

# Sustainability Practices and Operational Challenges of Printing Shops in Cabanatuan City, Philippines

Elmar V. Frany<sup>1</sup>, Arjhel V. Domingo<sup>2</sup>

Nueva Ecija University of Science and Technology, Cabanatuan City, Philippines

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## ABSTRACT

This paper examines the sustainability practices of printing shops in Cabanatuan City, Nueva Ecija, Philippines, using a descriptive-quantitative research design. It specifically aimed to describe the business profile of the printing shops, and the implementation of sustainability practices in their business operation, including the challenges encountered, and the strategies they are employing. Quantitative data were collected using a self-developed, validated, and reliability-tested survey instrument. A total enumeration method was applied to cover all the registered printing shops in the research area, and utilized descriptive statistics to analyzed and described the collected data. The results revealed that the printing shops are long-established, and are categorized as Small and Medium Enterprises (SMEs), with moderate capitals and with a small workforce, offering primarily basic printing services. The sustainability practices of the printing shops are consistently implemented in aspects including financial management, customer relation, skill development of employees, and environmental practices, while market demand and technological adoption were only generally implemented. Although sustainable practices are consistently employed by the printing shops, challenges still persisted in the form of limited financial resources, high operational costs, and strong market competition. Thus, this study highlights the need for improved financial strategies, greater investment in modern technological innovation, and enhanced marketing approaches, coupled with stronger adoption of environmentally sustainable practices to ensure long-term business resilience and operation.

**Keywords:** Business Challenges, Environmental Sustainability, Printing Shops, Strategic Management, Technological Adoption

## INTRODUCTION

Sustainability has become a central concern for Small and Medium Enterprises (SMEs), particularly in developing economies such as the Philippines. Recent studies emphasize that sustainability is no longer limited to financial performance but encompasses environmental responsibility, social impact, and long-term operational resilience. SMEs play a crucial role in economic development, yet they remain highly vulnerable to external shocks and structural limitations. In the Philippine context, there is growing recognition of the need for SMEs to adopt sustainable business practices in response to global environmental challenges and regulatory frameworks. Moreover, sustainability among SMEs is increasingly linked to their ability to adapt to dynamic market conditions and integrate innovative strategies into their operations. Contemporary research highlights that sustainability is driven by a combination of internal capabilities and external pressures, including competition, customer expectations, and government policies. As such, SMEs must transition from traditional business models to more adaptive and resilient systems to ensure long-term viability.

Financial management is widely recognized as a critical determinant of SME sustainability. Effective financial planning, cost control, and resource allocation enable businesses to maintain stability and withstand economic fluctuations. However, many SMEs, particularly in developing regions, face challenges related to limited access to capital and inadequate financial literacy. These constraints hinder their ability to invest in modern technologies and expand operations. Recent literature suggests that financial constraints remain one of the primary barriers to sustainable business practices among SMEs. Limited financial resources often restrict the

adoption of innovative solutions and environmentally sustainable practices, thereby affecting long-term competitiveness (Pinto et al., 2024).

In the Philippine setting, SMEs frequently rely on internal financing or informal lending, which may not be sufficient to support growth and technological upgrades. Consequently, financial management plays a crucial role in ensuring the sustainability and resilience of businesses, including printing shops

Technology adoption has emerged as one of the most significant factors influencing SME sustainability. Digital transformation enables businesses to streamline operations, improve efficiency, and enhance customer engagement. Studies conducted between 2023 and 2025 highlight that the integration of digital tools, such as online platforms, e-commerce, and automation technologies, significantly contributes to business growth and sustainability.

Digital transformation not only enhances operational efficiency but also fosters innovation and data-driven decision-making, allowing SMEs to remain competitive in rapidly changing markets (Pinto et al., 2024). In the Philippines, SMEs have increasingly embraced digital technologies as a response to economic challenges and market disruptions. Industry reports indicate that many MSMEs have adopted social media and online platforms to reach customers and sustain operations, particularly in the post-pandemic. Furthermore, empirical studies show a significant relationship between digital tool adoption and business growth among micro and small enterprises, highlighting the importance of technology in achieving sustainability (Atienza et al., 2024).

Market demand also plays a crucial role in determining the sustainability of SMEs. Fluctuations in demand directly affect revenue, production levels, and overall business stability. For printing shops, demand is often influenced by external factors such as academic calendars, business activities, and event-driven needs. Recent studies indicate that SMEs must continuously adapt to changing consumer preferences and market trends to remain competitive. The shift toward digital communication and paperless transactions has reduced demand for traditional printing services, compelling businesses to diversify their offerings and explore new markets. Additionally, post-pandemic economic conditions have resulted in unpredictable demand patterns, further challenging SMEs to maintain consistent income streams. Businesses that demonstrate flexibility and responsiveness to market changes are more likely to achieve long-term sustainability.

Competition is another critical factor influencing SME sustainability. The presence of numerous competitors within the same locality often leads to price-based competition, reduced profit margins, and increased pressure to innovate. In highly saturated markets, such as the printing industry, businesses must differentiate themselves through service quality, technological capabilities, and customer engagement strategies.

Recent literature highlights that competitive pressure forces SMEs to adopt more efficient and innovative practices to maintain their market position. However, excessive competition can also negatively impact profitability, particularly for small businesses with limited resources. In the Philippine context, the increasing number of SMEs and the accessibility of printing technologies have intensified competition within the industry. This situation underscores the need for strategic management and innovation to sustain business operations.

Environmental sustainability has become an increasingly important aspect of business operations, particularly in industries that rely heavily on natural resources, such as printing. The use of paper, ink, and energy contributes to environmental impact, prompting businesses to adopt eco-friendly practices. Recent studies emphasize that SMEs are gradually recognizing the importance of environmental sustainability, although adoption remains limited due to financial and operational constraints (Somova, 2024). The implementation of environmental policies, such as the Extended Producer Responsibility (EPR) law in the Philippines, encourages businesses to adopt sustainable practices and reduce waste (Somova, 2024). However, many SMEs still face challenges in integrating environmental practices into their operations due to limited awareness, high costs, and lack of technical expertise. Despite these challenges, businesses that adopt sustainable practices can enhance their reputation, attract environmentally conscious customers, and achieve long-term competitiveness.

Printing shops remain vital service providers in local economies, particularly in education-driven urban centers

such as Cabanatuan City. These enterprises play a significant role in supporting the daily operational needs of students, educators, government offices, and small businesses by providing essential services such as document printing, photocopying, layout design, and tarpaulin production. Despite the increasing shift toward digital platforms, printing shops continue to serve as accessible and cost-efficient solutions for various communication and documentation requirements, especially in areas where digital infrastructure and accessibility remain uneven.

However, the printing industry is currently undergoing substantial transformation due to rapid digitalization, evolving customer preferences, and continuous technological advancements. The proliferation of electronic documents, cloud storage systems, and online communication platforms has significantly reduced the reliance on traditional paper-based outputs. As a result, many printing businesses are experiencing a decline in demand for conventional printing services, particularly in document reproduction. At the same time, customers are becoming more selective, demanding faster service, higher quality outputs, and more customized products, which require businesses to upgrade their equipment and adopt new technologies.

Recent industry analyses indicate that while the Philippine printing sector continues to exhibit growth—particularly in packaging, advertising materials, and educational resources—it is simultaneously confronted with major challenges. These include increasing competition, rising costs of raw materials such as paper and ink, high maintenance expenses for printing equipment, and the growing threat posed by digital media alternatives. This paradox highlights a dual condition wherein opportunities for growth exist alongside significant risks that may hinder long-term sustainability.

For small printing shops, which often operate with limited financial and technological resources, this situation creates a critical sustainability challenge. Many of these businesses rely heavily on traditional operational models and face difficulties in adapting to digital innovations and market changes. The inability to invest in modern equipment, implement digital marketing strategies, or diversify service offerings may result in reduced competitiveness and profitability. Consequently, sustainability in this sector is no longer determined solely by financial performance but also by the capacity to innovate, adapt, and respond to dynamic environmental conditions.

In the context of Cabanatuan City, Philippines, where educational institutions and small enterprises are abundant, printing shops remain highly relevant but increasingly vulnerable. Understanding the factors that influence their sustainability is therefore essential. This study seeks to examine how financial management, technological adaptation, market demand, competition, and environmental practices collectively affect the long-term viability of printing shops. By identifying these key factors, the research aims to provide insights that can guide business owners, policymakers, and stakeholders in developing strategies that enhance resilience and promote sustainable growth within the local printing industry.

## **MATERIALS AND METHODS**

This study utilized a descriptive-quantitative research design to examine the factors influencing the sustainability of printing shops in Cabanatuan City. Descriptive research is appropriate as it aims to systematically describe the profile of the printing shops in terms of years of operation, capitalization, services offered, and number of employees, as well as their level of sustainability in areas such as financial management, technological adoption, market demand, competition, and environmental practices. The study gathered quantitative data through structured survey questionnaires administered to printing shop owners or managers. The responses were analyzed using appropriate statistical tools to describe the variables of the study.

The study was conducted in Cabanatuan City, Nueva Ecija, Philippines, a highly urbanized city known as the educational and commercial center of the province. Cabanatuan City hosts numerous educational institutions, government offices, and business establishments, creating a substantial demand for printing services. The local economy is supported by a mix of small to medium-sized enterprises (SMEs), including printing shops that provide essential services such as document reproduction, photocopying, tarpaulin production, and other printing-related operations.

The choice of Cabanatuan City as the research locale is based on its concentration of printing businesses and its role as a hub for educational and commercial activities. This setting provides a representative sample of printing shops that are operationally diverse and exposed to competitive pressures, technological changes, and varying market demands. Studying businesses in this locale allows for an in-depth examination of factors influencing sustainability within a real-world urban context, reflecting challenges and opportunities relevant to SMEs in similar Philippine cities.

The population of this study comprises all printing shops operating in Cabanatuan City, Nueva Ecija, which provide document printing, photocopying, tarpaulin production, and related services. Based on the latest data from the Cabanatuan City Business Permit and Licensing Office, there are 28 registered printing shops within the city. The respondents were selected using total enumeration, targeting owners or managers of these printing shops who have direct decision-making authority regarding operations, financial management, marketing, and technology adoption. Employees without managerial responsibilities were excluded from the study to ensure the accuracy and relevance of the collected data. A self-developed survey questionnaire using a 4-point Likert scale was validated by experts in the field of business management, financial management, and sustainability practices. After which, the instrument was then field-tested to printing shops outside the study area, garnering an internal consistency of 8.95, indicating a highly reliability.

## RESULTS AND DISCUSSION

### Profile of the Printing Shops

**Table 1. Years of Operation**

| Variable          | Frequency | Percentage |
|-------------------|-----------|------------|
| Less than a year  | 1         | 4%         |
| 1-3 years         | 8         | 29%        |
| 4-6 years         | 4         | 14%        |
| More than 7 years | 15        | 53%        |
| Total             | 28        | 100%       |

Out of the 28 printing shops included in the study, the majority have been in operation for more than seven years, comprising 15 establishments or approximately 54% of the total. This is followed by shops that have been operating for one to three years. Additionally, only one (1) printing shop, representing about 3% of the total, is newly established in the printing business. Lopez-Gamero et al (2011) suggest that Small and Medium Enterprises (SMEs) tend to develop a more systematic and structured processes, and resource management strategies when they have been in the business for longer times. This is also supported by Gadenne et al (2011) that experienced businesses can adopt and implement sustainable practices as they are becoming more aware of the regulatory requirements and cost-saving opportunities with sustainable initiatives.

**Table 2. Starting Capital**

| Variable              | Frequency | Percentage |
|-----------------------|-----------|------------|
| Below Php 50,000      | 6         | 21%        |
| Php 50,001 – 100,000  | 5         | 18%        |
| Php 100,001 – 200,000 | 10        | 36%        |
| More than Php 200,000 | 7         | 25%        |
| Total                 | 28        | 100%       |

In terms of start-up capital, a large proportion of printing shops reported an initial investment ranging from PHP 100,000 to PHP 200,000. This was followed by those that began operations with more than PHP 200,000. Meanwhile, the remaining printing shops started with relatively lower capital, amounting to either up to PHP 50,000 or up to PHP 100,000. The variation in the capital of the printing shops in Cabanatuan City reflects

their financial capacity to support sustainable business operations. Martins et al (2022) also highlighted that SMEs with limited financial resources often faced barriers to sustainability operations, leading to implementing non-sustainable and basic business operations.

**Table 3. Services offered**

| Variable              | Frequency | Percentage  |
|-----------------------|-----------|-------------|
| Below Php 50,000      | 6         | 21%         |
| Php 50,001 – 100,000  | 5         | 18%         |
| Php 100,001 – 200,000 | 10        | 36%         |
| More than Php 200,000 | 7         | 25%         |
| <b>Total</b>          | <b>28</b> | <b>100%</b> |

In terms of the services offered by the printing shops, binding is the most common services they offer, with a total of 18 responses, ranking as first, followed by photocopying, and photoprinting, both with a total of 16 responses. However, only seven (7) printing shops are offering tarpaulin printing services. These diverse printing services are often affected by relatively lower resource inputs, simpler equipment, and consistent day-to-day demand, making them more economically sustainable for small enterprises. However, it can also be observed that tarpaulin printing obtained the least responses, as it falls under large-format printing, which typically requires specialized machinery, higher energy consumption, and the use of synthetic materials such as polyvinyl chloride (PVC), which pose environmental concerns due to their limited recyclability and contribution to plastic waste (Hopewell et al., 2009). Meanwhile, in terms of sustainability, small businesses such as printing shops, often prioritize minimal environmental impact and minimal operational costs (Revell et al, 2010), coupled with steady financial income (Gadenne et al., 2011).

**Table 4. Number of Employees**

| Variable        | Frequency | Percentage  |
|-----------------|-----------|-------------|
| 1–5 Employees   | 16        | 57%         |
| 6–10 Employees  | 8         | 29%         |
| 11–20 Employees | 4         | 14%         |
| <b>Total</b>    | <b>28</b> | <b>100%</b> |

As presented in the table, the majority of printing shops have between 1 to 5 employees. This is followed by those employing 6 to 10 workers. Meanwhile, four printing shops reported having more than 10 employees. Since printing shops in Cabanatuan City fall under SMSe, they typically consist of small workforce sizes. Johnson and Schaltegger (2016) indicate that small businesses often rely on informal management systems, encouraging their employees to do multitasking, often leading to adopt a simple yet cost-effective sustainability practices across business operation (Caldera et al, 2019).

## Sustainability Practices of Printing Shops

**Table 5. Financial Management Practices of Printing Shops**

| Indicators                                                                                                | Mean        | Verbal Description       |
|-----------------------------------------------------------------------------------------------------------|-------------|--------------------------|
| 1. The shop maintains proper financial records and bookkeeping.                                           | 3.57        | Consistently Implemented |
| 2. There is a clear budgeting and expense control system.                                                 | 3.46        | Consistently Implemented |
| 3. The shop monitors profitability as it influences business decisions                                    | 3.50        | Consistently Implemented |
| 4. The business regularly reviews its financial performance.                                              | 3.36        | Consistently Implemented |
| 5. The shop follows proper financial planning and management to ensure long-term financial sustainability | 3.43        | Consistently Implemented |
| <b>Grand Mean</b>                                                                                         | <b>3.46</b> | Consistently Implemented |



Legend: 3.26-4.00 – Consistently Implemented; 2.51-3.25 – Generally Implemented; 1.76-2.50 – Partially Implemented; 1.00-1.75 – Not Implemented

Table 5 presents the financial management practices of the printing shops in Cabanatuan City, Philippines. As can be seen, a grand mean of 3.46 was obtained for all the financial management indicators, verbally described as consistently implemented. Meanwhile, among the indicators, maintaining proper financial records and bookkeeping, with a weighted mean of 3.57 obtained the highest value, indicating that most printing shops recognize the importance of accurate financial documentation. This means that the printing shops are consistently implementing, and are strictly following sustainable financial management practices. According to Gadenne et al. (2011), small and medium enterprises (SMEs) that adopt structured financial and management practices are more likely to improve their overall performance and sustainability outcomes. In addition, Bongomin et al (2017) discussed that proper financial planning and monitoring are closely linked to sustainable and resilience business operation.

**Table 6. Customer Management and Promotion Practices of Printing Shops**

| Indicators                                                                    | Mean        | Verbal Description       |
|-------------------------------------------------------------------------------|-------------|--------------------------|
| 1. Marketing strategies are employed to attract new customers.                | 3.57        | Consistently Implemented |
| 2. Customer feedback is regularly collected and addressed                     | 3.61        | Consistently Implemented |
| 3. Loyalty programs or promotions are used to retain customers.               | 3.50        | Consistently Implemented |
| 4. The business actively uses social media or online platforms for promotion. | 3.29        | Consistently Implemented |
| 5. Customer satisfaction is prioritized to maintain long-term relationships   | 3.48        | Consistently Implemented |
| <b>Grand Mean</b>                                                             | <b>3.56</b> | Consistently Implemented |

Legend: 3.26-4.00 – Consistently Implemented; 2.51-3.25 – Generally Implemented; 1.76-2.50 – Partially Implemented; 1.00-1.75 – Not Implemented

Table 6 presents the customer management and promotion practices of printing shops in Cabanatuan City. The results show a grand mean of 3.56, which is verbally interpreted as “consistently implemented.” This indicates that the printing shops regularly apply customer-oriented and promotional strategies in their daily operations. As can also be seen in the table, regular collecting and addressing customer feedback received the highest mean of 3.61, which is verbally interpreted as consistently implemented, while the use of social media and other online platforms, although received the lowest mean, it is still consistently implemented. These results reflect that the customer management practices are playing a key role in sustaining the operation of small businesses, including printing shops. Kotler and Keller (2016) argued that customer satisfaction, as well as marketing strategies are considered key drivers of long-term business success, and customer loyalty. In addition, Tiago and Verissimo (2014) emphasized that the use of different platforms, particularly social media, is significantly important as it enhances visibility, and improved overall performance of businesses.

**Table 7. Operations Practices of Printing Shops**

| Market Demand                                                         | Mean        | Verbal Description       |
|-----------------------------------------------------------------------|-------------|--------------------------|
| 1. Modern printing equipment and software are utilized.               | 3.39        | Consistently Implemented |
| 2. Technology adoption improves efficiency and service delivery.      | 3.50        | Consistently Implemented |
| 3. Digital platforms are used for marketing and client communication. | 3.21        | Consistently Implemented |
| 4. The shop regularly upgrades its equipment and technology.          | 3.46        | Consistently Implemented |
| 5. Operational processes are efficient and well-organized.            | 2.50        | Consistently Implemented |
| <b>Grand Mean</b>                                                     | <b>3.21</b> | Consistently Implemented |

Legend: 3.26-4.00 – Consistently Implemented; 2.51-3.25 – Generally Implemented; 1.76-2.50 – Partially Implemented; 1.00-1.75 – Not Implemented

As can be seen on table 7, it shows the operations practices of printing shops in Cabanatuan City, Philippines. As can be observed, a grand mean of 3.21 was obtained, verbally described as generally implemented. This indicates that practices related to market demand and technology adoption are applied only in certain situations and are not yet fully integrated into the operations of most printing shops. For instance, the efficient and well-organized operational processes of the printing shops, as well as the use of digital platforms for marketing, are not generally implemented. These findings suggest that while printing shops are making efforts to adopt technological tools, gaps remain in fully integrating digital and operational efficiencies into their business practices. Nambisan (2017) suggested that to improved market demand, the use of digital tools and platforms may be considered to improved long-term sustainability and operational efficiency. The same idea was also presented by Bahradwaj et al (2013) that digital technologies are playing crucial role in transforming business processes, enabling them to effectively respond to fluctuating market demands.

**Table 8. Skills Development Practices of Printing Shops**

| Indicators                                                           | Mean        | Verbal Description       |
|----------------------------------------------------------------------|-------------|--------------------------|
| 1. Employees receive proper training and skill development.          | 3.46        | Consistently Implemented |
| 2. Leadership practices encourage employee motivation and commitment | 3.43        | Consistently Implemented |
| 3. Staff turnover is managed effectively to maintain consistency.    | 3.43        | Consistently Implemented |
| 4. Employees are given clear roles and responsibilities.             | 3.46        | Consistently Implemented |
| 5. Good communication exists between management and staff.           | 3.68        | Consistently Implemented |
| <b>Grand Mean</b>                                                    | <b>3.49</b> | Consistently Implemented |

Legend:3.26-4.00 – Consistently Implemented; 2.51-3.25 – Generally Implemented; 1.76-2.50 –Partially Implemented; 1.00-1.75 – Not Implemented

Table 8 shows the skills development practices of printing shops. As can be gleaned, all indicators obtained a weighted mean with a verbal interpretation of consistently implemented. In addition, a grand mean of 3.49, verbally described as consistently implemented, was also obtained. This confirms that skills development practices are generally and regularly applied within the printing shops. These findings suggests that printing shops recognize the importance of employee development to effectively sustain the operation of the business. The Human Capital Theory, as formulated by Becker (1964) suggests that skills development of employee could enhance their performance, and may contribute to the long-term organization goal of the business. Meanwhile, Nafukho et al (2004) emphasized that prioritizing employee development, as well as internation and open communication within the business, would significantly lead to operational stability and adaptability.

**Table 9. Environmental Practices of Printing Shops**

| Indicators                                                          | Mean        | Verbal Description       |
|---------------------------------------------------------------------|-------------|--------------------------|
| 1. Waste management practices are implemented in operations.        | 3.54        | Consistently Implemented |
| 2. Energy-efficient equipment and practices are used.               | 3.50        | Consistently Implemented |
| 3. The business engages in community support or social initiatives  | 3.36        | Consistently Implemented |
| 4. The shop minimizes the use of harmful materials in production.   | 3.36        | Consistently Implemented |
| 5. Environmental responsibility is considered in business decisions | 3.30        | Consistently Implemented |
| <b>Grand Mean</b>                                                   | <b>3.43</b> | Consistently Implemented |

Legend:3.26-4.00 – Consistently Implemented; 2.51-3.25 – Generally Implemented; 1.76-2.50 –Partially Implemented; 1.00-1.75 – Not Implemented

Table 9 presents the environmental practices of printing shops in Cabanatuan City. The results show that all indicators obtained weighted mean scores interpreted as “consistently implemented,” with a grand mean of 3.43. This indicates that environmental practices are generally observed and integrated into the operations of

printing shops, although implementation levels vary across specific practices. Among the indicators, waste management practices obtained the highest mean (3.54), followed by the use of energy-efficient equipment and practices (3.50), suggesting that printing shops are more consistent in implementing operational and resource-related environmental strategies. These findings suggest that environmental sustainability practices in printing shops are more evident in day-to-day operational activities rather than in long-term strategic planning, in which SMEs contribute significantly to environmental sustainability. In addition, adopting sustainable environmental practices, such as waste reduction, and establishing energy efficient measures, contribute significantly to this cause (Revell et al, 2010).

## Sustainability Challenges Encountered of the Printing Shops

**Table 10. Sustainability Challenges Encountered**

| Indicators                                                                                        | Mean        | Verbal Description       |
|---------------------------------------------------------------------------------------------------|-------------|--------------------------|
| 1. Limited financial resources affect the sustainability of the printing shop.                    | 3.21        | Consistently Implemented |
| 2. Rapid technological changes make it difficult to keep up with industry demands.                | 3.07        | Generally Implemented    |
| 3. Strong competition from other printing shops or digital services affects business performance. | 3.32        | Consistently Implemented |
| 4. Fluctuating customer demand impacts the stability of operations.                               | 3.21        | Generally Implemented    |
| 5. High operational costs (materials, utilities, labor) hinder business sustainability.           | 3.50        | Consistently Implemented |
| <b>Grand Mean</b>                                                                                 | <b>3.26</b> | Consistently Implemented |

Legend: 3.26-4.00 – Consistently Implemented; 2.51-3.25 – Generally Implemented; 1.76-2.50 – Partially Implemented; 1.00-1.75 – Not Implemented

Table 10 presents the sustainability challenges encountered by the printing shops. As can be observed, the most consistent challenges they encountered are the limited financial resources, strong competition, and the high operational costs, indicating that these challenges are regularly experienced and have a continuing impact on business operations, while rapid technological changes, and fluctuating customer demands, received the lowest mean (3.07), though still interpreted as generally experienced. A weighted mean of 3.26, verbally described as consistently encountered, was obtained, indicating that these challenges are persistently encountered by the printing shops, which significantly affect the sustainable operation of their business. The World Bank (2020) suggests that SMEs, particularly in developing countries, often face financial constraints, affect their capacity to improve operational efficiency, and their long-term business sustainability.

## Proposed Strategies of the Printing Shops

| Focus Area                       | Objectives                                        | Strategies                                                                                       | Responsible Person | Expected Outcomes                                       |
|----------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------|
| Financial Management             | To improve financial stability and sustainability | Enhance financial management practices such as budgeting, cost control, and financial monitoring | Business Owner     | Improved cash flow and better financial decision-making |
| Technology and Innovation        | To increase efficiency and competitiveness        | Invest in modern technology and equipment (e.g., digital printers, software tools)               | Business Owner     | Increased productivity and improved service quality     |
| Marketing and Customer Relations | To strengthen customer retention                  | Improve marketing strategies and enhance                                                         | Business Owner     | Higher customer satisfaction and                        |



|                              |                                                  |                                                                                            |                |                                                               |
|------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------|
|                              | and market presence                              | customer relationship management                                                           |                | repeat customers                                              |
| Human Resource Development   | To enhance employee performance and productivity | Provide employee training and development programs                                         | Business Owner | Skilled workforce and improved service delivery               |
| Environmental Sustainability | To promote eco-friendly business operations      | Adopt environmentally friendly practices such as waste reduction and sustainable materials | Business Owner | Reduced environmental impact and improved business reputation |

## CONCLUSIONS

The findings of the study indicate that Robotic Process Automation (RPA) delivers strong operational This study highlights that the majority of the printing shops in Cabanatuan City are long-established small and medium enterprises, with most operating for more over seven (7) years, and with a capital start-up of Php 100,000 to Php 200,000. They offer several printing services such as binding, photocopying, photo printing, and tarpaulin printing. These factors suggest that the printing shops in Cabanatuan City significantly affect their operational mechanisms, business structures, and sustainability practices. In addition, the study also reveals that the sustainability practices of printing shops in Cabanatuan City are consistently implementing sustainable practices in terms of financial management, costumer relations, skills development for employees, sustainable environmental practices, while sustainable practices on market demand and technological integration remained moderately implemented. Despite these efforts, the printing shops in Cabanatuan City continue to face financial, operational, market competition, and environmental challenges; however, they emphasized the importance of enhancing financial systems, investing in modern technological innovation, developing employee's skill, strengthening their market strategies, and most critically, adopting environmentally-sustainable business practices.

## RECOMMENDATIONS

Based on the results and conclusion of the study, several recommendations are proposed to support future research and strengthen industry practice. Future studies may focus on examining how sustainability practices evolve over time, particularly in relation to financial management, technology adoption, and environmental initiatives. It is also recommended that further research be conducted to identify industry-specific barriers to technological adoption and innovation, especially within printing shops, to better understand the unique challenges they face in implementing new systems and processes.

In terms of practical support, Local Government Units (LGUs) are encouraged to provide financial assistance mechanisms such as low-interest loans or grants to help printing shops address limited capital and high operational costs. Academic institutions may also be tapped to deliver training and capacity-building programs that enhance skills in financial management, digital marketing, technology utilization, and environmental sustainability. Furthermore, stronger collaboration among government agencies, academic institutions, and industry stakeholders should be established to promote innovation, encourage knowledge sharing, and support the long-term development and competitiveness of the industry.

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