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The Effect of Tourism on Economic Status Among Local Surfers in Siargao Island

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Abstract

This study assessed the perceived economic effects of surf tourism among local surfers in Siargao Island, Philippines, focusing on income growth, income stability and asset accumulation, livelihood resilience and social support, and overall economic status. A quantitative descriptive-comparative design was employed involving 200 local surfers selected through simple random sampling from Dapa, General Luna, Pilar, San Isidro, and Santa Monica. Data were collected using a structured questionnaire and analyzed through descriptive statistics, the Mann–Whitney U test, Kruskal–Wallis test, and pairwise comparisons. Results revealed generally favorable economic perceptions, with income growth receiving the highest mean (M = 3.54), followed by income stability and asset accumulation (M = 3.48), economic status (M = 3.45), and livelihood resilience and social support (M = 3.42). Significant differences emerged across economic dimensions ($p = 0.012$), particularly between income growth and livelihood resilience ($p = 0.011$). Seasonal earnings significantly differentiated assessments across all four dimensions, while selected differences were associated with age, education, surf role, and accreditation or association membership. The study concluded that perceived income opportunities did not translate equally into long-term financial security. Livelihood diversification, financial literacy, accessible accreditation, and off-season support programs are recommended. Although limited by self-reported data and geographical coverage, the findings provide evidence for community-centered tourism planning. Supporting Sustainable Development Goals 8, 11, and 17, the study contributes to sustainable livelihood development, coastal community resilience, and stakeholder collaboration.

Keywords: Economic Status; Income Stability; Livelihood Resilience; Seasonal Earnings; Siargao Island; Surf Tourism; Sustainable Livelihoods

1. Introduction

Surf tourism has become an important contributor to economic development in coastal destinations, generating employment, investment, and livelihood opportunities (Román et al., 2022; Mach & Ponting, 2021). Governments increasingly recognize its potential for sustainable economic growth (Manero & Mach, 2023). However, rapid expansion may also result in environmental degradation, rising living costs, unequal income distribution, and economic dependence on external investors (Ponting, 2022; Hansen, 2021). Tourism benefits are often affected by economic leakage, where revenue leaves host communities through external ownership and imported services (Mengo et al., 2022). These challenges are particularly evident in island destinations experiencing accelerated tourism development and increasing dependence on visitor arrivals (Musico & Pelmin, 2025; Hansen, 2022; Manero & Mach, 2023).

Existing literature highlights the importance of income growth, financial stability, asset accumulation, and livelihood resilience in assessing tourism's economic benefits. Although surf tourism creates employment through instruction, guiding, and equipment rentals (Román et al., 2022), local workers may receive only a limited share of tourism revenue (Mach and Ponting, 2021). Seasonal employment, informal working arrangements, and limited business ownership opportunities further contribute to financial insecurity (Mach et al., 2024; Hansen, 2022). Sustainable livelihood improvement therefore requires the ability to convert tourism earnings into savings, productive assets, and business investments (Musico & Pelmin, 2025; Mach, 2022; Ponting, 2022). Moreover, tourism-dependent communities remain vulnerable to economic disruptions and climate-related disasters (Gössling et al., 2021; Morse, 2021). Community organizations and surf associations may strengthen resilience through collective support, livelihood assistance, and professional development (Alvarez et al., 2025; Ponting & O'Brien, 2021).

In the Philippines, coastal tourism has created employment and entrepreneurship opportunities while contributing to increasing property values and household expenses (Musico & Pelmin, 2025). Tourism recovery also does not necessarily guarantee improved household financial security, particularly among informal workers (Dela Cruz and Peralta, 2024). Republic Act No. 9593 (2009) and Republic Act No. 7160 (1991) emphasize sustainable tourism development, local economic participation, and community welfare. In Siargao Island, particularly General Luna, tourism expansion has transformed traditional livelihoods into surfing-related employment and business opportunities (Santos & Garcia, 2022; Hansen, 2022). However, external investment, increasing living costs, and commercial development pressures continue to affect local workers (Hansen, 2022; Musico & Pelmin, 2025). The COVID-19 pandemic and Super Typhoon Odette further exposed livelihood vulnerabilities (Reyes et al., 2023; Serato and Tupas, 2023). Despite tourism recovery, financial instability and seasonal employment challenges remain concerns among local surf workers (Hansen, 2022; Hansen, 2022).

The study is anchored in the Sustainable Livelihoods Framework of Chambers and Conway (1992), the Tourism Area Life Cycle Model of Richard W. Butler (1980), and the Political Economy of Surfonomics developed through Manero and Mach (2023) and Mach and Ponting (2021). These perspectives explain how tourism development influences livelihood assets, economic opportunities, financial vulnerability, and the distribution of tourism-generated benefits. An Input–Process–Output framework further guides the assessment of local surfers' characteristics, perceived economic conditions, and proposed livelihood interventions.

Despite existing research on surf tourism and coastal economic development, limited quantitative evidence examines its perceived effects on the financial conditions of local surfers across Siargao Island. This study therefore aimed to assess the economic effects of surf tourism among 200 local surfers in Dapa, General Luna, Pilar, San Isidro, and Santa Monica. Specifically, it examined income growth, income stability and asset accumulation, livelihood resilience and social support, and overall economic status, including significant differences across economic dimensions and respondent profiles. The findings are intended to support evidence-based policy recommendations and community livelihood initiatives.

The study aligns with Sustainable Development Goal 8 (Decent Work and Economic Growth) by promoting economic security and sustainable livelihood opportunities, SDG 11 (Sustainable Cities and Communities) by strengthening coastal community resilience, and SDG 17 (Partnerships for the Goals) by supporting collaboration among tourism stakeholders, local governments, and surfing associations. Its contribution to socioeconomic and community sustainability lies in providing evidence that may guide equitable tourism policies, livelihood protection, professional development, and long-term financial resilience among local surf workers in Siargao Island.

2. Material and methods

2.1 Research Design

The study utilized a quantitative descriptive-comparative research design to assess the economic effects of surf tourism on local surfers. The descriptive component examined respondents' age, sex, civil status, educational attainment, primary surf role, years of experience, peak- and off-peak-season earnings, formal accreditation, and surf association membership. It also assessed their perceptions of tourism's effects on income growth, income stability and asset accumulation, livelihood resilience and social support, and economic status. The comparative component determined whether significant differences existed across these four dimensions and when respondents were grouped according to their demographic and professional characteristics. Descriptive statistics, the Mann–Whitney U test, Kruskal–Wallis test, and pairwise comparisons were employed to address the research objectives.

2.2 Locale of the Study

The study was conducted in five selected municipalities of Siargao Island, Surigao del Norte, Philippines, namely Dapa, General Luna, Santa Monica, Pilar, and San Isidro. These municipalities were selected because surfing and

tourism-related activities contribute to their local economies. General Luna, home to the internationally recognized Cloud 9 surfing destination, serves as a major center of surf tourism, while Dapa, Santa Monica, Pilar, and San Isidro represent additional coastal communities with surfing-related livelihoods. These locations provided a broader setting for examining how tourism development, seasonal visitor demand, and local economic conditions affect the financial security and livelihood resilience of surf workers.

2.3 Respondents of the Study

The respondents consisted of 200 local surfers engaged in surfing-related livelihood activities across the five selected municipalities. Of these, 99 (49.5%) were surf guides, 88 (44.0%) were surf instructors, nine (4.5%) were surfboard rental operators or staff, three (1.5%) were surf shop owners or staff, and one (0.5%) belonged to other surf-related occupations. Surf guides and instructors collectively represented 93.5% of the respondents, indicating that direct surfing services were the predominant livelihood activities within the surveyed group. The respondents provided information regarding their demographic characteristics, professional backgrounds, seasonal earnings, economic conditions, and experiences with tourism development.

2.4 Sample and Sampling Procedure

The study employed simple random sampling to select 200 respondents from local surfing communities in Dapa, General Luna, Santa Monica, Pilar, and San Isidro. The participants were individuals directly engaged in surfing-related livelihoods, including surf instruction, guiding, surfboard rentals, surf shop operations, and other tourism services. Respondents were categorized according to their primary surf roles, while accreditation status and surf association membership were examined as separate profile variables. This approach was intended to obtain representation from different surfing-related occupations and assess variations in their perceived economic experiences.

2.5 Research Instrument

Data were collected using a structured, paper-based survey questionnaire adapted from standard measures in Sustainable Livelihood Framework (SLF) literature. The instrument consisted of four parts. The first gathered demographic and professional information, including age, sex, civil status, educational attainment, primary surf role, years of experience, monthly earnings during peak (March–October) and off-peak seasons, accreditation status, and surf association membership. The second assessed the perceived economic effects of tourism development from 2018 onward, including changes in lesson rates, tourist demand, local price inflation, housing costs, and post-2022 business recovery, using a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). The third examined income stability and asset accumulation through debt levels, emergency savings, ownership of surfboards, motorcycles, property, and homestay facilities, and access to banking and credit services. The fourth evaluated livelihood resilience and social support through alternative income sources, off-season coping strategies, association assistance, and long-term career opportunities. Before data collection, the questionnaire underwent content validation to ensure the clarity, relevance, and alignment of its items with the research objectives.

2.6 Data Gathering Procedure

Data collection began with the submission of official permission letters to municipal offices, tourism authorities, and local surfing associations in the five selected municipalities. Following coordination, the researchers personally administered questionnaires to local surfers in surfing areas, beachfront locations, surf shops, and other tourism-related establishments. Respondents were provided with explanations in Surigaonon, Cebuano, or Tagalog when necessary to ensure their understanding of the questions. The survey gathered information on their demographic profiles, tourism-related income changes, financial stability, asset ownership, livelihood resilience, and social support. Completed questionnaires were checked for completeness, assigned identification codes, and encoded into a spreadsheet for organization, tabulation, and statistical analysis.

2.7 Data Analysis Techniques

The collected data were analyzed using descriptive and inferential statistical methods. Frequency counts and percentages described respondents' demographic and professional characteristics, including their primary surf roles, experience, seasonal earnings, accreditation, and association membership. Means and standard deviations summarized their assessments of tourism's effects on perceived income growth, income stability and asset accumulation, livelihood resilience and social support, and economic status. The Mann–Whitney U test examined differences between two independent respondent groups, while the Kruskal–Wallis test assessed differences among three or more independent groups based on demographic and professional characteristics. The Kruskal–Wallis test was also applied to comparisons across the four economic dimensions, followed by post-hoc pairwise comparisons to identify specific differences when necessary. All inferential tests were evaluated at the 0.05 significance level, with p-values below 0.05 indicating statistically significant differences. The analysis provided a basis for identifying economic vulnerabilities and developing policy recommendations and community action plans to strengthen local surfers' financial security and livelihood resilience.

2.8 Ethical Considerations

The study adhered to ethical research principles to protect the rights, privacy, and welfare of respondents. Participation was voluntary, and informed consent was obtained after explaining the study's objectives, procedures, and participants' rights in Cebuano, Surigaonon, or Tagalog. Respondents were assured that identifying information would not be collected or linked to their answers and that findings would be presented in aggregate form. They were also allowed to skip questions or withdraw from participation at any time without penalty or adverse consequences.

3. Results and Discussion

3.1 Demographic and Professional Profile of Respondents

3.1.1 Age

Of the 200 respondents, 83 (41.5%) were aged 18–24 years, 62 (31.0%) were aged 25–34 years, 33 (16.5%) were aged 35–44 years, and 22 (11.0%) were aged 45 years and above. Overall, 72.5% were younger than 35 years. The findings indicate that Siargao's local surfing workforce consists predominantly of young adults engaged in physically demanding tourism activities. This concentration highlights the importance of long-term career development and financial security as workers age. Hansen (2021) similarly emphasized how social hierarchies and positions within Siargao's surfing environment shape local surfers' livelihood experiences.

3.1.2 Sex

Male respondents accounted for 195 (97.5%) of the sample, while only five (2.5%) were female, indicating a substantial gender imbalance among the surveyed surf workers. This distribution reflects the male-dominated nature of frontline surfing occupations and highlights the need to encourage greater female participation in surf instruction, guiding, and tourism enterprises. Hansen (2021) documented the influence of masculinity and gendered identities within Siargao's surfing culture, providing context for the observed disparity.

3.1.3 Civil Status

Most respondents were single, comprising 126 (63.0%), followed by 68 married individuals (34.0%), four single parents (2.0%), and two separated or divorced respondents (1.0%). Although the majority were unmarried, a considerable proportion had family responsibilities that required dependable income. Seasonal tourism earnings may therefore affect both individual financial security and household welfare. Hansen (2022) similarly emphasized the contribution of surf tourism to local livelihoods and household economic opportunities.

3.1.4 Educational Attainment

High school graduates represented the largest group, with 86 respondents (43.0%), followed by 56 with college-level education (28.0%), 26 college graduates (13.0%), 23 with high school-level education (11.5%), seven elementary graduates (3.5%), and two with elementary-level education (1.0%). Overall, 41.0% had attended or completed college. The findings demonstrate that surfing-related occupations attract individuals from different educational backgrounds. This suggests opportunities to strengthen professional competencies through vocational training, business education, and tourism-related certification. Hansen (2022) similarly recognized surf tourism as a source of employment and skills development for local communities.

3.1.5 Primary Surf Role

Surf guides comprised 99 respondents (49.5%), followed by 88 surf instructors (44.0%), nine surfboard rental operators or staff (4.5%), three surf shop owners or staff (1.5%), and one respondent in another surf-related occupation (0.5%). Together, guides and instructors represented 93.5% of the sample. The concentration in guiding and instruction indicates that most respondents depend on direct tourism services rather than business ownership. This employment structure exposes workers to fluctuations in tourist demand and emphasizes the importance of entrepreneurship and livelihood diversification. Mach et al. (2024) highlighted the role of local stakeholder participation in ensuring sustainable surf-tourism development and community economic benefits.

3.1.6 Years of Surfing and Instruction Experience

Among respondents, 75 (37.5%) had 1–3 years of experience, 65 (32.5%) had 4–6 years, 29 (14.5%) had at least 10 years, 27 (13.5%) had 7–9 years, and four (2.0%) had less than one year. Overall, 72.0% had six years or less of experience. The findings reflect a workforce largely composed of relatively recent and moderately experienced practitioners. This pattern is consistent with the expansion of surfing-related employment opportunities in tourism destinations. Hansen (2022) similarly found that surf tourism development creates livelihood opportunities for local residents, emphasizing the importance of continuous professional development and career retention.

3.1.7 Monthly Earnings During Peak Seasons

During peak tourism seasons, 84 respondents (42.0%) earned below ₱10,000 monthly, 76 (38.0%) earned ₱10,000–₱19,999, 25 (12.5%) earned ₱20,000–₱29,999, 10 (5.0%) earned ₱30,000–₱39,999, and five (2.5%) earned at least ₱40,000. Consequently, 80.0% earned below ₱20,000 monthly even during peak periods. These

findings suggest that increased tourist activity does not necessarily produce substantial earnings for frontline surf workers. Mach and Ponting (2021) emphasized the considerable economic contribution of surf tourism and the importance of translating tourism expenditure into sustainable community benefits. Manero and Mach (2023) likewise highlighted the significance of retaining tourism-generated revenue within host communities. The results support the need for fair service pricing, direct-booking opportunities, and cooperative income-generating initiatives.

3.1.8 Monthly Earnings During Off-Peak Seasons

During off-peak seasons, 145 respondents (72.5%) earned below ₱10,000 monthly, 45 (22.5%) earned ₱10,000–₱19,999, five (2.5%) earned ₱20,000–₱29,999, two (1.0%) earned ₱30,000–₱39,999, and three (1.5%) earned at least ₱40,000. Overall, 95.0% earned below ₱20,000 monthly. The greater concentration of respondents in lower-income brackets during off-peak periods demonstrates the financial vulnerability associated with seasonal tourism employment. Hansen (2022) explained that tourism-dependent communities remain exposed to livelihood instability despite the opportunities created by surf tourism. Hansen (2022) also identified seasonal demand, weather conditions, and industry competition as factors affecting surf instructors' economic circumstances in Siargao. These findings emphasize the importance of alternative livelihoods and off-season financial support.

3.1.9 Formal Accreditation and Surf Association Membership

Of the 200 respondents, 153 (76.5%) were classified as surf association members, 44 (22.0%) as accredited, two (1.0%) as not accredited, and one (0.5%) as a non-member. The findings indicate substantial participation in local surfing organizations, although formal accreditation was less frequently reported. Mach et al. (2024) emphasized stakeholder collaboration as an important component of sustainable surf-tourism development. Alvarez et al. (2025) also highlighted the contribution of coastal tourism cooperatives and surf associations to collective livelihood support. Strengthening accreditation accessibility and professional certification may improve institutional recognition and livelihood opportunities.

3.2 Perceived Economic Effects of Surf Tourism

3.2.1 Income Growth, Financial Stability, Livelihood Resilience, and Economic Status

The 200 respondents generally reported favorable assessments of tourism's economic effects. Perceived Income Growth received the highest mean ($M = 3.54$, $SD = 0.381$), followed by Income Stability and Asset Accumulation ($M = 3.48$, $SD = 0.374$), Economic Status ($M = 3.45$, $SD = 0.392$), and Livelihood Resilience and Social Support ($M = 3.42$, $SD = 0.403$). The relatively close mean scores indicate generally positive perceptions across the four dimensions, with income growth rated highest and livelihood resilience and social support lowest. These findings suggest that local surfers perceive tourism as beneficial for generating income, although its contribution to long-term financial security and livelihood resilience is comparatively less favorable. Mach and Ponting (2021) emphasized that tourism-generated economic activity must be accompanied by sustainable community benefits. Mach (2022) similarly discussed the challenges of converting seasonal earnings into savings and productive assets. The findings highlight the importance of strengthening financial management, asset-building opportunities, and social support systems.

3.3 Comparative Analysis Across Economic Dimensions

3.3.1 Overall Differences Among Economic Dimensions

The Kruskal–Wallis test revealed a statistically significant difference across the four economic dimensions, $\chi^2(3) = 11.0$, $p = 0.012$. This indicates that respondents did not assess all dimensions of tourism's economic effects equally. The result suggests that perceived tourism benefits differ between immediate income opportunities and longer-term financial security. Hansen (2022) identified both economic opportunities and livelihood challenges associated with surf tourism. Similarly, Dela Cruz and Peralta (2024) emphasized that improvements in tourism activity do not necessarily produce equal financial recovery among local workers. These findings support the need to address income stability, asset accumulation, and livelihood resilience alongside income growth.

3.3.2 Pairwise Comparisons of Economic Dimensions

Pairwise comparisons identified a significant difference between Livelihood Resilience and Social Support and Perceived Income Growth ($W = 4.364$, $p = 0.011$). Other comparisons were not statistically significant: Economic Status and Income Stability and Asset Accumulation ($W = 1.115$, $p = 0.860$), Economic Status and Livelihood Resilience and Social Support ($W = -0.778$, $p = 0.947$), Economic Status and Perceived Income Growth ($W = 3.608$, $p = 0.052$), Income Stability and Asset Accumulation and Livelihood Resilience and Social Support ($W = -1.897$, $p = 0.537$), and Income Stability and Asset Accumulation and Perceived Income Growth ($W = 2.539$, $p = 0.276$). The significant difference indicates that respondents rated income growth more favorably than livelihood resilience and social support. Mach and Ponting (2021) emphasized the distinction between tourism expenditure and sustainable community outcomes, while Manero and Mach (2023) highlighted the importance of equitable tourism revenue distribution. Mach (2022) further explained that seasonal income may not translate into long-term financial security when earnings are primarily used for household expenses. These findings reinforce the need for savings programs, emergency assistance, and livelihood diversification.

3.4 Differences in Economic Assessments According to Respondent Profiles

3.4.1 Age

The Kruskal–Wallis test revealed a significant difference across age groups only for Perceived Income Growth, $\chi^2(3) = 12.35$, $p = 0.006$. No significant differences were found for Income Stability and Asset Accumulation ($\chi^2 = 4.06$, $p = 0.255$), Livelihood Resilience and Social Support ($\chi^2 = 1.74$, $p = 0.628$), or Economic Status ($\chi^2 = 1.54$, $p = 0.672$). The findings indicate that perceptions of income growth vary by age, whereas assessments of long-term financial stability, resilience, and economic status remain statistically comparable. Hansen (2021) emphasized that social positions and local hierarchies influence surfers' experiences within Siargao's tourism environment. These results suggest the value of age-responsive income development initiatives alongside financial support programs accessible to all age groups.

3.4.2 Sex

The Mann–Whitney U test revealed no significant differences between male and female respondents in Perceived Income Growth ($U = 483$, $p = 0.975$), Income Stability and Asset Accumulation ($U = 299$, $p = 0.134$), Livelihood Resilience and Social Support ($U = 327$, $p = 0.200$), or Economic Status ($U = 358$, $p = 0.301$). The results indicate no statistically significant differences in economic assessments according to sex within the surveyed group. However, the limited number of female respondents should be considered when interpreting these findings. Hansen (2021) documented gendered social identities within Siargao's surfing culture, emphasizing that similar economic assessments do not necessarily indicate equal participation or representation.

3.4.3 Civil Status

No significant differences were identified across civil status categories for Perceived Income Growth ($\chi^2 = 2.88$, $p = 0.411$), Income Stability and Asset Accumulation ($\chi^2 = 2.44$, $p = 0.486$), Livelihood Resilience and Social Support ($\chi^2 = 1.56$, $p = 0.669$), or Economic Status ($\chi^2 = 1.76$, $p = 0.625$). The findings suggest that respondents' assessments of tourism's economic effects were statistically comparable regardless of civil status. Hansen (2022) emphasized that surf-tourism opportunities and vulnerabilities extend across households and communities. Thus, financial assistance and livelihood programs may benefit workers across different household circumstances.

3.4.4 Educational Attainment

Educational attainment showed a significant difference only in Economic Status, $\chi^2(5) = 11.68$, $p = 0.039$. No significant differences were found for Perceived Income Growth ($\chi^2 = 7.96$, $p = 0.159$), Income Stability and Asset Accumulation ($\chi^2 = 8.44$, $p = 0.134$), or Livelihood Resilience and Social Support ($\chi^2 = 7.65$, $p = 0.177$). The findings indicate that assessments of overall economic status differ according to educational attainment, although the other economic dimensions remain statistically comparable. Hansen (2022) highlighted the role of surf tourism in employment and skills development. The results support initiatives that strengthen professional competencies, entrepreneurship, and financial management among surfers with different educational backgrounds.

3.4.5 Primary Surf Role

The Kruskal–Wallis test identified a significant difference in Income Stability and Asset Accumulation across primary surf roles, $\chi^2(4) = 12.01$, $p = 0.017$. No significant differences were found for Perceived Income Growth ($\chi^2 = 5.73$, $p = 0.220$), Livelihood Resilience and Social Support ($\chi^2 = 7.47$, $p = 0.113$), or Economic Status ($\chi^2 = 5.25$, $p = 0.262$). These findings suggest that income stability and asset accumulation are assessed differently across surfing-related occupations. Hansen (2022) emphasized that employment roles influence how local residents experience tourism-related livelihood opportunities. Hansen (2022) also highlighted seasonal demand, weather conditions, and competition as important influences on the economic circumstances of Siargao's surf instructors. These findings support entrepreneurship training, cooperative ownership, and financial assistance initiatives that improve opportunities for asset accumulation among frontline workers.

3.4.6 Years of Surfing and Instruction Experience

No significant differences were identified across experience groups for Perceived Income Growth ($\chi^2 = 8.96$, $p = 0.062$), Income Stability and Asset Accumulation ($\chi^2 = 3.77$, $p = 0.438$), Livelihood Resilience and Social Support ($\chi^2 = 4.32$, $p = 0.364$), or Economic Status ($\chi^2 = 6.62$, $p = 0.158$). The findings indicate that years of surfing experience did not significantly differentiate respondents' economic assessments. Hansen (2022) explained that livelihood vulnerability in surf-tourism communities may arise from broader economic conditions rather than individual professional experience. This supports the provision of livelihood assistance and financial security programs across all experience levels.

3.4.7 Monthly Earnings During Peak Seasons

Significant differences were found across peak-season income groups in all four dimensions: Perceived Income Growth ($\chi^2 = 13.0$, $p = 0.011$), Income Stability and Asset Accumulation ($\chi^2 = 16.2$, $p = 0.003$), Livelihood Resilience and Social Support ($\chi^2 = 10.7$, $p = 0.031$), and Economic Status ($\chi^2 = 14.9$, $p = 0.005$). These findings indicate that respondents in different peak-season earning brackets assessed tourism's economic effects differently across all dimensions. Mach and Ponting (2021) emphasized the substantial economic activity associated with

surf tourism and its potential contribution to local livelihoods. The results highlight the importance of equitable income opportunities, standardized service fees, and cooperative revenue-sharing arrangements.

3.4.8 Monthly Earnings During Off-Peak Seasons

The Kruskal–Wallis test also revealed significant differences across off-peak income groups in Perceived Income Growth ($\chi^2 = 13.2$, $p = 0.010$), Income Stability and Asset Accumulation ($\chi^2 = 13.4$, $p = 0.009$), Livelihood Resilience and Social Support ($\chi^2 = 16.7$, $p = 0.002$), and Economic Status ($\chi^2 = 16.2$, $p = 0.003$). These findings indicate that off-peak earning levels are associated with different assessments of tourism's economic effects across all dimensions. Hansen (2022) emphasized the vulnerability of surf-tourism communities to fluctuations in tourism activity. The results underscore the importance of alternative income sources, off-season employment, and accessible financial support to strengthen livelihood security.

3.4.9 Formal Accreditation and Surf Association Membership

Significant differences were identified across accreditation and membership categories for Perceived Income Growth ($\chi^2 = 10.15$, $p = 0.017$) and Income Stability and Asset Accumulation ($\chi^2 = 11.02$, $p = 0.012$). However, Livelihood Resilience and Social Support ($\chi^2 = 4.87$, $p = 0.182$) and Economic Status ($\chi^2 = 3.84$, $p = 0.280$) showed no significant differences. The findings indicate that accreditation and association membership categories are associated with differences in perceived income growth and financial stability, but not in livelihood resilience or overall economic status. Mach et al. (2024) emphasized organized stakeholder collaboration as an important factor in sustainable surf-tourism development. These findings support accessible accreditation procedures, professional training, and stronger institutional partnerships to improve economic opportunities for local surfers.

4. Conclusion & Recommendations

The study concluded that surf tourism provided important economic opportunities for local surfers in Dapa, General Luna, Pilar, San Isidro, and Santa Monica, Siargao Island, particularly through perceived income growth. However, these opportunities were not equally reflected in income stability, asset accumulation, livelihood resilience, social support, and overall economic status. The findings revealed that local surfers generally perceived tourism favorably, although seasonal income fluctuations remained a major concern, particularly during off-peak periods. Significant differences in economic assessments were identified according to age, educational attainment, primary surf role, monthly earnings during peak and off-peak seasons, and accreditation or association membership status. Conversely, sex, civil status, and years of surfing experience showed no significant differences. Overall, the findings demonstrated that while surf tourism contributed to livelihood opportunities, its perceived economic benefits varied across financial dimensions and respondent groups, emphasizing the importance of strengthening long-term financial security and livelihood sustainability.

Local government units, tourism offices, and surfing associations in Siargao Island should prioritize programs that strengthen income stability, asset accumulation, and livelihood resilience among local surfers. Livelihood diversification initiatives and alternative employment opportunities should be developed to reduce financial vulnerability during off-peak tourism seasons. Financial literacy training, emergency savings programs, and accessible microfinance services should also be promoted to help surfers manage seasonal earnings and invest in productive assets. Local surfing associations should strengthen collective livelihood activities, professional development, and fair working arrangements while coordinating with tourism authorities to improve access to economic opportunities. Furthermore, accreditation and certification programs should be made more accessible to support professional recognition and career advancement. Local surfers should be encouraged to allocate part of their peak-season earnings toward savings, equipment, and alternative income-generating activities. These coordinated efforts may help translate tourism-related income opportunities into more stable and sustainable livelihoods.

The study was limited to 200 local surfers from five selected municipalities of Siargao Island, which may restrict the applicability of its findings to other surfing destinations and tourism communities. Its quantitative descriptive-comparative design relied on self-reported questionnaire responses, reflecting respondents' perceptions rather than independently verified economic outcomes. The study also examined economic conditions within the surveyed period and did not establish long-term changes or causal relationships. Furthermore, the unequal representation of respondent groups, particularly by sex and primary surf role, may affect subgroup comparisons. Future studies may consider broader geographical coverage, more balanced respondent groups, longitudinal approaches, and additional economic indicators to provide a more comprehensive understanding of surf tourism's livelihood effects.

5. Compliance with ethical standards

The authors affirm that no conflicts of interest exist in relation to this study. The research involved 200 local surfers from Dapa, General Luna, Pilar, San Isidro, and Santa Monica, Siargao Island, Philippines, who voluntarily

participated in a non-invasive, questionnaire-based survey after providing informed consent. Respondents were informed of the study's purpose and procedures and were allowed to skip questions or withdraw at any time without penalty or adverse consequences. Confidentiality and anonymity were maintained by ensuring that personally identifiable information was not linked to survey responses, assigning identification codes to completed questionnaires, and reporting findings in aggregate form.

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