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# Journal of Global Business and Technology



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*In Cooperation with the Global Business and Technology Association*



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Argjira Bilalli,  
Atdhetar Gara,  
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Purwanto,  
Muhammad Tahir Jan,  
Abdul Latip,  
Johan Arifin

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MICROFINANCE: THE ROLE OF ISLAMIC BRAND  
PERSONALITY AND ITS IMPACT ON ADOPTION  
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*Abstract: The main purpose of this research is to empirically investigate Islamic Brand Personality in forming attitudes towards Islamic Microfinance and its impact on adoption intentions. This research uses a quantitative approach involving 400 Islamic Microfinance customers. Additionally, the research data was collected both online and offline using a random sampling method. To test the proposed hypotheses, Partial Least Squares Structural Equation Model (PLS-SEM) analysis was conducted using Smart PLS 3 software. The results show that the data support all seven hypotheses. Islamic brand personality dimensions competence, excitement, and Sharia compliance have the most substantial impact on shaping attitudes toward Islamic microfinance. The attitude that is successfully formed then significantly impacts adoption intention. Islamic microfinance institutions must increase competence, enthusiasm and compliance with Islamic compliance to foster a more positive attitude and strengthen intentions to implement Islamic microfinance. Competency strengthening can be done by training staff willing to do so to ensure that staff can explain to customers that Islamic microfinance differs from other systems. Increasing excitement can be achieved by offering innovative financial products and easy-to-use digital services so that the services provided by Islamic microfinance are even more attractive. Islamic microfinance can inform the public that the contracts used in transactions are based on the values of the Islamic religion. By focusing on these key aspects, positive attitudes towards Islamic microfinance can be increased, ultimately driving the intention to adopt it. This research contributes to filling the research gap regarding the impact of Islamic Brand Personality in shaping attitudes towards Islamic Microfinance. The results prove that Islamic Brand Personality can form positive attitudes, which then influence adoption intention. These findings provide an important contribution to understanding the role of Islamic branding in increasing the adoption of Islamic microfinance services.*

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*Abstract: Indigenous chickens (ICs) are kept by almost every rural household in resource-poor regions in South Africa as in other developing countries, yet there is paucity of research output that focuses on IC production in relation to food security studies by developing countries including South Africa. This study is an attempt to address this gap. The purpose of the present research is to determine the contribution of IC production to food security and poverty alleviation in rural communities, using Ncera Village in the Eastern Cape Province in South Africa as a case. The challenges experienced by rural households in rearing indigenous chickens are highlighted and recommendations are provided for the relevant authorities and the IC producers to address the challenges identified by the study. Understanding challenges will assist in devising solutions and means of enhancing the income that could be generated from village chickens at rural household. A qualitative research approach was adopted, where semi-structured face-to-face in-depth interviews were utilised to gather data from a non-random purposive sample of twenty (20) households rearing indigenous chickens in the study area. The study revealed that the production of ICs plays a significant role in food security for households, and to a lesser degree in income generation. The study showed production and contribution of indigenous chickens to food security in rural households have not been fully utilised as an average of 24 ICs was produced per household. The study further discovered that women are the majority in the production of ICs in the study area. This addresses gender equality in a male-dominated traditional society. It is argued; this necessitates a need to design training programmes in IC production that will especially earmark women as they predominate IC rearing. The present study contributes to the scant body of knowledge of IC production as a viable tool for improving food security, reducing poverty and enhancing livelihoods in marginalised rural communities in South Africa. The study further sheds some light on possible interventions in enhancing IC production in the research site. The study suggests that government should assist the poor rural households to increase the production of ICs. This will contribute to rural development, transform poultry industry, boost food security and alleviate poverty. Limitations and future research are also discussed.*

<p>I. Ketut Juli Suarbawa, Luh Linna Sagitarini, M. Yusuf</p>	<p>A SHIP-BASED ERGONOMIC FRAMEWORK FOR SUSTAINABLE COMMUNITY-BASED TOURISM SYSTEMS</p>	<p>..... 87</p>
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*Abstract: Rural tourism faces many ongoing challenges, which create inefficiencies and hinder sustainability, such as overly physically demanding workloads, poorly organized systems, and a lack of stakeholder participation in addressing these issues. Through the SHIP-based Total Ergonomics Framework, this study seeks to create a design that will improve efficiency in the system, support sustainability, and empower communities in the Community-Based Tourism (CBT) system. In this case, a systemic, holistic, interdisciplinary, and participatory (SHIP) approach is used. In addition, ergonomic design and inclusive governance are also integrated. The data in this study were analyzed using the Partial Least Squares Structural Equation Modeling (PLS-SEM) model, with data obtained from 360 stakeholders in six CBT villages in Bali. This model analyzes the impact of Ergonomic-Based Assistance (EBA) on Task Burden (TD), Organizational Design (OD), and Environmental Context (EC), with Participatory Governance (PG) as a mediator of their relationship with Community Empowerment (CE) and Long-Term Sustainability (STC). The findings show that EBA and PG promote empowerment and systemic transformation. This is evidenced by EBA's ability to improve work efficiency, improve organizational coordination, and strengthen environmental security. Furthermore, PG also shows significance in mediating these effects.*

*This indicates that the framework applied can be implemented in countries globally in the context of sustainable development goals through the integration of ergonomic interventions into social innovation and policy relevance.*

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# EDITORIAL

Indonesia, along with China, India, and other developing nations, boasts a substantial population. These countries are experiencing economic growth and attracting foreign investments from wealthier nations. Investors must not disregard Indonesia at now as it ranks as the fourth largest smartphone market globally, following China, India, and the United States. Indonesia's video game industry generated over \$1.1 billion in revenue, establishing itself as one of the most profitable sectors in the region. Among the internet population, 74% of men and 70% of women engage in mobile gaming, while 62% of men and 50% of women participate in console gaming.

The **first paper** by Radna Andi Wibowo & Rajoli Vamsidhar Reddy evaluates and contrast the effectiveness of mobile in-game banner advertising among young adults in Indonesia and India. Hence, the focal point of the inquiry is around the manner in which customers/gamers engage with adverts exhibited on mobile devices during their preferred gaming activities. The findings are anticipated to aid game developers in identifying marketing objectives on a global scale, with a specific focus on India and Indonesia. This purpose is accomplished by examining the attitudes and intentions of mobile and portable gamers towards mobile in-game banner advertising. The study examined multiple variables, such as Entertainment, Informativeness, Irritations, Credibility, Financial Costs, Intentions, and Incentives, in order to acquire a more profound understanding of the characteristics of customers in Indonesia and India who have had encounters with the IGBA.

The researchers investigated the viability of game banner advertising in two specific markets: Indonesian (210) and Indian (202) young adults, with a combined sample size of 412 participants. The primary disparity between the two sample groups is in terms of gender. In India, males constitute the majority with 84.2%, while in Indonesia, females have a higher percentage at 58.6% compared to males at 39.9%. The majority of participants utilize an internet connection while playing games on their mobile phones, which implies that they likely possess greater familiarity with game banner advertising compared to those who play in offline mode. The Kolmogorov-Smirnov statistic, a widely recognized type of goodness-of-fit statistic, was employed to evaluate the normality of the data using the empirical distribution function. Based on the outcome of the Kolmogorov-Smirnov statistic test, the authors subsequently conducted the Wilcoxon Rank sum test due to the abnormality of the data distribution. The researcher employed the Partial Least Squares (PLS) technique to verify the formulated hypotheses. Path modeling employing Partial Least Squares (PLS) is predominantly utilized in contemporary times for conducting commercial research, resolving complex hypotheses, or assessing small-scale samples.

The irritation experienced while playing a game can result in a negative perception, hence eliciting subconscious dissatisfaction towards a specific brand. Hence, it is prudent to prioritize the precision of the advertisement for the recipient, encompassing the time of the ad. On the contrary, incentives are believed to captivate consumer motivation by offering a benefit that may be acquired by watching advertisements. Indian and Indonesian consumers find the entertainment component unsatisfactory. Gamers derive enjoyment from playing games, which leads to the disregard or easy elimination of appealing advertisements from their memory.

The question of how CEO characteristics affect corporate social responsibility (CSR) performance has become a concern in finance literature. Several studies report that since CEOs are the primary decision-makers in companies, their management decisions significantly impact CSR performance. However, few studies have examined the impact of CSR performance within the context of whether the founder and family member's CEOs (founder CEOs) or a professional CEO from outside runs the company (non-founder CEOs). The **second paper** by Woo Sung Kim & Halil Kiyamaz aims to empirically analyze whether founder

CEOs affect ESG performance for Indian companies. The analysis includes the following: First, the study examines whether the ESG performance is differentially affected by the founder or non-founder CEOs managing the firm. Second, it investigates how growth opportunities influence the relationship between founder CEOs and their ESG performance. Third, it explores how foreign ownership affects the relationship between the founder CEOs and ESG performance. Since firms with higher foreign ownership effectively monitor activities to improve firm value, the firms might have higher ESG performance.

The reasons for analyzing the relationship between the CEO and ESG performance of Indian companies in this study are as follows. First, professional CEOs of Indian companies are known to generate high firm performance. In particular, Harvard Business Review selected the World's top 10 CEOs with excellent firm performance, including ESG performance in 2019. Of these, three were chosen from India. Harvard Business Review considered weighted ESG scores over the past four years by 20% in selecting these outstanding CEOs in 2019. They were CEOs of world-renowned companies, including Shantanu Narayen, CEO of Adobe, Ajay Banga, CEO of Mastercard, and Satya Nadella, CEO of Microsoft. Interestingly, they are professional CEOs rather than founder CEOs. Thus, it makes sense to examine the varying impacts of the founder CEO and ESG performance on Indian companies. Second, among the emerging markets, India has been quite proactive in taking up CSR initiatives. In particular, Indian firms rely on mandatory regulation of CSR to behave responsibly toward CSR. Thus, the CSR performance of Indian companies is predicted to have unique characteristics compared to other countries. Third, many Indian companies have been driven by the family business group, which has led to India's economic growth. In particular, these groups have been operating both as founder and professional management CEOs. Thus, it is significant to the ESG strategy of Indian companies to analyze whether ESG performance is more positively affected by which CEO. Fourth, managers of Indian companies prioritize employee motivation and development over short-term shareholder profits. CEOs of Indian companies have somewhat different characteristics, such as recognizing CSR as a legal obligation, unlike advanced countries such as the United States and the United Kingdom.

The study by Kim & Kiyamaz contributes to the study of the determinants of ESG performance by empirically analyzing how the founder CEOs affect ESG performance and providing implications. The article's novelty is to add to the existing literature investigating the effect of founder CEOs and professional CEOs on ESG performance. None of the existing studies examines the issue from this perspective. In particular, the studies on ESG of Indian companies in emerging markets are expected to provide positive information to institutional and individual investors who invest in these companies. Furthermore, this study examines the proxy variable of ESG performance as the ESG index and conducts empirical analysis by separating it into environmental, social, and governance performance.

The major results of study by Kim & Kiyamaz are as follows. First, firms with founder CEOs have a negative impact on ESG performance. Second, the joint effect of growth opportunities between the founder CEOs and ESG performance negatively impacts ESG performance. The joint effect of foreign ownership between the founder CEOs and ESG performance positively impacts ESG performance. The implication suggests that developing and implementing ESG policies requires unique expertise, and firms with founder CEOs should not rely on their knowledge in developing proper ESG policies but instead consider getting more professional help. The findings also imply that firms with higher foreign ownerships may benefit from the ownerships of foreign companies and may signal more effective ESG policies and implementations in place.

The **third paper** by Argjira Bilalli, Atdhetar Gara, & Artenisa Beka explores the relationship between trade and energy consumption across two distinct regional groups: 38 OECD countries and 6 Western Balkan countries, covering the period from 2010 to 2022. The objective is to understand how trade activities influence energy consumption within the broader context of sustainable economic growth and development.

By employing a comparative approach, the study sheds light on regional disparities in trade-energy dynamics and offers insights to inform energy and trade policy.

The analysis is based on annual panel data sourced from the World Bank and the Global Economy Database, forming a balanced dataset that includes key economic and energy-related variables such as energy use per capita (EUPC), trade (% of GDP), foreign direct investment (FDI), inflation (INF), GDP per capita (GDPC), unemployment (UNE), and population growth (POG). Methodologically, the study employs pooled Ordinary Least Squares (OLS), robust OLS, Fixed Effects (FE), and Random Effects (RE) models to estimate the impact of trade and other variables on energy consumption. The Hausman test confirms the appropriateness of the FE model for both regional groups. Diagnostic tests confirm no issues of multicollinearity or heteroskedasticity, ensuring robust and reliable results.

Key findings of the study by Bilalli, Gara, & Beka demonstrate that trade has a statistically significant and positive effect on energy consumption in both regions, but the magnitude of the impact is notably higher in OECD countries ( $\beta = 22.33$ ) compared to the Western Balkans ( $\beta = 9.63$ ). This suggests that trade activities in more developed economies are more energy-intensive, possibly due to higher industrial output and more extensive infrastructure. In contrast, the weaker link in the Western Balkans may reflect less advanced trade networks and energy systems. Additional findings reveal that FDI and population growth positively influence energy consumption in both regions, with particularly strong effects observed in the Western Balkans. Meanwhile, unemployment has a significant negative effect on energy use in the Western Balkans but is not significant in the OECD countries. GDP per capita shows a stronger positive relationship with energy use in the Western Balkans as well. An ANOVA test confirms statistically significant differences in average energy consumption between the two groups ( $p = 0.000$ ), further emphasizing the developmental gap.

The authors conclude that while trade stimulates energy consumption in both regions, structural and policy differences influence the strength and sustainability of this relationship. For the OECD, the challenge is to maintain energy efficiency and environmental standards amid high trade volumes. For the Western Balkans, policies must focus on improving energy infrastructure, adopting renewable energy, and aligning with EU environmental and trade frameworks to harness trade for sustainable development. This research contributes to the growing literature on sustainable trade and energy policy by offering region-specific insights and evidence-based recommendations.

In the **fourth paper** by Purwanto, Muhammad Tahir Jan, Abdul Latip, & Johan Arifin explores the critical role of Islamic Brand Personality in influencing consumer attitudes and adoption intentions within the Indonesian Islamic microfinance sector. Despite the rapid growth of the global Islamic finance industry, Islamic microfinance institutions face a significant challenge: a persistent gap between their strong socio-economic mission and actual market adoption. While previous studies have examined brand personality in conventional and Islamic commercial banking, a substantial literature gap remains concerning the unique dynamics of brand perception within the microfinance context. This sector operates on a distinct ecosystem, targeting underserved communities with financial needs that go beyond mere commercial transactions. They embody a broader mission of empowerment and poverty alleviation, making it crucial to understand how brand personality encompassing spiritual and ethical dimensions—shapes consumer perceptions. The study addresses this gap by empirically investigating the specific brand personality dimensions that most effectively resonate with consumers and encourage the adoption of Islamic microfinance services.

To achieve the research objectives, a quantitative approach was employed using a questionnaire-based survey. The target population was customers of Islamic microfinance institutions in Indonesia. A hybrid data collection method was used, combining online and offline questionnaires to ensure a wider geographical reach and a more representative sample, particularly from rural areas. A total of 500 questionnaires were distributed, resulting in a robust final sample of 400 respondents, yielding a high

response rate of 80%. The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), a statistical technique well-suited for complex models with multiple latent variables. The analysis assessed the validity and reliability of the measurement model and tested the proposed hypotheses regarding the relationships between brand personality dimensions, consumer attitudes, and adoption intentions. The use of this rigorous methodology ensures the validity and reliability of the research findings, providing a solid empirical foundation for the conclusions.

The findings of this study provide significant insights into the dynamics of consumer perception in Islamic microfinance. The results confirm that all seven dimensions of Islamic Brand Personality—Sincerity, Excitement, Competence, Sophistication, Trustworthiness, Justice, and Sharia Compliance—have a positive and significant effect on shaping consumer attitudes. However, the analysis revealed that three dimensions had the most substantial impact: Competence, Excitement, and Sharia Compliance. The strong influence of Competence highlights the importance of institutional professionalism, efficient fund management, and transparency in building public trust. The significance of Excitement indicates that modern consumers are attracted to innovative and dynamic services, signaling a need for institutions to move beyond traditional service models. Finally, the paramount role of Sharia Compliance reaffirms that strict adherence to Islamic principles is a core expectation and a vital factor in building positive attitudes among Muslim consumers. Furthermore, the study confirms that a positive attitude towards Islamic microfinance is a primary predictor of an individual's intention to adopt these services, aligning with the core tenets of the Theory of Planned Behavior (TPB). These findings collectively underscore that brand personality is not merely a marketing tool but a fundamental driver of consumer behavior in this unique financial ecosystem.

From a practical perspective, this research offers concrete and actionable recommendations for managers and policymakers in the Islamic microfinance sector. Given the findings, institutions must strategically invest in strengthening key brand dimensions. Firstly, to enhance Competence, institutions should prioritize professional development for staff, implement transparent financial reporting, and improve the efficiency of their services. Secondly, to leverage the power of Excitement, managers should embrace innovation by developing user-friendly mobile applications, creating engaging digital content, and launching community-based programs that resonate with younger generations. Lastly, while Sharia compliance is expected, its importance as a significant driver of attitudes necessitates proactive communication through transparent audits and public education campaigns to build and maintain trust. By focusing on these strategic areas, Islamic microfinance institutions can enhance their competitiveness, increase market penetration, and ultimately contribute to the sustainable growth of the broader Islamic finance industry.

In summary this study by Purwanto, Jan, Latip, & Arifin confirms that Islamic Brand Personality is a key element that significantly shapes consumer attitudes and intentions to adopt Islamic microfinance services. The findings empirically demonstrate that a holistic brand strategy rooted in competence, innovation, and unwavering Sharia compliance is essential for the long-term sustainability of the sector. The study also strengthens the application of the Theory of Planned Behavior within the Islamic microfinance context. While providing valuable insights, this research has its limitations, including a sample focused on Indonesia, which may limit the generalizability of the findings. Future research could expand upon these findings by conducting comparative studies across different countries, exploring the influence of external factors like government regulations, and employing qualitative methods to gain a deeper understanding of consumer emotional connections to these brands. By building on these insights, the Islamic microfinance industry can continue to grow and fulfill its vital mission.

The **fifth paper** by Nombeko Felicity Dwesini & Vikelwa Judith Nomnga explores the contribution of free-range indigenous chickens (ICs) production to food security and poverty alleviation in rural communities using Ncera Village 1, which is situated 30 kilometers south of East London in the Eastern

Cape Province in South Africa. Specifically, this study addressed the following key research questions: What are the perceptions of rural households on the contribution of indigenous chicken production to food security and poverty alleviation? What challenges are encountered by rural households in rearing indigenous chickens? What strategies can be implemented to address the challenges identified by the study?

A qualitative research methodology was adopted, and semi-structured interviews were used to obtain in-depth data from the participants. Secondary data collection was accomplished by consulting sources such as journals, books, databases, government publications, dissertations/theses, local and international conference papers. Primary data were generated by utilizing an interview protocol as a research instrument. A non-probability purposive (judgement) sampling technique was applied in the present study because of its scientific alignment with the qualitative study.

The study reveals that IC production is widely practiced in the study site by various groups of people, of different age, gender and educational status. This is attributed to several factors which include: the almost short reproductive cycle of chickens, absence of cultural and religious prohibition on chicken meat in the study area, no difficulty in managing a small size of chicken flock and the capability of the indigenous chicken to adapt and survive in harsh conditions, meat and egg taste and scavenging ability. The findings revealed that ICs contribute to food security through provision of meat, eggs, and income that can be used to buy other food items. This study also revealed that meat consumption, egg production and to a lesser extent income generation were the main reasons for rearing ICs in the study area. This finding is consistent with the results of various other authors in their study on the characterization of ICs production system in Rwanda.

The study by Dwesini & Nomnga suggests that despite the contribution of ICs to the livelihood of rural communities, rearing them was bedevilled by various challenges including predation, theft, lack of capital, shortage of feed, high mortality of chicks, and absence of extension services. The study further demonstrates that despite the great potential of IC production, IC production in the research site is still quite low (average of 24 chickens). Additionally, the study exhibits that households kept ICs primarily for family-consumption and they do not realize the income that can be generated from ICs. Women are found to be the majority producers of ICs in the study area. This necessitates a need for the government to design training programs in IC production that will target women as they predominate ICs rearing. Lack of extension support to the rural IC producers shows that IC production was not accorded the recognition it deserves in terms of development and policy support by governmental institutions and civil organizations.

Rural community-based tourism (CBT) plays an essential role in promoting sustainable local economies, yet it continues to face systemic inefficiencies related to heavy physical workloads, unstructured organization, and limited stakeholder participation. The **sixth paper** by I. Ketut Gde Juli Suarbawa, Luh Lina Sagitarini & M. Yusuf introduces a *Systemic, Holistic, Interdisciplinary, and Participatory (SHIP)*-based Total Ergonomics framework to address these persistent challenges. The framework aims to optimize work systems, strengthen governance, and foster empowerment across tourism communities by embedding ergonomic principles into socio-technical and participatory structures.

The study employs a quantitative explanatory approach using Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine relationships among Ergonomics-Based Assistance (EBA), Task Demands (TD), Organizational Design (OD), and Environmental Context (EC), with Participatory Governance (PG) serving as a mediator toward Community Empowerment (CE) and long-term Sustainability (STC). Data was collected from 360 respondents representing six tourism villages in Bali, encompassing farmer groups, tourism operators, small enterprises, and community organizations. The model validates six hypotheses and demonstrates robust predictive strength. The findings of the study reveal that EBA has significant direct effects on TD, OD, and EC, thereby improving efficiency, organizational coordination, and environmental safety. PG mediates these ergonomic dimensions, creating pathways that enhance community empowerment and promote sustainable outcomes. The results confirm that

empowerment and sustainability are best achieved through integrated interventions combining technical design, inclusive governance, and contextual environmental adaptation. EBA was shown to reduce both physical and cognitive task burdens by improving workflow and tool usability, consistent with ergonomic evidence in agriculture and tourism. Within organizational design, ergonomic interventions clarified roles, enhanced coordination, and minimized redundancy, aligning with previous studies on adaptive tourism management structures. The environmental context also improved through ergonomic redesign and safety enhancements, strengthening the balance between productivity and cultural-environmental integrity. Importantly, participatory governance emerged as a pivotal mediating mechanism—encouraging inclusive decision-making, equitable participation, and shared accountability among local actors.

Theoretically, this study expands the scope of Total Ergonomics by linking it with participatory governance and empowerment frameworks. It extends ergonomics research beyond industrial and healthcare contexts into community-based tourism and rural innovation. The SHIP-based model thus establishes ergonomics as a strategic approach to socio-technical transformation within sustainable tourism systems. The framework reinforces that systemic interventions, rather than isolated technical solutions, are critical for achieving long-term community resilience and operational efficiency. Practically, the SHIP-TE framework offers actionable guidance for diverse stakeholders. CBT managers can utilize ergonomic principles to redesign workflows, optimize resource allocation, and improve safety standards. Local governments can integrate ergonomic training and participatory governance into policy development, advancing Sustainable Development Goals (SDGs) related to decent work, institutional capacity, and sustainable communities. NGOs and donor agencies can apply this framework to enhance inclusivity, fairness, and accountability in empowerment programs. Collectively, these applications demonstrate the model's adaptability across multiple sectors and its contribution to both social and economic sustainability.

The study by Suarbawa, Sagitarini, & Yusuf contributes to bridging the gap between ergonomic science and sustainable tourism management. It provides empirical evidence that ergonomics, when embedded within participatory and governance frameworks, strengthens empowerment and sustainability outcomes. By validating the SHIP-based Total Ergonomics framework, this study underscores that human-centered, participatory design is fundamental to achieving efficiency, equity, and resilience in rural tourism systems. The findings of this study have wide applicability across Global South, supporting future research on longitudinal validation, digital ergonomics, and cross-regional comparative analyses in sustainable community development.

**N. Delener, Ph.D., Editor-in-Chief**

# NOTE FROM THE EDITORS

As an interdisciplinary indexed journal, *The Journal of Global Business and Technology (JGBAT)* serves academicians and practitioners in the fields of global business and technology management and their related areas. JGBAT is also an appropriate outlet for manuscripts designed to be of interest, concern, and applied value to its audience of professionals and scholars. Readers will note that our attempt to bridge the gap between theory and practice has been successful.

We cannot thank our reviewers enough for having been so professional and effective in reiterating to contributors the need to provide managerial applications of their research. As is now obvious, the majority of the articles include a section on managerial implications of research. We wish to reiterate once again our sincere thanks to JGBAT reviewers for having induced contributors to answer the “so what?” question that every *Journal of Global Business and Technology* article is required to address.

Thank you for your interest in the journal and we are looking forward to receiving your submissions. For submissions guidelines and requirements, please refer to the Manuscript Guidelines at the end of this publication.

**N. Delener, Ph.D., Editor-in-Chief**  
**F. Victor Lu, Ph.D., Managing Editor**

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# THE EFFECTIVENESS OF IN-GAME BANNER ADVERTISING TOWARDS INDONESIAN AND INDIAN YOUNG ADULTS: A QUANTITATIVE ANALYSIS USING SMART-PLS

Radna Andi Wibowo and Rajoli Vamsidhar Reddy

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## ABSTRACT

*Although mobile device product promotion is not a novel concept, mobile advertising setups are constantly evolving. There are several basic formats for advertising on mobile devices. This objective is achieved by investigating mobile and portable gamers' attitudes and intentions towards mobile in-game banner advertising (IGBA). In this research, two potential markets for gaming banner advertising, namely, Indonesian and Indian young adults were investigated, there were of 412 respondents. A total of six variables were measured, namely Entertainment, Informativeness, Irritations, Credibility, Financial Costs, Intentions, and Incentives, were investigated to gain a more profound knowledge of the characteristics of consumers in Indonesia and India who have had experiences with the IGBA. Present days, IGBA is experiencing explosive growth and is widely regarded as the most effective method for promoting goods and services. The findings show that Indonesian and Indian young adults share the same view that irritation in IGBA has a negative impact. At the same time, incentives in IGBA are positively associated with the gamer's intentions. In addition, Indian and Indonesian customers do not perceive amusement as a crucial element when they encounter advertisements in games.*

**Keywords:** In-game banner advertising, Entertainment, Informativeness, Irritations and Credibility.

## INTRODUCTION

In 2020, the rapid development of people who actively play video games significantly changed the virtual entertainment industry. The results of extraordinary income up to billions of dollars became one of the most obvious effects. Thus, created many opportunities for various parties such as developers, publishers, retailers, and other market providers. Interestingly, the year 2020 will always be remembered as the year of the "pandemic", a year in which all of us have to face difficult times to survive and maintain our respective financial capabilities. Although the existence of the Covid-19 pandemic has been quite wild in attacking all kinds of business industry scopes, the video game industry has experienced the opposite phase. The convenience and the practicality of its function to play games anywhere while doing various

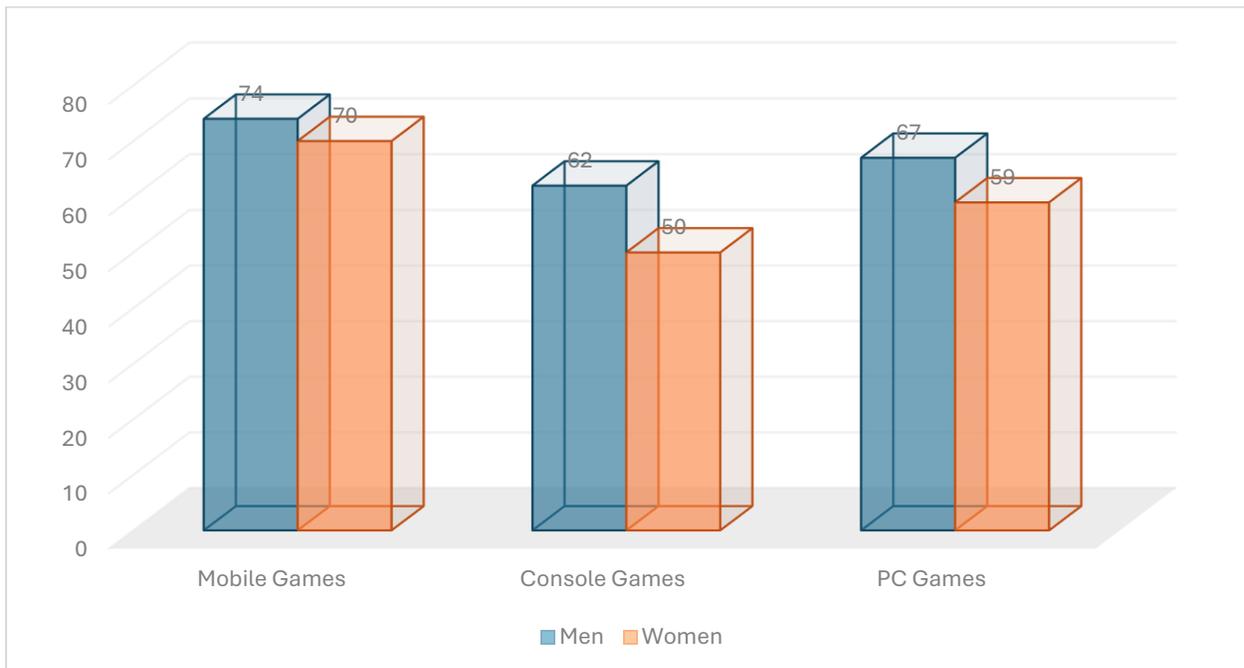
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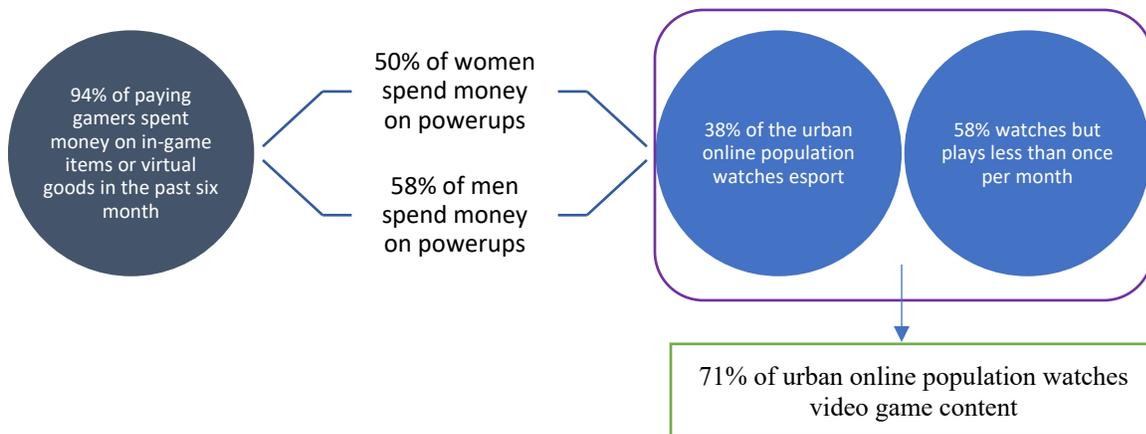
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important activities in daily life are enough to explain the strong magnet for mobile games. The target market for mobile games in developing countries is increasing yearly.

Indonesia has a large population like China, India, and other developing countries; these countries are growing their economy, and some foreign investments are coming from developed countries (Haudi & Cahyono, 2020; Kim & Thuc, 2020). Investors cannot just ignore Indonesia nowadays, Indonesia is the fourth largest smartphone market worldwide after China, India, and the United States. An estimated \$1.1 billion was spent on video games in Indonesia in 2017, making it one of the region's most lucrative businesses. Seventy-four percent of men and seventy zero percent of women play mobile games, while 62 percent of men and 50 percent of women play console games among the internet population (Figure 1). Ninety-four percent of all paying gamers have purchased virtual goods or currency during the last 24 weeks; 71% of all paying gamers view video game content; 38% observe esports (Figure 2).



**Figure 1.** Type of Games Played by Gender (Percent), (Newzoo.com, 2019).



**Figure 2.** Share the Urban Online Population that Plays, (Newzoo.com, 2019).

There are various designs to advertise in games, and the techniques regarding brand engagement (Salo, 2009). They can be extensively separated into two kinds: advergaming, which are created especially for a brand, where the brand or a product has the core function (Mau et al., 2008; Wise et al., 2008) and in-game advertising called IGA – consolidation of brands towards existing games (Chang et al., 2010; Terlutter & Capella, 2013; Yang et al., 2006). Valentino-DeVries J, (2011) stated that In-game advertising usually coincides with product placements observed in movies or television. However, this kind of advertising strategy is typically not implemented when it comes to low-cost, rapidly generated mobile games. Genuinely, integrated in-game product layouts, such as allowing the user to drive a vehicle brand in a racing game, present significant advertising prospects regarding brand loyalty, but typically involve more integration and development time than a basic display commercial (Internet Advertising Bureau, 2010).

This research aims to compare the performances of mobile in-game banner advertising in Indonesian and Indian young adults. Therefore, the investigation's problem centers on how customers/gamers interact with advertisements displayed on mobile phones while playing their favorite games. The results are expected to contribute to game developers mapping marketing targets worldwide, particularly in India and Indonesia. This objective is achieved by investigating mobile and portable gamers' attitudes and intentions towards mobile in-game banner advertising. First of all, the general attitudes are investigated, as well as how some characteristics unique to the mobile game context influence the attitudes. Next, this study examines gamers' intention to perform established on mobile in-game banner adverts and if incentives influence this behavior.

## **LITERATURE REVIEW**

### **The basis for mobile in-game advertising**

Mobile devices present the frequently multisided medium with multiple marketing, mobile commerce and advertising opportunities (Persaud & Azhar, 2012). Promoting products with mobile devices is not novel, but mobile advertising setups keep developing rapidly. There are primary formats to advertise on gadgets. These are displaying advertising, search advertising and messaging. Pioneer, before the universal adoption of PDAs, tablets and smartphones, SMS (Short Message Service) and MMS (Multimedia Messaging Service) were the original advertising forms in mobile tools (Barnes & Scornavacca, 2004; Lin & Bautista, 2018; D. J. Xu, 2006). The studies usually accept various messaging formats when the advertiser gives a consumer a solicited or un-solicited message (Choi et al., 2008a).

It is crucial for advertisers and entertainment, particularly game developers, to understand how this new advertising mechanism can be utilized pleasantly. There exist several ways for game developers to fabricate their creations, and the one where advertisers at least partially pay for game development is increasing its market share.

### **The primary users of mobile games**

The assumption that gamers are only for adolescent teenagers surely does not refer to mobile game users. Portable games have the potential to attain a considerably variable customer base in terms of important demographic elements (Krum, 2010). However, current mobile games target mainly young adults and adolescents, not considering the elderly restrictions (Nap et al., 2009).

Today's mobile games that rely more on online games, such as demanding competition or teamwork between players, are desirable to young people with the same preferences. Therefore, many studies on this case tend to take samples of young people as an example; the study was conducted by Shibuya et al., (2019),

where the age of participants was between 15-29 years, with a total of 948 teenagers and young adults. Additionally, young adults are the generation group most well-known for portable through commercialization (Jayawardhena et al., 2009). These data show that young adults are the primary demographic targeted by mobile in-game marketing, comparatively equally in both genders.

### **Estimating the influence of advertising**

At the beginning of the Internet business, there has been much study on what the efficiency or influence of banner advertising must be estimated (Manchanda et al., 2006). Then, numerous methods have been applied. These include trademark recall and brand awareness after being presented to the banner, impression on buying online expectation, intention to click on the ad, and consumer attitudes approaching different advertising features. In addition, the attitude has been estimated for the brand advertised towards the website the ad is positioned on, other online advertisement setups, and different varieties of banner advertisements in terms of design and content.

Related measures have been used to estimate the effect of portable advertisement in the prior study. However, regarding the IGBA performance study, the emphasis has been on brand awareness or advertisement attention. Additionally, attitude towards different features has been crucial in the earlier study on IGBA. Presently, the studies highlighted the influence of IGBA on players' intentions (de Pelsmacker et al., 2004; Hansson, 2017; Morillas et al., 2016). The video game business has been expanding at a rapid rate; hence, it could be advantageous to comprehend advertising in video games.

### **Hypotheses**

The study assessed various factors, including Entertainment, Informativeness, Irritations, Credibility, Financial Costs, Intentions, and Incentives, to gain a deeper knowledge of the characteristics of consumers in Indonesia and India who have had experiences with the IGBA. Mobile gamers typically play for a various reason and lose track of the time they spend playing mobile games (Ip & Jacobs, 2005; Yee, 2006). Therefore, the gamer's intentions should be analyzed. The positive influence of entertainment on consumers across all forms of digital media has also been supported by previous studies, which indicate that this benefit is significant (E.-B. Lee et al., 2017; Wahab et al., 2023). Pihlström & Brush, (2008) depicted entertainment on mobile content such as advertising on games strongly influenced intention to purchase, applied favorable word-of-mouth, and readiness to spend with a premium price. Therefore:

*H1: The entertainment in IGBA positively related to the gamer's intentions.*

The significant impact on advertising in the IGBA is similar to Logan et al., (2012) research. J. Lee & Hong, (2016) validated the informativeness effect on customer's empathy expression and found a high connection between customer's empathy and customer's intention to purchase. Advertising is attractive for customers; users shall find other games, dating applications, charities, and the like when playing an online game. Therefore, it is hypothesized that:

*H2: The Informativeness in IGBA positively related to the gamer's intentions.*

Opposite to entertainment and informativeness, irritation has negative impacts (Tefertiller, 2020a). Some gamers may experience annoyance or insult towards IGBA, a consequence of being uninteresting in the content or focusing only on the game (Brackett & Carr, 2001). In addition, Edwards et al. (2015) argued negative feelings against ads emerge when gamers see ads interrupt their concentration in-game. Therefore, we propose that:

H3: *The Irritation in IGBA is negatively related to the gamer's intentions.*

Credibility IGBA defines how the ads' content is trustworthy and authentic, in line with Martins et al., (2019) statement that ad credibility must be believable and real. Therefore, the ad's credibility is established by consumers when they perceive the content as authentic (Kavanoor et al., 1997). In addition, credibility does not exclusively depend on content; it can be influenced by self-referencing, brand image, and self-brand congruity (Bidmon & Röttl, 2018; Phua & Kim, 2018). The hypothesis for this investigation is:

H4: *The Credibility in IGBA positively related to the gamer's intentions.*

Financial costs highly influence whether the ads in the game are accepted or rejected. As a customer who pays for a more expensive video game, gamers consider a negative response against IGBA. Moreover, Turner, (2008) posited that engaging in video games, especially mobile games, carries financial implications, with an estimated monthly cost ranging from 13 to 15 USD. On the contrary, a gamer perceives ads as potentially acceptable if they help to reduce the game's price. The game developer perhaps invites advertisers to be in a mutual relationship, even more for a gamer as a customer (Acquisti & Spiekermann, 2011; Montag et al., 2019; Nelson et al., 2004). Based on the studies, it is suggested that:

H5: *The Financial Cost in IGBA is negatively related to the gamer's intentions.*

Advertising and promoting products/services on mobile phones are progressively proclaimed to be a potential strategic method for each organization in their marketing mixes (Dickinger & Kleijnen, 2008; Gray, 2009). For example, discounts, free samples, and the like commonly used to increase customers' interest in mobile marketing include IGBA (Altuna & Konuk, 2009; Barutçu, 2007; Phokwane & Makhitha, 2023). Furthermore, delivering incentives can enhance the advantage for gamers and intention to accept advertising in-game. It is presented that:

H6: *The Incentive in IGBA positively related to the gamer's intentions.*

## METHODOLOGY

### Population and Sample

The research focuses on a population of young adults residing in India and Indonesia who possess at least one mobile game on their smartphones. Indonesia and India were chosen as subjects of inquiry due to their classification as Big Five countries in the world, which have exhibited a significant volume of app downloads, particularly in gaming, within 2021-2022 (Statista.com, 2023). The authors investigated two potential markets for game banner advertising: Indonesian (210) and Indian (202) young adults, with 412 respondents. *Table 1* shows the Indonesian and Indian Respondent's information. The prominent gap between the two kinds of samples lies in gender, in which India is dominated by Males with 84.2%, whereas females in Indonesia are larger with 58.6% compared Male (39.9%). From an advertising viewpoint, promoting specific product information via Internet is required from a marketing standpoint. The Internet is a significant and rapidly rising source of information in many aspects (Vakratsas & Ambler, 1999). Almost all respondents use an internet connection when playing on a mobile phone; hence, they potentially have more experience with game banner advertising than those who play in offline mode. The six variables: Entertainment, Informativeness, Irritations, Credibility, Financial Costs, Intentions, and Incentives, are measured to find the performance of ads in mobile games. Hence, the results will show us which variables are applicable for both countries.

**Table 1. Key Sample Characteristics**

	<b>India</b>	<b>Indonesia</b>
Sample Size	N = 202	N = 210
Gender	Male: 84.2%; Female: 15.8%	Male: 39.9%; Female: 58.6%, Prefer not to say: 1.4%
Average age	20-24 years old (68.8%)	20-24 years old (49.5%)
Operating System	Android (70.8%)	Android (78.6%)
Game Types	Action (44.6%)	Strategy (31.6%)
Use the internet to play a mobile game	Yes (93.6%)	Yes (84.1%)
Duration plays a mobile game per session	16-30 minutes (53.3%)	16-30 minutes (44.3%)

This research analyses two matched student samples (young adults). The questionnaire was distributed to Indian and Indonesian students by Google form from August until October 31<sup>st</sup>, 2022. These samples are commonly used in cross-cultural consumer comparisons, "To describe the various cultures in the cross-cultural study" (Peterson & Merunka, 2014). Student samples are considered a reasonable model for young adults (J. Xu et al., 2004).

The author devised a set of five-point scales based on the Likert scale to construct a questionnaire. These scales include the following response options: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree. There are several advantages associated with the use of Likert-scale questionnaires. Firstly, they allow for the efficient data collection from a large sample of respondents in a relatively short time. Secondly, Likert-scale questionnaires have the potential to yield highly reliable estimates of individual abilities or attitudes. Lastly, the validity of the interpretations derived from the data obtained through Likert-scale questionnaires can be established through various methods (Nemoto & Beglar, 2014).

## Data Analysis

Due to the empirical distribution function, a well-known subclass of goodness-of-fit statistics, the Kolmogorov-Smirnov statistic was utilized to assess the normality of the data. This statistic compares the empirical cumulative distribution function  $F_{(x)}$  with the cumulative population distribution function  $F_{n(x)}$  (Hanusz & Tarasińska, 2015). Following the Kolmogorov-Smirnov statistic test result, the authors had to go through the Wilcoxon Rank sum test; consequently, the data distribution was abnormal. The Wilcoxon Rank sum test, also famous as The Whitney U test, compares two groups based on a singular ordinal variable with no detailed distribution (Mann & Whitney, 1947). On the contrary, a similar test of two groups called the t-test required a single variable to be counted at the interval ratio level rather than the ordinal and to be normal data distributed.

The researcher used the Partial Least Squares (PLS) method to validate the developed hypotheses. Path modeling using PLS is most commonly used in modern times for commercial study, solving intricate propositions, or analyzing tiny samples. It is a form of covariance structure analysis (Jakobowicz, 2006), and it is best utilized in research projects with many latent variables (Henseler, 2012). PLS-SEM has found applications in various of domains, including organizational studies, consumer behavior research, behavioral studies, management information system research, and corporate strategy research. In addition, this methodology has a minimal susceptibility to multicollinearity concerns and may be applied to exploratory data (Haenlein & Kaplan, 2004).

## Results and Discussion

The outcomes of the Kolmogorov-Smirnov normality test in Table. 2 demonstrate that all variables have a significance value of  $<0.05$ , which means that the data on all variables is not normally distributed. Consequently, the hypothesis testing uses the Mann-Whitney non-parametric different test required.

**Table 2. One-Sample Kolmogorov-Smirnov Test**

	One-Sample Kolmogorov-Smirnov Test						Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
	Normal Parameters <sup>a,b</sup>			Most Extreme Differences				
	N	Mean	Std. Deviation	Absolute	Positive	Negative		
Entertainment	412	4.4757	2.00532	.170	.170	-.138	3.442	.000
Informativeness	412	5.0922	1.92594	.129	.111	-.129	2.618	.000
Irritations	412	19.4248	4.00203	.102	.076	-.102	2.078	.000
Credibility	412	5.0728	2.05746	.145	.104	-.145	2.938	.000
Financial Costs	412	8.0583	2.75902	.109	.080	-.109	2.219	.000
Intentions	412	5.0024	1.88282	.105	.103	-.105	2.127	.000
Incentive	412	12.2670	3.35587	.102	.087	-.102	2.066	.000

The Non-parametric Mann-Whitney test in Table. 3 shows significant differences in entertainment, effectiveness, irritation, credibility, financial costs and intention in Indonesia and India. Nevertheless, there is no significant difference in incentives. Consumer experience contains informativeness, effectiveness, irritations, credibility, financial costs, and intention towards mobile phone ads, perhaps contrasting each other between Indonesian and Indian young adults. The advancements in technology increase connectivity, frequency, and speed of communication, which can be provided in real-time based on consumer demographic and geographic characteristics (Muk, 2007). Nevertheless, the advertising value will be a differentiator in the end. Undoubtedly, how advertising works is a key dimension of the value of advertising for a gamer (Knopper, 1993).

**Table 3. Non-parametric test**

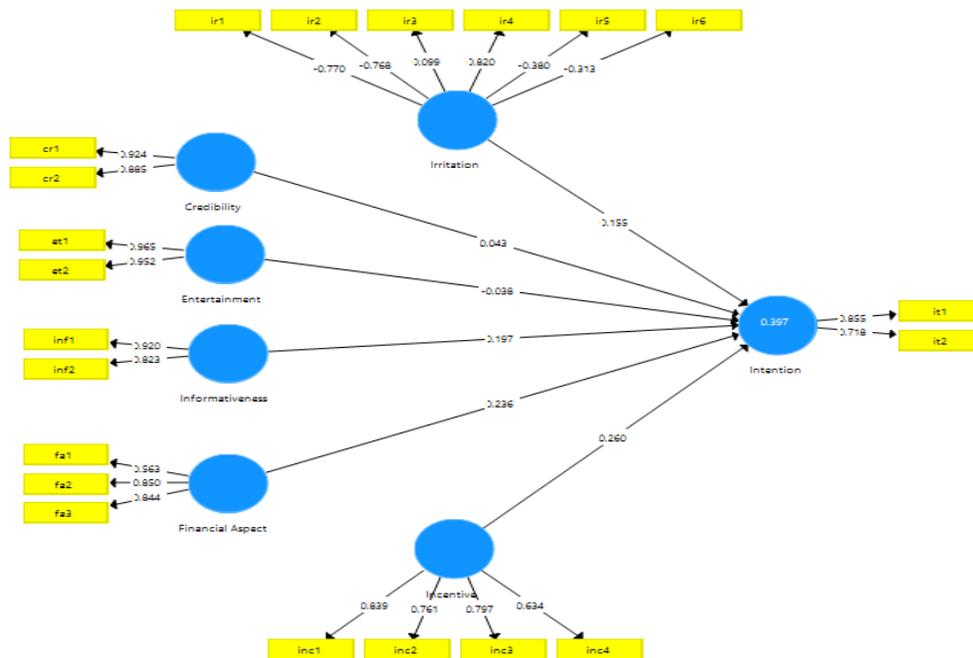
Test Statistics<sup>a</sup>

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
Entertainment	14968.500	36913.500	-5.243	.000
Informativeness	12087.500	34032.500	-7.661	.000
Irritations	11860.500	32566.500	-7.777	.000
Credibility	11483.000	33428.000	-8.149	.000
Financial Costs	12391.000	34336.000	-7.354	.000
Intentions	17255.000	39200.000	-3.319	.001
Incentive	18874.500	39580.500	-1.948	.051

a. Grouping Variable: Country

**Indonesian**

Based on the PLS output model depicted in Figure 3, researchers removed several indicators due to < 0.6 of outer loading. Researchers must carefully intake decisions to remove formative indicators founded on statistical outcomes; the weights of formative indicators depend on the digit of indicators used to calculate a construct. The average weight of indicators decreases as their number increases. Formative measurement techniques are fundamentally limited in the number of statistically significant indicator weights (Cenfetelli & Bassellier, 2009).



**Figure 3.** The Path Model Output (Indonesia)

"Cronbach's Alpha" is normally employed to assess internal reliability. Smart-PLS is regarded as a standard measurement in social science research. Additionally, previous research has supported the usage

of "Composite Reliability" (CR) as an alternative to Cronbach's Alpha (Bagozzi & Yi, 1988). Table 4 determined that the CR values are more significant than 0.6. Therefore, it can be inferred that the study's reflective latent variables have high internal consistency and reliability.

Besides, each latent variable's Average Variance Extracted (AVE) must be calculated to assess convergent validity. Also, Table No. 4 reveals that the AVE values obtained are sufficient and greater than the allowable threshold value of 0.5, leading to the decision that the construct possesses the main level of convergent validity. Hair et al., (2010) stated that convergent validity is the capacity to associate one measure with another of the same construct positively.

**Table 4. Construct Reliability (Indonesia)**

	Composite Reliability	Average Variance Extracted (AVE)
Credibility	0.900	0.819
Entertainment	0.958	0.919
Financial Cost	0.924	0.858
Incentive	0.845	0.580
Informativeness	0.865	0.762
Intention	0.767	0.624
Irritation	1.000	1.000

PLS-SEM aims to categorize and define the significant path coefficients in the structural model and comprehend the fundamental and applicable effects. Further, Bootstrapping can inspect the level of structural path significance through T-statistics values commonly used to investigate the inner and outer model of the structural path level (Hair et al., 2010). Table 5 describes Credibility, Entertainment and Informativeness as insignificance towards intention, due to the t-statistic values < 1.96. Meanwhile, Financial Cost, Incentive and Irritation are highly significance to Intention.

**Table 5. Mean, STDev, T-Values, P-Values**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )
Credibility -> Intention	0.051	0.050	0.085	0.602
Entertainment -> Intention	-0.003	-0.004	0.074	0.039
Financial Cost -> Intention	0.169	0.175	0.069	2.459
Incentive -> Intention	0.288	0.290	0.063	4.581
Informativeness -> Intention	0.179	0.180	0.099	1.813
Irritation -> Intention	0.209	0.211	0.059	3.530

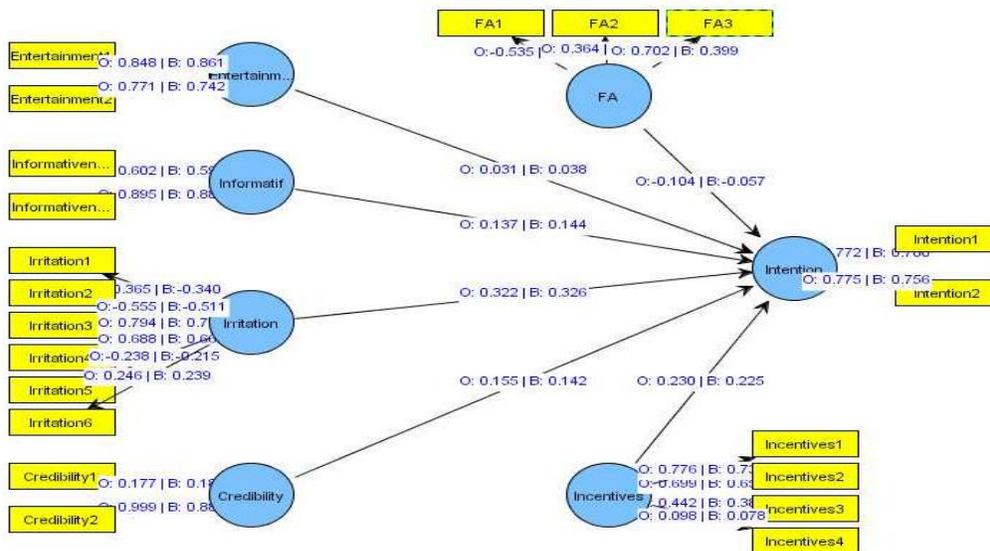
Indonesian consumers will accept banner advertisements within a game if they provide immediate benefits, such as a price reduction or other advantages. Molesworth, (2006) supports this finding by stating that consumers embrace potential authenticity and financial assistance advantages. N.O.V.A. Legacy (Developer: Gameloft SE), SimCity BuildIt (Developer: Electronic arts), Mobile Legends: Boom bang (Developer: Moonton), and the majority of other games are available for free download from the Google Play Store. The financial revenue is a success for them when we see each game has been downloaded more than 50 million although put ads and inform it in the Play Store. Nevertheless, gamers still need to pay for some items in the game to upgrade their character and achieve a new level shortly. Consequently, emerges a slogan by unhappy gamers; "pay to win than play to win."

Aside from financial assistance, incentives significantly influence customers' intentions. Incentives in ads such as discount leads lure impressions for customers even more if the ads give benefits relevant to the game itself, for instance, gift items. The ads commonly promote a product that includes rewards that users can claim to buy or get items in the game from who play. For example, Mortal Kombat from Warner Bross International Enterprises, provides gamers with free Kard packs, Souls, and Koins to improve the character in the game. If gamers want rewards, they must click "inspect," which contains ads.

The frequent ads that emerge in gaming perhaps signify disturbing experiences when playing a mobile game. Nevertheless, Indonesian customers receive advertisements when playing games well; they don't feel disturbed by the ads' presence. It indicates the companies that invest in mobile games (Indonesian region), particularly in advertising, focus on customers' needs and accomplished to avoid irritation in delivering their advertisements. Ranganathan & Campbell, (2002) mentioned that it is necessary to perform all this while not irritating or disturbing existing or potential users. In light of what has been discussed, we have concluded that hypotheses 1, 2, and 4 were rejected for Indonesia. Nevertheless, we accepted the contradictory hypotheses 3, 5, and 6.

**Indian**

Like the Indonesian PLS output model, researchers must exclude a number of indicators with an outer loading consequence of less than 0.6%. (Figure 4). Furthermore, In the Indian PLS output model, nine of 21 indicators must be deleted.



**Figure 3.** The Path Model Output (India)

According to Table No. 5, it was found that the CR values have a significance that is greater than 0.6. As a result, one can conclude that the reflective latent variables used in this study have a high level of internal consistency and reliability. Due to the fact that the AVE values that were obtained are sufficient and higher than the permissible threshold value of 0.5, it was determined that the concept holds the primary level of convergent validity. It was determined based on the findings presented in Table 6.

**Table 6. Construct Reliability (India)**

	Composite Reliability	Average Variance Extracted (AVE)
Credibility	0.792	0.657
Entertainment	1.000	1.000
Financial Costs	0.744	0.672
Incentive	0.715	0.615
Informativeness	0.820	0.714
Intention	0.836	0.728
Irritation	1.000	0.773

As depicted in Table 6, the outcome by inner weight estimation influence of entertainment (T-statistic score: 0.424) and financial costs (T-statistic score: 0.884) negative significant towards intention due to  $< 1.96$ . Whereas informativeness (T-statistic score: 2.228), irritation (T-statistic score: 2.672), credibility (T-statistic score: 2.031), and incentive (T-statistic score: 2.897) were positively significant towards intention. According to the findings, Indian consumers do not consider entertainment as an essential component when they are experiencing ads in games. As a consequence, the disappearance of enjoyable consumers watching the ads could lead to negative impacts on brands' attitudes. The Company that invests in ads must be encouraged to elevate pleasure by delivering aesthetic enjoyment and also an emotional release when playing a game. Consumer needs to "breathe a while" from activity concentration; therefore, ads provide a way to temporary escapism and diversion (Elliott & Speck, 1998; Shavitt et al., 1998).

**Table 7. Mean, STDev, T-Values, P-Values**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )
Entertainment -> Intention	0.031	0.038	0.074	0.424
Informativeness -> Intention	0.137	0.141	0.062	2.228
Irritation -> Intention	0.322	0.318	0.121	2.672
Credibility -> Intention	0.155	0.147	0.076	2.031
Financial costs -> Intention	-0.104	-0.065	0.118	0.884
Incentive -> Intention	0.230	0.225	0.079	2.897

Indian mobile game advertisers are capable of meeting the goals of informing customers about items or services and developing consumers' awareness of those products or services. According to Petrovici & Marinov, (2007) acquiring information about products and services is necessary. As a result, advertising should primarily emphasize providing information. In addition, the information pertinent to the game that is advertised through banners is regarded as competent and capable of leading to the trust of consumers (Liu et al., 2012). Similar findings in India and Indonesia stated that irritation is enormously significant towards intention. The irritation experienced by Indian gamers contributes to negative impacts on advertising value (Tefertiller, 2020b). Banner advertising during a game is commonly regarded as an interruption by consumers. It causes gamers to see the advertisements unfavorably, to the point that they may perceive a violation of their space (Abbasi et al., 2021). The frequent ads that appear when playing a game must be reduced and concentrate on the quality of the product or service information.

In contrast to their counterparts in Indonesia, gamers in India give significant weight to the credibility of the banner adverts they encounter in games. Therefore, trustworthiness in advertising affects customers' awareness of brands as well as their intentions. Chakraborty & Bhat, (2018) investigated that was indirect but still managed to confirm the importance of brand awareness and source trustworthiness as predictors. Regarding the Credibility of advertising, which generally appeals to viewers regardless of their country, the other study in the United States and South Korea determined credibility is the most influential predictor (Choi et al., 2008b).

In-game banner advertising provides an evident incentive, and it is an essential tactic for establishing consumer intention in either Indonesia or India. According to the findings of a number of studies, there should be some incentive for in-game banner advertising (Abbasi et al., 2021; Chou & Wang, 2016; Drèze & Hussherr, 2003; Robinson et al., 2007). According to Han et al., (2005), a tangible reward system would provide advantages to both game players and sponsors. Internet marketing done via mobile devices has the potential to be more successful if it offers multiple inducements, such as unique items or price reductions. The first and fifth hypotheses are both refuted by the evidence presented here. Contradictive hypotheses 2, 3, 4, and 6 were allowed to stand.

## CONCLUSION

The use of in-game banner advertising, which is now experiencing explosive growth, is widely regarded as the most effective method for promoting goods and services. A developer game must be concerned with gamers' behaviors or potential customers' characteristics over the globe, especially in China, the United States, Brazil, and Russia, as the countries with highly downloaded applications include games in the world besides Indonesia and India. However, the kinds of advertising strategies that can be used need to be segmented based on the types of media that will be used; the use of advertisements in games, especially on mobile phones, needs to be approached with caution due to the fact that it disrupts the users' ability to concentrate on the activities they are participating in while they are having fun. The appropriate strategy to apply ads on mobile games involves entertainment, informativeness, irritation, credibility, financial costs, and intention measured by researchers. Different results commonly occur between developed and developing countries, caused by users' cultures, perspectives, and the like. Nevertheless, the same typical countries also reveal an unidentical outcome: India and Indonesia.

Indonesian and Indian gamers have the same conclusion; hypotheses 3 and 6 were accepted, but hypothesis 1 was rejected. The irritation when playing a game will lead to a negative image, consequently triggering displeasure of a particular brand through the subconscious. Therefore, it is advisable to pay more attention to the accuracy of the ad for the receiver, including the ad's duration. On the other side, incentives are claimed to fascinate consumer intention reason of providing an advantage obtained by viewing ads. The entertainment factor is unacceptable to Indian and Indonesian consumers. A gamer accepts entertainment by playing a game; Hence attractive ads will be forgotten or easily erased in memory when they have been exposed to joy from a game they are playing.

Application distribution platforms, including both the App Store and Play Store, offer a variety of games that may be obtained through either a free download payment system or a paid download system for mobile phone users. Identifying a distinct technique among various developer games that effectively appeals to consumers and has the potential to influence their decision-making process is a complex task, as explored in this research. Scholars with an interest in this topic are encouraged to investigate the download payment systems and financial resources used by respondents (no sources are cited in the current document). This would help increase the scope and depth of the study's findings in the future.

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# DO FOUNDER CEOS MATTER IN ESG PERFORMANCE IN EMERGING MARKETS?

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## ABSTRACT

*This study empirically analyzes whether founder CEO's characteristics affect ESG performance for Indian companies using a panel regression model. The study uses 215 listed Indian companies from 2010 to 2015 and finds that the founder CEOs negatively affect the firm's ESG performance, supporting the self-interest hypothesis. In addition, the negative relationship between founder CEO and ESG performance is more pronounced for firms with a high growth opportunity than those with a low growth opportunity, supporting the resource-based hypothesis. The negative relationship between the founder CEO and ESG performance is less pronounced for firms with a higher foreign ownership than those with a lower foreign ownership, representing the auditing role hypothesis. The findings further show that the CEO's management system, such as founder CEOs, is a major determinant influencing ESG performance.*

**Keywords:** Owner CEO, professional CEO, ESG, environmental, social, governance

*GEL classification:* G30, G32, G34

## INTRODUCTION

Recently, the question of how CEO characteristics affect corporate social responsibility (CSR) performance has become the main concern in finance literature (Manner, 2010; Oh et al., 2011; Lamb and Butler, 2018; Li et al., 2018; Sun et al., 2021; Xu et al., 2023). A major question is whether managers such as CEOs should matter for CSR. Some studies (i.e., Adams et al., 2005; Chouaibi et al., 2023) find that since CEOs are the main decision-makers in companies, their management decisions significantly impact CSR performance. However, few studies have examined the impact of CSR performance within the context of whether the founder and family member's CEOs (founder CEOs) or a professional CEO from outside runs the company (non-founder CEOs).

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The main objective of this study is to empirically analyze whether founder CEOs affect ESG performance for Indian companies. The analysis includes the following: First, the study examines whether the ESG performance is differentially affected by the founder or non-founder CEOs managing the firm. Second, it investigates how growth opportunities influence the relationship between founder CEOs and their ESG performance. Third, it explores how foreign ownership affects the relationship between the founder CEOs and ESG performance. Since firms with higher foreign ownership effectively monitor activities to improve firm value, the firms might have higher ESG performance.

The reasons for analyzing the relationship between the CEO and ESG performance of Indian companies in this study are as follows. First, professional CEOs of Indian companies are known to generate high firm performance. In particular, Harvard Business Review selected the World's top 10 CEOs with excellent firm performance, including ESG performance in 2019. Of these, three were chosen from India. Harvard Business Review considered weighted ESG scores over the past four years by 20% in selecting these outstanding CEOs in 2019. They were CEOs of world-renowned companies, including Shantanu Narayen, CEO of Adobe, Ajay Banga, CEO of Mastercard, and Satya Nadella, CEO of Microsoft. Interestingly, they are professional CEOs rather than founder CEOs. Thus, it makes sense to examine the varying impacts of the founder CEO and ESG performance on Indian companies.

Second, among the emerging markets, India has been quite proactive in taking up CSR initiatives (Kim and Oh, 2019). In particular, Indian firms rely on mandatory regulation of CSR to behave responsibly toward CSR. Thus, the CSR performance of Indian companies is predicted to have unique characteristics compared to other countries.

Third, many Indian companies have been driven by the family business group, which has led to India's economic growth. In particular, these groups have been operating both as founder and professional management CEOs. Thus, it is significant to the ESG strategy of Indian companies to analyze whether ESG performance is more positively affected by which CEO. Fourth, managers of Indian companies prioritize employee motivation and development over short-term shareholder profits. CEOs of Indian companies have somewhat different characteristics, such as recognizing CSR as a legal obligation, unlike advanced countries such as the United States and the United Kingdom. Cappelli et al. (2010) suggest that Indian managers, unlike other countries, have paid much attention to social issues, community services, and infrastructure. In addition, they indicate that Indian managers perceive CSR as a prestige asset to increase their group brand and that managers of large, high-growth companies conduct their business from a long-term perspective.

This paper contributes to the study of the determinants of ESG performance by empirically analyzing how the founder CEOs affect ESG performance and providing implications. The article's novelty is to add to the existing literature investigating the effect of founder CEOs and professional CEOs on ESG performance. None of the existing studies examines the issue from this perspective. In particular, the studies on ESG of Indian companies in emerging markets are expected to provide positive information to institutional and individual investors who invest in these companies. Furthermore, our study examines the proxy variable of ESG performance as the ESG index and conducts empirical analysis by separating it into environmental, social, and governance performance.

The remainder of this paper is as follows. Section 2 examines the theoretical background and previous literature review. Section 3 presents hypotheses, and Section 4 presents data and methodology. Section 5 presents the empirical results. Section 6 offers the conclusion.

## **THEORETICAL BACKGROUND AND PREVIOUS LITERATURE**

This section examines the theoretical background of the manager's perspective on CSR performance. First, the *shareholder approach* suggests that managers should act in the best interests of their shareholders over the long-term (Friedman, 1970). He argues that managers must comply with shareholders' wishes when conducting CSR activities. In particular, it emphasizes that managers must have moral responsibilities to benefit shareholders. Second, *stakeholder theory* documents that managers do not invest in CSR, which can be instrumentalized into their performance for their benefit. In other words, managers invest in CSR to balance stakeholders' interests. Third, the *agency-stewardship approach* suggests that the manager's personal and situational characteristics are separated into the agent and the owner. From the agent's point of view, managers are more likely to engage in opportunistic behavior and are more likely to add their private interests (Jensen and Meckling, 1976). In particular, this approach argues that managers are opportunistic and only interested in maximizing shareholder value under efficient regulatory mechanisms. From the point of view of an owner, on the other hand, the *agency-stewardship approach* suggests managers value stakeholders' interests more than their interests. Managers try to achieve higher firm performance by working with them. In turn, it means that managers close to good management will be more willing to engage in CSR activities. Fourth, *the stewardship theory* suggests a new way to understand the manager profile (Davis et al., 1997). In particular, it presents a psycho-sociology perspective on corporate governance that depicts managers as servants of corporations. Managers are cooperative and collectivist rather than individual and self-interested. Good managers support the well-being of all stakeholders and manage shareholders and those who care about their companies. Also, the primary way to satisfy all stakeholders is to maximize the long-term value of a company (Hernandez, 2008).

Previous studies on CEOs and ESG performance examined the issue in the context of CEO ownership. Regarding governance structures, Johnson and Greening (1999) suggest a positive relationship between outside directors and CSR performance. They argue that, on the assumption that CSR increases firm value, an increase in ownership increases the incentive to participate in CSR. Li (2015) finds a positive relationship between CEO ownership and CSR incentives for S&P 500 companies. Laguir and Elbaz (2014) recently studied CSR performance between family member CEOs and competitive outsider CEOs for French listed companies from 2005 to 2011. They suggest that family businesses managed by competitive external CEOs have a more positive impact on CSR than those managed by owner CEOs. This result can be attributed to the balance of power that external CEOs can establish in the company.

Jiraporn and Chintrakar (2013) suggest that CEOs are active in CSR activities when they have low power. Still, when CEOs have high power, it has a negative effect on CSR activities. Chu et al. (2022) suggest CEOs negatively affect the CSR of high-power companies in the USA. In particular, negative relationships are more pronounced for younger, more competitive firms and firms with overconfident CEOs.

In summary, the existing literature reports mixed results on the impact of CEOs on the ESG performance of the firms, which provides an opportunity to provide additional evidence on this issue.

## HYPOTHESIS DEVELOPMENT

### *Relationship between Founder CEOs and ESG performance*

A management system operated by the founder or professional(outsider) CEO has a differential effect on ESG performance (Laguir and Elbaz, 2014). In other words, as a company requires professional management ability, it will need a CEO who is an experienced manager with profound knowledge and skill in the relevant field. A founder CEO with a limited labor pool may reduce the firm value because they do not have special abilities as non-professional managers. In particular, since environmental management,

such as carbon emission reduction, requires professional management skills, it is expected that the founder CEO with non-professional abilities will have a negative impact on environmental performance.

Founder CEOs focus on the competitive market environment rather than social goodwill, which may disadvantage stakeholders (Schultz et al., 2001). Likewise, based on the self-interest perspective, some studies argue that founder CEOs emphasize their self-interest rather than CSR (Morck and Yeung, 2004; Laguir and Elbaz, 2014). Furthermore, since founder CEOs have wealth and job stability on average than professional CEOs, they can focus more on personal gains than on firm performance. From this point of view, the founder CEO will focus on management activities for their benefit rather than activities that involve costs, such as social contribution activities. Therefore, founder CEOs are more likely to concentrate on self-interest. As a result, the founder CEOs are expected to have a negative impact on social responsibility performance.

It may not be easy for the founder CEOs to create a good governance structure that can infringe on self-interest. For example, in the case of an increase in the number of outside directors or a board-centered operation, if the transparent governance structure is operated, the management discretion of the founder CEOs is highly likely to decrease. Hence, they exploit firm resources as private profit. Consequently, the founder CEO will have a negative impact on corporate governance performance.

Based on these explanations, it is expected that the founder CEO will have a negative impact on ESG performance, thereby making an incentive to pursue private profit (Jensen and Meckling, 1976). This study establishes the following hypotheses:

*Hypothesis 1:* Firms with founder CEOs are more likely to negatively affect ESG performance than firms with non-founder CEOs.

*Hypothesis 1a:* Firms with founder CEOs are more likely to negatively impact environmental performance than firms with non-founder CEOs.

*Hypothesis 1b:* Firms with founder CEOs are more likely to negatively affect social performance than firms with non-founder CEOs.

*Hypothesis 1c:* Firms with founder CEOs are more likely to negatively affect governance performance than firms with non-founder CEOs.

### ***The effect of growth opportunities on the relationship between founder CEOs and ESG performance***

This study argues that the founder CEOs in firms with high growth opportunities tend to have a high CSR performance. First, Fahlenbrach (2009) documents that the long-run perspective facilitates founder CEOs to pursue the optimal firm value maximization strategy instead of focusing on short-run activities. Abebe and Acharya (2021) suggest that founder CEOs pay more attention to their companies' long-run survival and performance. In this context, they argue that founder CEOs are likelier to have a reduced possibility and frequency of environmental violation. Second, through the strategy approach, Chiang et al. (2019) suggest that CSR actions can be intrinsically a subset of company strategies that help firms capture their growth opportunities since more growth opportunities provide greater economies of scale for investments. As a result, Founder CEO firms with high growth opportunities are associated with high CSR activities and long-term performance. Based on the backdrop, the founder CEOs in firms with higher growth opportunities are more likely to increase their firm value, thereby making more CSR activities.

Accordingly, our hypotheses are as follows:

*Hypothesis 2:* A positive relationship between the founder CEO and ESG performance will exist when high growth opportunities exist.

*Hypothesis 2a:* When growth opportunities are high, a company with a founder CEO will positively affect environmental performance more than a professional CEO.

*Hypothesis 2b:* When growth opportunities are high, a company with a founder CEO will have a more positive effect on social performance than a professional CEO.

*Hypothesis 2c:* When growth opportunities are high, a company with a founder CEO will have a more positive effect on governance performance than a company with a professional CEO.

### ***The effect of foreign ownership on the relationship between founder CEOs and ESG performance***

Increasing companies' foreign ownership is known to affect corporate value positively. This is due to the efficient management monitoring of foreign investors as external supervisors (Pant and Pattanayak, 2007). In particular, management monitoring by foreign investors can play a positive role in ESG performance by controlling the CEO's self-interested management activities. In addition, foreign investors play a very important role in establishing transparent corporate governance (Joh, 2003). From this point of view, an increase in foreign ownership in a company with founder CEOs may increase the incentive for ESG activities to improve firm value. Therefore, in the case of companies with high foreign ownership, the owner CEO is expected to have a positive effect on ESG performance.

*Hypothesis 3:* When foreign ownership is high, there will be a positive effect between the owner CEO and ESG performance.

*Hypothesis 3a:* When foreign ownership is high, a company with an owner CEO will positively affect environmental performance more than a company with a professional CEO.

*Hypothesis 3b:* When foreign ownership is high, a company with an owner CEO will positively affect social performance more than a company with a professional CEO.

*Hypothesis 3c:* When foreign ownership is high, a company with an owner CEO will have a more positive effect on governance performance than a company with a professional CEO.

## **RESEARCH METHODOLOGY**

### ***Data selection***

The data is obtained from the following sources. First, the Bloomberg database is used for financial and ESG performance data. The Bloomberg database includes real-time and historical capital market data, economic data, and all industry and corporate data from around the World. The database extracts annual accounting data of Indian companies. Second, the accounting data of the sample companies are for six years, from 2010 to 2015. The data at the end of the accounting period is collected through each company's financial statements. In particular, collected data is used to investigate whether the CEO is an owner or

professional management. The CEOs and their characteristics were investigated after manually searching individual companies on the Internet. The number of observations in the study is analyzed using unbalanced panel data from 1001 firm years. The total number of firms is 215, including 102 firms with founder CEOs and 113 companies with professional CEOs.

### ***Methodology***

Our study uses the following research methodology. First, as a preliminary analysis, our study investigates the determinants of founder CEOs in Indian firms using a logit regression model. In addition, a t-test is used to examine the different characteristics between the founder and non-founder CEOs. Second, a panel regression model is used to analyze the relationship between CEO characteristics and ESG, as shown in Equation (1). The advantage of the panel regression model lies in the use of panel data. In other words, if panel data is used, the degree of freedom can be increased, and the problem of collinearity between explanatory variables can be solved, thereby improving the efficiency of parameter estimation.

Our study uses the panel fixed effect model (Fahlenbrach, 2009) to interpret results. We perform the Hausman test to decide whether to use a fixed-effects or random-effects model. The p-value is less than 0.05, and the null hypothesis is rejected at the 95% confidence level. Thus, we use the fixed-effects panel regression:

$$\begin{aligned}
 ESG\ performance_{it} &= \beta_{it} + \beta_1 FounderCEOs_{it} + \beta_2 FounderCEOs * MkttoBook\ ratio_{it} \\
 &+ \beta_3 FounderCEOs * ForeignOwn_{it} + \beta_4 SaleGr_{it} + \beta_5 Leverage_{it} \\
 &+ \beta_6 Profitability_{it} + \beta_7 LnAsset_{it} + \beta_8 FirmAGE_{it} + \beta_9 MkttoBook\ ratio_{it} \\
 &+ \beta_{10} R\&D_{it} + \beta_{11} DivPayout_{it} + \beta_{12} ForeignOwn_{it} + u_{it} + e_{it}
 \end{aligned}$$

The dependent variable is ESG performance. ESG data is used as a proxy variable representing ESG performance. As Nolle (2016) suggested, the ESG score has recently been used as a proxy for social responsibility performance. In particular, ESG data uses the ESG disclosure score published by Bloomberg. ESG score is calculated from 0 to 100. Bloomberg's ESG score covers a wide range of data, from carbon dioxide emissions to the number of female executives in the firm. In addition, the ESG score is related to the consumption of financial resources in that it considers the sustainability of a company and the ethical impact of investment (Nolle, 2016). In this study, the ESG score is divided into environmental performance (*Environ*), social performance (*Social*), and governance performance (*Governance*), respectively. The environmental performance reflects whether the company avoids ecological risks such as a complete ecosystem. Examples include carbon emission reduction and product innovation. Social performance measures a company's ability to generate loyalty and trust in its employees, customers, and communities. In particular, social performance reflects a company's reputation and is a major factor determining its ability to generate future value from a long-term perspective. Examples include community contribution, product responsibility, human rights, quality of employment, health and safety, and training. Governance performance measures the ability of the board of directors to regulate management and responsibilities through the creation of corporate systems and processes and the actions of board members from a long-term perspective for shareholders. This measurement includes board function, board structure, compensation policy, and shareholder rights, among others.

As for the independent variable, the CEOs variable is divided into founder and professional management CEOs using the *FounderCEOs* dummy variable. The variable takes a value of one for the founder CEOs and zero for the professional management CEOs. In particular, the founder CEOs are limited to the founder or relatives of the founder. Several control variables include the company's sales growth

rate, leverage, profitability, research and development (R&D), dividend payout ratio, Market-to-book ratio, size, and age.

**SaleGr** is the sales growth rate, and it is measured as [(current year sales – previous year sales)/previous year sales]. **Leverage** is a debt ratio measured by dividing total liabilities by total assets [total liabilities/total assets]. **Profitability** is the total asset operating ratio calculated by dividing operating profit by total assets [operating profit/total assets]. **LnAsset** is a proxy variable representing the size of a company and is obtained by taking the logarithm of the total assets. **FirmAge** is a proxy variable representing the age of a company. **ForeignOwn** represents foreign ownership. In particular, it has a value of one for a company with high foreign ownership and a value of zero otherwise. **R&D** is measured as R&D expenditures divided by total assets. The **dividend payout ratio** is computed by dividend divided by net income.

The **market-to-book ratio** is the book value of total assets minus the book value of equity plus the market value divided by the book value of total assets. This variable is typically used to indicate growth opportunities. In addition, our study includes the interaction terms to investigate the effect of growth opportunities and foreign ownership on the link between founder CEOs and ESG performance. In particular, it uses the interaction term (*Founder CEOs* × *Market-to-Book ratio*) to explore the effect of growth opportunities on the link between founder CEOs and ESG performance. Further, the interaction term (*founder CEOs* × *foreign ownership*) is used to explore the effect of foreign ownership on the link between founder CEOs and ESG performance.

## EMPIRICAL RESULTS

### Summary of statistics

Table 1 shows the summary statistic values of each variable using the entire company as a sample. The mean values of the dependent variables *ESG*, *Environ*, *Social*, and *Governance* are 19.28, 13.03, 15.54, and 45.98, respectively. These show that the ESG performance of the sample companies is rather low. In particular, the Governance index is the highest among the ESG indexes. On the other hand, the average value of *SaleGr* is 0.19 (19 percent), indicating that the sample has a high sales growth rate. The average value of *Leverage* is 0.20, which shows a low level of debt-to-equity ratio, and the average value of *Profitability* is 0.08 (about 8 percent), indicating that the total asset operating profit ratio is rather high. In particular, the average value of *FirmAge* is 42 years. The average market-to-book value, foreign ownership, and dividend payout ratios are 0.77, 0.19, and 0.48, respectively.

**Table 1. Summary of statistics**

This table summarizes variables, including performance measures and firm-specific control variables.

<i>Variables</i>	<i>Obs.</i>	<i>Mean</i>	<i>Median</i>	<i>Std.Dev.</i>	<i>Min.</i>	<i>Max.</i>	25	50	75
ESG	1001	19.28	17.77	8.37	9.09	50.83	14.46	17.77	20.66
Environ	834	13.03	10.85	9.23	1.55	51.94	8.53	10.85	14.73
Social	777	15.54	12.28	12.78	3.13	67.19	5.26	12.28	18.42
Governance	1001	45.98	44.64	5.63	10.71	67.86	44.64	44.64	48.21
SalesGr	996	0.19	0.12	0.52	-1.00	9.34	0.02	0.12	0.24

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Leverage	1001	0.20	0.17	0.16	0.00	0.83	0.07	0.17	0.31
Profitability	1001	0.08	0.08	0.06	-0.13	0.44	0.04	0.08	0.12
R&D	1001	0.00	0.00	0.01	0.00	0.09	0.00	0.00	0.00
DivPayout	1001	0.48	0.18	3.85	0.00	109.88	0.08	0.18	0.28
LnAsset	1001	10.71	10.62	1.67	6.90	15.67	9.47	10.62	11.79
FirmAge	999	41.91	31.00	28.59	2.00	155.00	23.00	31.00	55.00
Market-to-book ratio	1001	0.77	0.50	0.72	0.02	5.06	0.25	0.50	1.09

**Correlation analysis**

Table 2 shows how each variable is correlated with the ESG with the Pearson correlation coefficient. *Environ*, *Social*, and *Governance* variables show the highest correlation with the *ESG* of 0.94, 0.84, and 0.60, respectively, indicating that they all had positive (+) correlation coefficient values. However, this is unsurprising as *environmental*, *social*, and *governance* are subcategories of overall *ESG* measures. We use each of them separately as our dependent variable.

Similarly, the correlation coefficients between the *ESG*, *SalesGr*, and *Leverage* are -0.04 and -0.01, respectively. Finally, *ESG* is positively related to all the remaining variables, with the highest correlation of 0.39 with *LnAsset*. Among independent variables, the highest correlation is between *Market-to-book ratio* and *Profitability* (0.48). The correlation analysis shows that overall, the correlation between variables is low, and the multicollinearity problem does not appear to occur.

**Table 2. Correlation analysis**

This table provides a correlation analysis of the variables used.

	<i>ESG</i>	<i>Environ</i>	<i>Social</i>	<i>Governance</i>	<i>SalesGr</i>	<i>Leverage</i>	<i>Profitability</i>	<i>R&amp;D</i>	<i>Div Payout</i>	<i>LnAsset</i>	<i>Firm Age</i>	<i>Market-to-book ratio</i>
<b>ESG</b>	1											
<b>Environ</b>	0.94**	1										
<b>Social</b>	0.84**	0.66**	1									
<b>Governance</b>	0.60**	0.60**	0.50**	1								
<b>SalesGr</b>	-0.04	0.02	-0.02	0.02	1							
<b>Leverage</b>	-0.01	0.04	0.02	0.12**	0.03	1						
<b>Profitability</b>	0.04	0.08*	-0.04	0.07*	0.06	-0.37**	1					
<b>R&amp;D</b>	0.04	0.09**	0.05	0.02	-0.03	-0.19**	0.18**	1				
<b>DivPayout</b>	0.11**	0.10**	0.08*	0.10**	-0.02	0.02	-0.05	-0.02	1			
<b>LnAsset</b>	0.39**	0.37**	0.54**	0.32**	0.03	0.39**	-0.29**	-0.05	0.04	1		
<b>FirmAge</b>	0.11**	0.038	0.11**	0.014	-0.03	0.01	-0.13**	-0.02	0.08*	0.01	1	

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Market-to-book ratio	0.05	.108**	0.11**	0.10**	0.02	-0.43**	0.48**	0.29**	-0.04	-0.19**	-0.06*	1
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Notes: Significant at \* p<0.05 (t >. 1.96), \*\*p<0.01 (t>. 3.29).

### Preliminary analysis

#### *Determining factors of founder CEOs*

In this section, our study investigates which firms in India choose the founder CEO instead of the professional CEO. To achieve it, we perform a logit regression using financial variables. Table 3 shows logit regression results for the dependent variables, founder CEOs. The coefficient of *SaleGr* is -0.21 and statistically insignificant. Among the statistically significant variables, *Leverage*, *LnAge*, and *ForeignOwn* have positive coefficients of 1.81, 0.24, and 0.54, respectively. They are statistically significant at a 1 percent level, suggesting that younger firms tend to have founder CEOs.

Furthermore, it implies that firms with financial distress and a higher proportion of foreign ownership tend to hold founder CEOs. The coefficients of *LnAsset* and *Market-to-book ratio* are negative and statistically significant at a 1 percent level, supporting the notion that smaller firms and firms with lower growth opportunities are inclined to have founder CEOs. The coefficient of R&D is positive and statistically insignificant. Meanwhile, the coefficient (-0.39, -6.84 [t-statistics]) of *LnAsset* is negative and statistically significant at the 1 percent level, indicating that small firms are inclined to have founder CEOs.

The results imply that firms with high leverage, small firms, older firms, firms with low growth opportunities, and firms with high foreign ownership prefer to hold a founder CEO instead of a professional CEO in India.

**Table 3. Determinants of founder CEOs**

This table reports the determinants of founder CEOs using the firm-specific control variables. A logit regression model is employed.

<i>Variables</i>	<i>Founder CEOs</i>
C	3.38*** (4.56)
SalesGr	-0.21 (-1.40)
Leverage	1.81*** (3.39)
Profitability	0.15 (0.10)
R&D	3.59

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	(0.69)
LnAsset	-0.39***
	(-6.84)
LnAge	0.24**
	(2.21)
Market-to-book ratio	-0.51***
	(-3.90)
ForeignOwn	0.54***
	(2.87)
Industry effect	Yes
Pseudo. R squared	0.07

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Notes: Significant at \*  $p < 0.1$  ( $t > 1.64$ ), \*\*  $p < 0.05$  ( $t > 1.96$ ), \*\*\*  $p < 0.01$  ( $t > 3.29$ ).

*Comparison between founder CEOs and non-founder CEOs*

This section examines whether the means of variables differ significantly between founder and non-founder CEOs. We perform a parametric t-test to compare the means of both groups. To this end, we divide the sample into two groups: Founder and non-founder CEOs. Table 4 reports the results of comparing the ESG performance and financial characteristics of companies with founder CEOs and non-founder CEOs. The average ESG disclosure score for firms with founder CEOs is 18.29, significantly lower than 20.22 for non-founder CEOs. The average disclosure scores of *Environ*, *Social*, and *Governance* for firms with founder CEOs are 11.66, 13.22, and 45.49, significantly lower than 14.39, 17.85, and 46.45 for non-founder CEOs, respectively. Interestingly, among *Environ*, *Social*, and *Governance*, the disclosure score of *Social* reveals the highest difference, indicating that firms with founder CEOs have lower financial resources than those with non-founder CEOs. The results are similar to the results of group firms and non-group firms in India (Kim and Oh, 2019).

In addition, the average *Leverage* for firms with founder CEOs is 0.24, significantly higher than 0.19 for firms with non-founder CEOs. The average *Profitability* for firms with founder CEOs is 0.08, significantly lower than 0.09 for firms with non-founder CEOs. The results imply that firms with founder CEOs have higher financial distress. The average *LnAsset* for firms with founder CEOs is 10.53, significantly lower than 10.89 for non-founder CEOs, suggesting that firms with founder CEOs have smaller firms. Meanwhile, the average *Market-to-book ratio* for firms with founder CEOs is 0.67, significantly lower than 0.87 for firms with non-founder CEOs, suggesting that firms with founder CEOs hold lower growth opportunities than those with non-founder CEOs. The average foreign ownership for firms with founder CEOs is 0.22, significantly higher than 0.18 for non-founder CEOs.

Furthermore, firms with founder CEOs have insignificantly higher dividend payouts and are older than firms with non-founder CEOs. Firms with founder CEOs have lower sales growth and research and development expenses than those with non-founder CEOs, but the differences are statistically insignificant. Putting it all together, it shows that firms with founder CEOs have relatively lower ESG performance, lower growth opportunities, and smaller firm size compared to firms with non-founder CEOs.

**Table 4. Comparison between founder CEOs and non-founder CEOs**

This table compares performance measures and firm-specific control variables for founder and non-founder CEOs groups.

	Firms with founder CEOs			Firms with non-founder CEOs			Difference Tests <i>p-value</i>	
	<i>N</i>	<i>Mean</i>	<i>Median</i>	<i>N</i>	<i>Mean</i>	<i>Median</i>	<i>t-test</i>	<i>Mann-Whitney U test</i>
ESG	487	18.29	17.36	514	20.22	17.77	0.00	0.02
Environ	415	11.66	10.85	419	14.39	11.63	0.00	0.00
Social	388	13.22	8.77	389	17.85	12.28	0.00	0.00
Governance	487	45.49	44.64	514	46.45	44.65	0.01	0.00
SalesGr	487	0.16	0.14	509	0.21	0.11	0.17	0.04
Leverage	487	0.21	0.18	514	0.19	0.14	0.07	0.00
Profitability	487	0.08	0.07	514	0.09	0.08	0.01	0.08
R&D	487	0.01	0.00	514	0.01	0.0001	0.15	0.00
DivPayout	487	0.52	18.68	514	0.44	16.98	0.76	0.34
LnAsset	487	10.53	10.35	514	10.89	10.83	0.00	0.00
FirmAge	486	42.30	32.00	513	41.53	30.00	0.67	0.05
Market-to-book ratio	487	0.67	0.42	514	0.87	0.58	0.00	0.00
ForeignOwn	487	0.22	0.00	508	0.18	0.00	0.19	-

Notes: Significant at \*  $p < 0.1$  ( $t > 1.64$ ), \*\*  $p < 0.05$  ( $t > 1.96$ ), \*\*\*  $p < 0.01$  ( $t > 3.29$ ).

### ***The relationship between founder CEOs and ESG performance***

This section examines the influence of founder CEOs on ESG performance. Table 5 shows the results of fixed-effects panel regressions estimating Equation (1), where the dependent variable is *Founder CEOs*. The use of a fixed effect estimation is determined after applying the Hausman test.

Columns (1) and (2) show the estimation results for overall ESG scores using 1,001 observations with 215 firms. The remaining columns (3 through 8) report the regression results based on three sub-components, namely disclosure scores of environmental in columns (3) and (4) (*Environmental*), disclosure scores of social in Column (5) and (6) (*Social*), and disclosure scores of governances in Column (7) and (8) (*Governance*).

All models are statistically significant, and the *Adjusted R<sup>2</sup>* is typically between 0.01 and 0.27. Based on the full sample, Column (1) of Table 5 shows that founder CEOs have a statistically significant negative relationship with ESG at the 1 percent level (−3.69). The firm's financial characteristics may drive the effect of having a relationship with the *Founder CEOs*. Column (2) of Table 5 continues to hold after controlling for these characteristics. It shows that founder CEOs have a statistically significant negative relationship with ESG at the 5 percent level (−2.06). Hence, Indian firms with founder CEOs tend to reduce ESG performance compared to non-founder CEOs, supporting *Hypothesis 1a*. In addition, this empirical result is somewhat similar to the results of Laguir and Elbaz (2014), Jiraporn and Chintraker (2013), and Chu et al. (2022).

The control variables, *profitability*, *LnAsset*, *FirmAge*, and *market-to-book ratio*, show a significant positive sign, whereas *leverage* reveals a negative sign. These findings indicate that the lower the operating profit, the larger the firm size, the older the firm age, the higher the growth opportunities, and the lower leverage, the higher the ESG performance.

Columns (3) and (4) of Table 5 present the results on the link between founder CEOs and disclosure scores of environmental, respectively. They show that firms with founder CEOs are associated with lower environmental disclosure scores, regardless of whether the models add control variables. Thus, Indian firms with founder CEOs tend to reduce environmental performance compared to non-founder CEOs, supporting *Hypothesis 1b*. Likewise, Columns (5) and (6) of Table 5 present the results on the link between founder CEOs and disclosure scores of social, respectively. They show that firms with founder CEOs are associated with lower social disclosure scores. Thus, Indian firms with founder CEOs tend to reduce social performance compared to non-founder CEOs, supporting Hypothesis 1c. Columns (7) and (8) of Table 5 present the results on the link between founder CEOs and disclosure scores of governances, respectively. Columns (7) of Table 5 show that firms with founder CEOs are associated with lower disclosure scores of environmental. However, Columns (8) of Table 5 show that founder CEOs have a statistically insignificant negative relationship with ESG, inconsistent with *Hypothesis 1c*.

**Table 5. The relationship between founder CEOs and ESG performance using the fixed effect model**

This table reports the impact of founder CEOs and other control variables on the firm's *ESG*, *Environmental*, *Social*, and *Governance* performance. The results are interpreted using the panel fixed effect model (Fahlenbrach, 2009).

Variables	ESG		Environmen tal		Social		Governance	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
C	20.22***	−18.37** *	14.37***	−19.96** *	17.90***	−38.25***	46.44***	29.28***
	(55.18)	−(7.30)	(32.33)	−(6.35)	(28.35)	−(9.37)	(188.28)	(16.10)
Founder CEOs	−1.94***	−1.01**	−2.69***	−1.66***	−4.73*	−2.38***	−0.95***	−0.26
	−(3.69)	−(2.06)	−(4.27)	−(2.75)	−(5.29)	−(3.05)	−(2.68)	−(0.73)

SalesGr		-0.40		0.23		-0.78		-0.21
		-(0.83)		(0.38)		-(0.74)		-(0.61)
Leverage		-5.20***		0.15		-4.90		2.75**
		-(2.83)		(0.06)		-(1.56)		(2.07)
Profitability		18.37***		19.87***		18.16***		17.81***
		(3.67)		(3.25)		(2.27)		(4.92)
R&D		27.66		78.14*		86.51*		-8.02
		(0.93)		(1.91)		(1.86)		-(0.37)
DivPayout		0.23***		0.22***		0.21**		0.13***
		(3.86)		(3.26)		(2.47)		(3.01)
LnAsset		2.59***		2.32***		4.08***		1.28**
		(13.96)		(9.95)		(13.75)		(9.53)
FirmAge		1.83***		1.03**		1.57**		0.25
		(4.97)		(2.17)		(2.56)		(0.95)
Market-to-book ratio		0.79*		1.29**		2.87***		0.75**
		(1.81)		(2.25)		(3.91)		(2.37)
ForeignOwn		-0.56		0.36		1.67		0.49
		-(0.89)		(0.44)		(1.60)		(1.06)
Fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R squared	0.01	0.272	0.03	0.134	0.22	0.06	0.01	0.16
# of Obs	1,001	1,001	1,001	1,001	1,001	1,001	1,001	1,001
# of Firms	215	215	215	215	215	215	215	215

Notes: Significant at \*  $p < 0.1$  ( $t > 1.64$ ), \*\*  $p < 0.05$  ( $t > 1.96$ ), \*\*\*  $p < 0.01$  ( $t > 3.29$ ).

### *The effect of growth opportunities on the relationship between founder CEOs and ESG performance*

This section examines how growth opportunities affect the relationship between founder CEOs and ESG performance. We use an interaction term (*Founder CEOs* × *Market-to-book ratio*) to explore the effect of growth opportunities on the link between founder CEOs and ESG performance. Table 6 shows the empirical results of fixed effect panel regressions to test hypothesis 2. Like the model of Table 5, Column (1) is our panel regression model. The remaining columns are run based on three sub-components, which are disclosure scores of environmental (*Environmental*) in Column (2), disclosure scores of social (*Social*) in Column (3), and disclosure scores of governances (*Governance*) in Column (4). Column (1) of Table 6 shows that the interaction term has a statistically significant negative relationship with ESG at the 5% level (-2.50). Thus, when a firm's growth opportunities increase, Indian firms with founder CEOs are more likely to decrease ESG performance than firms with non-founder CEOs, supporting *Hypothesis 2a*.

Column (2) of Table 6 reveals that the interaction term has a statistically significant negative relationship with ESG at the 1% level (-2.73), which is associated with lower disclosure scores of environmental. Thus, when a firm's growth opportunities increase, Indian firms with founder CEOs tend to reduce environmental performance compared to firms with non-founder CEOs, supporting *Hypothesis 2b*. Likewise, columns (3) of Table 6 present the results that interaction term has a statistically insignificant negative relationship with *Social*, which is not associated with lower disclosure scores of social, inconsistent with *Hypothesis 2c*. Column (4) of Table 6 shows that the interaction term has a statistically significant negative relationship with *Governance* at the 10 percent level (-1.69), which is associated with lower disclosure scores of governance, consistent with *Hypothesis 2c*.

**Table 6. The effect of growth opportunities on the relationship between founder CEOs and ESG performance using the fixed effect model**

This table reports the effect of growth opportunities on the relationship between founder CEOs and ESG, *Environmental, Social, and Governance* performance. The results are interpreted using the panel fixed effect model (Fahlenbrach, 2009).

<i>Variables</i>	<i>ESG</i>	<i>Environ</i>	<i>Social</i>	<i>Governance</i>
	(1)	(2)	(3)	(4)
C	-18.90*** (-7.50)	-20.89*** (-6.64)	-38.56*** (-9.35)	29.02*** (15.91)
Founder CEOs× Market-to-book ratio	-1.72** (-2.50)	-2.52*** (-2.73)	-0.63 (-0.55)	-0.85* (-1.69)
Founder CEOs	0.25 (0.36)	0.05 (0.06)	-1.92* (-1.71)	0.36 (0.70)
Salesgr	-0.40 (-0.83)	0.22 (0.37)	-0.78 (-0.75)	-0.21 (-0.61)
Leverage	-5.16*** (-2.82)	0.17 (0.07)	-4.89 (-1.56)	2.77** (2.08)
Profitability	18.49*** (3.70)	20.00*** (3.28)	18.31** (2.29)	17.87*** (4.94)
R&D	27.37 (0.92)	72.52* (1.78)	85.81* (1.84)	-8.16 (-0.38)
DivPayout	0.23*** (3.77)	0.21*** (3.13)	0.21** (2.44)	0.13*** (2.94)
LnAsset	2.57*** (13.87)	2.29*** (9.88)	4.07*** (13.71)	1.27*** (9.46)
FirmAge	1.90*** (5.16)	1.18** (2.47)	1.62*** (2.61)	0.29 (1.08)
Market-to-book ratio	1.39*** (2.80)	2.21*** (3.33)	3.10*** (3.67)	1.04*** (2.89)
ForeignOwn	-0.56 (-0.88)	0.24 (0.29)	1.64 (1.57)	0.49 (1.07)
Fixed effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Adj. R squared	0.28	0.23	0.38	0.17

Notes: Significant at \*  $p < 0.1$  ( $t > 1.64$ ), \*\*  $p < 0.05$  ( $t > 1.96$ ), \*\*\*  $p < 0.01$  ( $t > 3.29$ ).

*The effect of foreign ownership on the relationship between CEO and ESG performance*

This section examines how foreign ownership affects the relationship between founder CEOs and ESG performance by including the interaction term (Founder CEOs  $\times$  Foreign Ownership) in the analysis. Table 7 shows the empirical results of fixed effect panel regressions to test hypothesis 3. As such, Column (1) of Table 7 is our panel regression model. The remaining columns are divided into three sub-components, which are *Environmental* in Column (2), *Social* in Column (3), and *Governance* in Column (4).

Interestingly, Column (1) of Table 7 shows that the interaction term has a statistically significant positive relationship with ESG at the 5 percent level ( $-2.50$ ). Hence, when a firm's foreign ownership increases, Indian firms with founder CEOs tend to increase ESG performance compared to firms with non-founder CEOs, supporting Hypothesis 3a.

Column (2) of Table 7 shows that the interaction term has a statistically significant positive relationship with Environmental at the 1 percent level ( $-3.67$ ), associated with higher environmental disclosure scores. Thus, when a firm's foreign ownership increases, Indian firms with founder CEOs tend to enhance environmental performance compared to non-founder CEOs, supporting Hypothesis 3a. However, Column (3) of Table 6 presents the results that the interaction term has a statistically insignificant positive relationship with Social, which is not associated with lower disclosure scores of social, inconsistent with *Hypothesis 3b*. Column (4) of Table 7 shows that the interaction term has a statistically significant positive relationship with *Governance* at the 1 percent level ( $2.43$ ), which is associated with higher disclosure scores of governance, consistent with *Hypothesis 3c*.

**Table 7. The effect of foreign ownership on the relationship between founder CEOs and ESG performance using the fixed effect model**

This table reports the effect of foreign ownership on the relationship between founder CEOs and ESG, *Environmental*, *Social*, and *Governance* performance. The results are interpreted using the panel fixed effect model (Fahlenbrach, 2009).

<i>Variables</i>	<i>ESG</i> (1)	<i>Environ</i> (2)	<i>Social</i> (3)	<i>Governance</i> (4)
C	-18.36*** (-7.34)	-19.67*** (-6.31)	-38.03*** (-9.32)	29.29*** (16.16)
Founder CEOs $\times$ ForeignOwn	4.21*** (3.50)	5.72*** (3.67)	3.05 (1.52)	2.43*** (2.78)
Founder CEOs	-1.81*** (-3.36)	-2.64*** (-4.03)	-2.91*** (-3.41)	-0.72* (-1.85)
SalesGr	-0.40 (-0.84)	0.15 (0.25)	-0.79 (-0.76)	-0.22 (-0.62)
Leverage	-5.15*** (-2.82)	-0.58 (-0.23)	-5.20* (-1.66)	2.78** (2.10)
Profitability	19.61*** (3.93)	20.60*** (3.39)	18.49** (2.32)	18.52*** (5.12)

DO FOUNDER CEOS MATTER IN ESG PERFORMANCE?

R&D	25.32 (0.86)	72.76 (1.79)	85.02* (1.83)	-9.37 (-0.44)
DivPayout	0.23*** (3.85)	0.22*** (3.22)	0.21** (2.44)	0.13*** (2.99)
LnAsset	2.64*** (14.29)	2.36*** (10.20)	4.09*** (13.79)	1.31*** (9.77)
FirmAge	1.82*** (4.98)	1.13** (2.38)	1.65*** (2.67)	0.25 (0.94)
Market-to-book ratio	0.71 (1.64)	1.25** (2.19)	2.83*** (3.85)	0.70** (2.23)
ForeignOwn	-2.87*** (-3.14)	-2.79** (-2.36)	-0.02 (-0.01)	-0.84 (-1.27)
Fixed effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Adj. R squared	0.28	0.23	0.38	0.17

Notes: Significant at \*  $p < 0.1$  ( $t > 1.64$ ), \*\*  $p < 0.05$  ( $t > 1.96$ ), \*\*\*  $p < 0.01$  ( $t > 3.29$ ).

*Robustness check*

This section tests the robustness of the above results. The panel fixed effect model may suffer from endogeneity problems. As a result, Arellano and Bond's (1991) Panel GMM is included in our analysis to account for endogeneity problems. In Table 8, we report a GMM estimation for the relationship between founder CEOs and ESG performance. In Panel A of Table 8, the relationship between founder CEOs shows significantly negative relationships with ESG performance, respectively, confirming the above results in Table 5. Furthermore, in Panel B of Table 8, the effect of growth opportunities on the relationship between founder CEOs and ESG performance presents significantly negative relationships with ESG performance, respectively, confirming the above results in Table 6.

In Panel C of Table 8, the effect of foreign ownership on the relationship between founder CEOs and ESG performance shows significantly positive relationships with ESG performance, confirming the above results in Table 7.

**Table 8. Robustness check on the relationship between founder CEOs, growth opportunities, and ESG performance using the panel GMM model**

This table reports the results of our robustness check on the relationship between founder CEOs, growth opportunities, and *ESG*, *Environmental*, *Social*, and *Governance* performance. Arellano and Bond (1991) Panel GMM is used in our analysis to account for endogeneity problems.

*Panel A. The relationship between founder CEOs and ESG performance*

<i>Variables</i>	<i>ESG</i> (1)	<i>Environ</i> (2)	<i>Social</i> (3)	<i>Governance</i> (4)
C	-18.25***	-19.96***	-38.25***	29.36***

	-(7.24)	-(6.35)	-(9.37)	(16.11)
Founder CEOs	-1.01**	-1.66***	-2.38***	-0.26
	-(2.06)	-(2.75)	-(3.05)	-(0.74)
SalesGr	-0.33	0.23	-0.78	-0.17
	-(0.67)	(0.38)	-(0.74)	-(0.47)
Leverage	-5.36***	0.15	-4.90	2.64**
	-(2.90)	(0.06)	-(1.56)	(1.98)
Profitability	18.17***	19.87***	18.16**	17.67***
	(3.62)	(3.25)	(2.27)	(4.87)
R&D	27.73	78.14*	86.51*	-7.98
	(0.93)	(1.91)	(1.86)	-(0.37)
DivPayout	0.23***	0.22***	0.21**	0.13***
	(3.86)	(3.26)	(2.47)	(3.01)
LnAsset	2.60***	2.32***	4.08***	1.28***
	(13.98)	(9.95)	(13.75)	(9.55)
FirmAge	1.79***	1.03**	1.57**	0.23
	(4.86)	(2.17)	(2.56)	(0.86)
Market-to-book ratio	0.77*	1.29**	2.87***	0.73**
	(1.77)	(2.25)	(3.91)	(2.33)
ForeignOwn	-0.54	0.36	1.67	0.50
	-(0.85)	(0.44)	(1.60)	(1.10)
Fixed effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Adj. R squared	0.27	0.22	0.38	0.17

Notes: Significant at \*  $p < 0.1$  ( $t > 1.64$ ), \*\*  $p < 0.05$  ( $t > 1.96$ ), \*\*\* $p < 0.01$  ( $t > 3.29$ ).

In addition, this research performs propensity score matching (PSM) to check the difference between the founder and non-founder CEOs. PSM provides a robust and reliable control sample for estimating the effect of founder CEOs if the ESG and financial characteristics variables are balanced between the founder and non-founder CEOs. Specifically, the balancing property means that the control group generated by PSM has a distribution of covariates analogous to that in the treated group. Table 8 shows the mean values of founder and non-founder CEOs in the PSM sample and the results of a t-test on the mean value differences of the variables of the two groups. After matching, the differences in means are significantly reduced, supporting the results reported in Table 4.

## SUMMARY AND CONCLUSION

This study analyzes how the founder CEOs affect ESG performance for listed Indian firms using panel regression from 2010 to 2015. Our main results are as follows. First, firms with founder CEOs have a negative impact on ESG performance. This empirical result is similar to the results of Laguir and Elbaz

(2014), Jiraporn and Chintraker (2013), and Chu et al. (2022). Second, the joint effect of growth opportunities between the founder CEOs and ESG performance negatively impacts ESG performance. This is in line with Chiang et al. (2019). The joint effect of foreign ownership between the founder CEOs and ESG performance positively impacts ESG performance. This finding is similar to Pant and Pattanayak (2007) and Joh (2003). The implication suggests that developing and implementing ESG policies requires special expertise, and firms with founder CEOs should not rely on their knowledge in developing proper ESG policies but rather consider getting more professional help. The findings also imply that firms with higher foreign ownership may benefit from the ownership of foreign companies and may signal more effective ESG policies and implementations in place. The limitations of this study are as follows. First, data collection is limited to investor types for listed companies in India. Collecting more data, the research can be expanded into ESG performance according to investor type. Second, since this study only targets Indian listed companies, comparing founder CEOs and ESG performance of other emerging countries will be very meaningful. Third, our model used a static panel model, and a dynamic model may be more appropriate.

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# TRADE AND ENERGY CONSUMPTION: A COMPARATIVE APPROACH BETWEEN THE OECD AND WESTERN BALKAN COUNTRIES

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## ABSTRACT

*This study is designed to examine the dynamics between trade (TR) and energy consumption (EC) by employing a comparative analysis across 38 OECD countries and 6 Western Balkan countries, spanning a period of 13 years from 2010 to 2022. The selection of this topic was strategically made to understand the interplay between trade activities and the adoption of renewable energy within the context of sustainable economic growth. In terms of methodology, the research utilizes advanced econometric techniques, including Ordinary Least Squares (OLS), Fixed Effects (FE), and Random Effects (RE) panel regression models. These methods are applied to meticulously sourced secondary data from the Global Economy Database and the World Bank database, ensuring a comprehensive and robust analysis. This investigation into the trade–energy consumption nexus, particularly in the context of the economic differences between OECD and Western Balkan countries, seeks to address and fill a notable gap in the existing academic literature. Through this comparative approach, the study aims to offer nuanced insights into how trade influences energy consumption patterns differently in these two groups of countries, thereby contributing valuable perspectives to the discourse on sustainable economic development. The econometric model reveals that the impact of trade on energy use is higher in OECD countries ( $B = 22.33$ ) compared to the Western Balkans ( $B = 9.63$ ), both of which are statistically significant at the 1% significance level. Results from an ANOVA analysis indicate significant differences in energy use between Western Balkan and OECD countries. With a highly significant  $p$ -value of 0.000, we conclude that there are statistically significant variations in energy consumption between these countries.*

**Keywords:** *Sustainable energy consumption; trade; economic growth; inflation.*

**JEL CLASSIFICATION :** *F18 ; Q43 ; Q56*

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## **INTRODUCTION**

Understanding the relationship between trade activities and energy consumption is critical in the context of global economic interdependence and environmental sustainability. The OECD, consisting of high-income economies, has established frameworks for energy efficiency and sustainability through significant investments in renewable technologies and stringent regulations (OECD, 2020). In contrast, the Western Balkan countries, which are working towards EU integration, face challenges in balancing economic growth with sustainable energy practices due to varying infrastructural development and regulatory frameworks (European Commission, 2021; World Bank, 2018). Trade influences energy consumption through the movement of goods and services, with OECD countries typically having lower energy intensity per unit of output compared to the Western Balkan countries, which focus more on primary and semi-finished goods (UNCTAD, 2019; Energy Community, 2020). Studies have shown that energy consumption is closely linked to economic growth and trade, with evidence from various regions including the Middle East, South Mediterranean countries, and BRIC countries highlighting the importance of sustainable energy practices in promoting economic development (Sadorsky, 2011; Kahouli, 2018; Pao & Tsai, 2010). Furthermore, research indicates that renewable energy consumption can positively impact economic growth, emphasizing the need for policy frameworks that support green energy transitions (Bhattacharya et al., 2016; Saidi & Hammami, 2015).

Understanding the interplay between trade and energy consumption in OECD and Western Balkan countries highlights the importance of tailored energy policies and sustainable trade practices to promote economic growth and environmental sustainability. Both regions can learn from each other's experiences to develop more efficient and environmentally friendly energy systems. By examining these dynamics, this study aims to provide insights for policymakers to promote sustainable trade practices and enhance energy efficiency, contributing to global efforts to combat climate change.

The structure of this paper is systematically organized into six distinct sections. The first section serves as the introduction, where we emphasize key aspects and important features relevant to the topic at hand. Following this, the second section delves into the literature review, providing a comprehensive overview of existing research and findings pertinent to our study. The third section is dedicated to the methodology, where we detail the specification of the model employed and the data utilized in our sample. Regarding the methodology, the fourth section presents the results derived from applying various econometric models to our data. The fifth section encompasses the discussion, where we interpret and contextualize the results within the broader framework of our research topic. Finally, the sixth and concluding section synthesizes the key findings and insights gleaned from our research, offering conclusions and potential implications of the study.

This study is primarily driven by the observation that there are limited investigations into how economic factors influence sustainable energy consumption. A distinguishing feature of our research lies in its unique methodology, the specific period considered, the variables included in the sample, and the comparative approach we have adopted between two distinct sets of countries. These aspects collectively define the novelty of our study. Consequently, our research aims to bridge a gap in the existing literature, offering new insights and perspectives on the relationship between economic factors and sustainable energy consumption. This endeavor not only contributes to the academic discourse but also provides practical implications for policy-making and future research in this field.

## **LITERATURE REVIEW**

Exploring the relationship between trade and energy consumption has been an area of significant academic interest, yet it presents notable gaps in existing literature. This body of research unveils a complex interplay of factors influencing the outcomes of studies in this field. Economic conditions, for instance, play a pivotal role; as economies grow and expand their trade frontiers, their energy consumption patterns often shift to accommodate increased industrial activity, transportation, and services that are intrinsic to trade operations. The relationship between trade and energy consumption differs markedly between OECD and Western Balkan countries. In OECD countries, economic growth initially increases energy consumption but is later mitigated by advancements in technology and stringent environmental policies, leading to greater energy efficiency (Grossman & Krueger, 1991; Ang & Zhang, 2000). These countries benefit from well-established regulatory frameworks and substantial investments in renewable energy, which help decouple economic growth from energy consumption over time (Cole, 2006). As these countries progress, the adoption of energy-efficient technologies and practices, coupled with strong environmental regulations, results in a more sustainable economic model that balances growth with environmental concerns. Conversely, Western Balkan countries, still in economic transition, heavily rely on outdated infrastructure, resulting in a strong positive correlation between GDP growth and energy consumption (Mikulić et al. 2015; Štreimikienė & Mikalauskienė, 2016).

Moreover, the global shift towards a more interconnected economy has heightened the importance of understanding these dynamics. International trade not only involves the exchange of goods and services but also entails significant energy use through transportation, production, and the operation of supply chains. As such, the environmental implications of trade, including its contribution to global energy demand and greenhouse gas emissions, have become areas of critical concern. The comparative analysis of trade and energy consumption between OECD and Western Balkan countries reveals distinct patterns influenced by their respective economic structures, geopolitical positions, and development strategies. Topcu & Payne (2018) suggest that the impact of trade on energy consumption varies with different stages of economic development. Additionally, trade can stimulate innovation in energy efficiency, as firms engaged in export activities invest more in innovation, thereby improving their environmental performance (He & Huang, 2021). Additionally, (Dogan, 2016) estimated the relationship between energy consumption, trade, and economic growth in Belgium, and the study confirmed the existence of a long-run relationship between selected variables to obtain sustainable long-run economic growth; moreover, the author highlighted that Belgium should promote energy consumption and trade through appropriate policies. Some other studies examined the impact of energy consumption and economic growth. Apergis & Payne (2009) emphasized a present cointegration between real GDP, energy consumption, the labor force, and real gross fixed capital formation, with the respective coefficients positive and statistically significant. Renewable energy consumption should contribute to economic growth, and secondly, it should not cause damage to the environment (Yildirim, Saraç & Aslan, 2012).

Gozgor, Lau & Lu (2018) analyzed the effects of renewable and non-renewable energy consumption, and their findings indicate a positive association with a higher rate of economic growth. Encouraging the use of renewable energy has advantages for both the environment and the countries' economies (Inglesi-Lotz, 2016).

Further, Beka et al. (2024) in their findings indicated that trade and economic growth positively influence green growth in Western Balkan Countries, while in OECD countries, trade has negative effects on green growth. (Bilalli et al. 2024) quantified the extent to which increasing the use of renewable energy sources can mitigate the environmental impact of energy consumption. Policies to reduce energy consumption aimed at reducing emissions are likely to have a greater impact on the GDP of the developed rather than the developing world (Chontanawat, Hunt, & Pierse, 2008). Political regimes also have major impacts on both energy efficiency and value-added trade (Yao et al., 2021). Renewable and non-renewable energy consumption and trade positively and significantly impact economic growth (Ben Jebli & Ben Youssef, 2013).

Despite these positive aspects, trade also contributes to the displacement of environmental pressures, as seen in the increasing externalization of energy consumption-related impacts (Wood et al., 2018). Therefore, while trade can facilitate transitions to sustainable energy, it also poses challenges that require careful policy consideration to ensure environmental sustainability.

In the aspect of comparative Insights, OECD countries exhibit a more direct impact of international trade on energy consumption and environmental outcomes, with trade openness contributing to pollution and energy use, especially in transportation. In contrast, the Western Balkan countries' trade and energy consumption dynamics are heavily influenced by their economic growth, trade openness, and natural gas resources. Their strategic location for energy transit and potential for renewable energy development are key factors differentiating their energy consumption patterns from OECD countries. Both regions show that trade and energy consumption are closely intertwined with economic growth, but the Western Balkans face unique challenges and opportunities due to their transitional economies and evolving trade relations, especially with the EU. Pijalović & Kapo (2017) challenged the notion that energy efficiency is only relevant for developed countries, arguing that Western Balkan countries, despite being non-OECD members with lower per capita energy consumption, could greatly benefit from energy efficiency projects. Following a thorough examination of many literary works, we can formulate the following hypothesis, which is pertinent to our study:

H1: Trade has a positive impact on energy consumption

H2: There are significant differences in terms of energy consumption between BP and OECD countries.

## **METHODOLOGY**

The impact of trade on energy consumption is measured using panel data for six Western Balkan countries and 38 OECD countries, covering the period from 2010 to 2022.

Methodologically, various panel data models are employed, including pooled OLS, robust OLS, fixed effects (FE), and random effects (RE). For comparison, the Hausman test is used to identify which model, fixed or random effects, is more dependable. The Hausman test is a statistical procedure used to determine the appropriateness of fixed effects (FE) versus random effects (RE) models in panel data analysis. It tests whether the unique errors (individual effects) are correlated with the regressors. The FE model assumes that these individual effects are correlated with the explanatory variables, thereby capturing any time-invariant characteristics that could influence the dependent variable. In contrast, the RE model assumes no such correlation, treating individual effects as random and uncorrelated with the regressors. Additionally, an appropriate estimation method must be used to ensure objective, dependable, and efficient estimations of the coefficients. Additionally, the element that characterizes this paper is the comparison between the countries, namely, OECD and Western Balkans, displayed through the application of the methodological approach.

### **The Specification of the Model**

To estimate the effects of trade on energy consumption, we apply a log-linear model. The study uses a macroeconomic series that consists of yearly observations between 2010 and 2022, for 44 countries (6 Western Balkan countries and 38 OECD Countries). Further, the specification of the models taking into account the variables selected for a set of countries to highlight this impact is presented below:

$$EUPC = \beta_0 + \beta_1(TR) + \beta_2(FDI) + \beta_3(INF) + \beta_4(GDPC) + \beta_5(POG) + \beta_6(UNE) + uit$$

Where Energy use per Capita (EUPC) is the dependable variable, which in this case is,  $i = 1 \dots 44$  (countries),  $t = 2010 \dots 2022$  (years), the independent variables of the study are; Trade (TR), foreign direct investment (FDI), inflation rate (INF), income per capita (GDPC), unemployment (UNE) and population growth (POG), while  $uit$  is the error term.

**Table 1. Definition of variables**

Variable	Abbreviations	Unit	Source
Energy Use per Capita	EUPC	kWh	World Bank Database; The Global Economy
Foreign Direct Investment	FDI	% of GDP	World Bank Database; The Global Economy; The Global Economy
Inflation	INF	%	World Bank Database; The Global Economy
GDP per Capita	GDPC	US \$	World Bank Database; The Global Economy
Trade	TR	% of GDP	World Bank Database; The Global Economy
Population Growth	POG	%	World Bank Database; The Global Economy
Unemployment	UNE	%	World Bank Database; The Global Economy

## Data

Our study utilizes annual data compiled from the Global Economy database and the World Bank database (WBD), encompassing a balanced panel dataset. This dataset includes six Western Balkan countries: Kosovo, Albania, North Macedonia, Bosnia and Herzegovina, Montenegro, and Serbia. Additionally, it covers 38 OECD countries: Colombia, Turkey, Mexico, Costa Rica, Chile, Poland, Hungary, Greece, Latvia, Slovak Republic, Lithuania, Portugal, Czechia, Estonia, Slovenia, Spain, Korea, Italy, Japan, France, United Kingdom, New Zealand, Germany, Israel, Belgium, Canada, Austria, Finland, Netherlands, Australia, Sweden, Denmark, Iceland, the United States, Norway, Switzerland, Ireland, and Luxembourg. The time frame for the dataset spans from 2010 to 2022, offering a comprehensive overview of the relationship between trade and energy consumption across a diverse set of nations over these thirteen years.

In examining the intricate dynamics of trade and energy consumption, our study adopts a comparative approach between the OECD and Western Balkan countries. The interplay between these two crucial facets of economic activity holds significant implications for sustainable energy practices. By delving into annual data spanning 2010 to 2022 from the World Bank (WBD) and the Global Economy database, the research seeks to unravel the complex relationship between trade dynamics and energy consumption patterns across diverse nations. The balanced panel dataset, featuring six Western Balkan countries (Kosovo, Albania, North Macedonia, Bosnia and Herzegovina, Montenegro, and Serbia) and 38 OECD countries, provides a comprehensive foundation for analysis. As we examine the influence of trade on energy consumption, we aim to identify shared trends, disparities, and key determinants that shape

sustainable energy in these distinct countries. This comparative perspective contributes valuable insights into the global endeavor to balance trade and energy sustainability.

## EMPIRICAL FINDINGS AND DISCUSSION

This section presents the empirical findings of the study. First, it provides descriptive statistics covering all 44 nations under consideration. The chapter then conducts a comparative analysis, contrasting the results of descriptive statistics between the Western Balkans, consisting of six countries, and the larger group of OECD countries, consisting of 38 countries.

In the context of the data analysis for the 44 countries of the study (Table 2), some important dynamics can be observed in relation to energy and economic aspects. On average, sustainable energy consumption per capita reaches 3579.26 kilowatt hours, bringing to attention the need for the use of energy at individual levels and the efficiency of its use.

Beyond the dimension of energy utilization, the data reveal substantial correlations between economic factors and energy consumption. Foreign direct investments (FDI) make up approximately 3.84% of the Gross Domestic Product (GDP), indicating the trust and dedication of foreign investors in these economies. Concurrently, the average unemployment rate of 9.35% underscores the complexities within the labor market, presenting both challenges and opportunities for energy utilization within the framework of the economic development of these countries.

**Table 2. Descriptive statistics for all sampled countries**

Variable	Obs	Mean	Std. Dev.	Min	Max
EUP	572	3579.26	2765.35	432	18432
FDI	572	3.84	22.46	-391.43	234.46
INF	572	2.68	4.22	-1.73	72.3
GDPC	529	34092.02	25456.67	3009.52	133590.15
TR	572	100.89	57.30	23.38	388.12
POG	572	.423	.82	-2.25	2.67
UNE	570	9.35	6.42	2.02	35.41

*Source: Author's calculation*

After presenting the descriptive statistics for all the countries together, Table 3 shows the results separated for the countries of the Western Balkans and the OECD countries. Based on the results presented in this table, analysis of key economic indicators between the Western Balkans and the OECD reveals noteworthy differences in energy consumption, trade activities, foreign direct investment, inflation rates, and GDP per capita. The Energy Use per Capita (EUPC) data indicates that individuals in the Western Balkans tend to consume less energy on average than those in the OECD, potentially reflecting variations in industrialization and technological advancement.

Moving on to Trade (TR), both regions exhibit similar mean values, suggesting comparable levels of international trade activities. This economic interdependence is vital for fostering growth through global engagement, highlighting the importance of trade relationships in both the Western Balkans and the OECD.

The analysis of Foreign Direct Investment (FDI) indicates that the Western Balkans attract a higher level of foreign investment on average compared to the OECD. This may be a strategic effort by the Western Balkans to stimulate economic development by bringing in external capital, technology, and expertise. In terms of Inflation (INF), both regions demonstrate relatively similar mean values, indicating a degree of economic stability in both the Western Balkans and the OECD. Stable inflation is crucial for maintaining a healthy and well-managed economy.

Lastly, the substantial discrepancy in GDP per Capita (GDPC) between the Western Balkans and the OECD underscores a significant difference in economic prosperity. The higher GDPC in the OECD countries suggests a greater level of development and wealth distribution compared to the Western Balkans.

**Table 3. Comparison of results in Western Balkan countries and OECD countries**

Variable	Western Balkans			OECD		
	Obs.	Mean	Std. Dev	Obs.	Mean	Std. Dev
EUP	78	1488.2	660.683	494	3909.43	2826.29
FDI	78	6.3	3.694	494	3.451	24.107
INF	78	2.757	3.459	494	2.678	4.341
GDPC	74	5655.9	1443.74	455	38716.8	24496.9
TR	78	97.165	19.675	494	101.478	61.156
POG	78	-0.403	0.636	494	0.554	0.78
UNE	78	20.269	7.044	492	7.629	4.251

*Source: Author's Calculation*

The correlation coefficients provided in Table 3 offer insights into the relationships between energy consumption (EUPC) and trade (TR) in the OECD and Western Balkans regions.

Relationship between trade (TR) and energy consumption (EUPC), the OECD region demonstrates a moderate positive correlation with a coefficient of 0.33. This implies that there is a discernible but not overwhelmingly strong connection between trade activities and energy consumption in the OECD. In other words, as trade increases, there is a moderate tendency for energy consumption to also increase in the OECD countries. In other words, as trade increases, there is a moderate tendency for energy consumption to also increase in the OECD region. This relationship reflects the interdependence of economic activities and energy use, where increased trade often leads to higher energy demands due to industrial production, transportation, and other trade-related activities. The OECD countries, known for their high levels of industrialization and advanced infrastructure, typically engage in trade that involves high-value, technology-intensive products. These activities, while more energy-efficient per unit of output compared to less developed economies, still result in significant overall energy consumption due to the scale of operations.

Furthermore, the stringent environmental regulations and substantial investments in renewable energy within the OECD contribute to a scenario where increases in trade do not proportionally translate to massive spikes in energy consumption. Instead, the moderate correlation suggests that while trade activities do drive energy demand, advancements in energy efficiency and sustainable practices help mitigate the potential surge in energy use. For policymakers in the OECD, this correlation underlines the importance of continuing to support green technologies and sustainable practices to balance economic growth with environmental sustainability.

On the other hand, the Western Balkans exhibit a notably weaker positive correlation between trade (TR) and energy consumption (EUPC) with a coefficient of 0.053. This suggests a less pronounced

relationship between trade and energy consumption in the Western Balkans compared to the OECD. The weaker correlation could be indicative of various factors such as different economic structures, energy sources, or trade dynamics in the Western Balkans. The weaker correlation could be indicative of various factors unique to the Western Balkans, such as different economic structures, predominant energy sources, or the nature of their trade dynamics. For example, the Western Balkans might rely more on less energy-intensive industries or have less integrated trade networks that do not significantly impact energy consumption levels.

The economic structure of the Western Balkan countries, characterized by a focus on primary and semi-finished goods, means that trade does not exert as strong an influence on energy consumption as it does in more industrialized economies. Additionally, these countries often face infrastructural and technological constraints that limit the efficiency of energy use in trade-related activities. The energy infrastructure in the Western Balkans is typically less advanced, and there may be a higher reliance on traditional energy sources, which are less efficient and more polluting. Moreover, the economic transition these countries are undergoing as they seek to integrate into the European Union adds layers of complexity to the trade-energy nexus. Regulatory frameworks are still evolving, and the integration of sustainable practices is gradual. This transitional phase could account for the weaker correlation observed, as the full impact of trade on energy consumption is still unfolding. For policymakers in the Western Balkans, the weaker correlation suggests that boosting trade alone may not significantly affect energy consumption without concurrent improvements in energy infrastructure and efficiency. There is a crucial need for comprehensive policies that address both trade expansion and energy efficiency. Investments in modernizing the energy infrastructure, promoting renewable energy sources, and adopting energy-efficient technologies are essential steps toward achieving a more sustainable economic model.

**Table 4. Correlation analysis**

Variables	OECD	Western Balkans
	EUPC	EUPC
EUPC	1.000	1.000
TR	0.330	0.053
FDI	-0.110	-0.015
INF	-0.063	-0.027
GDPC	0.636	0.442
POG	-0.499	0.254
UNE	-0.306	-0.262

*Source: Author's Calculation*

Table 4 presents the results of two econometric models (one for the Western Balkan countries and the other for the OECD countries). The presented models were executed using the fixed effects method, since, according to the results of the Hausman tests, a statistical test used in econometrics to evaluate the consistency of an estimator in the presence of potential endogeneity. Specifically, it is commonly used to determine whether a random effects model or a fixed effects model is more appropriate in panel data analysis. In our case, while ( $P=0.000$  and  $P=0.001$ ), we prefer to use the fixed effects model. The fixed effects model in econometrics offers several advantages that make it a valuable tool in statistical analysis. One key advantage is its ability to control for individual-specific heterogeneity, allowing researchers to account for unobserved factors that may vary across different entities. Including fixed effects for each entity in the model helps eliminate the potential bias introduced by time-invariant characteristics, thereby providing more accurate estimates of the relationships between variables. Additionally, the fixed effects model is robust against omitted variable bias, a common concern in regression analysis. This makes it particularly useful when dealing with panel data, where observations are made on multiple entities over

time. Overall, the fixed effects model enhances the precision and reliability of estimates by accounting for individual-level variations.

In the presented models, the problems of multicollinearity are not shown, which is checked by the VIF test, and the values are lower than 5, while the problem of heteroskedasticity is not present either, which is checked by the Breuch Pagan Langargian and the values for this test, both models are higher than 0.05. So, the data are homoscedastic.

**Table 5. Results of the Fixed Effect model for Western Balkan countries and OECD countries**

Variable	Western Balkans			OECD		
	Coef.	Std. Err	P-value	Coef.	Std. Err	P-value
TR	9.63***	2.39	0.000	22.33***	1.73	0.000
FDI	16.64**	8.03	0.042	1.64	0.88	0.063
INF	6.09***	7.42	0.415	47.26***	10.47	0.000
GDPC	0.12***	0.02	0.000	0.01**	0.03	0.658
POG	88.58**	41.99	0.039	21.55***	43.31	0.000
UNE	-18.89***	5.90	0.002	-2.76	6.94	0.691
Cons	1979.99***	374.22	0.000	5909.02	230.4	0.000
Mean dependent var	1450.439			3921.352		
Number of obs	74			455		
SD dependent var	649.324			2827.054		
Chi-square	940.728			6428.68		
VIF	1.72			1.26		
Hausman test	0.000			0.001		
Hetest	0.1143			0.1042		

Source: Author's Calculation

Notes: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Based on the results of this econometric model, the impact of trade on energy use is positive, specifically the impact is higher in the OECD countries with a coefficient  $B=22.33$ , while the impact is lower in the countries of the Western Balkans with a coefficient  $B=9.63$ . Both coefficients are statistically significant at the 1% significance level ( $P=0.000$ ).

The increase in foreign direct investments also has a positive impact on the increase in energy consumption, particularly in the Western Balkan region,  $B=16.64$ , while in the OECD countries the impact is positive with a coefficient of  $B=1.64$ .

Population growth also has a very high positive impact on consumption growth, particularly in the Western Balkan region,  $B=88.58$ , while in OECD countries the impact is positive with coefficient  $B=21.55$ , where both coefficients are statistically significant at 1% and 5% significance level.

**Table 6. Significant differences of energy consumption between BP and OECD countries**

Source	Partial SS	df	MS	F	Prob (F)
Model	3.94	1	3.94	56.68	0.000
WB vs OECD	3.51	1	3.55	52.32	0.000
Residual	3.97	570	6997796		

Total	4.36	571	7657204
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The table above presents the results of the ANOVA analysis for the comparison of statistically significant differences in energy use. The ANOVA (Analysis of Variance) test, while useful for identifying whether there are significant differences between group means, has limitations. It does not indicate which groups differ from each other, requiring post-hoc tests for detailed comparisons. ANOVA assumes homogeneity of variance and normality of data, and its results can be affected by outliers. Additionally, it only tests mean differences and does not account for other distribution aspects or random effects in data structures. Acknowledging these limitations provides a more nuanced understanding of the statistical tools used in the comparative analysis of trade and energy consumption in the OECD and Western Balkan countries. According to the result of the ANOVA test ( $P=0.000$ ), we conclude that there are statistically significant differences in the use of energy between the countries of the Western Balkans and the OECD countries.

## DISCUSSION

The relationship between trade and energy consumption in Western Balkan and OECD countries demonstrates significant variations, influenced by their respective economic structures and development stages. In the Western Balkans, trade's impact on energy consumption is closely tied to the region's economic growth, natural gas resources, and strategic position for energy transit (Akar, 2016). The region's potential for renewable energy development, although high, is hampered by various constraints, making the impact of trade on energy consumption more nuanced (Lalic et al. 2011). In contrast, OECD countries exhibit a more direct relationship between trade and energy consumption. International trade increases energy use, contributing to environmental challenges, particularly in transportation (Soete & Ziesemer, 1997). The relationship is further complicated by factors like economic growth and affluence, leading to increased energy consumption. Golušin, Ivanović, & Redžepagić (2013) reviewed the current state of energy systems in the Western Balkans, discussing the potential benefits of implementing energy efficiency and conservation projects. The study also emphasizes the high energy consumption, carbon emissions, and the minimal production of renewable energy sources (RES) in the region, suggesting strategic directions for energy development.

The comparison between the Western Balkans and OECD countries in terms of trade and energy consumption underscores the diverse economic backgrounds and developmental challenges faced by different regions. While the Western Balkans grapples with leveraging its strategic position and natural resources amidst various constraints, OECD countries face the challenge of balancing economic growth derived from trade with the ensuing energy consumption and its environmental impacts. This contrast highlights the need for region-specific strategies to manage the trade-energy nexus effectively. The hypothesis tested in this econometric analysis posited that trade has a positive impact on energy consumption. The results of the model support the hypothesis, revealing a statistically significant positive relationship between trade and energy consumption. The coefficients assigned to different regions provide additional insights into the varying magnitudes of this impact. Notably, in OECD countries, the coefficient is found to be 22.33, indicating a relatively higher impact compared to the Western Balkans, where the coefficient is 9.63. Both coefficients are deemed statistically significant at the 1% significance level, reinforcing the robustness of the findings.

These results hold implications for policymakers and researchers interested in the intersection of trade and energy dynamics. The evidence suggests that as countries engage in international trade, their energy consumption tends to increase. The disparities in coefficients across regions imply that the influence of trade on energy usage is not uniform globally. Policymakers might consider tailoring strategies to address the specific challenges and opportunities associated with increased energy consumption resulting from

trade, recognizing the differing impacts observed in distinct economic contexts. Further research could delve into the underlying mechanisms driving these variations and explore potential policy interventions to manage the environmental consequences of heightened energy use associated with international trade. Western Balkan countries can promote trade while mitigating the increase in energy consumption by investing in renewable energy sources such as solar, wind, and hydroelectric power, which reduces reliance on fossil fuels. Enhancing energy efficiency across industrial, commercial, and residential sectors through the adoption of energy-efficient technologies and infrastructure upgrades is crucial. Additionally, developing green financing initiatives, such as green bonds and sustainability-linked loans, can attract investments in sustainable projects. Providing incentives for businesses to adopt sustainable practices will also support this balanced approach to economic growth and energy consumption.

The results of the ANOVA analysis provide convincing evidence to support the hypothesis that there are substantial differences in energy consumption between the Western Balkans (WB) and OECD countries. A low p-value of 0.000 suggests a high level of confidence in the hypothesis testing. So, we have statistical evidence to accept the second hypothesis. One key limitation is data availability, particularly for the Western Balkan countries, where data may be less comprehensive and less frequently updated compared to the OECD countries. This can affect the accuracy and reliability of the analysis. Additionally, the study relies on certain model assumptions, such as the homogeneity of variance and normality of data distribution, which might not hold for all datasets.

## CONCLUSION

Furthermore, this study holds significant implications for energy and environmental policies in the selected set of countries. By carefully considering specific periods and utilizing relevant indicators, our research provides insights into how these policies may be impacted or need to be adapted. The nuanced understanding of the trade–energy consumption relationship, as explored in our analysis, offers valuable guidance for policymakers. This guidance is crucial for designing and implementing strategies that effectively balance economic growth with energy efficiency and environmental sustainability. The study's findings, therefore, not only contribute to academic knowledge but also have practical applications in shaping informed and effective energy and environmental policies in the countries under consideration. This study used a specific dataset and relied on certain model assumptions, such as the homogeneity of variance and the normality of data distribution. These methodological choices were necessary to perform the analysis and interpret the relationships between trade and energy consumption in the OECD and Western Balkan countries. The main objective of this paper was to empirically examine the influence of economic factors on sustainable energy consumption in the Western Balkan and OECD countries using econometric methods. Results were generated by applying STATA software as a data processing tool, despite opposition to the comparative approach between the two respective groups of countries (Western Balkan and OECD).

The econometric model reveals that the impact of trade on energy use is higher in OECD countries ( $B = 22.33$ ) compared to the Western Balkans ( $B = 9.63$ ), with both results being statistically significant at the 1% level. Results from an ANOVA analysis indicate significant differences in energy use between Western Balkan and OECD countries. With a highly significant p-value of 0.000, we conclude that there are statistically significant variations in energy consumption between these regions.

OECD countries generally have higher levels of economic development, industrialization, and technological advancement compared to the Western Balkan countries. Furthermore, the OECD must encourage member countries to implement energy efficiency measures across various sectors, including industry, transportation, and buildings. This includes promoting the adoption of energy-efficient technologies and practices to reduce overall energy consumption, and exchanging best practices, policy

experiences, and information on effective approaches to addressing energy consumption and related challenges.

Sustainable development is widely recognized to require energy as a fundamental component of both social and economic progress, and energy systems—particularly the advancement of sustainable or renewable energy—depend heavily on energy policy. To increase sustainable energy consumption, this paper highlights the significance of institutional efficiency and policy implications.

In summary, trade influences energy consumption in complex ways, with effects varying based on the degree of openness, the stage of economic development, the type of trade, and the policies implemented. While trade can lead to increased energy efficiency and renewable energy use, it also has the potential to increase overall energy consumption and displace environmental pressures.

In conclusion, a comparative analysis between the OECD and Western Balkan countries in terms of trade and energy consumption should consider the level of economic development, trade patterns, energy mix, infrastructure, policy frameworks, and the stage of renewable energy development in each region. The differences observed can provide insights into the challenges and opportunities for sustainable trade and energy practices in these distinct groups of countries.

For OECD countries, specific policy recommendations based on the findings include promoting investments in renewable energy technologies through subsidies and tax incentives, and implementing carbon pricing mechanisms such as carbon taxes or cap-and-trade systems. Enhancing energy efficiency standards for buildings, appliances, and industrial processes is crucial, as is increasing funding for research and development in sustainable energy technologies. Facilitating green finance through instruments like green bonds, aligning trade policies with environmental goals, and conducting public awareness campaigns can further support these efforts. Additionally, strengthening international collaboration on climate and energy policies can help OECD countries collectively achieve their sustainability objectives.

It is also important to recognize that other factors beyond the scope of this study may influence the relationship between trade and energy consumption. These factors include technological advancements, economic cycles, political stability, and regulatory changes, all of which can significantly impact energy use and trade dynamics. Moreover, consumer behavior, global energy prices, and geopolitical events can also play crucial roles in shaping energy consumption patterns. Acknowledging these additional influences provides a more comprehensive understanding of the trade–energy nexus and highlights the complexity of developing effective policies that balance economic growth with environmental sustainability.

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# SHAPING ATTITUDES TOWARD ISLAMIC MICROFINANCE: THE ROLE OF ISLAMIC BRAND PERSONALITY AND ITS IMPACT ON ADOPTION INTENTION

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## ABSTRACT

*The main purpose of this research is to empirically investigate Islamic Brand Personality in forming attitudes towards Islamic Microfinance and its impact on adoption intentions. This research uses a quantitative approach involving 400 Islamic Microfinance customers. Additionally, the research data was collected both online and offline using a random sampling method. To test the proposed hypotheses, Partial Least Squares Structural Equation Model (PLS-SEM) analysis was conducted using Smart PLS 3 software. The results show that the data support all seven hypotheses. Islamic brand personality dimensions competence, excitement, and Sharia compliance have the most substantial impact on shaping attitudes toward Islamic microfinance. The attitude that is successfully formed then significantly impacts adoption intention. Islamic microfinance institutions must increase competence, enthusiasm and compliance with Islamic compliance to foster a more positive attitude and strengthen intentions to implement Islamic microfinance. Competency strengthening can be done by training staff willing to do so to ensure that staff can explain to customers that Islamic microfinance differs from other systems. Increasing excitement can be achieved by offering innovative financial products and easy-to-use digital services so that the services provided by Islamic microfinance are even more attractive. Islamic microfinance can inform the public that the contracts used in transactions are based on the values of the Islamic religion. By focusing on these key aspects, positive attitudes towards Islamic microfinance can be increased, ultimately driving the intention to adopt it. This research contributes to filling the research gap regarding the impact of Islamic Brand Personality in shaping attitudes towards Islamic Microfinance. The results prove that Islamic Brand Personality can form positive attitudes, which then influence adoption intention. These findings provide an important contribution to understanding the role of Islamic branding in increasing the adoption of Islamic microfinance services.*

**Keywords** Islamic Microfinance, Islamic brand personality, Attitude, Adoption intention, Indonesia, Sharia compliance.

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## INTRODUCTION

As one of the largest Sharia financial markets, Indonesia is ranked seventh globally in the Sharia financial industry. The Islamic Finance sector in Indonesia also succeeded in occupying third place in the 2023 Islamic Finance Development Indicator published in the 2023 Islamic Finance Development Report and third place in the Global Islamic Economy Indicator Score (Financial Services Authority, 2023). In maintaining economic growth momentum, Indonesia's Sharia financial services industry continues to show impressive development. By the end of December 2023, total sharia financial assets in Indonesia reached IDR 2,582.25 trillion, experiencing growth of 9.04% compared to 2022. This growth was driven by positive performance in various sectors: Sharia banking grew by 11.21%, the Sharia capital market grew by 7.43%, and the Sharia non-bank financial industry sector, including Islamic Microfinance, recorded growth of 12.98% (Financial Services Authority, 2023).

However, amidst this positive trend, the growth of Islamic Microfinance assets in Indonesia shows a downward trend. Over the last three years, Islamic Microfinance's asset growth has slowed, only recording an increase of 3.84% in 2023, lower than the growth of 5.86% in 2022 and far below the growth of 13.51% in 2021 (Financial Services Authority, 2023). This downward trend shows the need for a more effective strategy to increase the attractiveness of Islamic Microfinance, one of which is implementing Islamic Brand Personality.

In a global context, a brand must adapt its personality to local culture to be accepted by consumers in various countries (Kashif & Udunuwara, 2021). Aaker (1997) brand personality model has been widely applied in multiple studies, including on numerous brands across cultures, as well as the analysis of factors that influence brand personality and its consequences (Calderón-Fajardo et al., 2023; Delgado-Ballester & Fernandez-Sabiote, 2024; Saeed et al., 2022). This approach is also critical in new contexts, such as the Metaverse, where brands play a key role in influencing consumer behavior and purchase intention (Efendioğlu, 2023). Several researchers have also developed Islamic brand personalities in various contexts. Zaki et al. (2023) developed an Islamic apparel brand personality, while Aji & Muslichah (2023) developed a halal brand personality. In the context of Sharia Finance, Ahmed et al. (2018) developed the Islamic Bank Brand Personality, which was refined by Jan & Shafiq (2021).

Jan & Shafiq (2021) perfected the Islamic Bank Brand Personality by including six dimensions, namely sincerity, excitement, competence, trustworthiness, Shariah compliance, and justice. Islamic Bank Brand Personality is essential in the Islamic Finance industry because Muslim people tend to consider religious dimensions in their consumption decisions, including financial services (Iranmanesh et al., 2021). The study conducted by Loussaief et al. (2024) and Elsitasari & Ishak (2021) shows that there is a strong relationship between a person's level of religiosity and their preference for halal-certified products, confirming that the Islamic identity of a brand has a significant influence on acceptance by Muslim consumers. These findings indicate that brands that reflect Islamic values, such as honesty, fairness, and compliance with Sharia principles, have more potential to gain trust and adoption from Muslim consumers. Thus, strengthening the Islamic Bank's brand personality is a marketing strategy and a commitment to fulfilling consumers' religious expectations and building long-term loyalty in the Sharia financial sector.

While a growing body of literature has explored Islamic Brand Personality, a significant gap remains concerning its application within the specific context of Islamic Microfinance. Previous studies, such as the seminal work by Jan & Shafiq (2021), have predominantly focused on established Islamic commercial banks, often measuring their impact on general customer satisfaction. However, Islamic Microfinance operate within a distinct ecosystem, targeting underserved communities with unique financial needs and expectations. This paper argues that the dynamics of brand personality in a microfinance context are fundamentally different and require dedicated empirical investigation. Islamic Microfinance do not just

offer financial services; they embody a socio-economic mission of empowerment and poverty alleviation. Therefore, understanding how brand personality especially dimensions like competence, trustworthiness, and sharia compliance shapes consumer attitudes and intentions is not merely an academic exercise. This research is uniquely positioned to fill this critical gap by providing a nuanced analysis of the impact of Islamic Brand Personality on consumer attitudes and adoption intentions within the Islamic microfinance sector. By building a deeper understanding of this relationship, our study will offer crucial insights that can be leveraged to increase the attractiveness and market penetration of Islamic Microfinance, ultimately contributing to the sustainability and growth of the broader Islamic finance industry.

## LITERATURE REVIEW

### Islamic Microfinance

Islamic Microfinance in Indonesia is known as *Baitul Maal wat Tamwil* (BMT). BMT is a microfinance institution operated based on Sharia principles. The birth of BMT in Indonesia was based on the growing awareness of the Muslim community to carry out economic activities based on Sharia principles as a whole. In addition, the establishment of BMT aims to provide capital for micro and small business actors, which are very large in number but have difficulty accessing Sharia capital (Ministry of National Development Planning, 2018). Islamic Microfinance in Indonesia is developing as a solution to increase financial inclusion for low-income communities that are not reached by conventional banking. With the principles of being usury-free, justice-based, and empowerment-oriented, Islamic Microfinance provides financial access that aligns with Islamic values. One type of Islamic Microfinance in Indonesia is BMT. BMT is a non-bank financial institution based on Sharia principles (Prasada et al., 2020; Kim & Hidayana, 2022), especially by implementing a profit-sharing system in its business activities. The uniqueness of BMT lies in its management structure, which is divided into two main parts, namely *Baitul Maal* and *Baitut Tamwil* (Purwanto et al., 2022).

*Baitul Maal* is a forum for collecting and distributing social funds such as zakat, *infaq*, and waqf from the community for social interests and to empower the people (Maulana et al., 2018). Meanwhile, *Baitut Tamwil* plays a role in developing productive businesses and investments to improve micro-business actors' welfare through financing and savings activities per Sharia principles (Prasada et al., 2020). With this model, BMT functions as a financial institution and an economic empowerment institution that integrates social and business aspects in supporting Sharia-based economic growth. Despite its great potential, Islamic Microfinance still faces challenges, such as low sharia financial literacy, limited capital, and a lack of technological innovation in microfinance services. Islamic Microfinance needs to strengthen its branding strategy based on Islamic Brand Personality to increase competitiveness. With the right approach, Islamic Microfinance can make a more significant contribution to encouraging sharia financial inclusion and improving the economic welfare of society.

### Islamic Brand Personality and Attitude toward Islamic Microfinance

Attitudes towards Islamic Microfinance refer to individuals' perceptions, beliefs, and evaluations of Sharia-based microfinance services (Islam & Ahmad, 2020). This attitude is influenced by various factors, such as understanding sharia principles, trust in Islamic financial institutions, and experience and benefits obtained from Islamic Microfinance services (Cameron et al., 2021; Islam & Ahmad, 2020). Islamic Brand Personality dimensions, such as sincerity, excitement, competence, trustworthiness, shariah compliance, and justice, play an essential role in forming a positive attitude towards Islamic Microfinance. Therefore, the stronger the perception of Islamic values in an Islamic Microfinance service, the greater the possibility that society will have a supportive attitude and be willing to adopt Islamic Microfinance services

(Rahman et al., 2023; Aziz & Pandey, 2020).

Jan and Shafiq (2021) developed the Islamic Brand Personality concept by adapting existing brand personality models to Islamic values. The Islamic Bank Brand Personality model developed by Ahmed et al., (2018) seeks to incorporate Islamic values by referring to the verses of the Koran and Hadith. During its development, the concepts of sophistication and ruggedness were removed because they were considered inconsistent with Islamic teachings, where sophistication is often associated with excessive luxury, which is not recommended in Islam (Jan & Shafiq, 2021).

## **Sincerity**

Sincerity is a fundamental dimension of brand personality that significantly impacts consumer attitudes. As a core characteristic, a sincere brand is often associated with high morality, honesty, and a focus on family and community values (Aaker, 1997). This authenticity builds positive long-term relationships with consumers because sincerity is linked to feelings of trust, acceptance, and social harmony (Lim et al., 2024).

In the context of the Islamic religion, sincerity is a core ethical value that permeates all aspects of life, including economic and financial transactions. This principle of honesty and fulfilling promises has a strong basis in Islamic teachings, as stated in the Qur'an and Hadith (Jatmiko et al., 2024). Islam emphasizes that every business dealing must be carried out with genuine intention, transparency, and honesty to build a foundation of trust between parties

The value of sincerity is directly reflected in an Islamic Microfinance institution's commitment to providing fair and transparent financial services based on Sharia principles. Customers who perceive that a financial institution possesses a high degree of sincerity are more likely to develop a deeper sense of trust, which in turn fosters a positive attitude toward the service (Aziz & Pandey, 2020; Masserini et al., 2017). Furthermore, recent studies confirm that Muslim consumers tend to be more loyal to brands that genuinely reflect values of sincerity in their business practices (Kaur et al., 2024; Nofrizal et al., 2023). Based on this, it can be assumed that a higher level of perceived sincerity in Islamic Microfinance will lead to a more positive public attitude towards it. Therefore, the hypothesis proposed is:

*H1: Sincerity has a positive impact on attitudes towards Islamic Microfinance*

## **Excitement**

Excitement in brand personality describes the level of courage, enthusiasm, and energy that can attract customer attention (McManus et al., 2022). Aaker (1997) associates Excitement with being imaginative, brave, and always keeping up with the times. Apart from that, Excitement also reflects vitality, independence, and social attraction. This is especially important for brands that aim to build trust and closeness with consumers by offering a dynamic and engaging experience (Jenkins & Molesworth, 2018).

From an Islamic perspective, the values of Excitement related to courage and independence align with the principles that encourage people to be brave in good and independent living. The principle of *wasatiyah* (moderation) in Islam is not against positive spirit or energy as long as it is carried out in a balanced and not excessive manner (Jan & Shafiq, 2021). Instead, excitement in Islamic finance can be articulated as a brand characteristic that reflects innovation and dynamism. This approach is crucial for attracting younger and digitally-savvy consumers who seek modern, efficient, and engaging financial services (Raza et al., 2024). For instance, studies on the adoption of Islamic fintech services highlight that brand excitement, manifested through user-friendly digital platforms and innovative products, is key to attracting and retaining a new generation of customers (Marhadi et al., 2024). Therefore, a brand that projects enthusiasm and innovation is more readily accepted by the public. Based on this, it can be

concluded that excitement plays an essential role in creating an attractive brand image and motivating consumers to participate in Islamic Microfinance services, so the hypothesis proposed is:

*H2: Excitement has a positive impact on attitudes towards Islamic Microfinance*

### **Competence**

Competence in the context of brands refers to qualities that show that a brand has the knowledge, skills, and abilities to meet consumer needs (He & Ge, 2023). Aaker (1997) emphasizes that competence includes responsibility, patience, and purpose, which provide a picture of a clear structure and a brand's ability to face challenges with a planned approach. This is very relevant in Islamic Microfinance, where customers look for institutions that can provide products and services that comply with sharia principles and can be trusted to manage funds and provide appropriate financial solutions (Ali et al., 2024). From the Islamic Brand Personality perspective, this competency is closely related to reliability and success, which is based not only on economic profits but also on social impact and sustainability (Hilmi, 2018). For example, competent Islamic financial institutions offer products that comply with Islamic law and ensure that these products provide long-term benefits for society, including economic empowerment.

In the Koran, Allah (SWT) gave wisdom and knowledge to Prophet Solomon and Prophet David, which made them competent figures in leading and making wise decisions (QS. Al-Anbiya: 79-80) (Jan & Shafiq, 2021). This concept illustrates that competence in Islam goes beyond technical skills; it includes the wise application of knowledge for the benefit of all, a principle that is highly relevant to Islamic financial practices. Research by Mahri et al. (2016) reinforces this by highlighting that a firm's expertise in providing fair and sustainable benefits is key to building consumer trust. Therefore, competence in an Islamic brand is crucial for creating an image that consumers can trust and rely on. This will, in turn, create a positive attitude towards Islamic microfinance, where consumers feel confident that the institution can meet their financial needs in a manner that is both ethically grounded and socially impactful. Based on this, the hypothesis proposed is:

*H3: Competence has a positive impact on attitudes towards Islamic Microfinance*

### **Trustworthiness**

Trustworthiness in brand personality is a critical dimension for building consumer confidence, particularly in the financial sector. Several studies have highlighted that trust serves as the foundational element for long-term customer relationships and loyalty (Hallikainen & Laukkanen, 2021; Loureiro et al., 2012). This emotional and cognitive bond is especially crucial in a service-oriented industry like microfinance, where the brand's credibility directly impacts a customer's perception of security and reliability (Aziz & Pandey, 2020).

In the context of Islamic Microfinance, trustworthiness becomes even more fundamental. The concept of *amanah* (trust) is a core value in Islam, which emphasizes the obligation to be faithful and honest in all dealings, especially in financial matters. This religious imperative reinforces the need for institutions to demonstrate the highest level of integrity and transparency. The Qur'an itself reminds believers to fulfill their trusts (QS. An-Nisa: 4:58), a principle that must be reflected in the operations of a sharia-based financial institution (El-Bassiouny et al., 2023).

Furthermore, a trusted brand in Islamic Microfinance provides customers with a sense of security and emotional comfort, which is essential for fostering a positive attitude towards the service. Recent empirical research by Hussein-Kakembo et al. (2021) and Migdad (2023) confirms the significant role of a

brand's trustworthiness in strengthening customer perceptions and ultimately influencing their decision-making. Therefore, by upholding the values of *amanah* in every aspect of its operations, an Islamic microfinance institution can build a strong brand image that directly translates into a positive public attitude. Based on this, the hypothesis proposed is:

*H4: Trust has a positive impact on attitudes towards Islamic Microfinance*

### ***Shariah compliance***

Shariah compliance positively impacts attitudes towards Islamic Microfinance (Fianto et al., 2018). In the context of Islamic financial institutions, Ghauri (2015) highlights three main prohibitions in Islam, namely *Riba* (usury), *Gharar* (uncertainty), and *Maysir* (gambling). Usury is additional money that must be paid by the borrower to the creditor along with the principal as a loan condition or extension of maturity (Mews & Abraham, 2007). *Gharar* is defined as “starting a business without sufficient knowledge or carrying out transactions that are too risky,” which is related to fraud and fraud (Habib, 2017). *Maysir* is “a bet on something of value with unnecessary risk, with the hope of profit based on elements of luck and uncertain events” (Kalimullina & Orlov, 2020). These prohibitions are not just for financial institutions but for every Muslim. The avoidance of *Riba*, *Gharar*, and *Maysir* is significant in building a positive attitude toward Islamic Microfinance, as it is a fundamental expectation of Muslim consumers seeking ethical financial services (Jatmiko et al., 2024)

While the avoidance of these prohibitions is an essential dimension in the Islamic Bank Brand Personality model (Jan & Shafiq, 2021), its importance transcends branding alone. It is a core value that directly influences consumer trust and acceptance (Mal et al., 2018). For customers, strict adherence to Sharia principles by an Islamic microfinance institution provides a sense of peace of mind and reinforces the brand's authenticity. This alignment with religious values is a powerful driver of positive attitudes, confirming that full compliance with Islamic law is vital for forming positive societal perceptions. Therefore, the hypothesis proposed is:

*H5: Shariah compliance has a positive impact on attitudes towards Islamic Microfinance*

### ***Justice***

The justice dimension in Islamic Brand Personality is related to Islamic teachings that clearly emphasize the importance of justice in all aspects of life, including in the financial context (Jan & Shafiq, 2021). A true Muslim must adhere to the principles of justice, which include honesty, impartiality, and fair treatment of others, as explained in various Islamic teachings (Jan & Shafiq, 2021). Justice is a moral value and a legal basis in multiple aspects of life, including the management of financial transactions. Alotaibi et al., (2022) also emphasized that justice is a characteristic that a true Muslim must have, and this must be reflected in every action, including in the management of funds and financial relationships. In the context of Islamic Microfinance, the justice dimension is the primary driver in building customer trust and satisfaction. Societies and organizations that are built with a philosophy and guidelines of justice will be more trusted and relied upon by consumers (Wintein & Heilmann, 2024).

Islamic financial institutions apply this principle of justice in various forms, such as offering fair products without usury, transparency in costs, and equal treatment of all customers without discrimination (Kasri, 2014). Multiple studies have proven that the justice dimension plays a key role in building customer satisfaction in Sharia financial institutions (Siu et al., 2013; Jan & Shafiq, 2021). In this case, Justice is an essential factor in creating long-term, mutually beneficial relationships between customers and Islamic financial institutions. Based on this understanding, justice has a positive impact on forming people's

attitudes towards Islam. The justice dimension functions not only as a moral value in Islam but as an essential aspect in building people's attitudes towards Islamic Microfinance services. Therefore, the hypothesis proposed is

H6: Justice has a positive impact on attitudes towards Islamic Microfinance

### ***Attitude toward Islamic Microfinance and adoption Intention***

Even though Islamic Microfinance has values that align with Islamic principles, its adoption still faces various obstacles. Lack of Sharia financial literacy, limited perception of its benefits compared to conventional services, and trust in the transparency and professionalism of Islamic Microfinance financial institutions can influence people's attitudes (Hoque et al., 2022; Kim & Hudayana, 2022). Therefore, strengthening a brand image based on Islamic values, providing education regarding the benefits of Islamic microfinance, and increasing innovation in Sharia microfinance services are essential steps in building positive public attitudes towards Islamic microfinance and encouraging increased adoption.

Attitudes towards Islamic Microfinance can influence the intention to adopt products or services Islamic financial institutions offer. In the theory of Theory of Planned Behavior, attitudes towards something are the main predictor in determining an individual's intention to take action (Ajzen, 1991), including in adopting Islamic Microfinance. When individuals have a positive attitude towards Islamic Microfinance, which is related to factors such as trust, compliance with Sharia principles, and the socio-economic benefits that can be obtained, they are more likely to adopt the product. Previous studies show that a positive attitude towards a product or service increases an individual's likelihood of participating or adopting it (Purwanto et al., 2022; Redda & Shezi, 2023) Therefore, the hypothesis proposed in this research is that

*H7: Attitudes towards Islamic Microfinance have a positive impact on intention to adopt Islamic Microfinance*

## RESEARCH MODEL

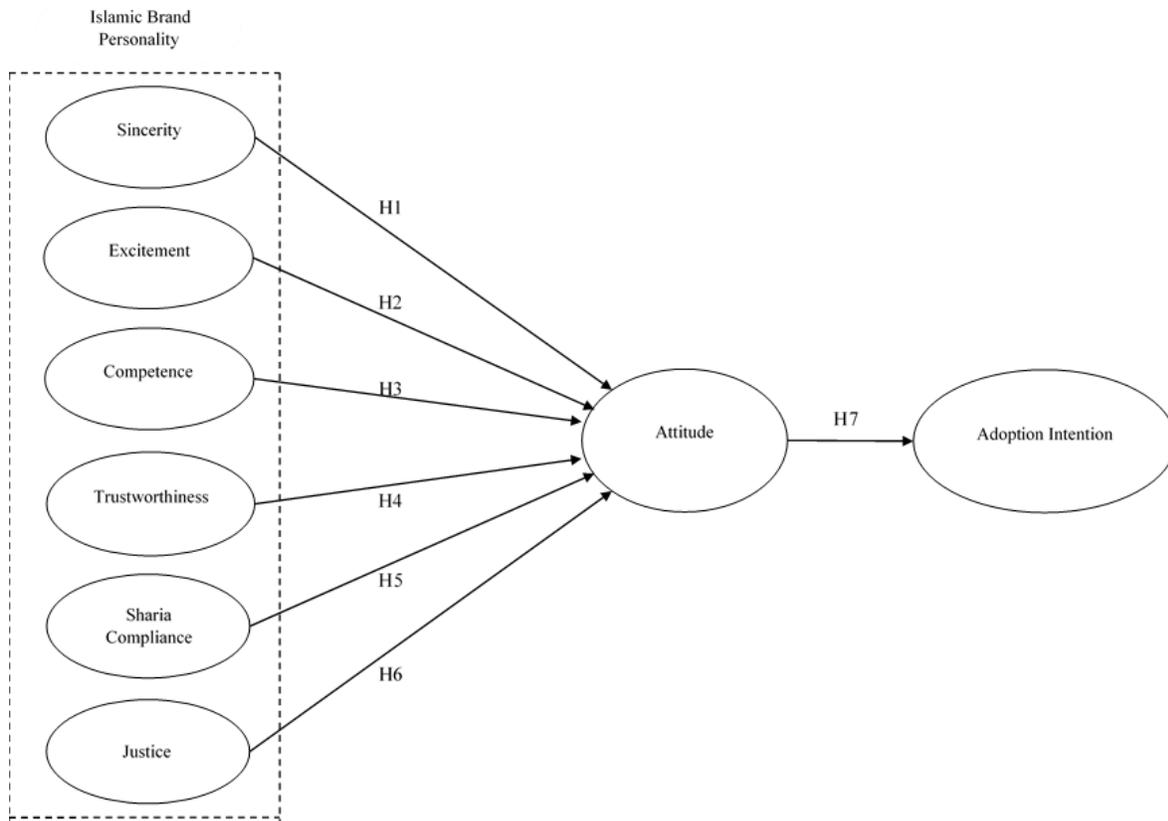


Figure 1. Research Model

## METHOD ANALYSIS

### Research Design

This research was designed with a positivist approach, which emphasizes that the research object is independent of the researcher's awareness (Song, 2017), resulting in an explanatory quantitative research design. The empirical approach used focuses on observations that can be verified and is based on scientific reasoning that is consistent with theory, not just to develop theory or conceptualization (Liu et al., 2023). With this design, the research aims to examine the influence of Islamic Brand Personality in forming attitudes towards Islamic microfinance, which can influence the intention to adopt services in Islamic microfinance. This test ultimately provides an empirical contribution regarding the importance of Islamic Brand Personality in Islamic microfinance.

### Population, sample and sampling technique

The population in the research was 24,136 Islamic microfinance customers (Financial Services Authority, 2021). From this number, the Slovin formula determines the number of samples with a margin of error of 5%. By using the Slovin formula to determine the number of research samples, the samples taken

accurately represent the population and can support credible statistical analysis. From the sample calculation results, the ideal sample size for this research is 393.48, but the sample number was refined to 400 samples.

A random sampling technique was applied. This method was used to provide an equal opportunity to each member of the population as a research sample (Sekaran & Bougie, 2016). This technique also helps to minimize selection bias and ensures the sample is representative of the population (Cao et al., 2024). Thus, the research results can objectively reveal the relationship between Islamic Brand Personality in forming attitudes towards Islamic microfinance and contribute to the development of Islamic Finance literature and practice, especially in the Islamic microfinance sector.

### **Data collection techniques**

The data collection technique in this research was carried out using a questionnaire distributed both online and offline. This hybrid approach was chosen to ensure wider reach and improve the response rate, addressing potential limitations of a single collection method. Online questionnaires were distributed via an online platform to facilitate access for respondents from different geographical backgrounds. In contrast, offline data was collected to reach respondents who were more limited to rural areas, thus ensuring the representativeness of the sample from diverse backgrounds. To obtain the final sample of 400 respondents, a total of 500 questionnaires were distributed, resulting in a response rate of 80%. In addition, this combination of methods can minimize bias in data collection and increase response rates so that research results become more valid and reflect actual conditions in the field.

### **Measurement of variable and Scale**

The measurement of variables in this research is a development of previous studies conducted by Jan & Shafiq (2021) and Ahmed et al. (2020), Therefore, all indicators in the Islamic Brand Personality variable were adapted from their research. The sincerity dimension is measured using nine statement items, while competence and sharia compliance each consist of five items. Seven statement items were used to measure trustworthiness, while six and four statements represented justice and excitement. Attitudes in this study were measured with five statement items adopted from research by Maulana et al. (2018) and Purwanto et al. (2022). Meanwhile, the adoption intention variable is measured with four statement items adapted from research conducted by Musa et al. (2024). All instruments in this study use a Likert scale with five levels of answer choices, which allows respondents to express their level of agreement with each statement in a more structured way.

### **Method analysis**

After the data is collected, the research data is then analyzed using variance-based Structural Equation Modeling (SEM) analysis, also often referred to as SEM-PLS (Structural Equation Modeling-Partial Least Square) (Latan & Noonan, 2016; Dash & Paul, 2021). Researchers used the SEM-PLS analysis technique because the testing was oriented toward prediction (Hair et al., 2019). Researchers used tools such as SmartPLS software to facilitate the inferential analysis process. There are two stages in the process: testing the measurement model or the outer model, and testing the structural model, which is referred to as the inner model (Hair et al., 2014).

Outer model testing is carried out to ensure the quality of the data produced through validity and reliability tests. The validity test in SEM-PLS uses construct validity in the form of a convergent validity test and a discriminant validity test. The indicators for each variable that meet the convergent validity criteria have a factor loading value of  $> 0.70$  and an average variance extracted value of  $> 0.5$  (Hair et al.,

2019). The fulfillment of discriminant validity criteria is assessed using the Heterotrait-monotrait ratio (Henseler et al., 2015). The recommended HTMT value is below 0.85 (Law & Fong, 2020). If the test results produce an HTMT smaller than 0.85, it can be said that the indicator meets the discriminant validity criteria. Meanwhile, you can use the Cronbach  $\alpha$  and Composite reliability values to assess reliability criteria or internal consistency reliability in SEM-PLS. A research instrument is said to meet the reliability criteria if it has a Cronbach  $\alpha$  and Composite reliability value  $> 0.7$  (Hair et al., 2019).

The inner model testing stage is a further stage in the SEM-PLS analysis. This testing stage can occur if the research model meets the outer model criteria. Inner or structural model testing consists of R-square,  $f^2$  (effect size) evaluation, Q-square test evaluation, and significance test. R-Square evaluation is carried out by looking at the size of the contribution of the independent variable in influencing the dependent variable by looking at the resulting R-Square value. If the R-Square  $> 0.75$ , then the independent variable contributes substantially; if the dependent variable value has an R-Square  $> 0.50$ , then the independent variable only contributes moderately, and if the R-Square value  $> 0.25$ , then the independent variable only makes a weak contribution (Hair et al., 2019). In SEM-PLS,  $f^2$  (effect size) is used to justify the magnitude of the influence of the independent variable on the dependent variable in the structural model. Criteria:  $f^2 \geq 0.02$  indicates a small effect,  $f^2 \geq 0.15$  a medium effect, and  $f^2 \geq 0.35$  a significant effect (Henseler et al., 2016). If the  $f^2$  value is minimal ( $<0.02$ ), then the influence of the independent variable is considered weak or insignificant. These measurements are essential for understanding the relative contribution of each variable in the model and ensuring the relevance of the relationships in the research. Q-square evaluation is intended to find out whether the model developed in research has a relevant predictive model. If the Q-square produces a value greater than 0, then the accuracy of the model developed has small predictions; 0.25 indicates that the model developed has medium prediction accuracy, and a Q-square value of 0.50 illustrates that the model developed has significant predictions (Hair et al., 2019). Meanwhile, a significance test is carried out to test whether the independent variable influences the dependent variable. Decision-making is done by looking at the p-value. If the resulting p-value is  $<0.05$ , the variable has a significant influence (Hair et al., 2011).

## RESULTS AND DISCUSSION

### Characteristics of respondents

There were 400 respondents to this study, 51% men and 49% women. Most have a high school education (36.25%) and a bachelor's degree (29.25%). Most were aged 41–45 years (30.75%). Regarding employment, the majority are entrepreneurs (32.25%), followed by teachers/lecturers and private employees at 17.75% each. Complete data can be seen in Table 1.

Table 1. Demographics of Respondents (N=400)

	Category	Number	(%)
Gender	Female	196	49.00
	Male	204	51.00
	Total	400	100.00
Education	Junior High School	32	8.00
	Senior High School	145	36.25
	Diploma	9	2.25
	Bachelor's Degree	117	29.25
	Master's Degree	93	23.25

	Doctorate	4	1.00
	Total	400	100.00
Age	Less than 25 Years	34	8.50
	26 - 30 Years	59	14.75
	31 - 35 Years	64	16.00
	36 - 40 Years	89	22.25
	41 - 45 Years	123	30.75
	46 - 50 Years	25	6.25
	More than 50 Years	6	1.50
	Total	400	100.00
Occupation	Teacher/Lecturer	71	17.75
	Farmer	57	14.25
	Non-teacher Civil Servant	66	16.50
	Entrepreneur	129	32.25
	Private Employee	71	17.75
	Others	6	1.50
	Total	400	100

Source: Smart PLS3 Output (2025)

### Measurement model evaluation

The test results are shown in Table 2, so this research has an adequate measurement model. The indicators for each variable meet the convergent validity criteria because they have a factor loading value of  $> 0.70$  and an average variance extracted value of  $> 0.5$  (Hair et al., 2019). The model also meets the discriminant validity criteria because the HTMT value produced in Table 3 is smaller than 0.85 (Law & Fong, 2020). Meanwhile, the measurement model evaluation results also obtained Cronbach  $\alpha$  and Composite reliability values  $> 0.7$ , so the research instrument met the recommended reliability criteria (Hair et al., 2019).

Table 2. Convergent Validity and Reliability Criteria

Variable	Code	Loading Factor	Composite reliability	Cronbach's Alpha	AVE
Sincerity	SIN1	0.768	0.821	0.708	0.534
	SIN2	0.704			
	SIN4	0.723			
	SIN4	0.726			
Excitement	EX1	0.834	0.844	0.722	0.643
	EX2	0.798			
	EX3	0.772			
Competence	COM1	0.769	0.904	0.867	0.654
	COM2	0.845			
	COM3	0.779			
	COM4	0.810			
	COM5	0.835			
Trustworthiness	TR1	0.868	0.911	0.885	0.595

	TR2	0.759			
	TR3	0.750			
	TR4	0.710			
	TR5	0.714			
	TR6	0.845			
	TR7	0.738			
Sharia Compliance	SC1	0.729			
	SC2	0.705			
	SC3	0.711	0.839	0.760	0.510
	SC4	0.709			
	SC4	0.717			
Justice	JUS1	0.818			
	JUS2	0.741			
	JUS3	0.806	0.892	0.850	0.623
	JUS4	0.769			
	JUS5	0.810			
Attitude	AT1	0.800			
	AT2	0.770			
	AT3	0.747	0.895	0.853	0.631
	AT4	0.871			
	AT5	0.778			
Intention	INT1	0.806			
	INT2	0.780			
	INT3	0.802	0.911	0.878	0.673
	INT4	0.856			
	INT5	0.857			

Source: Smart PLS3 Output (2025)

**Table 3. Discriminant Validity with Heterotrait-Monotrait Ratio (HTMT)**

	AT	COM	EX	INT	JUS	SC	SIN
Attitude							
Competence	0.676						
Excitement	0.659	0.788					
Intention	0.743	0.644	0.733				
Justice	0.624	0.512	0.597	0.665			
Sharia Compliance	0.724	0.830	0.823	0.686	0.548		
Sincerity	0.796	0.743	0.389	0.730	0.588	0.746	
Trustworthiness	0.741	0.804	0.731	0.638	0.519	0.828	0.820

AT: Attitude, COM: Competence, EX: Excitement, INT: Intention, JUS: Justice, SC: Sharia Compliance, SIN:

Sincerity, TR: Trustworthiness

Source: Smart PLS3 Output (2025)

### Structural model evaluation

The results of the hypothesis testing indicate a normed fit index (NFI) value of 0.911 and a standardized root mean square residual (SRMR) value of 0.068. According to Henseler et al. (2016), a model achieves Goodness of Fit if the NFI is equal to or greater than 0.90 and the SRMR is equal to or less

than 0.08. Therefore, the model developed in this study meets and precisely fits the criteria for Goodness of Fit. The structural model analysis and measurement were carried out using Smart PLS 3. The resulting model can be observed in Figure 2 below.

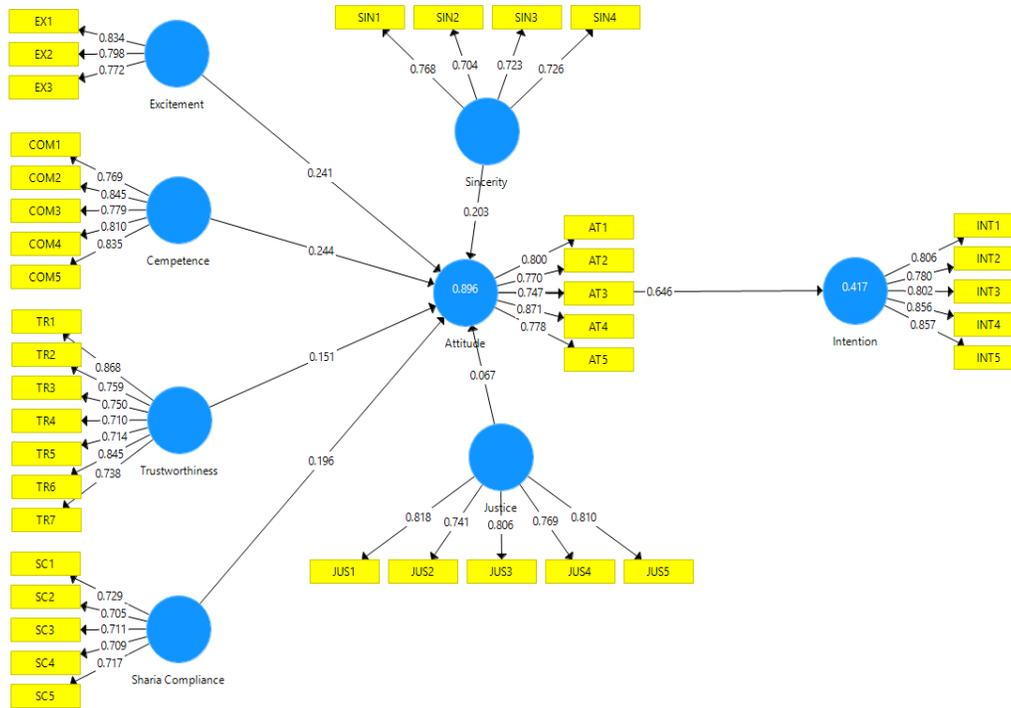


Figure 2. Final Research Model

The results indicate that hypotheses H1–H7 were accepted, with p-values below 0.05. Among the predictors of Attitude, *Competence* ( $\beta = 0.244$ ) and *Excitement* ( $\beta = 0.241$ ) had the most substantial impact, followed by *Sincerity* ( $\beta = 0.203$ ) and *Sharia Compliance* ( $\beta = 0.196$ ). *Trustworthiness* ( $\beta = 0.151$ ) and *Justice* ( $\beta = 0.067$ ) had relatively lower effects. Furthermore, *attitude* significantly influenced *Adoption Intention* with the highest beta value ( $\beta = 0.646$ ). The detailed hypothesis results are presented in Table 4.

Table 4. Hypotheses Testing

Hypothesis	Original Sample	Standard Deviation	T Statistics	P Values	Conclusion
H1: Sincerity -> Attitude	0.203	0.037	5.554	0.000	Accepted
H2: Excitement -> Attitude	0.241	0.035	6.864	0.000	Accepted
H3: Competence -> Attitude	0.244	0.031	7.898	0.000	Accepted
H4: Trustworthiness -> Attitude	0.151	0.034	4.483	0.000	Accepted
H5: Sharia Compliance -> Attitude	0.196	0.037	5.259	0.000	Accepted
H6: Justice -> Attitude	0.067	0.021	3.202	0.001	Accepted
H7: Attitude -> Intention	0.646	0.038	17.075	0.000	Accepted

Source: Smart PLS3 Output (2025)

The tests carried out in this research included analysis of R Square, Q Square, and f2 effect sizes. The R Square value, which measures the contribution of the independent variable to the dependent variable,

provides several significant findings. The analysis results show that the variables Sincerity, Excitement, Competence, Trustworthiness, Sharia Compliance, and Justice have an R Square of 0.896 towards attitude, which reflects a substantial contribution. Meanwhile, the Attitude versus Intention variable has an R Square of 0.417 or 41.7%, which is classified as moderate. In addition, the  $f^2$  effect sizes analysis results show that Excitement (0.186) and Competence (0.206) mildly influence attitude. In contrast, other variables such as Sincerity (0.127), Trustworthiness (0.071), Sharia Compliance (0.136), and Justice (0.101) have a weaker influence. Meanwhile, attitude towards intention has an  $f^2$  effect size value of 0.031, also in the weak category. The complete results of this test are presented in Table 5 below.

**Table 5. Q Square, R square value (R2) and Effect size of ( $f^2$ )**

Hypotheses	R Square	Q Square	$f^2$ effect sizes
Sincerity -> Attitude			0.127 Weak
Excitement -> Attitude			0.186 Moderate
Competence -> Attitude			0.206 Moderate
Trustworthiness -> Attitude	0.896	0.557	0.071 Weak
Sharia Compliance -> Attitude			0.136 Weak
Justice -> Attitude			0.101 Weak
Attitude -> Intention	0.417	0.274	0.031 Weak

Source: Smart PLS3 Output (2025)

## DISCUSSION

The findings of this study confirm that the dimensions of Islamic Brand Personality play a crucial role in shaping positive attitudes towards Islamic Microfinance. The results highlight that while all dimensions are significant, competence, excitement, and sharia compliance have the most substantial impact in influencing consumer attitudes. This finding provides an empirical contribution by demonstrating the specific brand elements that matter most in the context of Islamic Microfinance. Unlike conventional banking, which focuses solely on service quality, the Islamic microfinance sector requires a nuanced approach that also considers spiritual and emotional aspects of the brand.

The test results show that sincerity has a positive and significant effect on attitudes towards Islamic microfinance ( $\beta = 0.203$ ,  $t = 5.554$ , and  $p = 0.000$ ). This indicates that the more sincere and honest an Islamic financial institution is in its operations, the more positive the public's attitude towards the services offered. Honesty in communication, product transparency, and commitment to Islamic values are essential factors in building trust and positive attitudes of potential customers towards Islamic microfinance (Alziyadat & Ahmed, 2019; Redín et al., 2014).

The influence of excitement on attitudes towards Islamic microfinance is also significant ( $\beta = 0.241$ ,  $t = 6.864$ , and  $p = 0.000$ ). The results of this research provide data support that the more interesting, innovative, and dynamic the services offered by Islamic microfinance, the higher the community's positive attitude towards its use (Riwajanti, 2014; Fidayanti et al., 2024). This factor confirms that Islamic microfinance, which can provide an attractive and enthusiastic service experience, is more readily accepted by the public. The test results show competence influences attitudes towards Islamic microfinance ( $\beta = 0.244$ ,  $t = 7.898$ , and  $p = 0.000$ ). These findings indicate that Islamic microfinance's professionalism in providing services is key to forming positive attitudes. Good performance in fund management, clarity of transaction procedures, and service quality ultimately increase public trust in Islamic microfinance (Kim & Hidayana, 2022; Aziz & Pandey, 2020).

Trustworthiness has also been proven to determine attitudes towards Islamic microfinance ( $\beta = 0.151$ ,  $t = 4.483$ , and  $p = 0.000$ ). These results show that the higher the level of public trust in the integrity and commitment of Islamic microfinance in implementing sharia principles, the greater the positive attitude towards the services offered. Islamic microfinance's credibility and track record in maintaining trust are key in strengthening positive perceptions of Islamic microfinance (Hussein-Kakembo et al., 2021; Migdad, 2023). Compliance with Sharia principles significantly affects Attitude ( $\beta = 0.196$ ,  $t = 5.259$ , and  $p = 0.000$ ). This research confirms that full compliance with Islamic law in managing Islamic microfinance products and services is vital in forming positive societal attitudes (Kim & Hudayana, 2022; Fidhayanti et al., 2024). Muslim communities tend to be more accepting and confident in Islamic financial services that operate according to Sharia law, without any elements of *riba*, *gharar*, or *maysir*.

The test results show that Justice has a minor positive influence on attitudes with  $\beta = 0.067$ ,  $t = 3.202$ , and  $p = 0.001$ . Even though justice is a core value in Islamic teachings, its impact on people's attitudes towards Islamic microfinance is not as significant as other factors. This may indicate that although fairness is essential, society may pay more attention to factors such as trust, competence, and compliance with sharia in determining their attitudes toward Islamic financial services (Alotaibi et al., 2022; Albaity & Rahman, 2021). The analysis results show that Attitude significantly influences Intention, with  $\beta = 0.646$ ,  $t = 17.075$ , and  $p = 0.000$ . These findings confirm that people's positive attitudes toward Islamic microfinance directly increase their Intention to adopt these services (Purwanto et al., 2022; Purwanto, 2021). In other words, the better the public perceives Islamic microfinance, the more likely they will use it in their financial activities. Therefore, building and strengthening a positive attitude toward Islamic microfinance is the primary strategy for increasing the adoption of Islamic financial services.

## CONCLUSION

This research reveals that Islamic Brand Personality, developed by Jan & Shafiq (2021), is not just a marketing dimensions but a key element that significantly shapes attitudes and intentions to adopt Islamic Microfinance services. With full support for the seven hypotheses proposed, it is clear that Islamic Brand Personality is not just an identity but a fundamental factor in building consumer trust and preferences. Therefore, Islamic microfinance must strengthen its brand personality because if it fails to adopt a branding strategy based on Islamic values, it risks losing its relevance and appeal, even in market segments with a majority Muslim population.

This research confirms the relevance of the Islamic Brand Personality component in forming a positive attitude toward Islamic Microfinance. Jan & Shafiq (2021) explain that Islamic Brand Personality dimensions, which reflect Sincerity, Competence, Excitement, Trustworthiness, Justice and Shariah Compliance, have contributed to the formation of positive attitudes in society towards Islamic Microfinance. Islamic Brand Personality dimensions function as a factor in forming a strong brand image, which in turn influences attitudes. This research also strengthens our understanding of the importance of the Islamic Brand Personality component in creating a positive attitude towards Islamic Microfinance. According to the theory of Planned Behavior (TPB) from (TPB) from Ajzen (1991), attitudes can influence the intention to adopt certain products or services. In the context of this research, Islamic Brand Personality dimensions function as factors that form a positive attitude towards Islamic Microfinance. Thus, these findings strengthen the TPB, especially in the context of Islamic Microfinance, that aspects of branding that are by Islamic values have a significant impact on forming attitudes towards Islamic Microfinance.

## MANAGERIAL AND PRACTICAL IMPLICATIONS

From a practical perspective, this research provides concrete and actionable recommendations for managers and policymakers in the Islamic microfinance sector to address the recent downward trend in asset growth. Islamic microfinance institutions must invest in professional development for their staff, especially in fund management and service efficiency. This includes implementing transparent financial reporting and clear transaction procedures to build a reputation of reliability and expertise. To attract younger and more dynamic customer segments, institutions should also move beyond traditional services and embrace innovation by developing user-friendly mobile apps, creating engaging digital content, and launching community-based programs that resonate with modern consumers. Furthermore, while Sharia compliance is a core expectation, institutions must proactively communicate their adherence to these principles through transparent audits and public education campaigns that highlight the differences between Islamic and conventional financial systems. These strategic steps are crucial to enhance the competitiveness of Islamic Microfinance, increase public trust, and support the industry's sustainable growth.

## LIMITATIONS AND FUTURE RESEARCH

This study provides valuable insights, but it is not without limitations. The findings are based on a sample of Islamic microfinance customers in Indonesia, which may limit the generalizability of the results to other regions with different cultural and economic contexts. Additionally, this research focused on internal brand factors and did not consider external influences such as government regulations and technological changes. Future research could expand on these findings by conducting a comparative study between Islamic microfinance in Indonesia and other Muslim-majority countries to see if the brand personality dimensions have a different impact. Researchers could also explore the role of other brand-related variables, such as brand reputation and brand loyalty, and their relationship with adoption intention. Lastly, a qualitative approach, such as in-depth interviews, could be used to gain a deeper understanding of customer perceptions and their emotional connection to Islamic microfinance brands.

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# INDIGENOUS CHICKEN CONTRIBUTION TO FOOD SECURITY AND POVERTY ALLEVIATION: A CASE OF NCERA VILLAGE IN THE EASTERN CAPE PROVINCE, SOUTH AFRICA

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## ABSTRACT

*Indigenous chickens (ICs) are kept by almost every rural household in resource-poor regions in South Africa as in other developing countries, yet there is paucity of research output that focuses on IC production in relation to food security studies by developing countries including South Africa. This study is an attempt to address this gap. The purpose of the present research is to determine the contribution of IC production to food security and poverty alleviation in rural communities, using Ncera Village in the Eastern Cape Province in South Africa as a case. The challenges experienced by rural households in rearing indigenous chickens are highlighted and recommendations are provided for the relevant authorities and the IC producers to address the challenges identified by the study. Understanding challenges will assist in devising solutions and means of enhancing the income that could be generated from village chickens at rural household. A qualitative research approach was adopted, where semi-structured face-to-face in-depth interviews were utilised to gather data from a non-random purposive sample of twenty (20) households rearing indigenous chickens in the study area. The study revealed that the production of ICs plays a significant role in food security for households, and to a lesser degree in income generation. The study showed production and contribution of indigenous chickens to food security in rural households have not been fully utilised as an average of 24 ICs was produced per household. The study further discovered that women are the majority in the production of ICs in the study area. This addresses gender equality in a male-dominated traditional society. It is argued; this necessitates a need to design training programmes in IC production that will especially earmark women as they predominate IC rearing. The present study contributes to the scant body of knowledge of IC production as a viable tool for improving food security, reducing poverty and enhancing livelihoods in marginalised rural communities in South Africa. The study further sheds some light on possible interventions in enhancing IC production in the research site. The study suggests that government should assist the poor rural households to increase the production of ICs. This will contribute to rural development, transform poultry industry, boost food security and alleviate poverty. Limitations and future research are also discussed.*

**Keywords:** Food security, poverty alleviation, income generation, indigenous chickens, rural communities.

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## **INTRODUCTION**

This study aimed to determine the contribution of free-range indigenous chickens (ICs) production to food security and poverty alleviation in rural communities. This was achieved by using Ncera Village 1, which is situated 30 kilometres south of East London in the Eastern Cape Province in South Africa as an ideal case. Ncera community comprises nine rural villages falling within the Buffalo City Metropolitan Municipality in the Eastern Cape Province. The Eastern Cape province is one of the poorest provinces in South Africa and therefore, Ncera villages as part of it are not exempt from poverty, and a high rate of unemployment. Anyona et al., (2023) note that IC production is considered a critical pathway to asset creation, poverty alleviation and improved household food security in rural areas of developing countries. This is because they are favourable for backyard rearing and their adaptability to harsh tropical conditions (Gheyas et al., 2022).

It is observed that, while South Africa is technically food secure, on average, at a national level, most households lack access to adequate food to satisfy their nutritional needs for an active and healthy lifestyle. Approximately, 2.1 million (11.6%) South African households reported to have experienced hunger in 2017 (Statistics South Africa, 2023). Statistics South Africa further reported that the non-metros areas of the Northern Cape (25.3%), North West (22.6%) and Eastern Cape (21.7%) had the maximal percentage of households that reported inadequate access to food. Idamokoro and Hosu (2022) assert that the COVID-19 pandemic has left many people in lack of food and more hunger in various countries in the world including South Africa. Gourlay et al., (2021) on the other hand contend that food insecurity has been a conundrum even before the onset of COVID-19. According to Statsa (2020) hunger study reports that respondents who stated that they experienced hunger since the onset of the COVID-19 lockdown increased from 4.3% to 7.0%. Additionally, Ngumbela (2021) in South Africa revealed that the subset of respondents who reported that their income had decreased since the beginning of the national COVID-19 lockdown were more likely to be hungry, with around 11.4% (roughly one out of every 10) stating they had gone hungry throughout the lockdown. It is widely believed that the production of indigenous chickens could contribute to improved food security of resource-poor rural communities where it is the primary source of animal protein in the form of meat and eggs (Desta, 2020; Moussa et al., 2018), and contributes to poverty alleviation as well by providing significant income for the producers. This study argues that the South African government should encourage and assist rural IC producers to expand their IC production. In this way the rural IC producers in addition to consuming IC products can participate in income-generating activities enhancing their economic situations and promoting rural economic growth. This would also contribute to a significant reduction to malnutrition in the rural communities as rural families would be able to consume large amounts of eggs and meat which provide readily available much-needed animal proteins. This will contribute greatly to rural development coupled with employment creation, poverty alleviation and enhanced livelihood, particularly for the rural poor. South Africa has a very high unemployment rate especially among youth, poultry could help reduce the high unemployment rate as it has a proven capability for job creation (Baird, 2024). Dapira (2024) note that the agricultural sector, which includes poultry farming, is assumed to hold prospects of creating rural employment opportunities, particularly for the bulk of unskilled, poorly educated and geographically located in remote areas, far from urban labour markets. This study aimed to qualitatively determine the contribution of IC production to food security and poverty alleviation, challenges experienced by producers, and thereby recommend strategies for addressing the identified constraints. This study addressed the following key research questions:

- What are the perceptions of rural households on the contribution of indigenous chicken production to food security and poverty alleviation?
- What challenges are encountered by rural households in rearing indigenous chickens?
- What strategies can be implemented to address the challenges identified by the study?

The current research contributes to empirical literature on the use of indigenous chicken production as a tool to achieve food security and alleviate poverty and challenges experienced in rearing indigenous chickens in the rural context. It further sheds some light on possible interventions in enhancing IC production in the research site. The remaining sections of the present study are structured in the following manner: a review of the literature related to the topic of this article, the research methodology employed, the findings and discussion are presented. Finally, the implications, recommendations, conclusion and further research are discussed.

### LITERATURE REVIEW

Previous research indicates that IC production is the backbone of livelihoods of most resource-poor rural households in South Africa and other developing countries. According to Alemayehu et al., (2019) IC production has the potential to improve the income of the households, enhance food security, contribute to poverty reduction and assist in lessening the detrimental economic effects for rural communities. They, however, note that extant literature lacks sufficient evidence that indicates the share of the chicken income compared to all income sources contrasted with all income sources and lack of information on disjointed data by the various wealth categories. Tembachako & Katanha (2019:43) concur with Sadati et al., (2021:1) that food security occurs when all people, at all times have access to enough, safe and nutritious food to meet their nutrient needs and food choices for a functional and healthy life. They however, note this is challenging to accomplish in most rural communities in developing countries. Notwithstanding the scores of challenges related to responding to hunger in the world, the significance of food security for all people cannot be overemphasized, and indigenous chicken production is an essential key to sustainable food security in the developing world (Idamakoro & Hosu, 2022; Tabler et al., 2023). Sadati et al., (2021) and Vagsholm (2020) go further and agree that food safety and food security are two complementing components of our sustainable future. However, it is argued that food safety must be an enabler and not a deterrent of global food security. Concerted attempts are required to increase the production of food but with a prospect to promote food quality and safety as well as to be in charge of residues of continuous pesticides in the environment (Carvalho, 2006). Vagsholm et al., (2020) contend that the tools and strategies used to accomplish food security must be in line with food safety and public health together with sustainability. One precept according to Vagsholm et al., is that, unsafe food does not answer food security challenges. They further state however, that mechanisms to ensure safety and quality of food can sometimes decrease the amount of the available food and thereby enlarge food scarcities.

The phenomenon of food insecurity refers to the opposite of food security. Ngumbela et al., (2019) state that food insecurity takes place when a person or community lacks physical or economic access to adequate safe and nutritious food to satisfy their dietary needs and food choices for an active and healthy life. The Food and Agriculture Organization (FAO) captures food insecurity as a phenomenon that occurs when some people do not have access to adequate quantities of safe and nutritious food and hence do not consume the food that they need for growing normally and conducting an active and healthy life.

### CONTRIBUTION OF ICS TO FOOD SECURITY

Bhiranu et al., ((2023) note that food insecurity has been a global development challenge in previous decades. They further posit that the majority of poor households experiencing food insecurity are from developing countries, largely in rural and agricultural sectors. Mujiyambere et al., (2021) asserts that food security is a requirement of rural households in developing countries. Reliable access to adequate food is a fundamental human right and necessary for well-being. IC production is considered one of the vital mechanisms of enhancing food security by a huge proportion of people worldwide (Bettridge et al., 2018; Desta, 2020; FAO, 2014a; Idamakoro & Hosu, 2022). ICs are accessible to resource-poor rural people and

they improve food security in various ways including provision of meat and eggs, income generation, organic fertiliser (Rajkumar, et al., 2021; Thembacako & Katanha, 2019) and contribute to the empowerment of women (Tabler et al., 2023; Wong et al., 2017), and to socio-cultural functions like traditional ceremonies, hospitality, and exchange gifts to nourish relationships (Gunya et al., 2020). Accordingly, they contribute remarkably to the livelihoods of those who rear them. ICs produce meat and eggs which are a source of high-quality protein. Various authors have reported the probabilities of utilising ICs as food source (meat and eggs) for the vulnerable (Bhiranu et al., 2023; Gunya et al., 2020; Idamokoro & Hosu, 2022). According to Idamokoro and Hosu (2022:2) animal source foods as well as chicken are especially concentrated in bio-available iron, various vitamins and components (like vitamin A, vitamin B12, zinc, and riboflavin); which are nutrients that are often not available in many poor communities particularly in developing countries.

In a study conducted by Gunya et al., in Centani and Mount Frere in the Eastern Cape province, South Africa, it was found all respondents (100%) reared ICs to satisfy the food needs (meat and eggs) of their households. In both areas the majority of farmers stated that they consume one chicken at a time. Egg consumption differed, as most of the respondents (86.38% and 80.52%) reported consuming IC eggs, while few (26.3% and 19.48%) did not.

Bhiranu et al., (2023) opines that IC production has a multidimensional contribution to the livelihood of both rural and urban households. IC production covers economic and social to cultural and environmental benefits (Akinola & Essien, 2011; Bhiranu et al., 2022; Gueye, 2000). Bhiranu et al., (2023) concurs with Tembachako and Katanha (2019) in explaining that the economic role of IC production includes generating additional income for the household that can be utilised to pay school fees, medical expenses, purchase other foodstuff and even buy other agricultural inputs such as fertilizers and improved seeds. Gueye (2000) argues that IC production systems are financially economic, due to the fact that, even though the productivity of birds is low, even little amounts of poultry meat and eggs amount to almost a net profit for smallholder farmers. In the study by Gunya et al., (2020) in South Africa, the majority of farmers in both Centane and Mount Frere did not sell village chickens. The reasons cited for not selling village chickens were having few chickens and reserving them for home consumption only and non-existence of a market. Nevertheless, a few farmers reported they seldom sold some of their chickens within the community. The primary reason that was cited for selling chickens was the need for cash. Chickens were sold at R80 (\$7.22) each. The majority of farmers did not sell eggs, manure and feathers because of non-existence of markets (Gunya et al., 2020).

## **CONTRIBUTION OF ICS TO POVERTY ALLEVIATION**

The role of ICs as a potential tool to reduce abject poverty through its effects on the improvement of livelihoods is established in the literature (Anyona, 2023; Gueye, 2005; Hailemichael et al., 2016; Mujyambere et al., 2021; Sonaiya, 2007). The importance of poultry (which includes the production of ICs) in helping the poor and the disadvantaged is demonstrated in various national poverty alleviation programs (Alemayehu et al., (2019). ICs can play a significant role in poverty reduction of rural farmers by providing a cheap source of protein, by means of chicken meat and eggs (Gunya et al., 2020). Bhiranu et al., (2023) opine that although the average contribution of ICs cash income to overall household cash income appears small, it has remarkable implications for households, living below the poverty line. They further state the higher contribution of poultry cash income to households' livestock and total cash income may imply IC product is one of the primary livelihood pursuits for resource-poor communities and its potential role as an entry point for poverty alleviation and improving households' livelihood.

Desta (2020) asserts that indigenous village chicken (IVC) production is a pro-poor enterprise and diversifies the rural economy. IVCs can be sold as the need arises to buy food, to cover school fees, clothing

and medical expenses. Since IVC production has a short generation interval, it quickly yields income and gathers resources and plays a subsidiary occupational role (Gondwe, 2004). IVC production can be used as a job creation strategy to engage unemployed youth and contributes to political stability of low-income countries. Desta (2020) and Wong et al., (2017) concur that despite the fact that IC production may not contribute significantly to the mainstream national economy, it does play an integral part in savings and investment and backs the livelihood of subsistence farmers. According to Wong et al., (2017) ICs promote asset formation and wealth accumulation, particularly in rural communities, which improves the social status of subsistence farmers.

Desta (2020) suggests that any interventions with IC production have to be labour-intensive to decrease the high rate of employment in the developing countries. Accordingly, VCs improve and diversify the rural economy (Besbes, 2009; Desta, 2020; Padhi, 2016), and simultaneously maintain household food security (Wong et al., 2017) by reducing and rolling out production risks (Rise et al., 2005; Wong et al., 2017). Padhi (2016) concludes that in view of this, ICs are a component of mainstream subsistence agriculture. Padhi further contends that ICs create rural jobs, and hence contribute to poverty alleviation and development of a small-scale resilient enterprise.

Women are reported to be the key caretakers of ICs, as they normally stay at home; however, from time to time men and children may also be involved (Kurz et al., 2023). Alemayehu et al., (2018) reveal that in spite of all the regional variations, whether referring to smallholder farmers in Africa, Asia or Latin America in smallholder chicken production, women often assisted by their children are the major owners and carers of ICs. Men are known to help in the construction of chicken houses. The research literature reveals that an exception to the rule is that there are some cases where men take particular interest in IC production when flock sizes grow large. In the study by Gunya et al., (2020), it was reported that, although the ICs belonged to the whole family, there were specific patterns of ownership. The majority of chickens (53.829% and 45,76%) in Centane and Mount Frere respectively were owned by women. It is also reported that decision-making regarding selling, consumption and gifts to guests in ICs reflects plurality. Muchadeyi et al., (2004) reported that in Zimbabwe women-headed household owned more chickens, suggesting that chicken production is crucial to these households. According to Alemayehu et al., (2018) even though women are by and large the main chicken owners and caregivers of these birds, women normally do not take the decisions on the use of the ICs and/or women are not necessarily bestowed with complete ownership of the chickens or with decision-making authority with regard to the use of IC products and income from sales.

## **CHALLENGES OF REARING ICS**

Extant literature (Alemayehu, 2018; Kurz et al., 2023; Solondae, et al., 2022; Tabler et al., 2023) reveals that numerous obstacles stand in the way of making the production of ICs a sustainable enterprise to fight food insecurity and poverty. These challenges include diseases, low productivity, predation, poor housing, theft, high cost of and limited availability of feeds, market access, lack of veterinary and extension services.

Diseases are cited as the major cause of chicken losses in chicken production. It is widely believed this is due to poor housing, poor hygiene and not enough feeding which makes chickens vulnerable to diseases (Gunya et al., 2020; Selam & Kelay, 2013). In a South African study by Mtileni et al., (2009) a high prevalence of diseases was observed among ICs. This is attributed to among other things mixing of different livestock, free-ranging behaviour which leads to the mixing of chickens, and the absence of veterinary services (Gwala, 2014). Gunya et al., (2020) in their study in South Africa state that diseases become a challenge when drugs and vaccines are not easily attainable to smallholder farmers. The most common cause of the high mortality rates in chicken production is found to be the New Castle disease (ND)

which can sometimes wipe the whole flock. Tembaco & Katanha (2019) note that most rural smallholder farmers are resource-poor and cannot afford to buy vaccines to prevent diseases attacking their birds leading to death of most ICs due to being not vaccinated.

Regarding productivity, IC breeds are low and slow producers of eggs and meat, compared with commercial poultry (Wong et al., 2017). Wong et al., (2017) go further and state that even under ideal housing and feeding situations, productivity in IC production is much lower compared to that of their commercial counterparts. Village chickens spend a lot of time scavenging for feed and escaping from predators, lowering their growth rate and eggs production, and use up to 75% of their time hatching eggs and looking after chicks (Pym & Alders, 2012; Wong et al., 2017).

Several researchers (Desta, 2020; Harun & Massango, 2000; Mahoro et al., 2017; Tarwiyeri & Fanadzo, 2013 & Wong et al., 2017) have reported significant losses in IC production that are caused by predators. These include thieves, hawks, dogs, rats, and owls. Chicks are found to be more vulnerable to predators especially hawks and typical attrition rates range from 50% to 70% (FAO, 2010; Wong et al., 2017). Predation was ranked second after diseases as a challenge to IC production in a study by Anyona et al., (2023).

Various studies on chicken production (Chah et al., 2018; Gunya et al., 2020) report theft as contributing to chicken losses in flocks under free range production system.

There is evidence in the literature that lack of markets and information is one of the constraints encountered by IC producers. Mkhabela (2018) as cited in Mamabole et al., (2021) posit that most farms in South Africa collapsed due to limited access to the market. Anyona et al., (2023) in their study on characterization of IC production and related constraints cited lack of markets. Developing effective marketing strategies for ICs including instituting market channels and advancing the “our own” product is vital for farmer livelihoods.

According to Anyona et al., (2023) most remote areas of developing countries have minimal veterinary and extension services that cannot cover the huge areas successfully, which constrains IC producers’ access to significant services and information. The spread out area, limited resources and absence of infrastructure in various rural areas of low and middle income countries frequently add largely to restricted veterinary and extension services FAO (2014). There is general acceptance that the lack of government support for communal farmers has contributed to their failure (Mamabola et al., 2021). In a South African research undertaken by Mtileni et al., (2009) farmers reported low-standard chicken housing, poor disease control, and the lack of organised vaccination and poultry extension services as the primary challenges for IC production in the Limpopo, Northern Cape and Eastern Cape provinces.

## **STRATEGIES FOR ADDRESSING CHALLENGES**

Promotion of best management practices, health management, predation prevention, proper housing, producer training in improved production are strategies that could be implemented to address the constraints experienced in IC rearing.

### **Promotion of best management practices**

Previous research (Adoligbe et al., 2020; Idamokoro & Hosu, 2022; Mujiyambere, 2021; Tabler, 2023) shows that changes in traditional management practices can enhance the production of ICs and therefore contribute to household income increase. Tabler et al., (2023) posit that assumption of enhanced management practices led to improved flock size, improved household income, improved household food

security and improved decision-making power for women. However, Adoligbe et al., (2020) argue that intervention to enhance production in the traditional system should be community-based and pre-arranged. They further propose that for chicken production to be sustainable, the perceived needs and interests of the communities must be taken into account when suggesting several recommendations.

According to research, the management of health is a major challenge in rural IC production. Kusina et al., (2001) and Pedersen (2002) as cited in Mujyambere (2021) observed that high mortality rates and the reduction in the production performance of ICs were the significant repercussions of poor health management. Availability of veterinary services to rural ICs producers could help combat and treat diseases. Tabler et al., (2023) note that New Castle disease vaccination programs led to significant growth in magnitude of flocks and the profitability of ICs. They further suggest training women as community vaccinators could result in the sustainability of vaccination programs.

Building proper housing for and confining chickens, scarecrows and trapnets are recommended strategies that can be used to prevent predation (Mujyambere, 2021).

Various authors assert that ICs are vulnerable to theft when not sheltered. Thus, proper housing facilitates the management of ICs and help the farmers in effectively rearing their chickens to the market age in the shortest time possible. Despite this, the ICs survive and reproduce in the excruciating village circumstances where commercial breeds perform poorly.

Anyona et al., (2023) suggest that a specific focus to address the challenges that consider gender- and region-based distinctions is important. They further indicate that women frequently have scanty to no benefits from extension services of trainings in new technologies. Additionally, the majority of far-removed areas in developing countries frequently have restricted extension and veterinary services which cannot service the vast areas properly, which hamper producers' access to important services and information (FAO, 2014b).

Extant literature (Tabler, 2023) indicates that women play key roles in ICs production, ICs production assists in reducing inequality by improving women income and control over a household's limited resources. They further posit income inequality especially, increases the possibility of food insecurity, particularly of socially excluded or disenfranchised groups.

## **RESEARCH METHODOLOGY AND DESIGN**

### **Study area**

This study was conducted in Ncera Village 1, which is located within the Buffalo City Metropolitan Municipality (BCMM), Eastern Cape Province in South Africa. This area was selected because of its rurality, convenience and accessibility to the researchers. The study targeted both men and women rearing ICs in the study area. The data were gathered from the beginning of January to the end of March 2023.

### **Research design**

The present study is explorative in nature, and a qualitative research method was considered appropriate since it is subjective in nature and allows the researcher to dig deeper into the phenomenon to obtain rich understanding (Creswell & Creswell, 2018). Esterby et al., (2018) as mentioned in Adekomaya et al., (2023) also note that qualitative research allows the researcher to understand the underlying reasons and motivations behind the phenomenon, and this is in line with interpretivism and subjectivism. Semi-structured interviews were used to obtain in-depth data from the participants, and data was collected until saturation was reached. Interviews allow triangulation of data obtained from other sources and therefore

enhance the integrity of research findings. The qualitative approach was chosen because of the descriptive nature of the study. Also, it provides an in-depth insight into a particular topic, issue, or meaning based on first-hand experience. Secondary data collection was accomplished by consulting sources such as journals, books, databases, government publications, dissertations/theses, local and international conference papers. Primary data were generated by utilising an interview protocol as a research instrument. Before data gathering, a pilot study was undertaken to pre-test the interview protocol for validity and suitability for collecting data from households rearing indigenous chickens, using face-to-face semi-structured in-depth interviews with two households in the research site.

### **Measurement instrument**

Data for the current study were gathered using an interview guide which contained twelve questions that were posed face-to-face to the respondents during the interview. Questionnaires would have been too rigid and limiting to accomplish the aims of this research. The interview is considered one of the most powerful and popular mechanisms for data collection since it allows the researcher to access respondents' perceptions, meanings and understanding of others' situations Punch (2005).

### **Population and sampling**

This study's primary focus was on free-range indigenous chicken producers. The population for this study, therefore comprised all households in Ncera Village 1 that were rearing ICs. The study population was considered to be homogenous as chicken producers live close to each other and have similar livestock rearing practices. Therefore, following the notion of Singleton et al (1993) the sample size of twenty respondents was considered adequate. A non-probability purposive (judgement) sampling technique was applied in the present study because of its scientific alignment with the qualitative study. The purposive sampling method involves the researchers deliberately and purposefully choosing the sample they think can be the most fruitful in responding to the research questions Farrugia (2019). The inclusion criteria were, an individual had to be above eighteen (18) years old, a resident of the study area, currently rearing ICs or from an IC keeping household, and agreeing to participate in the study. The participants included both men and women and the majority were women by virtue of being the ones mainly in charge of chicken keeping in most households.

### **Data collection**

The necessary ethical clearance was obtained from the village chief before data were gathered. The interview guide was piloted by interviewing two residents before rolling out data collection to the rest of the sample. The researchers requested interview meetings and set up appointments with the village residents. Being familiar with one of the researchers who is also a resident in the village, it was easier for the respondents to consent to take part in the research. The interview guide used to gather data comprised of a list of open-ended questions with probes used to get more understanding where necessary. Respondents signed informed consent forms before taking part in the interviews. The date, location and time of the interviews were agreed upon among the researchers and respondents. The researchers ensured that interview settings protected respondents' safety and anonymity (Bloomberg & Volpe, 2008) as quoted in Adekomaya et al., (2023). To ensure that all respondents understood the topics covered in the interview guide, the in-depth interviews were carried out in Isixhosa, captured in a note book and audio-recorded. Interviews allowed respondents to constructively convey their experiences and views without being held down by the researchers' viewpoints or previous research findings. At the end of every interview session the researcher asked the respondent for referrals, and in that way the researcher was able to acquire more contacts for potential respondents to be part of the study.

### **Trustworthiness**

According to Babbie and Mouton (2001:275) the way towards enhancing validity and reliability which is called trustworthiness in a qualitative study, include inter alia triangulation, peer reviewing, writing extensive note taking, member checking and audit trials. In the present research the researchers employed triangulation and member checks. Member checking takes place when the researcher takes the transcribed interviews back to the participants to check whether what is written is what they have truly said. Through this method additional volunteer information can be obtained. Member checks was done by the researchers by way of calling and emailing the participants and requesting that they read through the transcribed interviews.

### **Data analysis**

In this study, the collection and analysis of data from interviews was done concurrently as time permitted. All interviews conducted were audio recorded, transcribed and translated into English. Data were then manually analysed and subsequently identifying the key themes. The researchers analysed the data by reading each transcript carefully several times and reflecting on the points raised by participants. The researchers selected to manually analyse the data instead of using qualitative computer software programme, like NVivo, in keeping with Carson et al.,'s (2001) contention that manual analysis leads up to a deeper appreciation of many interpretations that may be derived from qualitative data.

### **Ethical considerations**

The study observed research ethics, where the participants were first informed about the purpose of the research. They were also informed that their participation was voluntary and that they could withdraw from the interview at any point without any penalties. Moreover, consent forms were signed to guarantee voluntary participation and confidentiality of information before the interviews were conducted. All the participants were assigned numbers instead of names to protect their identities in the study.

## **FINDINGS AND DISCUSSION**

### ***Demographic characteristics of the participants***

In-depth interviews were conducted with twenty (20) households' representatives that were rearing indigenous chickens in Ncera Village 1 in the Eastern Cape Province, South Africa. The findings indicate that the majority of participants were females as represented by 60% (n= 12), and 40% (n= 8) were males. The age groups 41 years to 50 years, and 61 years to 70 years were the majority with each representing 30% (n=6) of the sample. The seventy-plus age group represented 25% (n=5), while the 21 years to 30 years, age group was the lowest 10% (n=2). These findings indicate that ICs production is dominated by older persons in Ncera Village 1. These older farmers may encounter various challenges in applying modern poultry management practices. The finding on elderly farmers is consistent with the findings of Tarwireyi and Fanadzo (2013) who stated that the majority (56%) of participants in their study were 50 years and older. Regarding marital status, the majority of the participants, 75% (n=15) were married while 25% (n=5) were single. On employment status, a significant percentage 95%, (n=19) of the participants were unemployed at the time of data collection. Their major sources of income were old age pension and child support grants. Further analysis revealed the majority of participants, 95% (n=19) had formal education, while 5% (n=1) were illiterate.

The flock sizes ranged from five (5) chickens to 65 chickens, with an average of 24 chickens per household. This is an indication that IC production in the study area is on a small-scale basis. IC production is not utilised to the maximum in this village. This finding is similar to that of Gwala (2014).

## ***The Contribution of ICs***

The findings revealed that ICs contribute to food security through provision of meat, eggs, and income that can be used to buy other food items. These are discussed below in detail.

### ***Meat consumption***

When household participants were asked why they reared ICs, the majority, 90% (n=18) revealed that they reared ICs primarily for home consumption. They indicated that they keep ICs so that whenever they need meat they can slaughter. They further stated that they do not have to buy meat (chicken) on credit when they have stock at home. Moreover, with the money from the sales of the chickens, they can buy other foodstuffs. This could then supplement or complement their food basket. To illustrate this, Participant 1 opined that:

*I do not have money to buy meat. The money I have only covers food excluding meat. So when you rear chickens you slaughter them because meat is important for health. It provides proteins.*

In agreement with the above view, Participant 5 commented that:

*We raise chickens mainly for our consumption. Also, we do not want to buy meat on credit. Yes, we do sell when one wants to buy something else. The cock is R150 each and the hen is R130 each.*

The study also revealed that some other participants reared ICs out of passion and as a family tradition. Regarding their preferences for meat from ICs versus that from broilers, all the participants indicated that they prefer IC meat over broiler meat. They explained that IC meat has a better taste than broiler meat. They further noted that the IC meat is fresh since it is slaughtered whenever needed. To attest to this, participant 7 commented that:

*The broiler is not good health-wise. A lot of chemicals are used to make broilers grow fast so that the producer can make money fast. Broiler meat is tasteless unless you add some spices to make it tasty. The indigenous chickens' meat on the other hand is healthy and you just need to add salt only when cooking it.*

The study also revealed that the consumers of indigenous chicken meat are prepared to pay higher prices. Therefore, the producers of ICs in the study area should take advantage of this market opportunity and increase their production to generate more income and improve food security.

### ***Eggs***

Eggs were ranked as the second reason for rearing ICs by the participants. The majority of participants emphasised, however, that they do not consume eggs as much as they consume chicken meat. They explained that they preserve eggs for hatching to increase their flock. Contrary to the above contention Participant 9 explained that:

*I eat a lot of IC eggs because I have noticed that chickens do not hatch all the available eggs. An example is a hen that broods 15 eggs and only hatches six (6) chicks. So, I should eat half of the eggs because even those six chicks may not survive. I have a hen that hatched eleven chicks recently, but now it does not have a single chick due to attacks by the hawks.*

This study reveals that eggs are generally utilised to generate the flock. However, although eggs are not consumed to the same degree as meat, they remain a significant source of protein for rural households.

Participants also indicated that they prefer IC eggs because their taste and the colour of the yolk is better, compared to those of the exotic chickens.

### ***Income generation***

In the present study, when the participants were asked if they sell ICs, 20% (n=4) responded in the affirmative, and 80% (n=16) stated that they do not sell their chickens at all. Those who reported having been selling the chickens mentioned that they sell cocks, since cocks do not contribute to egg production to increase the flock. Another participant mentioned that he sells chickens for R60 or R70 to reduce the flock when he feels there are many. Two other participants reported that when someone wants to buy chickens they sell and use the money to buy household stuff.

This study revealed that meat consumption, egg production and to a lesser extent income generation were the main reasons for rearing ICs in the study area. This finding is consistent with the results of various other authors (Gunya et al., 2020; Mahoro et al., 2017) in their study on the characterisation of ICs production system in South Africa and Rwanda respectively. In contrast to reports of earlier studies conducted in other countries and South Africa (Gunya et al., 2020; Mtileni et al., 2009; Nyoni & Masika 2012) none of the participants mentioned cultural rituals as a reason for rearing ICs.

### ***Challenges Faced by ICs Producers***

This study revealed that despite the contribution of ICs to the livelihood of rural communities, rearing them was bedevilled by various challenges including predation, theft, lack of capital, shortage of feed, high mortality of chicks, and absence of extension services. These constraints are discussed below.

It was reported that during the day, chickens move freely around the compound, scavenging for food, and in the process become exposed to predators and thieves. One can conclude that the impact of these constraints is attributed to the prevalence of scavenging in the village production system. This observation concurs with the findings of Asresie and Mitiku (2015). Participant 1 shared her experiences with a wild cat she called “ichathaza” or “ingada” and stated:

I even bought a fine net and used it to secure my flock but this animal digs a hole under the fencing. We once saw it, but we could not catch it. “Ichathaza” gets inside the chicken house and takes off the chicken heads. The problem is that we are based in the forest.

Still on predators, the majority of the interviewees, 60% (n=12) cited dogs as preying on both eggs and chickens. Hawks were also reported to be responsible for the high mortality rate of chicks. Notably, only 5% (n=1) of the participants had not experienced predation as he had built a brick house for overnight shelter for his flock. Moreover, he had properly fenced the area where the chickens were scavenging during the day.

Shortage of feed as one of the challenges was mentioned by 80% (n=16) of the interviewees. They reported that it becomes more challenging when the feed runs out and there is no money to purchase.

The majority of interviewees cited the high chicks' mortality as a serious challenge and attributed it largely to the Hawks. All participants sought assistance with proper materials to build safe and conducive housing for their flocks.

The participants reported the theft of chickens as another drawback in their production of ICs. Those who had experienced theft blamed poor chicken housing and a lack of resources to fence their premises.

All the participants reported a lack of agricultural extension support services concerning village chicken rearing at the time of data collection. Instead, ICs producers indicated that they utilise the indigenous chicken-rearing knowledge they obtained over a long period, as well as sharing their challenges with fellow producers in the local community. The participants called for assistance in the supply of feed, fencing, housing structures and provision of veterinary support services.

### ***Strategies that can be implemented to address the challenges***

In the current study respondents emphasized the need for extension support services including vaccination programs to combat the high mortality of chicks, need for safe and secure housing for their birds, assistance in the provision of feed. Improved productivity through proper interventions can be a starting point of sustainable chicken production (Singh et al., 2018). Tabler et al., (2023) note that changes in best management practices to increase chicken production can enhance food security. Singh et al., 2018 and Chaiban et al., 2020 concur that IC productivity can be enhanced by the introduction of germplasm, as there is a necessity to develop chickens with inbred potential for improved growth and egg production. It is argued in this study that IC producers should be trained and encouraged to provide housing for their birds using local materials. The majority of respondents believed that improved housing would address the challenge of predators as well as that of theft. Regarding high chick mortality, the respondents perceived the availability of drugs as the solution. They perceive that endemic disease control must be strengthened with free supply of vaccines. Respondents also cited training in effective management of ICs as the best strategy to overcome the challenges. Dumas et al., (2016) as cited in Singh et al., (2023) posit that addressing health and management constraints of ICs led to great increases in households' income, food security, and physical health of the community.

The current study noted that other strategies of surmounting production challenges include: support from stakeholders, proper housing, supplementary feed, availability of drugs and training. The fact that IC producers in the study area never received training on techniques of IC production from policymakers and other agencies supporting agriculture indicates low emphasis of livestock from the government.

## **DISCUSSION**

The current study reveals that IC production is widely practiced in the study site by various groups of people, of different age, gender and educational status. This is attributed to several factors which include: the almost short reproductive cycle of chickens, absence of cultural and religious prohibition on chicken meat in the study area, no difficulty in managing a small size of chicken flock and the capability of the indigenous chicken to adapt and survive in harsh conditions (Adoligbe et al., 2020), meat and egg taste and scavenging ability (Singh et al., (2023). ICs are also preferred because they require minimum feed and inputs, produce more eggs, and grow quickly. However, despite the great potential, ICs production in the study site was found to be small scale in nature as the study reveals an average of 24 chickens per household. This is so, even though village chickens have been projected to be one of the most sustainable means of promoting food security by the majority of people worldwide (Dest, 2021; FAO, 2014a). The results also show that most IC producers in the study area are women. This may be due to various factors including: the fact that women typically stay at home and are mainly responsible for looking after these birds including cleaning the chicken houses, feeding and watering the birds; the fact that men regard IC production as women's role, the low investment nature of IC keeping compared to other livestock farming. Mujiyambere et al., (2021) on the other hand attribute the higher involvement of women to their low literacy while the more educated men are involved in other professional activities. Tabler et al., (2023) state that IC production is a significant income generator for women who often own and manage ICs and use them as an important

part of female-headed households. However, sometimes men and children are found to also be involved. It is argued that men tend to be interested in chicken production when the enterprise grows. This finding is in agreement with findings of past research (Chah et al., 2018; Gunya et al., 2020; Kurz et al., 2023) which have revealed that chicken management is predominantly in the hands of women. The researchers argue that women should therefore be targeted in any intervention aimed at enhancing IC production in the study area. This would contribute to the empowerment of women as this would provide women with opportunities for education (Tabler et al., 2023; Wong et al., 2017). Additionally, since most ICs in the study site are managed by women this addresses gender equality in male-dominated traditional societies. Rural women empowerment might be an important tool to boost the rural economy and the South African chicken industry. Contrary to the finding in the present study Hirwa et al., (2019) as quoted in Mujyambere et al., (2021) reported in their study that the number of ICs owned by women in Rwanda was low (17%).

Villagers perceived the production of ICs as a significant contributor towards food security and other livelihoods of rural people. This agrees with many studies (Gunya et al., 2020; Mujyambere et al., 2021; Ozdemir, 2020) which found that the major reasons for rearing ICs is provision of protein in the form of meat, eggs, and income that can be used to buy other food items. In the current study respondents indicated that they preferred IC meat from broiler meat because of its taste, texture and leanness. They further explained that the advantage with rearing ICs is that they can slaughter anytime they feel like. Respondents also noted that even though they consume eggs they do not eat a lot of them as they preserve them for incubation. This is consistent with findings in previous studies (Gunya et al., 2020; Mujyambere et al., 2021).

The finding that ICs are raised mainly for meat consumption in the study area confirms previous research findings (Chah et al., 2018; Gwala, 2014; Mtileni et al., 2009; Nyoni & Masika, 2012; Tarwireyi & Fanadzo, 2013) which state that ICs are raised primarily for family consumption, social security, and selling would take place only when there was excess or when producers needed cash for emergencies. The current study also revealed that some other participants reared indigenous chickens out of passion and as a family tradition. Contrary to these findings, Moussa et al., (2019) reported that in Niger, the selling of chicken was ranked the highest (38.31%) followed by home-consumption (37.74%), and lastly donation (22.99%). Nevertheless, in this study, it can be concluded that ICs meet two of the primary cornerstones of food security which are the availability and accessibility of food. The production of ICs by villagers boost their food security through improved availability and access to IC eggs and meat. This finding is consistent with that of various other authors (Chaiban et al., 2020; FAO & IFAD, 2020; Tabler, 2023) who concluded that village chicken systems play critical roles in the food and nutritional security of rural people in vulnerable and resource-poor ecosystems. It can be deduced that the numerous IC producers in the study area reared ICs without realizing the income that can be generated from them as they concentrate on consumption.

The findings of the current study show that respondents faced numerous challenges in regard to rearing ICs which include: predation, shortage of feed, high mortality among chicks, theft and lack of agricultural extension support. This finding is consistent with findings by numerous other researchers in poultry production. Respondents emphasized the need for extension support services including vaccination programs to combat the high mortality of chicks, need for safe and secure housing for their birds, assistance in the provision of feed. Tabler et al., (2023) opine that changes in best management practices to increase chicken production can enhance food security. It is argued in this study that IC producers should be trained and encouraged to provide housing for their birds using local materials. The majority of respondents believed that improved housing would address the challenge of predators as well as that of theft. Regarding high chick mortality, the respondents perceived the availability of drugs as the solution. Respondents also cited training in effective management of ICs as the best strategy to overcome the challenges.

## CONCLUSION AND RECOMMENDATIONS

This study found that the production of ICs in the study area plays a crucial role in household livelihood in terms of food security and to a lesser degree income generation. The study further demonstrated that despite the great potential of IC production, IC production in the research site is still quite low (average of 24 chickens per household). Additionally, the study indicated that households kept ICs primarily for family-consumption and they do not realise the income that can be generated from the birds. Women are found to be the majority producers of ICs in the study area. This, necessitates a need for the government to design training programmes in IC production that will especially earmark women as they predominate ICs rearing. IC producers are found to be plagued by challenges such as wild animals, dogs, hawks, theft, lack of capital, shortage of feed, high mortality of chicks and absence of extension services. The fact that there was no extension support available to the rural IC producers as indicated by study participants, shows that village chicken production was not accorded the recognition it deserves in terms of development and policy support by governmental institutions and civil organisations.

The implications of this research are, IC producers must come together and form cooperatives through which they will access extension services and training programmes. They must establish a slaughterhouse for the cooperatives. Agricultural policy makers must conduct awareness programmes that emphasize the significance of ICs in human nutrition. Civil organisations in the Eastern Cape province and in the BCMM, that work hand in hand with rural communities, must introduce programmes in support of interventions that advocate breeding of ICs, which will be achieved through capacity building of the marginalised rural households.

Based on the findings, the study recommends that the agricultural extension department through its officers should provide necessary skills and knowledge of handling chicken by conducting regular trainings and workshops to build the capacity of ICs producers in the rural areas. The study also recommends that there should be creation of awareness among the producers to diversify their production, to not only focus on consumption, but income generation as well. This can be a potential route to alleviate poverty and high unemployment rates in the rural villages, especially among youth.

Finally, this study acknowledges that small qualitative studies cannot be generalised. Further research could utilise quantitative approach with a big sample of rural households or mixed-method approach to obtain more meaningful outcome. A bigger sample can be used to generalise findings.

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# A SHIP-BASED ERGONOMIC FRAMEWORK FOR SUSTAINABLE COMMUNITY-BASED TOURISM SYSTEMS

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## ABSTRACT

Rural tourism faces many ongoing challenges, which create inefficiencies and hinder sustainability, such as overly physically demanding workloads, poorly organized systems, and a lack of stakeholder participation in addressing these issues. Through the SHIP-based Total Ergonomics Framework, this study seeks to create a design that will improve efficiency in the system, support sustainability, and empower communities in the Community-Based Tourism (CBT) system. In this case, a systemic, holistic, interdisciplinary, and participatory (SHIP) approach is used. In addition, ergonomic design and inclusive governance are also integrated. The data in this study were analyzed using the Partial Least Squares Structural Equation Modeling (PLS-SEM) model, with data obtained from 360 stakeholders in six CBT villages in Bali. This model analyzes the impact of Ergonomic-Based Assistance (EBA) on Task Burden (TD), Organizational Design (OD), and Environmental Context (EC), with Participatory Governance (PG) as a mediator of their relationship with Community Empowerment (CE) and Long-Term Sustainability (STC). The findings show that EBA and PG promote empowerment and systemic transformation. This is evidenced by EBA's ability to improve work efficiency, improve organizational coordination, and strengthen environmental security. Furthermore, PG also shows significance in mediating these effects. This indicates that the framework applied can be implemented in countries globally in the context of sustainable development goals through the integration of ergonomic interventions into social innovation and policy relevance.

**Keywords:** Total ergonomics, participatory governance, community empowerment, sustainable tourism, SHIP framework

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## INTRODUCTION

In the context of community-based tourism (CBT), the approach adopted is generally human-oriented. The environmental, social, and institutional interactions created in this ecosystem require sustainable development planning (Bolis et al., 2023; Borak Ali et al., 2021). In terms of its application, this approach is particularly suitable for rural tourism with high ecological sensitivity (Saldarriaga Isaza & Salas, 2024). In this regard, Costa et al., (2020) highlight that adopting a circular economy (CE) perspective can help the tourism sector transform toward greater sustainability by balancing economic progress with the responsible use of natural resources. Tourism performance is influenced by interrelated economic and social factors, and a stable social environment plays a critical role in sustaining tourism growth. Sibanda et al., (2020) found a significant negative relationship between crime rates and tourism income, indicating that improved social stability can lead to higher tourist receipts. These findings emphasize the importance of adopting a systemic and sustainable management approach that integrates economic, environmental, and social dimensions to ensure resilience and long-term sustainability. Research addressing these issues exists, but it predominantly focuses on stakeholder participation, cultural heritage preservation, and socio-economic impacts (Krittayaruangroj et al., 2023). However, no research has yet examined the application of ergonomic principles within CBT systems. Therefore, this study focuses on how system design and ergonomic factors can enhance functionality, strengthen resilience, and improve the well-being of tourism actors.

The lack of adequate infrastructure in the tourism sector, despite the fact that work activities in this sector often require heavy physical labor and multitasking, creates problems such as poor workload management, uncertain roles and tasks, and challenges for tourism sustainability (Rivera et al., 2016). The integration of ergonomics into work systems or local infrastructure is still rarely done in CBT (Dolezal & Novelli, 2022). This shows that productivity and sustainability in tourism at the community level can be improved through ergonomic design.

This gap is addressed by the application of the SHIP-based Total Ergonomics Framework conducted here (García-Acosta et al., 2012), for the CBT context (El-Sherbeeny et al., 2023). Efficiency, more systematic organization, and environmental safety can be improved through the integration of participatory ergonomics with socio-technical design. In this case, data from six tourism villages in Bali was used.

Here, an analysis was conducted on the impact of Ergonomics-Based Assistance (EBA) on Task Demands (TD), Organizational Design (OD), and Environmental Context (EC). Participatory Governance (PG) is modeled as a mediator toward Community Empowerment (CE) and the long-term Sustainability of Tourism Communities (STC). The model contributes theoretically and provides practical guidance. Local governments can use it for policy and training design. CBT managers can optimize workflow, task allocation, and safety. NGOs can strengthen participatory governance and inclusive decision-making.

This research integrates ergonomics and community development to introduce a systems-based intervention tailored for CBT contexts. The approach supports SDGs related to decent work, sustainable communities, and institutional capacity building (Toda et al., 2023). The findings contribute to policy, practice, and research on ergonomics, tourism, and rural innovation. More broadly, applying ergonomic principles to human-machine-organization interactions enhances efficiency, safety, and resilience, with transferable insights for tourism and other service sectors.

## LITERATURE REVIEW

## **Total Ergonomics and Community-Based Tourism (CBT)**

Total Ergonomics (TE) integrates task design, organizational dynamics, and environmental factors within socio-technical systems, aligning people, technology, and context. The SHIP framework (Systemic, Holistic, Interdisciplinary, Participatory) extends TE by embedding collaborative governance, which strengthens resilience and efficiency in sectors such as agriculture and services (Amjad et al., 2023; García-Arca et al., 2023). Participatory Ergonomics (PE), first applied in industrial settings, is increasingly valuable in tourism contexts where resources are scarce and labor distribution is unclear (Burgess-Limerick, 2018; Moysan & Ródenas-Rigla, 2024; Rivera et al., 2016; Utama et al., 2024). In CBT, which emphasizes cultural preservation and community participation, ergonomic aspects remain underexplored despite their importance for efficiency, well-being, and empowerment (Costa-Black & Arteberry, 2020; Gascón, 2013). Integrating TE through SHIP provides a pathway to improve working conditions, enhance productivity, and strengthen community resilience (Baloch et al., 2023; El-Sherbeeney et al., 2023a; Suarbawa et al., 2024).

## **Research Gap and Theoretical Justification**

Existing studies acknowledge the value of participatory approaches in CBT. However, most frameworks focus on social empowerment and cultural heritage while neglecting ergonomic structuring of tasks, roles, and governance (Baloch et al., 2023). Consequently, efficiency, workload management, and system sustainability remain underdeveloped. This study addresses the gap by adopting a SHIP-based Total Ergonomics Model (Manuaba, 2006). The model extends ergonomic interventions from the individual to the community level to strengthen empowerment, organizational clarity, and environmental alignment in CBT. The approach also integrates risk management and efficiency assessment. It supports tourism villages in achieving sustainability, ensuring equity in employment, and promoting broader participation in local development strategies.

## **Conceptual Framework and Hypotheses**

This study builds on Total Ergonomics (Manuaba, 2006), Participatory Ergonomics (Hansen et al., 2024), and CBT (Dolezal & Novelli, 2022) by applying the SHIP model as a systems-based intervention. Unlike top-down models, SHIP emphasizes co-design and contextual relevance (Bottero & Gualeni, 2024; El-Sherbeeney et al., 2023; García-Arca et al., 2023). The framework positions Ergonomics-Based Assistance (EBA) as a driver of Task Demands (TD), Organizational Design (OD), and Environmental Context (EC). It is hoped that Participatory Governance (PG) will encourage increased Community Empowerment (CE) and create stronger Tourism Community Sustainability (STC) (Abdollahpour & Helali, 2022).

Figure 1 is the conceptual framework of this study. Directly, EBA influences TD, OD, and EC. When mediated through PG, these dimensions contribute to CE, which in turn supports STC. In this case, it highlights how systemic design encourages the development of sustainable rural tourism.

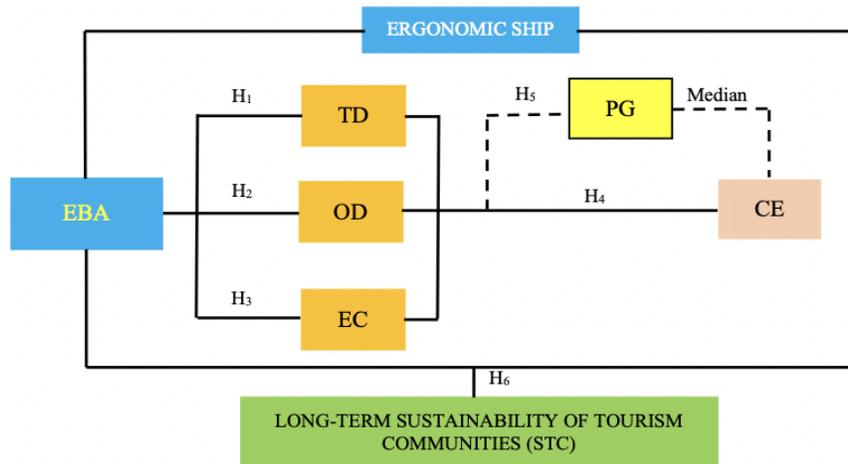


Fig. 1. Conceptual Framework

This model forms the basis for the following hypotheses:

- H<sub>1</sub> : EBA positively influences TD by improving efficiency and cognitive clarity.
- H<sub>2</sub> : EBA positively influences OD by strengthening coordination, role clarity, and decision-making.
- H<sub>3</sub> : EBA positively influences EC by improving safety, spatial design, and environmental fit.
- H<sub>4</sub> : TD, OD, and EC positively affect CE
- H<sub>5</sub> : PG mediates the relationship between ergonomic dimensions (TD, OD, EC) and CE.
- H<sub>6</sub> : A SHIP-based ergonomics framework enhances the long-term sustainability of CBT systems (STC).

Ergonomics integrated into governance and empowerment processes demonstrates the contribution of systemic design to the development of sustainable rural tourism.

## METHODOLOGY

### Research Design

This study employs a quantitative explanatory design (Luekveerawattana, 2025), to evaluate a SHIP-based Total Ergonomics model in CBT. Consistent with Industrial Engineering and Management Systems (IEMS), the design integrates ergonomics, governance, and sustainability to assess system efficiency. Data were collected through structured surveys of tourism village stakeholders, focusing on the relationships among EBA, TD, OD, EC, PG, and CE to evaluate the impact of ergonomic interventions on sustainability and resilience.

### Operationalization of Variables

The model includes seven latent constructs: EBA, TD, OD, EC, PG, CE, and STC. Each was measured using validated indicators covering ergonomic support, workload, organizational structure, environmental safety, governance, empowerment, and sustainability outcomes (Table 1)

**Table 1. Core Variables and Definitions**

Variable	Code	Operational Definition	Key References
Ergonomics-Based Assistance	EBA	Quality of ergonomic training/tools/support to reduce strain and improve efficiency.	Gjini & Diesbourg, (2025); Santos et al., (2025)
Task Demands	TD	Perceived physical and cognitive workload in CBT tasks.	Jirapongsuwan et al., (2023);
Organizational Design	OD	Role clarity, coordination, workflow management.	Mai & Do, (2023)
Environmental Context	EC	Ergonomic safety, spatial layout, cultural-environmental fit.	Munir et al., (2025)
Participatory Governance	PG	Community ownership, decision-making, inclusivity.	Abdollahpour & Helali, (2022)
Community Empowerment	CE	Local capacity, autonomy, entrepreneurship.	Sarbat & Ozmehmet Tasan, (2022)
Long-Term Sustainability	STC	Long-term viability, ecological and socio-economic benefit.	Kant, (2023)

### Research Site and Context

The study was conducted in Munduk Village, North Bali, purposively selected for its integration of ecotourism, permaculture, and cultural heritage within a CBT framework. Strong community engagement and alignment with ergonomic and participatory design made it suitable for applying the SHIP-based Total Ergonomics model. The research was supported by local NGOs and vocational institutions and linked to two national programs (2023–2024 Matching Fund) on environmental design and ergonomic tools. This diverse context enhanced comparative analysis and strengthened the model’s external validity for application in Global South tourism villages (Croes et al., 2023).

### Sample Size Determination

The sample size was based on 35 observed variables across seven latent constructs (Ahmed, 2024). Following PLS-SEM guidelines of 5–10 respondents per variable (Joseph F. Hair Jr et al., 2021), a 10:1 ratio was applied, producing a target of 350 respondents. To account for potential data loss, 360 respondents were selected using stratified random sampling, ensuring proportional representation of farmer cooperatives, CBT management teams, and tourism-related SMEs. This approach captured diverse perspectives across the socio-technical system. The sample enhances generalizability and reflects Croes et al., (2023) call for multi-dimensional ergonomic research in tourism.

### Research Instrument

Thirty-five questions (Appendix A) were developed to measure seven constructs: Ergonomics-Based Assistance (EBA), Task Demands (TD), Organizational Design (OD), Environmental Context (EC), Participatory Governance (PG), Community Empowerment (CE), and Long-Term Sustainability (STC). All items employed a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Appendix A presents the operationalized indicators for each construct. Content validation by six subject matter experts produced a Gregory Content Validity Index of 0.916, indicating excellent validity. A pilot test (n = 30)

confirmed face validity and clarity. Reliability testing using SPSS v22 showed Cronbach's Alpha values above 0.70 for all constructs, demonstrating strong internal consistency (Vivian Wong Shao Yun et al., 2023).

### **Data Analysis Technique**

Data were analyzed using PLS-SEM (Joseph F. Hair Jr et al., 2021) with SmartPLS 4.0 and SPSS 22. This method is suitable for complex models with mediators and aligns with Industrial Engineering and Management Systems (IEMS) in optimizing resilience and performance. The analysis proceeded in two stages. First, the measurement model was tested for reliability and validity using Cronbach's Alpha, Composite Reliability, AVE, outer loadings, Fornell-Larcker, and HTMT. Second, the structural model was evaluated with bootstrapping (5,000 resamples) to test six hypotheses and path coefficients.  $R^2$ ,  $f^2$ ,  $Q^2$ , and mediation via PG were assessed to ensure statistical robustness and support improvements in sustainable tourism systems.

### **Ethical Considerations**

The study followed international ethical standards, including the Declaration of Helsinki, with institutional approval. All participants provided written informed consent, ensuring voluntary, anonymous, and confidential participation (Timmermann et al., 2022). As a non-invasive, survey-based study, it was classified as low risk. Local cultural norms were respected, and inclusive participation was promoted to build trust and ensure community alignment.

## **RESULTS AND DISCUSSION**

### **Population and Demographics**

The study included 360 respondents from Munduk CBT villages in North Bali, selected through stratified random sampling to represent key stakeholder groups. Participants comprised 40% in agriculture (e.g., Blue Tamblingan Coffee farmers), 30% in tourism services, 20% in crafts and small businesses, and 10% in village governance. The gender distribution was 53% male and 47% female, mostly aged 20–59, with secondary education or higher. Overall, respondents were involved in sustainability initiatives, including the 2023–2024 Companion Fund program on conservation tourism and permaculture.

Based on demographics, this is consistent with the multi-sector nature of the CBT community, which shows intersections between tourism and agriculture, crafts, and governance. Such sectoral intersections have been demonstrated by research in Southeast Asia (Krittayarungroj et al., 2023) and Latin America (Saldarriaga Isaza & Salas, 2024), which show the integration of rural economies with agriculture and tourism to strengthen resilience.

Reflecting inclusivity is demonstrated by balanced gender representation. This is a key dimension in participatory ergonomics (Hansen et al., 2024). This is supported by previous research that tourism governance involving balanced gender participation promotes equitable empowerment and collective decision-making (Dolezal & Novelli, 2022). Thus, it provides a basis for evaluating how ergonomics-based assistance (EBA) interacts with task demands, organizational design, and governance in maintaining CBT.

## Measurement Model and Validity Testing

### Validity, Reliability Model

Convergent validity was confirmed, indicating that all indicator loadings were above 0.70. High loadings were observed for CE (e.g., CE3: 0.957), PG (PG3: 0.955), and EBA (EBA5: 0.945). STC (STC3: 0.977), EC (EC4: 0.927), TD, and OD (up to 0.950) also showed strong reliability. Discriminant validity was supported by the Fornell-Larcker criterion, as AVE values exceeded inter-construct correlations (e.g., CE AVE: 0.919; CE–EBA correlation: 0.624). Cross-loadings and HTMT values below 0.90 further confirmed construct distinctiveness.

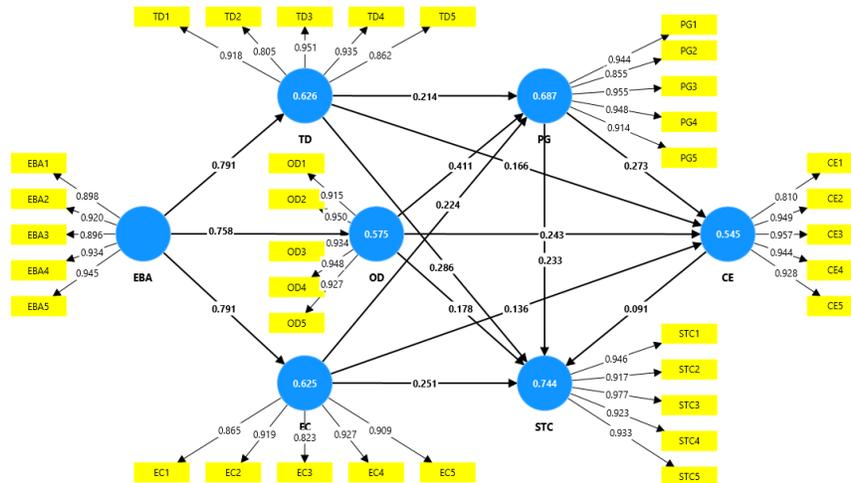


Figure 2. Outer Model Estimation

Composite reliability testing showed that all constructs exceeded the 0.70 threshold. STC had the highest CR (0.974), while EC had the lowest (0.950), both within the acceptable range. Cronbach's Alpha values were all above 0.90, confirming strong internal consistency (Figure 2)

These results confirm that all constructs EBA, TD, OD, EC, PG, CE, and STC are valid and reliable for structural analysis.

These outcomes align with SEM methodological standards (Joseph F. Hair Jr et al., 2021), confirming that each construct represents its theoretical dimension. Similar approaches have been used in ergonomics-based community research in Africa (El-Sherbeeny et al., 2023) and participatory management studies in Europe (Bottero & Gualeni, 2024), both highlighting the importance of rigorous construct validation in socio-technical systems.

Confirming the reliability and validity of these constructs reinforces the applicability of SHIP-based ergonomics in CBT contexts. It shows that ergonomic dimensions, traditionally studied in industrial or healthcare systems (Burgess-Limerick, 2018; Costa-Black & Arteberry, 2020) can also be empirically applied in rural tourism. This expands the global scope of ergonomics research and provides a strong basis for testing causal relationships in the structural model.

## Model Testing and Structural Effects

### Goodness of Fit

Goodness-of-fit analysis confirmed strong model performance. R<sup>2</sup> values ranged from 0.545 (CE) to 0.744 (STC), reflecting moderate to high explanatory power. All Q<sup>2</sup> values exceeded 0.35, with STC reaching 0.651, indicating strong predictive relevance. The SRMR was 0.054, below the 0.08 threshold, demonstrating acceptable fit. These results align with global SEM studies on socio-technical frameworks, where R<sup>2</sup> values above 0.50 are considered substantial for complex community systems (Hansen et al., 2024; Joseph F. Hair Jr et al., 2021). Figure 3 presents the inner model estimation, supporting the strength of the hypothesized paths.

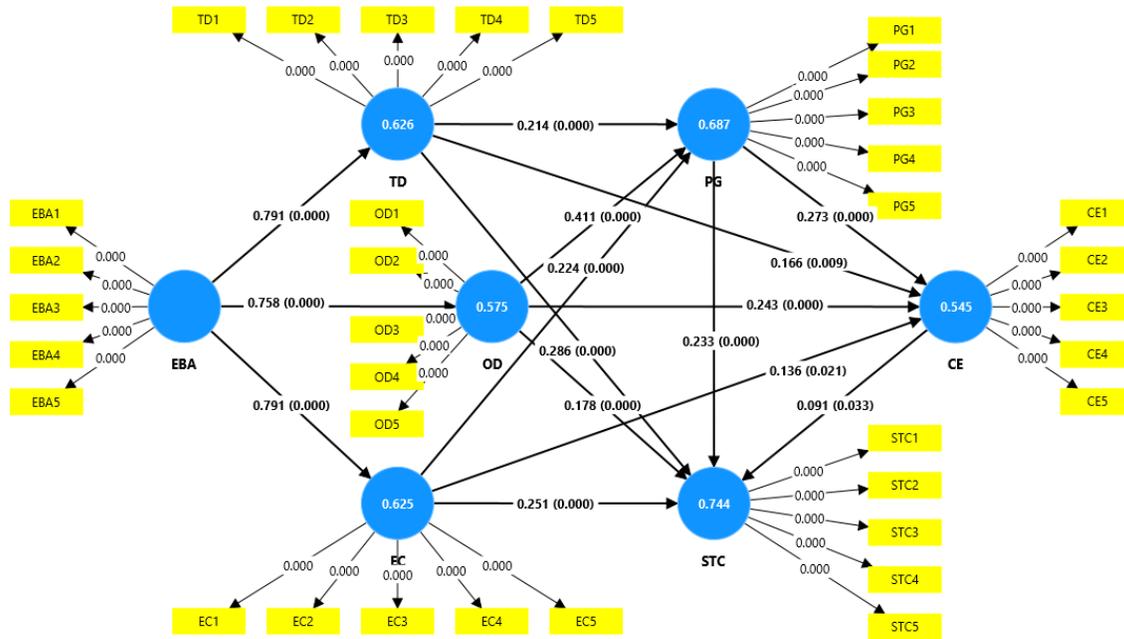


Figure 3. Inner Model Estimation

*Multicollinearity and Effect Size*

Variance Inflation Factor (VIF) values for all constructs were below 5, confirming no multicollinearity issues. The highest VIF was for Organizational Design (OD) at 3.509, still within acceptable limits. Effect size (f<sup>2</sup>) results revealed large effects of EBA on TD (1.675), EC (1.670), and OD (1.351), underlining its central role in the model. By contrast, CE’s effect on STC was small (0.015), indicating that empowerment contributes to sustainability indirectly via governance and ergonomic pathways. This mirrors findings in community development studies in Asia and Africa, which emphasize systemic interventions over isolated empowerment measures (El-Sherbeeney et al., 2023; Saldarriaga Isaza & Salas, 2024)).

*Direct Effects*

Direct effect testing confirms the hypothesized relationships. EBA exerted strong, significant influences on TD ( $\beta = 0.791, p < 0.001$ ), OD ( $\beta = 0.758, p < 0.001$ ), and EC ( $\beta = 0.791, p < 0.001$ ). These ergonomic dimensions subsequently contributed to CE and STC, with CE significantly impacting STC ( $\beta = 0.091, p = 0.033$ ). These findings align with participatory ergonomics research in industrial contexts (Burgess-Limerick, 2018) and rural tourism systems (Krittayaruangroj et al., 2023), showing that technical assistance translates into improved community outcomes. Importantly, PG also showed significant effects

on CE ( $\beta = 0.273$ ) and STC ( $\beta = 0.233$ ), reinforcing the role of governance as a bridge between ergonomics and sustainability, as echoed in global CBT studies (Bottero & Gualeni, 2024; Burgess-Limerick, 2018; Dolezal & Novelli, 2022).

### *Indirect Effects*

Bootstrapping results confirmed multiple significant indirect pathways. For instance, EBA influenced PG and CE through OD ( $\beta = 0.312$ ;  $p < 0.001$ ) and EC ( $\beta = 0.062$ ;  $p < 0.001$ ), while TD also mediated EBA's effect via PG ( $\beta = 0.169$ ;  $p < 0.001$ ). Multi-step mediation chains, such as  $EBA \rightarrow OD \rightarrow PG \rightarrow CE$  and  $EBA \rightarrow OD \rightarrow PG \rightarrow STC$ , were statistically significant, highlighting governance as a pivotal mechanism. These findings are consistent with international evidence that institutionalized participatory governance mediates technical interventions to produce empowerment and long-term sustainability (Amjad et al., 2023; Moysan & Ródenas-Rigla, 2024). Even though some extended indirect effects (e.g.,  $EC \rightarrow PG \rightarrow CE \rightarrow STC$ ) were marginal, they suggest possible cumulative impacts over time, which future longitudinal studies could explore.

### Hypotheses Testing Results

The results collectively support all six hypotheses:

- H<sub>1</sub> : Ergonomics-Based Assistance (EBA) significantly enhances Task Demands (TD), confirming its role in improving workload management.
- H<sub>2</sub> : EBA significantly strengthens Organizational Design (OD), supporting its effect on improving organizational clarity.
- H<sub>3</sub> : EBA significantly improves Environmental Context (EC), affirming its contribution to environmental safety.
- H<sub>4</sub> : TD, OD, and EC significantly strengthen CE, showing that well-designed systems empower communities.
- H<sub>5</sub> : PG mediates ergonomic dimensions and CE, confirming governance as a central mechanism of empowerment.
- H<sub>6</sub> : The SHIP-based framework enhances STC, demonstrating that ergonomics combined with participatory governance builds resilience and sustainability.

Together, these findings validate the systemic nature of the SHIP-based ergonomics framework. They show that empowerment and sustainability in CBT are best achieved through integrated interventions. Such interventions combine technical design, organizational structure, environmental alignment, and participatory governance.

### ***Analysis of Total Effects and Determination Coefficients***

The total effect analysis confirmed that Ergonomics-Based Assistance (EBA) exerts a strong and significant influence on Sustainable Community Tourism (STC), both directly and indirectly through improvements in Task Demands (TD), Organizational Design (OD), Environmental Context (EC), and Participatory Governance (PG). EBA demonstrated high effect sizes across key variables:  $EBA \rightarrow STC$  ( $\beta = 0.731$ ,  $p < 0.001$ );  $EBA \rightarrow CE$  ( $\beta = 0.617$ ,  $p < 0.001$ ); and  $EBA \rightarrow PG$  ( $\beta = 0.706$ ,  $p < 0.001$ ). CE also contributed positively to STC ( $\beta = 0.091$ ,  $p = 0.033$ ). The  $R^2$  value for STC reached 0.744, confirming substantial predictive power, while PG ( $R^2 = 0.687$ ), EC ( $R^2 = 0.625$ ), and CE ( $R^2 = 0.545$ ) showed moderate-to-strong explanatory strength. These results validate the systemic role of ergonomics and governance in ensuring long-term resilience in CBT systems.

### ***EBA and Task Demands***

This finding highlights the pivotal role of EBA in strengthening CBT's operational pillars. In terms of task demands, ergonomic interventions reduced both physical and cognitive loads in agricultural and tourism-related work. This resonates with Jirapongsuwan et al., (2023) who reported that ergonomics lowers fatigue and enhances focus in rural labor contexts. The principle of task–context–person fit within SHIP thus gains empirical support. Comparable ergonomic impacts on operational efficiency have also been documented in manufacturing (El-Sherbeeney et al., 2023) and service industries (Marková et al., 2025), and service industries (Marková et al., 2025), reinforcing the cross-sectoral relevance of these results.

### ***EBA and Organizational Design***

EBA also enhanced coordination and clarified role distribution within organizational design. This finding aligns with Krittayaruangroj et al., (2023), who emphasized the need for adaptive organizational structures in CBT, and with global evidence that ergonomic facilitation reduces role ambiguity in complex work systems (Akhirson et al., 2025; Pacher et al., 2024). Effective organizational design emerges here not only as a managerial practice but also as a socio-technical requirement for sustainable CBT.

### ***EBA and Environmental Context***

The environmental context improved significantly through ergonomic interventions such as workspace redesign, enhanced safety measures, and improved accessibility. Abdul Latip et al., (2025) observed similar benefits in small-scale tourism enterprises, where ergonomic redesign boosted both safety and productivity. These results demonstrate that ergonomics can serve as a bridge between occupational health and sustainable tourism development, a conclusion supported by global studies in hospitality management (El-Sherbeeney et al., 2023).

### ***Participatory Governance and Community Empowerment***

Participatory governance influenced how TD, OD, and EC affected Community Empowerment (CE). Following ergonomic interventions, governance structures like village meetings and planning forums became more inclusive. This supports Abdollahpour & Helali, (2022) claim that participatory ergonomics enhances governance legitimacy and concurs with global research showing that sustainable CBT depends not only on technical advances but also on participatory institutions (Amjad et al., 2023; Dolezal & Novelli, 2022).

In turn, community empowerment significantly impacted long-term sustainability. Empowered communities demonstrated increased resilience, autonomy, and adaptability, aligning with Coy et al., (2021), findings that empowerment boosts resilience to economic and environmental challenges. This outcome also corresponds with worldwide evidence that empowered local stakeholders improve cultural relevance and help sustain CBT initiatives (Saldarriaga Isaza & Salas, 2024).

In summary, these results confirm the effectiveness of the SHIP-based Total Ergonomics framework. By combining technical, organizational, environmental, and governance aspects, it creates a unified system that promotes sustainable CBT. Unlike earlier research that viewed empowerment and sustainability mainly as social concepts, this study shows that incorporating ergonomics into participatory governance is essential for both operational success and lasting resilience.

## **PRACTICAL IMPLICATIONS AND FUTURE RESEARCH**

The SHIP-based Total Ergonomics (SHIP-TE) framework provides practical guidance for various stakeholders involved in community-based tourism (CBT):

The SHIP-based Total Ergonomics (SHIP-TE) framework provides practical guidance for various stakeholders involved in community-based tourism (CBT):

- For CBT managers:  
This framework helps reshape workflows, clarify role assignments, and improve facilities. Implementing participatory ergonomics minimizes confusion over responsibilities, balances workload more effectively, and enhances workplace safety. These changes boost overall efficiency and promote the well-being of workers.
- For local governments:  
The findings provide a solid, evidence-based basis for developing ergonomic training programs, safety standards, and rural development policies that align with the Sustainable Development Goals (SDGs). Incorporating the SHIP-TE framework into village and district planning can enhance institutional capabilities and help ensure that empowerment efforts lead to tangible sustainability results.
- For NGOs and donor agencies:  
SHIP-TE offers a clear guide for designing empowerment initiatives. By reinforcing participatory governance structures, it promotes inclusivity, fairness, and shared accountability. These strategies support systemic improvements that go beyond technical skills training and contribute to lasting resilience.

## **FUTURE RESEARCH**

Further studies should expand on this framework by exploring several avenues. In particular, longitudinal research is necessary to evaluate the long-term effectiveness of ergonomic and governance interventions and their impact on community resilience over time. Second, applying the SHIP-TE framework across diverse Global South contexts such as Southeast Asia, Sub-Saharan Africa, and Latin America will test its adaptability and broaden its relevance. Third, integrating digital ergonomics and smart technologies may complement participatory processes and increase system efficiency. Finally, cross-country comparative analyses could refine the framework's generalizability and inform international policy on sustainable tourism.

## **CONCLUSION**

This study validates the SHIP-based Total Ergonomics framework as a systemic model linking ergonomic interventions, participatory governance, and community empowerment to the sustainability of CBT systems. Empirical evidence shows that Ergonomics-Based Assistance (EBA) exerts strong direct and indirect effects on task demands, organizational design, environmental context, and governance processes. Together, these dimensions enhance empowerment and strengthen long-term resilience.

Theoretically, this research extends participatory ergonomics beyond industrial and healthcare contexts into tourism and community development, addressing a gap in the global literature on socio-technical systems. Practically, it demonstrates that embedding ergonomics within governance and empowerment processes enables communities to become more efficient, resilient, and adaptive. By positioning ergonomics within the broader discourse of sustainable development, the study contributes

to academic theory, applied policy, and practice. It supports the global movement toward inclusive, resilient, and sustainable tourism systems that integrate technical innovation, cultural values, and participatory governance.

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## CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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### Appendix A. Operationalized Indicators for SHIP-Based Ergonomic Constructs

The table below presents the 35 survey items used to measure the seven key constructs of the SHIP-Based Ergonomic Framework. All items were rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree)

Variable	Code	Item Statement
<b>Ergonomics-Based Assistance (EBA)</b>	EBA <sub>1</sub>	I received ergonomic training that improved productivity in farming, processing, or eco-tourism.
	EBA <sub>2</sub>	The ergonomic tools provided are tailored to local agricultural and tourism needs.
	EBA <sub>3</sub>	Facilitators understand local work practices and contextual needs.
	EBA <sub>4</sub>	Assistance integrated technical, social, and environmental aspects of our work system.
	EBA <sub>5</sub>	Training was participatory, involving farmers, managers, and local entrepreneurs.
<b>Task Demands (TD)</b>	TD <sub>1</sub>	Ergonomic support has made physically demanding tasks easier.
	TD <sub>2</sub>	I can manage multiple tasks more effectively and with less fatigue.
	TD <sub>3</sub>	Workflows became more efficient after ergonomic guidance.
	TD <sub>4</sub>	Physical discomfort has reduced since using ergonomic methods.
	TD <sub>5</sub>	I feel more motivated and productive with ergonomic support.
<b>Organizational Design (OD)</b>	OD <sub>1</sub>	My role in tourism operations has become clearer.
	OD <sub>2</sub>	Our system encourages coordination among farmers, SMEs, and tourism actors.
	OD <sub>3</sub>	Tourism activities are now well-organized and efficient.
	OD <sub>4</sub>	Tasks are allocated based on member competencies.
	OD <sub>5</sub>	Open communication and joint problem-solving are supported.

<b>Variable</b>	<b>Code</b>	<b>Item Statement</b>
<b>Environmental Context (EC)</b>	EC <sub>1</sub>	Work environments are arranged to be safe and comfortable.
	EC <sub>2</sub>	Facilities and methods reduce fatigue and injury risk.
	EC <sub>3</sub>	Infrastructure and signage enhance visitor safety and comfort.
	EC <sub>4</sub>	Tourism design considers both access and efficiency.
	EC <sub>5</sub>	Practices are environmentally, culturally, and ergonomically sound.
<b>Participatory Governance (PG)</b>	PG <sub>1</sub>	I participate actively in tourism planning and decision-making.
	PG <sub>2</sub>	Stakeholders from various sectors are included in governance.
	PG <sub>3</sub>	Community input shapes tourism strategies.
	PG <sub>4</sub>	Equal opportunities are provided for participation.
	PG <sub>5</sub>	Decisions are made collectively, not dominated by elites.
<b>Community Empowerment (CE)</b>	CE <sub>1</sub>	I can develop tourism businesses based on local potential.
	CE <sub>2</sub>	Training has enhanced my technical and managerial skills.
	CE <sub>3</sub>	We manage tourism assets independently and transparently.
	CE <sub>4</sub>	I can initiate tourism ideas without relying on outsiders.
	CE <sub>5</sub>	I feel confident collaborating and competing in tourism markets.
<b>Long-Term Sustainability (STC)</b>	STC <sub>1</sub>	Tourism activities promote environmental preservation.
	STC <sub>2</sub>	Local tourism businesses are rooted in community strengths.
	STC <sub>3</sub>	Our system is resilient to external challenges.
	STC <sub>4</sub>	Tourism boosts income without harming local culture.
	STC <sub>5</sub>	Ergonomics-based programs support long-term viability.

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Fredrickson, B. L. (2000, March 7). Cultivating positive emotions to optimize health and well-being. *Prevention & Treatment*, 3, Article 0001a. Retrieved November 20, 2000, from <http://journals.apa.org/prevention/volume3/pre0030001a.html>

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9. Acknowledge the anonymous reviewers. Acknowledgements and information on grants received must be stated before the References.
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