainability performance within business organizations (Billet et al., 2023; Suganthi, 2020). The findings suggest that spirituality serves as an important underlying factor that encourages SMEs to implement sustainability strategies.

This study provides valuable insights for formulating policy recommendations and business practices that support sustainable SME development. By understanding how demographic factors and spirituality contribute to sustainability, the findings can assist governments, organizations, and business practitioners in designing more effective and contextually relevant sustainability strategies. Such strategies may enhance not only the economic performance of SMEs but also broader social welfare outcomes.

This study has several limitations that should be acknowledged. First, the findings may not be directly generalizable to SMEs outside Bali, given the unique business, cultural, and institutional contexts of each region. Second, the assessment of sustainability maturity relies on respondents' perceptions and subjective interpretations, which may introduce potential bias into the results. In addition, the measurement of sustainability maturity could be further refined beyond the use of binary scoring (0 and 1). Finally, constraints related to time and budget may have limited the sample size or geographic scope of the study, which could affect the representativeness of the findings.

Future research is encouraged to conduct comparative studies between SMEs in Bali and those in other regions to identify differences in factors influencing sustainability. Deeper analysis of spirituality may be achieved through qualitative approaches such as in-depth

interviews or case studies. Expanding the research sample could enhance the representativeness and validity of the findings and address limitations related to generalizability. Further efforts should also be directed toward developing more objective and nuanced measurement tools for assessing sustainability maturity among SMEs. Additionally, future studies may explore the policy implications arising from these findings and examine how governments and other stakeholders can support SMEs in achieving higher levels of sustainability maturity.

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