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Extent of Digitalization of Tourism Microenterprises in Sorsogon City

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ABSTRACT

This research assessed the extent of digitalization of Sorsogon City's tourism microenterprises through a quantitative descriptive method. The researchers obtained responses from 77 tourism microenterprises through structured questionnaires which resulted in a 71% response rate from the 108 identified establishments. The tourism sector consisted mainly of food and beverage services at 45.45% and accommodation establishments at 38.96% while most businesses operated less than a year and employed between 1 to 3 staff members. The analysis of digital adoption revealed that tourism businesses extensively used basic technologies including smartphones at 88.31% and intermediate technologies including social media at 74.03% and e-payment systems at 63.64% but they underutilized advanced technologies for data analysis and customer relationship management. The business model dimensions showed different levels of digitalization where marketing and sales and customer interactions achieved the highest integration at overall weighted mean of 3.67 with "mostly digitalized" while partnerships obtained the lowest at overall weighted mean of "2.73". The research results showed that microenterprises used digital tools mainly to interact with customers instead of using them to enhance their business operations which could restrict their ability to grow competitively in the long run. The research suggests that businesses should expand their digital adoption beyond customer engagement through specific training programs and enhanced government backing to achieve complete digital transformation that supports the Tourism Act of 2009 and UN Sustainable Development Goals.

Keywords: *Digital Adoption, Digitalization, Tourism Microenterprises.*

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CHAPTER ONE
INTRODUCTION

This section presents the overview of digitalization in the tourism industry, legal and policy framework for tourism digitalization, digitalization gaps in tourism microenterprises, and the study's significance theoretical and conceptual frameworks and paradigms, the present study, and definition of terms.

- *Overview of Digitalization in the Tourism Industry*

According to the United Nations World Tourism Organization (UNWTO), the tourism industry was among the first to adopt digital tools and technologies in the world. These technologies such as digital photography, social media marketing, online booking systems, and virtual tours are reshaping both service delivery and customer engagement within the sector. From online booking of accommodation to experiencing destinations through virtual reality. It undergoes a significant digital transformation which plays an important role in the present. It entails that tourism businesses are quick to use the internet, mobile apps, online booking systems, and different kinds of social media platforms to improve the services offered and reach customers globally.

These technologies are reshaping both service delivery and customer engagement within the sector. Likewise, Phoonsap (2025) highlighted that tools such as social media marketing, and digital advertising play an important role in attracting tourists, enhancing customer engagement and supporting sustainable tourism. He also highlighted that while digital technologies have great potential, the local tourism sectors often face several challenges when properly implementing and integrating.

The research of Agit, et. al. (2024) showed the importance of embracing digital innovations to strengthen tourism competitiveness and economic performance. Their study emphasized that digital innovations are important to lead to strong customer connections and improved customer services. Likewise, Stryzhak (2022) found a connection between the level of digital preparedness and the tourism sector. His findings suggest that highly digitally-developed areas tend to be more successful in tourism. These insights are relevant to local areas that want to grow their tourism economy through the use of digital technologies.

- *Legal and Policy Framework for Tourism Digitalization*

According to Republic Act No. 9593, or the Tourism Act of 2009, it aims to strengthen the Department of Tourism (DOT) and its attached agencies to efficiently and effectively implement tourism in the Philippines. In line with this mandate, its objectives emphasize digitalization fostering innovation and global competitiveness by promoting technology adoption. Moreover, this act is significant to the tourism development of microenterprises, as it encourages small businesses to leverage digital solutions to improve their services and competitiveness.

In connection with this, the United Nations Sustainable Development Goals, particularly Goal 8 (Decent Work and Economic Growth), connects to the present study because digitalization enables tourism microenterprises to expand their market through digital platforms, thus developing the economic growth and opportunities of tourism microenterprises in Sorsogon City. In addition, Goal 9 (Industry, Innovation, and Infrastructure) is also aligned, as the utilization of digital tools promotes technological advancements and innovation in the locality.

- *Digitalization Gaps, Related Studies and Significance in Tourism Microenterprises*

Thomas, et. al. (2011) defined the tourism microenterprise as a small, often informally operated business that offers goods or services directly and indirectly to tourists within the tourism sector. In many years, these small enterprises often lack access to digital tools and training, as well as infrastructure in rural provinces in the Philippines, including Sorsogon. As a result, several microenterprises struggle to promote their services online or use digital platforms to reach a wider scale of audience. The study by Obrero and Garcia (2022) confirms that while microenterprises contribute significantly to the regional economy, they face significant obstacles to growth. These obstacles, as described in the paper, are directly related to the limitations in digital adoption, such as a lack of access to finance, skills, and business networks.

In recent years, digital tools have become crucial in the tourism industry as they help improve in many ways, such as customer experiences, selling products, and delivering services. The growing role of social media in promoting tourism products, building brand identity, and managing customer relationships were emphasized in Palaniswamy (2016) study, in which she found that tourists depend on digital platforms in getting information and planning their travel. A bibliometric study was conducted by Madzik, et. al. (2023), in which they examined the transformation of digital technologies in the tourism sector in the year between 2013 and 2022. The result showed that during the COVID-19 pandemic a lot of people used smart analytics and digital marketing tools.

According to Lapuz, et. al. (n.d.), strengthening digital technologies can make tourism operations become more efficient by lowering the costs, improving processes, and making decisions in a faster way. However, there remains a significant gap in understanding how these digital innovations are being integrated into smaller, emerging tourism hubs such as Sorsogon City. Despite its recognition as a top local destination (Lim, 2023), limited research has explored how local tourism stakeholders adopt and implement digital tools, what challenges they face, and how digitally integrated strategies could further elevate tourism growth and

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competitiveness in the area.

This gap emphasizes the demand to examine the current state of digitalization among tourism microenterprises in Sorsogon City. Digitization has reached a point where it significantly contributes to operational efficiency and sustainability, laying the groundwork for the future of tourism-related business here in the Philippines (Miranda, Mäkitalo, et. al. 2019). These findings support the idea that adopting new technologies is essential for both the tourism and hospitality industry to improve operations and customer satisfaction. This aligns with the goals of our study in Sorsogon City, which also aims to explore how the use of digital technologies can improve service quality in local tourism businesses. Bridging this gap plays a vital role in ensuring that all the businesses in the tourism industry can benefit from digitalization and contribute to inclusive and sustainable tourism development.

➢ *The Frameworks of the Study*

This section discusses and presents the different frameworks and paradigms that anchor the study's context and purpose. These frameworks are significant because they provide the theoretical and conceptual foundation that guides the study's direction, analysis, and interpretation of findings.

- *Theoretical Framework:*

The study focused on two major theories that explain the adoption of digital technologies among businesses: the Technology Acceptance Model (TAM) and the Business Model Theory. The Technology Acceptance Model explains that the decision to adopt and continuously use technology is primarily influenced by two different factors: perceived usefulness and perceived ease of use—which in this study was given highlights by mentioning the different microenterprises in Sorsogon City, specifically in the tourism sector. In the context of tourism microenterprises, the extent to which business owners and operators believe that digital tools, such as online booking systems, digital payments and social media platforms can improve their efficiency and competitiveness will influence their adoption.

The Business Model (BMT) Theory, which explains how firms operate and adapt in a dynamic environment or social system, encompasses internal activities, marketing, products and services, and partnerships. This theory highlights the business adoption, operation, and execution of different platforms, e-payment, and advanced software. Relating to the present study, this theory is the basis for shaping the function and the transformation of one's microenterprise in day-to-day operations that leads to innovation of the business and improved business outcomes. Looking at the case of tourism microenterprises in Sorsogon City, some businesses may embrace digital technologies quickly, while others may lag due to limited capital, digital literacy, or infrastructure. By combining these two theories—TAM and BMT—this study provides a comprehensive lens for understanding the extent of digitalization among microenterprises. With this, the study will ensure its purpose by navigating the different factors affecting the extent of digitalization as well as technology integration in the many microenterprises in Sorsogon. The study will reveal the gaps and solve issues that might affect the improvement and development of these tourism microenterprises in Sorsogon and beyond.

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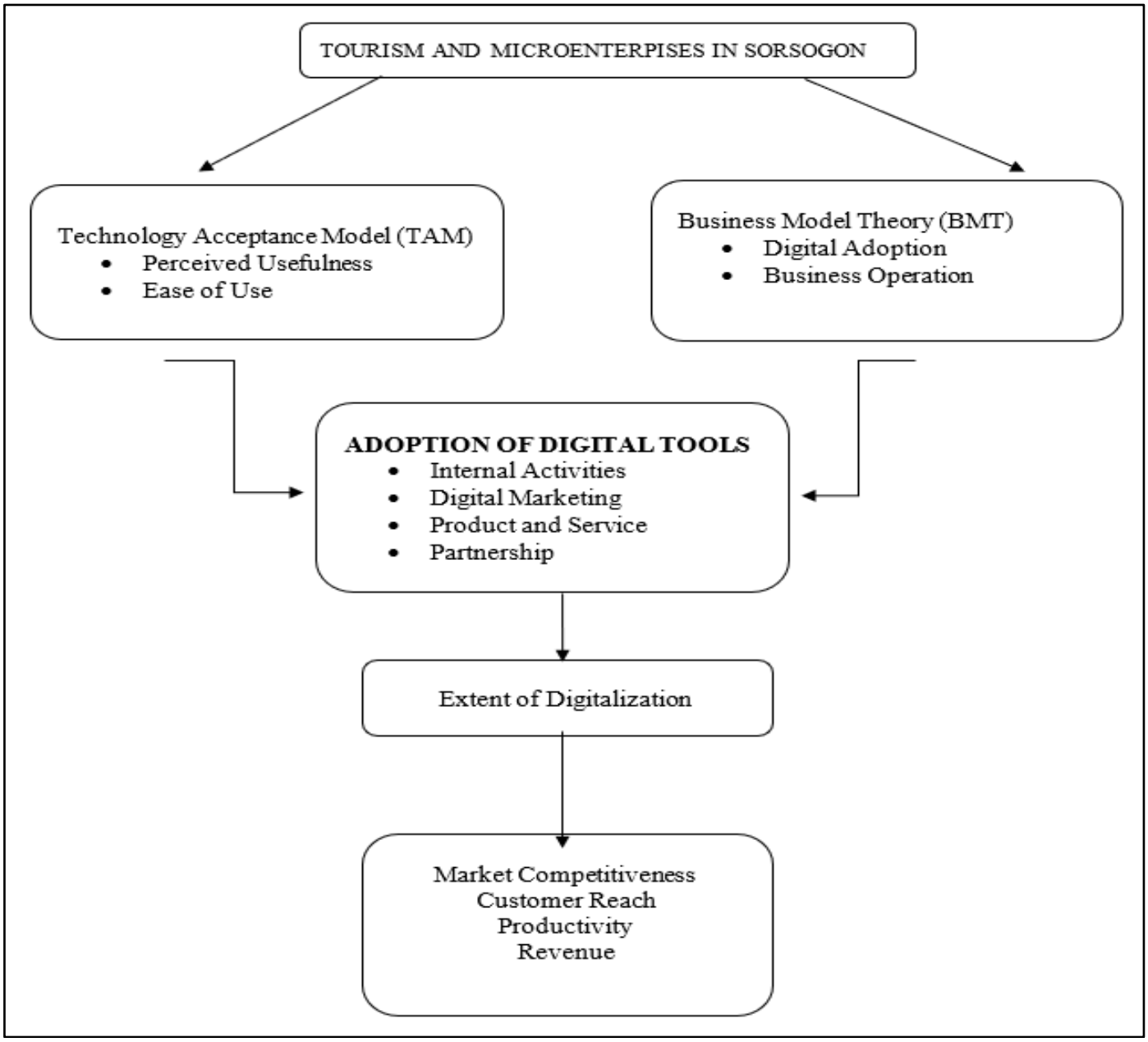

Fig 1 Theoretical Paradigm

- *Conceptual Framework:*

The conceptual framework of this study showed the relationship between the profile of tourism microenterprises, level of digital adoption, and extent of digitalization across business model.

The profile of tourism microenterprises includes the business sector, its years in operation, and the number of employees. The paradigm showed that these variables may influence the level of digital adoption of tourism microenterprises which is directly determined by the digital technologies used by the business. The levels of digital adoption are classified into Basic Digital Technology (BDT), Intermediate Digital Technology, and Advanced Digital Technology (ERIA 2019; SME Corporation Malaysia 2018). Basic Digital Technology (BDT) refers to the usage of simple devices ranging from smartphones to tablets and basic software, such as Microsoft, for communication and daily operational tasks. Intermediate Digital Technology (IDT) focuses on leveraging technologies for front-end tasks such as sales/marketing through online platforms, including social media, digital/e-commerce platforms, websites, and payment through digital technology (e-payment). On the other hand, Advanced Digital Technology (ADT) refers to advanced software used to effectively and productively complete back-end tasks such as financing/accounting, data analysis, customer relationship management (CRM), etc. Both the profile of tourism microenterprises and the digital adoption levels could be related with each other.

Moreover, the profile of tourism microenterprises may also influence their extent of digitalization which is observed across the firm's business model. A business model is defined as the firm's architecture of activities for the creation, delivery, and capture

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of customer value (Zott & Amit, 2007, 2010). The model is broken down into four aspects of the firm's business operations: internal activities; marketing, sales, and customer interactions; products and services; and partnerships. This extent is observed through how deeply digital technologies are integrated by tourism microenterprises into these aspects of the business model.

This framework explains that the profile of tourism microenterprises may significantly influence the level of digital adoption and extent of digitalization across business model of tourism microenterprises in Sorsogon City.

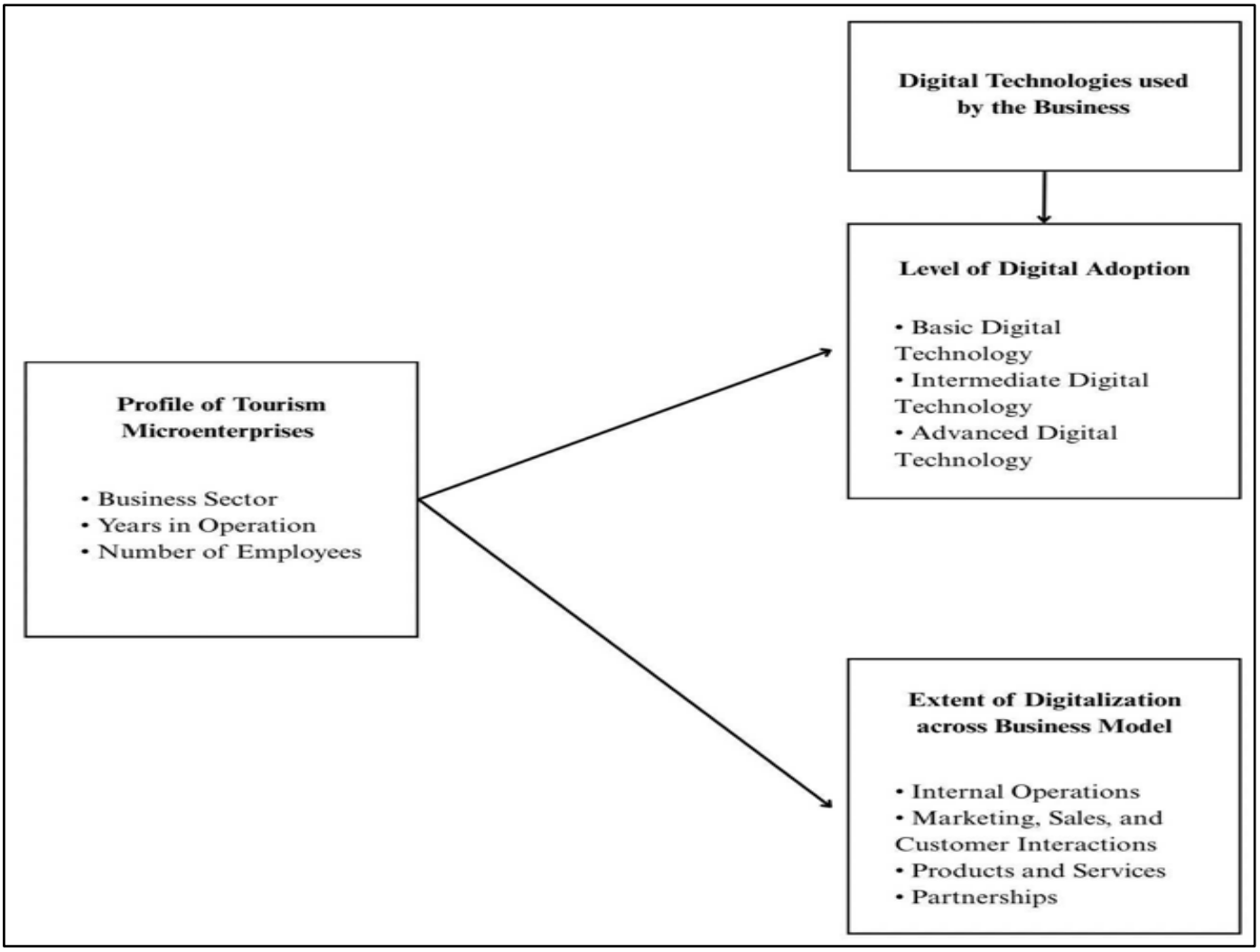

Fig 2 Conceptual Paradigm

➢ *Significance of the Study*

The findings of this study have important implications for multiple stakeholders. For tourism microenterprises, the study highlights how digital tools can enhance marketing, customer service, and overall business operations, helping small-scale businesses understand practical ways to improve their performance. Business owners can use these insights to inform decision-making, particularly regarding the impact of digital transformation on customer satisfaction and business outcomes. For the broader tourism industry, the results emphasize the importance of adopting technology to remain competitive and better meet consumer expectations in an increasingly digital environment. Tourism policymakers may benefit from the study by using the findings to develop evidence-based policies that strengthen the region's digital tourism infrastructure, support strategic planning, and promote sustainable tourism development aligned with global digital trends. At the government level, the study can guide initiatives to enhance digital literacy and capacity building within local tourism sectors. For researchers, the study identifies gaps in the existing literature, particularly in local contexts such as Sorsogon City, and provides a foundation for designing future studies and methodologies to assess digital adoption in tourism. Finally, future researchers can build on these findings to explore underexamined areas, including government-led digital initiatives and the adoption of technology by small businesses, thereby advancing knowledge on digital integration in the tourism sector.

➢ *The Present Study*

Many related studies gathered and emphasized by the researchers that integrating digital tools and equipment has become vital for enhancing service quality and fostering stronger relationships with customers (Erdem & Seker, 2022; Hadjielias, et. al., 2022;

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Xia, 2022). This study will assess the extent of digitalization of tourism microenterprises in Sorsogon City recognizing their crucial role in economy and local tourism. To remain competitive, the companies that are connected to tourism must adopt the tools that provide insights into consumer behavior, allowing for more personalized and efficient services as well as fostering a digitally literate and adaptive workforce is a must. The microenterprises in Sorsogon are often constrained by limited resources, training, and infrastructure. These constraints hinder their ability to adopt new technologies and maintain ongoing training programs (Van Nuenen & Scarles, 2021; Gutierrez, Ferreira, & Fernandes, 2023).

To assess the extent of digitalization of tourism microenterprises in Sorsogon City, a quantitative research approach was employed in this study, collecting and analyzing numerical data that accurately reflects the extent of digitalization of tourism microenterprises in Sorsogon City.

This study focuses on assessing the extent of digitalization among 108 tourism microenterprises in Sorsogon City that have been identified by the Department of Tourism - Sorsogon, specifically including accommodation providers, food and beverage outlets, souvenir shops, and small travel service intermediaries. These are qualified as microenterprises based on government standards (with assets not exceeding ₱3,000,000 and fewer than 10 employees). It examines the information of these businesses (business sector they belong, years in operation, and number of employees), as well as the digital technologies they used. The study also evaluates the extent of digitalization of these businesses. However, the scope of this research is limited only to microenterprises within Sorsogon City and excludes larger tourism enterprises with more than 10 employees or higher capitalization, unregistered or informal operators, and tourism stakeholders outside the province.

The general objective of this study is to assess the extent of digitalization of tourism microenterprises in Sorsogon City. Specifically, it aims to: (1) determine the profile of tourism microenterprises in Sorsogon City, in terms of business sector, years in operation, and number of employees; (2) determine the level of digital adoption of tourism microenterprises in Sorsogon City; (3) assess the extent of digitalization of tourism microenterprises in Sorsogon City, in terms of firms business model: scale composition by Autio, et. al. (2024) which includes internal activities, marketing, sales, and customer interactions, products and services, and partnerships; (4) investigate the relationship between the profile and the level of digital adoption of tourism microenterprises; (5) investigate the relationship between the profile and extent of digitalization across business model; lastly (6) formulate recommendations that can be proposed based on the findings of the study.

➢ *Definition of Key Terms*

This section presents the following key terms used in this study, providing clear and concise interpretation of variables discussed by the researchers throughout the research to avoid confusion.

- *Digitalization*.

It uses digitized information to simplify how humans work and make it more efficient, such as by using digital technology to report processing, collecting and analyzing of data (Pellicelli, 2023). In this study, digitalization refers to the integration of digital tools into small-scale business processes in Sorsogon City.

- *Tourism Microenterprises*.

This refers to small, often informally operated businesses that function within the tourism sector by offering goods or services directly or indirectly to tourists (Thomas, et. al., 2011). In this study, these refers to small-scale business establishments with less than ten (10) employees in Sorsogon that are involved in serving tourists directly or indirectly.

- *Digital Adoption*.

The degree to which a company uses and incorporates digital technologies into its operations is known as "digital adoption." Digital adoption in this study refers to how much Sorsogon City's tourism microenterprises use digital tools for marketing, operations, and service delivery. These tools include smartphones, social media platforms, e-commerce websites, digital payments, data analytics, and customer relationship management systems.

- *Business Model*.

The framework and system by which a business generates, provides, and extracts value is referred to as its business model. Based on Djukic's (2024) and Zott & Amit's (2007, 2010) framework, the firm's business model in this study comprises four essential components: internal operations; marketing, sales, and customer interactions; products and services; and partnerships. The way digital technologies are incorporated into these business model components serves as a gauge for the degree of digitalization.

- *Digital Technologies*.

Are the electronic tools, systems, devices, or any other resources that can process, store, or generate data through different digital means. In this study, digital technologies refer to the tools, platforms, devices, or channels that the businesses use to provide efficient operation and enhance customer services and marketing processes.

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CHAPTER TWO
METHODOLOGY

This section presents the research design, source of data, research ethics, research instrument, data collection, and data analysis, providing a clear and reliable foundation for achieving the study's objectives.

➢ *Research Design*

This study used a quantitative research approach, collecting and analyzing numerical data that clearly reflects the extent of digitalization of tourism microenterprises in Sorsogon City. Quantitative research approaches can be used to find patterns and averages, make predictions, evaluate causal relationships, and generalize results to wider populations (Bhandari, 2023).

This study also used a non-experimental research design, specifically descriptive-correlational design to determine the profile of tourism microenterprises in Sorsogon City and the level of digital adoption of tourism microenterprises in Sorsogon City. This design was also used to assess the extent of digitalization of tourism microenterprises in Sorsogon City in terms of firms' business model scale composition by Autio, et. al. (2024). Furthermore, descriptive-correlational design was used to investigate the relationships of the profile of tourism microenterprises with their level of digital adoption and extent of digitalization across business model.

Descriptive-correlational design is important because it helps to identify characteristics of certain population and find relationships between different variables (Brodowicz, 2024), wherein, this study aims to find relationships between the profile of tourism microenterprises with their level of digital adoption and extent of digitalization across business model.

➢ *Source of Data*

The primary sources of data for this study were the responses from owners, managers, or representatives of tourism microenterprises in Sorsogon City. These respondents are directly involved in the management and operations of the business. These businesses are qualified as a tourism microenterprise based on Republic Act 9501: Magna Carta for Micro, Small and Medium Enterprises, stating that microenterprises have fewer than 10 employees and assets not exceeding P 3,000,000.

The total population of microenterprises in Sorsogon City is 4,265 as of September 12, 2025, according to the Permits and Licensing Division, LGU - Sorsogon City. This data was obtained by the researchers through a request letter submitted to the Office of the Mayor in Sorsogon City. The requested data was assisted by the Permits and Licensing Division, LGU - Sorsogon City. Thereafter, the researchers passed the data to the Department of Tourism (DOT) - Sorsogon to specifically identify microenterprises operating in the tourism sector in Sorsogon City. A total population of 108 tourism microenterprises has been identified by the DOT, serving as the baseline data for this study.

To identify and select the number of respondents needed for this study, the researchers used total enumeration covering 108 tourism microenterprises identified by the DOT, aiming to collect data from every single individual in the population of tourism microenterprises in Sorsogon City.

➢ *Research Ethics*

Prior to data collection, a signed informed consent form was obtained from each respondent to ensure voluntary participation. In line with this, researchers informed each participant about the nature, purpose, potential risks, and benefits of the research. Participants were also provided with a detailed explanation of the study's objectives, the voluntary nature of their participation, and their right to withdraw at any time without penalty. Furthermore, researchers guaranteed the protection of the participants' privacy by keeping all responses confidential and anonymous so it could not be traced back to who they were. Participants' dignity and welfare were also protected, respecting their rights and ensuring no harm arises from their involvement. Finally, their consent was considered by the researchers in taking photos for documentation purposes.

After the data collection, all data obtained was stored securely, accessible only to the research team, and was disposed of responsibly after the completion of the study to prevent unauthorized access. The researchers guaranteed that the findings will be used responsibly to contribute positively to the community and the tourism sector, avoiding any misrepresentation or misuse of data that could negatively impact the participants or society.

➢ *Research Instrument*

The research instrument used in this study was a structured checklist survey questionnaire designed to collect numerical data from the owners, managers, or any representatives of selected tourism microenterprises in Sorsogon City. The instrument was an adapted modified questionnaire from Vutha, et. al. (2023) and Autio, et. al. (2024). The questionnaire was composed of an introductory paragraph, consisting of the title of the study, its purpose, respondents' participation, and assurance for the confidentiality of their responses. It was organized into three sections: information about the business; digital technologies used by the business; and extent of digitalization of the business.

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The information about the business gathers basic information of tourism microenterprise such as company name (optional/code), business sector, years in operation, and number of employees. On the other hand, the digital technologies used by the business include smartphones, tablets, laptops, desktops, basic software, social media, digital/e-commerce platforms, websites/application, e-payment, financing/accounting, automated chatbots, data analysis, digital advertisement, customer relationship management, and others. The digital technologies used by the business determines their level of digital adoption. Meanwhile, the extent of digitalization of the business assess how the business uses digital technologies in their operations through a business model which has four aspects such as internal activities, marketing, sales and customer interactions, products and services, and partnerships.

To assess the extent of digitalization of the business, the researchers used a five-point likert-scale (1=not at all … 5=perfectly) adopted from Autio, et. al. (2024) which was originally adapted from Djukic (2024). Autio, et. al. (2024) designed the likert-scale questionnaire based on inspired received theory, previous empirical operations, and their own reasoning. They incorporate a total of 23 statements querying the application of digital technologies in four aspects of the firm's business operations: (1) internal activities (8 items); (2) marketing, sales, and customer interactions (7 items); (3) products and services (3 items); (4) partnerships (4 items). Principal component analyses yielded four factors with Eigenvalues greater than 1. After removing items with no strong loadings on any factor and items with strong loadings on more than one factor, a total of 17 individual items were retained: six for internal activities; six for marketing, sales, and customer interactions; three for products and services; and two for partnerships. The scale values were computed as weighted averages of individual statements, using factor loadings as weights.

The adapted modified questionnaire has undergone face validity by experts in the field of research. It was validated to ensure that the items are appropriate and relevant, measuring what it is supposed to measure, and to ensure that the questionnaire itself is credible.

- *Data Collection*

The data collection began on October 15, 2025 and continued until November 27, 2025. It was conducted through both face-to-face with printed questionnaires and online using google form, targeting 108 tourism microenterprises in Sorsogon City, including accommodation services, food and beverage services, tour and travel services, souvenir shops/handicrafts, transportation services, as well as dual accommodation and food & beverage services, which are identified and selected by the DOT.

The number of printed questionnaires distributed at the businesses' location was 88 (81%). While via online, there were 20 (19%) questionnaires. Upon retrieval, the researchers got 15 (17%) answered questionnaires on the same day of distribution, and 49 (56%) was retrieved 3-7 days after the face-to-face distribution. On the other hand, 13 (65%) answered via google form, wherein the researchers contacted the respondents by messaging directly to the businesses' facebook page. Overall, 77 (71%) responded and 31 (29%) declined and are not currently operating. The questionnaires were managed well by the researchers, and responses were checked immediately for completeness. All data was securely stored to avoid unauthorized access.

- *Data Analysis*

The collected data was tabulated in tables using Microsoft Excel. Upon tabulation, frequency and percentage were used to analyze the first objective — determining the profile of tourism microenterprises in Sorsogon City, in terms of business sector, years in operation, and number of employees. Frequency, percentage, and ranking were used to analyze the second objective — determining the level of digital adoption of tourism microenterprises in Sorsogon City. To analyze the third objective — assessing the extent of digitalization of tourism microenterprises in Sorsogon City in terms of firms' business model scale composition by Autio, et. al. (2024), weighted mean was used, wherein the scale was ranging from *"Perfectly – Not at all"*. This scale supports the study by quantifying the extent to which tourism microenterprises in Sorsogon City show each component of Autio, et. al. (2024) business model scale, allowing the researchers to numerically interpret the extent of their digitalization. For the fourth objective — investigating the relationship between the profile of tourism microenterpises and their level of digital adoption, Chi-square (X^2) was used to examine relationship and the computation for the statistical values was conducted using Minitab statistical software and their statistical significance at the 0.05 level. Lastly, Eta Squared (η^2) was used to answer the fifth objective — examining the relationship between the profile of tourism micrenterprises and their extent of digitalization across business model and the computation for the statistical values was also conducted using Minitab statistical software and test their statistical significance at 0.05 level.

Scale	Interpretation
4.2 - 5.0	Perfectly
3.4 - 4.19	Mostly
2.6 - 3.39	Moderately
1.8 - 2.59	Slightly
1 - 1.79	Not at all

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CHAPTER THREE
RESULTS

This section presents the findings of the collected data derived from the study. The results reveal its relevance to the objectives of this study.

➢ *Profile of Tourism Microenterprises in Sorsogon City*

Table 1 Frequency and Percentage of Tourism Microenterprises by Business Sector

Business Sectors	Frequency	Percentage (%)
Accommodation Services	30	39%
Food and Beverage Services	35	45%
Souvenir Shop/Handicrafts	3	4%
Travel and Tour Services	2	3%
Transportation Services	1	1%
Resorts (Day Operation)	3	4%
Accommodation & Food and	3	4%
Beverage Services		
N	77	100%

Table 1 presents various business sectors comprising the tourism microenterprises in Sorsogon City, wherein, food and beverage services had the highest percentage accounting to 45%, following the accommodation services accounting to 39%. Souvenir shops/handicrafts, resorts (day operation), and dual accommodation & food and beverage services were 4%. While transportation services were the lowest accounting for 1%.

Table 2 Frequency and Percentage of Tourism Microenterprises by Years of Operation

Years of Operation	Frequency	Percentage (%)
<1	5	6%
1-3 years	23	30%
4-6 years	22	29%
7-10 years	11	14%
>10 years	16	21%
N	77	100%

Table 2 presents the operational tenure among tourism microenterprises in Sorsogon City, in which 1-3 years of the business' operation had the highest percentage accounting to 30%, following the 4-years in operation accounting to 29%. Followed by more than 10 years which accounts to 21%-, and 7-10-years accounting to 14%. While the least percentage was less than 1 year accounting to 6%.

Table 3 Frequency and Percentage of Tourism Microenterprises by Number of Employees

Number of Employees	Frequency	Percentage (%)
None (owner operated)	9	12%
1-3 employees	29	38%
4-6 employees	24	31%
7-10 employees	15	19%
N	77	100%

Table 3 presents the number of employees who are currently working in the tourism microenterprises in Sorsogon City, in which 1-3 employees had the highest percentage accounting to 38%, following this were 4-6 employees accounting to 31%. 7-10 employees accounts to 19%, and the least were none (owner operated) accounting to 12%.

➢ *Level of Digital Adoption of Tourism Microenterprises in Sorsogon City*

Table 4 Statistical Distribution and Ranking of Digital Technologies in each Digital Adoption Level among Tourism Microenterprises

Levels	Digital Technologies	Frequency	Percentage (%)
Basic	Smartphones	68	88.31%
	Tablets	22	28.57%
	Laptops	33	42.86%

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	Desktops	15	19.48%
	Basic Software	19	24.68%
Intermediate	Social media	57	74.03%
	Digital/E-commerce Platform	8	10.29%
	Website/Application	9	11.69%
	E-payment	49	63.64%
Advanced	Financing/Accounting	9	11.69%
	Automated Chatbots	9	11.69%
	Data Analysis	1	1.30%
	Digital Advertisement	25	32.47%
	CRM	11	14.29%

Table 4 shows the frequency, percentage and ranking distribution of the digital technologies across each level of digital adoption among tourism microenterprises in Sorsogon City, wherein basic technologies are the most widely used, with smartphones (88.31%) ranking first, followed by laptops (42.86%), while desktops were ranked 8 with 19.48%, and basic software was ranked 7. At the intermediate level, social media (74.03%) is highly used and ranks second overall. E-payment systems (63.64%) also show high usage ranking third, while only a small number of microenterprises use websites/application and e-commerce platform accounting to 11.69%, ranking 10. For advanced technologies, tools such as financing/accounting software, automated chatbots, CRM, and data analysis show minimal usage, each below 15%.

➢ *Extent of Digitalization of Tourism Microenterprises in Sorsogon City*

- *Internal Activities*

Internal Activities. It refers to how fully digitalized the businesses are when it comes to inside operations.

Table 5 Assessment of Internal Activities Using Weighted Mean Scores

Indicators	Weighted mean	Interpretation
Our human resource processes are fully digitalized (e.g., salary driven company payments, recruitment, training...)	3.03	Moderately
Our customer management system and customer database are fully digitalized	2.92	Moderately
Our accounting system is fully digitalized	2.95	Moderately
We use digital technologies and data to optimize our manufacturing, service, and logistics.	2.97	Moderately
We use digital technologies for resource and inventory planning	2.97	Moderately
We are fully data-driven company	2.84	Moderately
Overall Mean	2.95	Moderately

The data showed that businesses were generally interpreted as moderately digitalized with a total weighted mean of 2.95 in their internal operations, across the six items. The first item “Our human resource processes are fully digitalized (e.g., salary driven company payments, recruitment, training)” scored the highest weighted mean of 3.03, interpreted as moderately while the last item “We are fully data-driven company” was the weakest area in the internal activities.

➢ Marketing, Sales, and Customer Interactions

- *Marketing, Sales, and Customer Interactions.*

This covers how the businesses interact with, reach, and engage their customers.

Table 6 Assessment of Marketing, Sales, and Customer Interactions Using Weighted Mean

Indicators	Weighted mean	Interpretation
We advertise our products and services primarily through digital channels	3.53	Mostly
We constantly use social media to interact with customers (e.g., Facebook, Instagram, TikTok, LinkedIn, Twitter, Line)	3.99	Mostly
We constantly monitor how our customers interact with websites and social media (e.g., clicks, views, etc.)	3.77	Mostly
Our customers can order or pay online (or both)	3.81	Mostly
We actively monitor our online ratings and customer reviews online	3.66	Mostly
We operate our own online user community	3.23	Moderately
Overall Mean	3.67	Mostly

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This assessment indicates strong digital maturity across marketing, sales and customer interactions. The second item "We constantly use social media to interact with customers (e.g., Facebook, Instagram, TikTok, LinkedIn, Twitter, Line)" has the highest weighted mean of 3.99, with an interpretation of "mostly" while the last item "We operate our own online user community" scored the lowest with a weighted mean of 3.23. The overall scores of weighted mean among all items tend heavily towards "mostly digitalized"

- *Products and Services*

Products and Services. This refers to how they offer their products and services; for instance, if their products are connected to mobile apps.

Table 7 Assessment of Products and Services Using Weighted Mean

Indicators	Weighted mean	Interpretation
Our products and services are fully digital	2.65	Moderately
Our products and services are connected to mobile app	2.91	Moderately
We use digital platforms to test new products and services and get user feedback	2.92	Moderately
Overall Mean	2.83	Moderately

The results demonstrate that the products and services offered are predominantly moderately digitalized with a total of 2.83 overall weighted mean across three items. The item "We use digital platforms to test new products and services and get user feedback" received the highest count of 2.92 weighted mean, while the lowest item "Our products and services are fully digital" has a total of 2.65.

- *Products and Services*

Partnerships. If the businesses actively collaborate with other businesses, suppliers, or organizations to support their sales or to enhance operational efficiency.

Table 8 Assessment of Partnerships Using Weighted Mean

Indicators	Weighted mean	Interpretation
We actively work with partners to increase sales	2.73	Moderately
We collaborate with partners to create new services for our customers	2.73	Moderately
Overall Mean	2.73	Moderately

The findings clearly establish that partnerships are also moderately undeveloped area. Both items scored a weighted mean of 2.73, indicating an interpretation of "moderately digitalized." This shows that businesses in terms of partnerships are still in the developing stage.

➢ *Investigate The Relationship Between the Profile of the Respondents and the Level Digital Adoption of Tourism Microenterprises.*

Table 9 Summary of Relationship Between the Profile of the Respondents and the Level Digital Adoption of Tourism Microenterprises

Variables	Statistical Values			
	χ^2	*Cramér's V*	*p-value*	*Level of Significance*
Business Sector and Digital Adoption	6.73	.209	.875	0.05
Years of Operation and Digital Adoption	5.82	.194	.667	0.05
Number of Employees and Digital Adoption	10.3	.259	.112	0.05

✓ H_{01}: There is no relationship between the profile of the respondents and the level digital adoption of tourism microenterprises.
✓ H_{a1}: There is relationship between the profile of the respondents and the level digital adoption of tourism microenterprises.

Note: **Significant = Level of Significance (0.05) < p-value*

Table 9 presents the results of the relationship between profile of the respondents and the level digital adoption of tourism microenterprises in Sorsogon City. The Chi-square (χ^2) was employed to examine relationship and the computation for the statistical values was conducted using Minitab statistical software and test their statistical significance at the 0.05 level.

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➢ *Summary of Relationship Between the Profile of the Respondents and the Extent Digitalization Utilization of Tourism Microenterprises*

Table 10 Summary of Relationship Between the Profile of the Respondents and the Extent Digitalization Utilization of Tourism Microenterprises

Variables	**Statistical Values**			
	F-value	***η² (Eta Squared)***	***p-value***	***Level of Significance***
Business Sector and Internal Activities	2.91	.172	.019*	0.05
Business Sector and Marketing, Sales, and Customer Interactions	4.79	.255	.001*	0.05
Business Sector and Products	2.06	.128	.081	0.05
Business Sector and Partnerships	4.38	.238	.002	0.05
Years of Operation and Internal Activities	1.40	.073	.241	0.05
Years of Operation and Marketing, Sales, and Customer Interactions	2.66	.130	.040*	0.05
Years of Operation and Products	1.40	.073	.242	0.05
Years of Operation and Partnerships	0.653	.035	.627	0.05
Number of Employees and Internal Activities	6.47	.212	.001*	0.05
Number of Employees and Marketing, Sales, and Customer Interactions	3.87	.139	.013*	0.05
Number of Employees and Products	1.78	.069	.158	0.05
Number of Employees and Partnerships	6.09	.001	.202	0.05

✓ H_{02}: There is no relationship between profile of the respondents and the extent of digitization utilization of tourism microenterprises.

✓ H_{a2}: There is relationship between the profile of the respondents and the level digital adoption of tourism microenterprises.

Note: **Significant = Level of Significance (0.05) < p-value*

Table 10 presents the results of the relationship between profile of the respondents and extent digitization utilization in terms on (a) internal activities, (b)marketing, sales and customer interactions, (c) product, and (d) partnership of tourism microenterprises in Sorsogon City. The Eta Squared (η^2) was employed to examine relationship and the computation for the statistical values was conducted using Minitab statistical software and test their statistical significance at the 0.05 level.

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CHAPTER FOUR
DISCUSSION

This section discusses and interprets the study's findings from each objective. This includes the Profile and Digitalization Needs of Tourism Microenterprises, Digital Adoption Levels Among Tourism Microenterprises, and uneven Digitalization Across Business Model Dimensions

- *Profile and Digitalization Needs of Tourism Microenterprises*

The profile of tourism microenterprises in Sorsogon City shows that the sector is primarily composed of food and beverages services (45.45%) and accommodation establishments (38.96%), showing that these two sectors dominate the city's tourism economy as the city's tourism is continuously growing and the demand of food and beverage and accommodations establishments is needed to cater tourists. Smaller segments such as souvenir shops, resorts, travel and tour services, and transportation services are less developed, which is common for emerging tourism destinations like Sorsogon City.

In terms of years in operation, 29.87% of tourism microenterprises have been operating for 1-3 years, mostly accommodation services accounting to 40%. Additionally, there are 28.57% of tourism microenterprises that have been operating for 4-6 years, mostly food and beverages services accounting to 48.57%, suggesting that many of tourism microenterprises in Sorsogon are new and still growing within the city's tourism sector.

The number of employees shows the small-scale nature of these businesses, with the majority employing 1-3 employees (37.66%), mostly from accommodation services accounting to 53.33%. While food and beverage services employ 4-6 employees accounting 42.85%, aligning with the definition of microenterprises having fewer than 10 employees (Republic Act 9501: Magna Carta for Micro, Small and Medium Enterprises).

These characteristics may be associated with limited resources, training, and infrastructure, and may present difficulties in adopting digital technologies, as highlighted by Obrero and Garcia (2022) concerning microenterprises in Bicol Region, including Sorsogon. For this reason, future initiatives in tourism and hospitality practice should prioritize adopting digital technologies for tourism microenterprises in Sorsogon City, while policy should focus on giving support and incentives for digital integration across these microenterprises, especially the less developed ones. Future research could explore the specific digital challenges of smaller segments and the long-term impact of digitalization on the survival and growth of these businesses in this changing economy.

- *Digital Adoption Levels Among Tourism Microenterprises*

There is an existing study that supports the idea that there are three levels of digital adoption such as Basic Digital Technology (BDT), Intermediate Digital Technology (IDT), and Advanced Digital Technology (ADT) (ERIA 2019; SME Corporation Malaysia 2018). The result reveals that tourism microenterprises in Sorsogon City mostly use basic and intermediate digital technologies, with smartphones being the most common (88.31%, Rank 1), followed by social media platforms (74.03%, Rank 2) and e-payment systems (63.64%, Rank 3). This high usage of basic and intermediate digital technologies supports the principles of the Technology Acceptance Model (TAM), which explains that people are more likely to use technology when they perceive it as useful and easy to use. In this case, digital technologies such as smartphones, social media, and e-payment systems are widely used because they support important business operations like communication, marketing, and financial transactions. However, there is a significant digital gap revealed, as intermediate digital technologies like digital/e- commerce platforms (10.29%) and websites/applications (11.69%), and advanced digital technologies such as data analysis (1.30%), financing/accounting (11.69%), automated chatbots (11.69%), and CRM (14.29%) show lower usage. This inequality may suggest that even though microenterprises are skilled in front-end customer engagement, they are not fully using digital technologies to improve back-end operations, make strategic decision-making stronger, or manage customer relationships more systematically. This case reflects the finding of Obrero and Garcia (2022) who notes that microenterprises (including those in Sorsogon) experience major growth challenges due to limited access to financing, skills, and infrastructure, which in turn limit their ability to use and integrate new digital technologies.

For the tourism and hospitality sector, these findings suggest that the practical benefits and ease of use of more advanced digital technologies are needed to present in to microentrepreneurs. Meanwhile, government agencies and local tourism offices should strengthen tourism policies highlighting digitalization for tourism microenterprises. These initiatives align with the Tourism Act of 2009 (Republic Act 9593), which mandates enhancing the sector's competitiveness through digitalization.

Furthermore, future research may examine the specific barriers to adopting advanced digital technologies through qualitative approaches and assess how current levels of digital adoption affect the long-term competitiveness of these microenterprises.

- *Uneven Digitalization Across Business Model Dimensions*

The extent of digitalization across the four dimensions of the business model such as internal activities, marketing/sales/customer interactions, products and services, and partnerships reveals varying levels of digital integration among tourism microenterprises in Sorsogon City, reflecting both opportunities and challenges in their digital transformation journey.

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Internal Activities show moderate digital integration, with weighted means ranging from 2.84 to 3.03 across the six statements, indicating performance of "moderately digitalized" with an overall weighted mean of 2.95. The item for human resource processes is the most digitalized aspect with a weighted mean of 3.03 within the moderate status of digitalization. Conversely, the statement "We are fully data-driven company" got the lowest score of 2.84 also falling into moderate status. The findings highlight that the microenterprises have successfully implemented basic digital systems but not yet completed the transition into a completely integrated system. Consequently, this aligns with the Business Model Theory (BMT) by providing an audit of two components which are "Key Activities" and "Key Resources". The scores across all internal activities suggest that their Key Activities such as HR, accounting, and operations are not fully optimized. The lowest score of being "fully data-driven company" highlights a significant weakness in leveraging data as a strategic key resource. This deficiency suggests that microenterprises have internal inefficiencies, hindering their overall value creation.

In contrast to internal activities, "Marketing, Sales, and Customer Satisfaction" demonstrate the highest level of digitalization among all business model dimensions, with overall weighted mean of 3.67, achieving a "mostly digitalized" status. Social media interaction received the highest weighted mean of 3.99, while the statement "We operate our own online user community" got the lowest weighted mean of 3.23 and it is the only item that is under "moderately digitalized" while other items is in "mostly" status. The results states that most microenterprises have strongly embraced digital technologies for customer engagement. The weighted means reveal strong adoption of digital channels for advertising, social media engagement, and online payment options. Notably, the scores for statements about social media usage and online customer interactions suggest that microenterprises recognize the critical importance of digital presence in reaching customers. This finding supports the Technology Acceptance Model (TAM), as these customer- facing technologies are perceived as both useful and easy to use for customer engagement. Furthermore, the results align with Palaniswamy's (2016) study, which emphasized the growing role of social media in promoting tourism products and managing customer relationships. Nevertheless, the lowest scores for operating online user communities indicate that while businesses engage customers through digital platforms, they have not yet fully developed sophisticated digital community-building strategies.

On the other hand, "Products and Services" are classified in "moderately digitalized" status with an overall weighted mean of 2.83.The lowest score is 2.65 for the statement "Our products and services are fully digital" while the use of digital platforms for testing new offerings and getting user feedback showed the highest weighted mean of 2.92. This gap is particularly significant given that digital transformation increasingly requires businesses to reimagine their products and services in digital formats (Agit, et. al., 2024).

Furthermore, "Partnerships" are the most underdeveloped area of digitalization, with an overall weighted mean of 2.73. Both statements from this category "We actively work with partners to increase sales" and "We collaborate with partners to create new services for our customers" received an identical score of 2.73 placing it into moderately digitalized level. This finding reflects the BMT's emphasis on partnerships as a crucial component of business model innovation. Accordingly, the moderate scores suggest that while some microenterprises leverage digital platforms to expand their networks and co-create value with partners, others have not yet recognized or capitalized on these opportunities.

Consequently, the tourism and hospitality sector face the critical need for comprehensive support programs addressing both customer-facing and operational digital capabilities. The uneven digitalization across business model dimensions—with marketing/sales/customer interactions scoring highest overall weighted mean of 3.67, followed by internal activities with the score of 2.95, products and services with a total of 2.83 and 2.73 in partnerships having the lowest overall weighted mean.

This highlights that while microenterprises excel in customer engagement activities, they require targeted interventions to strengthen internal operations, digitalize core offerings, and foster collaborative digital ecosystems. Government agencies, particularly the Department of Tourism and local government units, should provide subsidized training programs, financial incentives, and improved digital infrastructure to facilitate holistic digital transformation in alignment with the Tourism Act of 2009 (Republic Act 9593) and UN Sustainable Development Goals 8 and 9.

Given these results, future research should employ qualitative methodologies to investigate specific barriers to digitalization and conduct longitudinal studies to assess the long-term impacts of digital adoption on business performance and sustainability, thereby informing more effective policies and interventions for tourism businesses across all sectors.

➢ *Relationship Between the Profile of the Respondents and the Level Digital Adoption of Tourism Microenterprises*

- *Business Sector and Digital Adoption*.

Based from the result it reveals that there is no significant association between the type of business sector and the level of digital adoption among tourism microenterprises in Sorsogon City base from the statistical values (χ^2 (77) = 6.73, Cramér's V = .209, p = .875), since the p-value is greater than the level of significance at 0.05. This means that the business sector does not appear to meaningfully influence whether enterprises adopt digital tools or technologies and it implies that other factors such as access to technology, managerial knowledge, or external support might play a more critical role.

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- *Years of Operation and Digital Adoption*.

The relationship between the years of operation and digital adoption produced (χ^2 (77) = 5.82, Cramér's V = .194, p = .667) a very low relationship that is not statistically significant. The result suggest that the duration of business operation does not significantly affect the level of digital adoption. These microenterprises that have been operating for longer periods are not necessarily more likely to adopt digital technologies than newer businesses, signifying that experience alone is not a determinant of digital uptake.

- *Number of Employees and Digital Adoption.*

On the number of employees and digital adoption showed a (χ^2 (77) = 10.3, Cramér's V = .259, p = .112) that the relationship is slightly stronger compared to the other variables, it still falls short of statistical significance at the 0.05 level. This describes that the size of the employees does not significantly influence the level of digital adoption among tourism microenterprises. Other factors beyond the number of employees, such as technological literacy, managerial initiative, or resource availability, might have a stronger impact on digital integration.

➢ *Relationship Between the Profile of the Respondents and the Extent of Digitization of Tourism Microenterprise*

- *Business Sector.*

The results show that the business sector has a significant relationship with internal activities with a F-value of 2.91, an η^2 of .172, and a p-value of .019. This recommends that tourism microenterprises from different business sectors tend to vary in their adoption of digital tools for internal operations, such as record-keeping, scheduling, and workflow management.

On the other hand, the business sector also demonstrated a significant influence on marketing, sales, and customer interactions, with a F-value of 4.79, η^2 of .255, and a p-value of .001. This implies that the type of business strongly affects how enterprises utilize digital platforms to engage customers, promote products, and conduct sales activities. In terms of partnerships, the business sector again exhibited a significant relationship (F = 4.38, η^2 = .238, p = .002), stressing that digital collaboration and networking practices differ across business types. Meanwhile, the relationship between business sector and products was not statistically significant (F = 2.06, η^2 = .128, p = .081), suggesting that digital adoption in product-related processes, such as digital cataloging or online product management, is relatively consistent across sectors.

- *Years of Operation.*

The results show that the number of years a business has been operating does not significantly influence internal activities (F = 1.40, η^2 = .073, p = .241), products (F = 1.40, η^2 = .073, p = .242), or partnerships (F = 0.653, η^2 = .035, p = .627). This shows that the duration of operation alone does not strongly affect the degree to which tourism microenterprises adopt digital tools for internal processes, product management, or collaborative partnerships. However, a significant relationship was observed between years of operation and marketing, sales, and customer interactions (F = 2.66, η^2 = .130, p = .040), suggesting that more established enterprises may leverage digital platforms more effectively in reaching and interacting with customers.

- *Number of Employees.*

The result shows that the number of employees significantly influences internal activities (F = 6.47, η^2 = .212, p = .001) and marketing, sales, and customer interactions (F = 3.87, η^2 = .139, p = .013), signifying that larger microenterprises are more likely to utilize digital tools for operational and customer-facing tasks. While, the relationship between the number of employees and products was not significant (F = 1.78, η^2 = .069, p = .158), suggesting that workforce size does not strongly affect digital adoption for product-related processes. Interestingly, partnerships showed a non-significant relationship (F = 6.09, η^2 = .001, p = .202), signifying that collaboration and networking practices might be influenced more by other factors such as managerial initiative, external support, or business strategy rather than the size of the workforce.

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CHAPTER FIVE
CONCLUSION AND RECOMMENDATION

The study concludes that tourism microenterprises in Sorsogon City are mainly operating in food and beverages and accommodation, showing that these sectors dominate the local tourism economy. Most of these businesses are newly built and have fewer employees, which may affect their ability to adopt advanced digital technologies. Findings also show that even though these microenterprises actively use basic and intermediate digital technologies such as smartphones, social media, and online payments, they make less use of digital technologies for internal operations, product development, and partnerships. Among the four business model dimensions, marketing, sale, and customer interactions show the highest extent of digitalization, while partnerships show the lowest. These results indicate that tourism microenterprises in Sorsogon City rely on digital technologies mostly for customer engagement rather than for improving overall business operations, which may limit their long-term growth and competitiveness in the digital economy.

Moreover, it reveals that none of the profile variables such as business sector, years of operation, or number of employees are significantly related to the level of digital adoption among tourism microenterprises in Sorsogon City and it showed that the extent of digitization among tourism microenterprises in Sorsogon City varies depending on certain profile characteristics. The business sector consistently affects internal operations, marketing, and partnerships, demonstrating that the type of enterprise shapes how digital tools are applied. In addition, the years of operation influence marketing and customer interaction activities, while the number of employees affects both internal activities and marketing efforts. Product-related digitization, however, appears largely independent of the examined profile variables, suggesting that digital adoption is likely influenced more by other operational, technological, or managerial factors rather than the basic demographic characteristics of the enterprises.

Based on the study's findings, it is recommended that tourism microenterprises in Sorsogon City expand their digital adoption beyond customer engagement by integrating digital technologies into internal processes, product and service improvements, and partnership activities. It also highlights the need for targeted interventions, such as digital literacy programs or technology support initiatives, to encourage the adoption of digital tools across all types and sizes of tourism microenterprises and that the digital adoption strategies should be tailored to business type, operational experience, and workforce size, while also considering other organizational and environmental factors to enhance digitization effectiveness across all functional areas.

In line with this, the researchers proposed a modular digital kit to be provided for microentrepreneurs in Sorsogon City, demonstrating the step-by-step tutorial on how to navigate digital technologies that have lower percentage of usage, based on the result of this study. The kit contains valuable information about the practical benefits of digital technologies to increase their acceptance and use. Furthermore, government agencies and local tourism offices should strengthen tourism policies highlighting digitalization to help microentrepreneurs operating in the tourism sector gain knowledge and skills and help them adopt more advanced digital technologies suited for their business. Additionally, future research should investigate the specific challenges that prevents the use of advanced digital technologies and examine how digitalization affects business performance over time.

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