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Digital Payment Schemes and Collection Efficiency: Evidence from Sorsogon II Electric Cooperative (SORECO II)

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Abstract: This study evaluated the effectiveness of digital payment schemes in enhancing the collection efficiency of Sorsogon II Electric Cooperative (SORECO II). Specifically, it determined the level of effectiveness of digital payment schemes in terms of platform connectivity and payment accuracy, and customer access and payment convenience; assessed the level of member-consumers' satisfaction; identified the challenges encountered by cooperative staff and member-consumers in the adoption of digital payment schemes for bill collection; and proposed a digital payment optimization plan to further improve the cooperative's digital payment services. The study employed a quantitative descriptive research design using survey questionnaire with checklist, specification, and Likert-type rating scales. A total of 38 respondents, composed of SORECO II staff and member-consumers, participated in the study. The findings revealed that the digital payment schemes of SORECO II were effective in terms of platform connectivity and payment accuracy, as well as customer access and payment convenience. Member-consumers were likewise satisfied with the digital payment scheme, particularly in terms of service efficiency and transparency. However, the study identified several challenges affecting digital payment adoption, including unstable internet connectivity in rural areas, limited digital literacy, unfamiliarity with mobile payment applications, system downtime, failed transactions, limited access to financial services, transaction fees, cybersecurity and data privacy concerns, and the continued preference for face-to-face payment transactions. Based on these findings, a digital payment optimization plan was proposed, which includes improving digital infrastructure, developing low-bandwidth and offline-compatible payment channels, strengthening cybersecurity and transaction verification, expanding payment partnerships and financial inclusion initiatives, implementing digital literacy programs, reducing transaction fees where feasible, and adopting a gradual hybrid payment approach. The study concludes that the digital payment schemes implemented by SORECO II effectively enhance collection efficiency while improving customer convenience and satisfaction. Addressing the identified challenges is essential to achieving broader adoption and ensuring the long-term sustainability of digital payment services within the cooperative.

Keywords: *Member-Consumer Satisfaction, Digital Payment Adoption, Payment Convenience, Platform Connectivity, Payment Accuracy, Digital Literacy, Digital Payment Optimization.*

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I. INTRODUCTION

A cooperative is a type of organization or business that is owned and operated by its members, who work together to achieve common goals and share in the benefits. The members of a cooperative are typically the consumers, employees, or producers who use the services or products provided by the cooperative, and they have a say in the decision-making process, often through a democratic voting system.

All cooperatives are guided by the same principles: - voluntary and open membership; democratic member control; member economic participation; autonomy and independence; education, training, and information; cooperation among cooperatives; and concern for community. Cooperatives can take various forms, depending on their purpose and the sector they serve: - Consumer Cooperatives, Worker Cooperatives; Producing Cooperatives; Housing Cooperatives and Electric Cooperatives.

A type of cooperative that provides electrical power or energy services to its members, typically in rural or underserved areas is Electric Cooperative. It differs from other cooperatives primarily in seven key ways: - Primary Service: to provide electricity to their member not variety of services; Regulatory and Legal Framework: subject to specific government regulations related to energy and utilities; Infrastructure and Capital Requirements: significant

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capital and infrastructure need for building and maintaining power plants, substations, transmission lines, and other energy-related equipment; Geographic Scope and Membership: specific geographic areas not based on the cooperative's purpose; Social Mission: have a strong social mission to improve the quality of life in the areas they serve; Operational Focus: technical aspects of energy generation, transmission, and distribution not on a variety of industries.

Adopting new technologies in cooperatives—especially electric cooperatives—can significantly enhance operational efficiency, improve member satisfaction, and ensure long-term sustainability. As technology continues to evolve, cooperatives face growing pressure to modernize and adapt to remain competitive, efficient, and responsive to members' needs. By embracing new technologies like block chain, AI, and mobile payments, cooperatives can foster growth, enhance transparency, and deliver better services to their members. These innovations not only improve day-to-day operations but also help cooperatives become more resilient and adaptable in an increasingly digital economy.

Different methods of payment affect the collection efficiency which refers to the ability of electric cooperatives to collect payments in a timely, accurate, and cost-effective manner. Traditional methods of payment collection, such as in-person cash payments at physical offices or through third-party agents, are often resource-intensive, time-consuming, and prone to human errors. In contrast, digital payments offer a more streamlined, secure, and convenient approach that can significantly reduce operational bottlenecks, minimize payment delays, and enhance overall customer experience. The advent of digital payment systems has revolutionized the way businesses across various sectors manage transactions, improving efficiency, reducing operational costs, and increasing customer convenience. In the energy sector, particularly among electric cooperatives, the integration of digital payment solutions has become increasingly vital. Electric cooperatives, which are responsible for distributing electricity to rural and underserved areas, often face significant challenges in payment collections. These challenges include the geographical dispersion of customers, limited access to traditional banking services, and inefficiencies in cash handling processes. As these cooperatives strive to improve their financial stability and ensure the continuous provision of services, the adoption of digital payment systems emerges as a potential solution to streamline collection processes and enhance operational performance.

International policies on the effectiveness of digital payments primarily focus on improving access to financial services, streamlining payment systems, and ensuring secure and efficient transactions. These policies are implemented by international organizations, governments, and regulatory bodies to promote the adoption of digital payment systems in sectors such as utilities, including electric cooperatives. Some key international policies that influence the effectiveness of digital payments in enhancing collection efficiency for electric cooperatives: - United Nations Sustainable Development Goal (SDG) 7 - Affordable and Clean Energy: advocates for the digitalization of energy services (including payment systems for electric cooperatives) to improve efficiency, transparency, and accessibility; World Bank's Financial Inclusion Policies: advocates for the adoption of digital financial services to improve access, reduce poverty, and enhance service delivery in various sectors, including utilities; International Finance Corporation (IFC) - Promoting Digital Payments in Utility Sectors: adopting digital payment solutions to streamline billing and payment collection, this includes integrating mobile payment systems, online platforms, and smart grid technologies that can reduce the cost and time involved in payment collection; International Telecommunication Union (ITU) - Bridging the Digital Divide: focuses on the role of ICT (Information and Communication Technology) in advancing digital economies, including in sectors like energy and utilities; Global Partnership for Financial Inclusion: encourages the development of secure, interoperable payment platforms that can be used across different sectors; G20 Digital Payments Initiative: has worked on frameworks that encourage the development of digital payment systems that are efficient, secure, and low-cost, especially for cross-border transactions; European Union (EU) Payment Services Directive (PSD2): ensures that digital payment systems are secure and efficient, protecting both the payment providers and customers from fraud and ensuring that transactions are processed without delays.

In the Philippines, as in many developing countries, the electric cooperative is making important contribution in the community through providing electricity in the rural and urban area. The Philippine government has enacted different cooperative related laws, policies and regulations to support the formation and organization of cooperatives and to create an atmosphere conducive to their growth and development. It also implemented various national policies aimed at enhancing the effectiveness of digital payments in improving collection efficiency across different sectors, including electric cooperatives. Electric cooperatives in the Philippines, which are responsible for distributing electricity to rural and underserved areas, face challenges related to payment collection efficiency, particularly in remote areas with limited access to traditional banking services.

The adoption of digital payment systems can significantly enhance collection efficiency, reduce costs, and improve service delivery. Several national policies have been developed to promote the use of digital payments in the electric cooperative sector, with a focus on ensuring financial inclusion, interoperability, regulatory compliance, and technological innovation: - Republic Act No. 10531: National Electrification Administration (NEA) Reform Act of 2013: created a framework for improving the efficiency of electric cooperatives, including adopting modern technologies for payment collection; Digital Payments Transformation Roadmap (2020-2023): set a goal of converting 50% of total retail payments in the Philippines to digital by 2023; Republic Act No. 11213: Tax Amnesty Act of 2019: promotes the use of electronic payment systems for tax settlements and government transactions, which can be adapted to encourage the use of digital payment platforms for electric cooperative

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bill payments, as government-supported platforms like Land Bank's LBP ePayment System; Republic Act No. 8792: Electronic Commerce Act of 2000: as a foundation for the legal recognition of digital transactions, and it impacts the ability of electric cooperatives to accept and process digital payments; National Payment Systems Act (Republic Act No. 11127):promotes the interoperability of payment systems, allowing electric cooperatives to integrate various digital payment options; Republic Act No. 11232: Revised Corporation Code of the Philippines (RCCP): provides a legal framework for the governance and operations of cooperatives, and it supports the adoption of digital payment technologies in their operations; E-Government Master Plan (EGMP): to adopt e-payments for their services, which helps in the collection of fees and bills more efficiently.

In Sorsogon, a progressing province in the part of the Bicol region, where Sorsogon II Electric Cooperative, a non-profit cooperative is located and one of the leading electric cooperatives in the Bicol region which is evidently categorized as an AAA electric coop in the Philippines from 2022 to 2025.

SORECO II was organized on April 14, 1977, and granted a franchise by NEA. After receiving its franchise, SORECO II rapidly expanded electrical services. It assumed operations from the defunct Sorsogon Electric Plant and started serving 2,595 consumers in 17 barangays on May 21, 1977, with an initial capital of P16 million. Between 1977 and 1979, it energized multiple municipalities, including Bacon, Gubat, Prieto Diaz, Barcelona, Castilla, Pilar, and Donsol, overcoming challenging terrains. In 1980, SORECO II built its headquarters and third substation. Typhoons in 1987 caused major damage to the system, but by 1992, it earned the "Most Outstanding Region V Rural Electric Cooperative" award.

The SORECO II has played a critical role in the electrification and socio-economic development of Sorsogon Province. Through its cooperative culture, focus on community involvement, and commitment to sustainable practices, SORECO II has transformed from a small electric provider to a key player in the province's growth. Its story highlights how the cooperative model can bring together diverse stakeholders to achieve shared goals and improve the quality of life for members and communities.

To support this ongoing growth, SORECO II has continuously evolved its collection processes, transitioning from traditional methods to a modern approach by incorporating online payment options for its member-consumers. As part of this digital transition, the cooperative has actively commercialized and promoted its online payment features on Facebook and other digital platforms. The success of this initiative is reflected in recent milestones: for the months of March, April and May 2026, the cooperative recorded 7,949, 5,884 and 8,205 member-consumers respectively, who utilized online payment channels to settle their accounts. This additional payment method serves as a convenient alternative that benefits both the member-consumers and the cooperative's daily operations.

➢ *Research Objectives*

- To assess the effectiveness of the different digital payment schemes in terms of:

✓ Platform connectivity and payment accuracy, and
✓ Customer access and payment convenience.

- To identify the level of member-consumer satisfaction in using the digital payment scheme of SORECO II.
- To explore the challenges encountered by cooperative staff and member-consumers in the adoption of digital payment schemes for bill collection.
- To develop a digital payment optimization action plan that enhances the effective utilization of the digital payment system and improves collection efficiency.

II. METHODOLOGY

This study utilized a descriptive research design to determine the extent of effectiveness of digital payment schemes in enhancing the collection efficiency of SORECO II. The respondents of the study were selected through purposive sampling to ensure that only individuals with relevant experience in billing and collection processes, particularly those who have utilized online payment methods, were included in the study.

This study consisted of 38 respondents, comprising 8 employees of SORECO II and 30 member-consumers. The employee respondents were personnel directly involved in cashiering, billing, and payment-related operations, while the member-consumer respondents were individuals who regularly conduct transactions and make payments through online or digital platforms.

III. RESULTS

➢ *Level of Effectiveness of the Digital Payment Schemes*

The evolution of technology over time has brought about changes in how financial transactions take place. Digital payment schemes play a vital role in improving efficiency, ease of use, and security of payments made by both firms and customers. Numerous businesses and organizations have adopted digital payments to make transactions easier and ensure they serve their customers faster and better.

In relation to SORECO II, the cooperative seeks to adopt digital payment schemes in order to improve its service delivery through billing and payment services. The use of digital payment schemes helps in addressing several problems that exist in traditional forms of payments such as slow and inefficient services and unavailability of payment locations. Member – consumers will be able to make their payments comfortably using various online services

Table 1 reflects of Effectiveness of Digital Payment Schemes in Terms of Platform Connectivity and Payment Accuracy. Based on the table, receipts include official reference codes that match cooperative records, ensuring easy

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verification, obtained the highest mean of 4.57, described as effective. This indicates that respondents strongly agreed that the use of official reference codes enhances the verification process of transactions. The presence of reference codes allows both the cooperative and its members to easily validate payments and confirm transaction details. This also helps minimize errors, prevent disputes, and ensure transparency in payment processing, making the digital payment system more reliable and trustworthy.

Table 1 Effectiveness of Digital Payment Schemes in Terms of Platform Connectivity and Payment Accuracy

Indicators	Mean	Description
Receipts include official reference codes that match cooperative records, ensuring easy verification.	4.57	Effective
Payments are instantly reflected in the cooperative's system, minimizing delays and ensuring the exact billed amount is credited.	4.50	Effective
The system directly links to the cooperative's billing database, reducing manual errors and ensuring precise posting of payments.	4.43	Effective
Platforms maintain stable connectivity, with payments processed 24/7 across multiple outlets.	4.43	Effective
Members receive immediate proof of payment, while cooperatives can cross-check transaction IDs to verify correctness and completeness.	4.37	Effective
Transactions are automatically reflected in the cooperative's billing system within minutes, ensuring exact amounts are credited.	4.37	Effective
Average	**4.45**	**Effective**

Payments are instantly reflected in the cooperative's system, minimizing delays and ensuring the exact billed amount is credited, ranked second with a mean of 4.50, interpreted as effective. This suggests that respondents perceived the payment system as efficient in posting payments immediately after transactions are completed. The quick reflection of payments reduces delays and assures members that the exact amount they paid has been credited accurately. This feature contributes to faster transaction processing and improves the overall efficiency of the cooperative's billing operations.

The system directly links to the cooperative's billing database, reducing manual errors and ensuring precise posting of payments and Platforms maintain stable connectivity, with payments processed 24/7 across multiple outlets, both obtained a mean of 4.43, described as effective. The first indicator implies that respondents appreciated the direct integration between the payment platform and the billing database because it minimizes manual encoding and reduces the risk of human error. Accurate posting of payments ensures reliable billing records and better transaction management. On the other hand, the second indicator indicates that respondents found the payment platforms dependable and accessible at any time. Stable connectivity and round-the-clock payment processing provide convenience for consumers, allowing them to pay through multiple outlets whenever needed.

Meanwhile, members receive immediate proof of payment, while cooperatives can cross-check transaction IDs to verify correctness and completeness and Transactions are automatically reflected in the cooperative's billing system within minutes, ensuring exact amounts are credited, both received a mean of 4.37, interpreted as effective. These findings indicate that respondents recognized the importance of immediate payment confirmation and automatic updating of records. Providing proof of payment right after the transaction gives assurance to members that their payments were successfully processed. Likewise, the use of transaction IDs enables the cooperative to verify the accuracy and completeness of transactions. The automatic reflection of payments within minutes also reduces delays in updating records and ensures that all payments are accurately credited to the appropriate accounts.

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Overall, the computed average mean of 4.45, which is described as effective. This reveal that the digital payment scheme of SORECO II is effective in ensuring accurate, reliable, and timely payment transactions. The results further suggest that adopting digital payment technologies can improve operational efficiency, reduce manual errors, and provide greater convenience and satisfaction among cooperative members.

As to the effectiveness of digital payment scheme in terms of customer access and payment convenience members can pay bills at physical outlets or online platforms without being restricted to cooperative office hours, ensuring timely and accurate posting obtained the highest mean of 4.63, described as very effective. This indicates that respondents highly appreciated the convenience and accessibility provided by the digital payment system. The availability of multiple payment channels allows members to settle their obligations anytime, even outside regular office hours. This flexibility ensures that payments are posted on time and reduces the inconvenience of physically visiting the cooperative office, resulting in improved customer satisfaction.

Similarly, customers receive proof of payment with unique reference numbers, enabling both members and cooperatives to verify transactions accurately" also obtained a mean of 4.63, interpreted as very effective. This finding suggests that respondents strongly valued the issuance of proof of payment with unique reference numbers because it enhances the accuracy and reliability of transaction verification. The use of reference numbers enables both members and cooperative personnel to track and confirm transactions easily, reducing the possibility of errors, disputes, or unrecorded payments.

Members can settle bills without being limited by office hours, ensuring payments are processed promptly and correctly ranked next with a mean of 4.53, described as effective. This indicates that respondents recognized the effectiveness of digital payment systems in allowing members to make payments at their convenience. The ability to settle bills beyond office hours contributes to faster processing of transactions and ensures that payments are handled accurately and efficiently.

Table 2 Effectiveness of Digital Payment Scheme in Terms of Customer Access and Payment Convenience

Indicators	Mean	Description
Service Efficiency		
Payments are processed quickly without delays.	4.57	Satisfied
Minimal downtime or technical errors during payment.	4.45	Satisfied
Availability of multiple payment channels (mobile apps, kiosks, online portals).	4.45	Satisfied
Ease of use in paying bills anytime and anywhere.	4.37	Satisfied
Average	**4.46**	**Satisfied**
Transparency		
Assurance that personal and financial information is secure.	4.56	Satisfied
Payments are correctly reflected in consumer accounts.	4.53	Satisfied
Clear receipts, transaction records, and notifications provided.	4.50	Satisfied
Effective safeguards against unauthorized transactions.	4.37	Satisfied
Average	**4.49**	**Satisfied**

Members receive immediate proof of payment, while cooperatives can verify transactions using unique codes to ensure correctness and Payments are directly transmitted to the cooperative's records, reducing manual intervention and ensuring exact amounts are credited both received a mean of 4.50, interpreted as effective. The first indicator implies that respondents appreciated receiving immediate payment confirmation because it provides assurance that transactions have been successfully completed. The use of unique verification codes also strengthens the accuracy and security of payment validation. Meanwhile, the second indicator shows that respondents perceived the direct transmission of

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payments to cooperative records as effective in minimizing manual intervention. This process reduces the risk of human error and ensures that the exact payment amounts are properly credited to the appropriate accounts.

Lastly, payments are instantly reflected in the cooperative's billing system, minimizing delays and reducing risks of mismatched records obtained a mean of 4.37, described as effective. This suggests that respondents considered the system effective in updating billing records immediately after payment transactions. The quick reflection of payments minimizes delays in account updating and helps avoid discrepancies or mismatched records between the payment platform and the cooperative's billing system.

Overall, the average mean of 4.53, interpreted as effective, indicates that the digital payment system is generally perceived as efficient and beneficial in improving the payment experience of cooperative members.

- *Level of Consumers' Satisfaction in Using the Digital Payment Scheme*

It described as how satisfied, pleased, and fulfilled the consumers are with the various offerings of the digital payment system. This pertains to the level of satisfaction that consumers derive from how convenient, accessible, reliable, secure, and accurate payments have been made through the use of the digital payment system.

In the case of SORECO II, the consumer satisfaction can be described as how satisfied, pleased, and fulfilled the consumers are with the various benefits offered by the digital payment scheme, such as faster payment, user-friendliness, payment channel availability, instant transaction confirmation, and accurate transaction posting. The more satisfied the consumers are, the better they consider the digital payment scheme.

The table 3 presents the consumers' level of satisfaction in using the digital payment scheme of SORECO II in terms of service efficiency. Payments are processed quickly without delays obtained the highest mean of 4.57, described as satisfied. This indicates that respondents were highly satisfied with the speed of transaction processing provided by the digital payment scheme. Fast payment processing allows consumers to complete transactions efficiently without experiencing long waiting times. This also helps ensure that payments are immediately reflected in the system, contributing to a more convenient and reliable payment experience for consumers.

Table 3 Consumers' Satisfaction in Using Digital Payment Scheme

Indicators	Mean	Description
Members can pay bills at physical outlets or online platforms without being restricted to cooperative office hours, ensuring timely and accurate posting.	4.63	Very Effective
Customers receive proof of payment with unique reference numbers, enabling both members and cooperatives to verify correctness and avoid disputes.	4.63	Very Effective
Members can settle bills without being limited by office hours, ensuring payments are processed promptly and correctly.	4.53	Effective
Members receive immediate proof of payment, while cooperatives can verify transactions using unique codes to ensure correctness.	4.50	Effective
Payments are directly transmitted to the cooperative's records, reducing manual intervention and ensuring exact amounts are credited.	4.50	Effective
Payments are instantly reflected in the cooperative's billing system, minimizing delays and reducing risks of mismatched records.	4.37	Effective
Average	**4.53**	**Effective**

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Minimal downtime or technical errors during payment" received a mean of 4.45, interpreted as satisfied. This suggests that respondents were satisfied with the reliability and stability of the digital payment system. Minimal technical interruptions and reduced system downtime help consumers complete their transactions smoothly and securely. The result implies that the system is dependable enough to support continuous payment processing without causing major inconvenience to users.

Similarly, availability of multiple payment channels (mobile apps, kiosks, online portals)" also obtained a mean of 4.45, described as satisfied. This finding indicates that respondents appreciated the accessibility and flexibility of having different payment options available. The availability of various payment channels allows consumers to choose the most convenient method for settling their bills, whether through mobile applications, payment kiosks, or online portals. This feature enhances accessibility and provides greater convenience to users with different preferences and needs.

Lastly, ease of use in paying bills anytime and anywhere garnered a mean of 4.37, interpreted as satisfied. This suggests that respondents were satisfied with the convenience and user-friendliness of the digital payment scheme. The ability to pay bills regardless of time and location allows consumers to manage their payments more efficiently. Although it received the lowest mean among the indicators, the result still reflects a positive perception regarding the accessibility and practicality of the system.

Overall, the average mean of 4.46, interpreted as satisfied. It reveals that consumers are satisfied with the service efficiency of the digital payment scheme implemented by SORECO II. The results indicate that the system effectively provides fast, reliable, accessible, and convenient payment services that contribute to a better consumer experience.

As to the level of consumers' satisfaction in using the digital payment scheme in terms of transparency, assurance that personal and financial information is secure obtained the highest mean of 4.56, described as satisfied. This indicates that respondents were highly satisfied with the security measures implemented in the digital payment system. Consumers felt confident that their personal details and financial information were protected from unauthorized access and misuse. The result suggests that the cooperative's digital payment scheme promotes trust and confidence among users by ensuring data privacy and transaction security.

Payments are correctly reflected in consumer accounts, which is ranked second with a mean of 4.53, interpreted as satisfied. This finding implies that respondents were satisfied with the accuracy of the payment posting process. Consumers recognized that their payments were properly recorded and reflected in their accounts without significant errors or delays. Accurate reflection of payments is important in maintaining reliable billing records and preventing disputes related to payment transactions.

Clear receipts, transaction records, and notifications provided received a mean of 4.50, described as satisfied. This suggests that respondents appreciated the clarity and completeness of the transaction details provided by the digital payment system. The issuance of receipts, notifications, and transaction records helps consumers monitor and verify their payments easily. These features also improve transparency by allowing users to track their transaction history and confirm successful payments.

Lastly, effective safeguards against unauthorized transactions obtained a mean of 4.37, interpreted as satisfied. This indicates that respondents were satisfied with the security controls and protective measures of the digital payment scheme. The presence of safeguards against unauthorized transactions helps reduce the risk of fraud, errors, and unauthorized access to consumer accounts. Although this indicator received the lowest mean among the indicators, the result still reflects a positive perception regarding the system's ability to protect users from security threats.

The overall average mean of 4.49, interpreted as satisfied. It indicates that the system effectively ensures accurate transactions, provides clear payment records, and maintains the security of consumers' financial information, contributing to a more trustworthy and reliable payment experience.

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➢ *Challenges Encountered in the Adoption of Digital Payment Scheme*

Table 4 Challenges Encountered in the Adoption of Digital Payment Scheme

Challenges	Frequency	Rank
Many households, especially in rural areas, struggle with unstable or no internet connectivity, making online transactions difficult.	26	1
Some consumers are unfamiliar with mobile apps, online banking, or e-wallets, leading to hesitation or errors in transactions.	25	2
System downtime, app crashes, or failed transactions can cause frustration and delays.	22	3.5
Transactions may fail due to incorrect account details, insufficient funds, or system errors.	22	3.5
Not everyone has access to bank accounts, credit cards, or e-wallets, limiting digital payment adoption.	21	5
Some platforms charge convenience fees, which can discourage frequent use.	20	6
Fear of fraud, phishing, and identity theft discourages people from trusting digital payment platforms.	17	7.5
Many consumers still prefer physical payment centers because they feel more secure with face-to-face transactions.	17	7.5
Users worry about how their personal and financial data is stored, shared, or potentially misused.	10	9

The table presents the challenges encountered in the adoption of the digital payment scheme among consumers and SORECO II. It may be classified into technological, digital literacy, financial, security, behavioral, and accessibility challenges that influence the successful implementation of digital payment systems.

Many households, especially in rural areas, struggle with unstable or no internet connectivity, making online transactions difficult, obtained rank 1 with a frequency of 26, making it the highest-ranked challenge encountered in the adoption of the digital payment scheme. It is classified as a technological and infrastructure challenge because digital payment systems depend heavily on stable internet connectivity for successful transactions. Consumers encounter delays, failed transactions, and inconvenience whenever internet connectivity becomes unstable, causing frustration and discouraging them from relying on online payment systems. For SORECO II, poor internet infrastructure limits the accessibility and effectiveness of digital payment services, especially among consumers located in geographically isolated areas. Since internet connectivity serves as the foundation of digital transactions, this challenge naturally emerged as the most significant problem faced by both consumers and the organization.

Following this, some consumers are unfamiliar with mobile apps, online banking, or e-wallets, leading to hesitation or errors in transactions, ranked 2 with a frequency of 25. It is considered a digital literacy challenge because it reflects consumers' lack of knowledge, skills, and confidence in using technology-based payment systems. Consumers may fear committing mistakes, entering incorrect information, or being unable to complete transactions properly. As a result, they become hesitant to adopt digital payment systems. In the case of SORECO II, this challenge slows down the transition toward cashless transactions because consumers require proper guidance, training, and technical assistance before they can confidently use online payment services. Therefore, improving digital literacy and providing consumer education programs are necessary to encourage greater participation in digital payment adoption.

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In relation to technological difficulties, system downtime, app crashes, or failed transactions can cause frustration and delays, ranked 3.5 with a frequency of 22. It is categorized as a technological and operational challenge because it involves technical problems within digital payment systems and applications. Consumers become frustrated whenever applications suddenly crash or payment systems temporarily stop functioning, especially during urgent payment periods. Such experiences reduce consumer trust and confidence in the reliability of digital payment services. For SORECO II, technical failures can result in delayed payment processing, customer dissatisfaction, and increased complaints from consumers. Consequently, maintaining stable and reliable systems is important to ensure continuous and efficient digital payment operations.

Similarly, Transactions may fail due to incorrect account details, insufficient funds, or system errors also ranked 3.5 with a frequency of 22. It is another example of a technological and operational challenge because it involves errors occurring during the transaction process. Consumers may unintentionally enter incorrect account information, encounter insufficient balance issues, or experience technical system errors that interrupt payment processing. These failed transactions create inconvenience and confusion among consumers, discouraging them from repeatedly using digital payment systems. For SORECO II, transaction failures can lead to delays in payment confirmation and additional workloads in handling customer concerns and correcting transaction issues. This situation emphasizes the importance of improving system accuracy and simplifying transaction procedures to minimize payment-related errors.

Meanwhile, not everyone has access to bank accounts, credit cards, or e-wallets, limiting digital payment adoption ranked 5 with a frequency of 21. It is a financial inclusion and accessibility challenge because it reflects the limited availability of financial tools needed for digital transactions. Without these financial resources, consumers cannot fully participate in online payment systems and remain dependent on traditional over-the-counter payment methods. For SORECO II, this challenge limits the reach and effectiveness of its digital payment services since not all consumers are capable of adopting cashless payment options. This highlights the need to promote financial inclusion and improve access to digital financial services.

Furthermore, some platforms charge convenience fees, which can discourage frequent use," ranked 6 with a frequency of 20. This challenge is categorized as a financial challenge because it involves additional expenses incurred by consumers when using digital payment systems. Consumers may perceive these additional charges as unnecessary expenses and may prefer traditional payment channels that do not require extra fees. For SORECO II, the presence of convenience fees reduces the attractiveness of digital payment platforms and affects consumer willingness to adopt cashless transactions consistently. Therefore, minimizing transaction fees may help encourage more consumers to use digital payment services regularly.

Alongside financial concerns, fear of fraud, phishing, and identity theft discourages people from trusting digital payment platforms ranked 7.5 with a frequency of 17. This challenge is considered a security challenge because it involves concerns about cybercrime, online scams, and unauthorized access to personal financial information. Consumer's fear becoming victims of online scams, losing money, or having their identities stolen while conducting digital transactions. For SORECO II, this challenge emphasizes the need to strengthen cybersecurity measures and educate consumers about safe online transaction practices. Building consumer trust and ensuring secure digital systems are necessary to encourage wider adoption of digital payment platforms.

Similarly, many consumers still prefer physical payment centers because they feel more secure with face-to-face transactions also ranked 7.5 with a frequency of 17. It is categorized as a behavioral and cultural challenge because it reflects consumers' continued preference for traditional payment methods. Consumers often feel more secure when paying in person because they can immediately verify their payments and ask questions directly to payment personnel. For SORECO II, this preference slows the transition toward digital payment adoption because many consumers remain dependent on over-the-counter transactions rather than utilizing digital alternatives. This demonstrates that consumer behavior and trust play an important role in the successful implementation of digital payment schemes.

Lastly, users worry about how their personal and financial data is stored, shared, or potentially misused ranked 9 with a frequency of 10, making it the lowest-ranked challenge encountered in the adoption of the digital payment scheme. It is a privacy and security challenge because it involves concerns regarding the protection and confidentiality of consumer information. Although this indicator received the lowest frequency, consumers still worry that their personal and financial data may be exposed, leaked, or improperly used by digital platforms. Nevertheless, for SORECO II, protecting customer information and maintaining data privacy remain important responsibilities in building consumer confidence and ensuring the safe use of digital payment systems. Even if ranked lowest, privacy protection continues to be an essential component of a trustworthy digital payment environment.

➢ *Proposed Digital Payment Optimization Plan*

- *Issue:*

Many households, especially in rural areas, struggle with unstable or internet connectivity, making online transactions difficult.

✓ Refinement Strategy: Development of low-bandwidth and alternative offline-compatible payment channels.
✓ Rationale: Poor internet connectivity significantly limits the ability of consumers in rural and geographically isolated areas to access digital payment platforms. Consumers experiencing unstable internet connections may encounter interrupted transactions, delayed

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confirmations, and difficulty accessing mobile applications. This situation discourages the consistent use of digital payment systems and forces consumers to rely on traditional payment centers. By introducing alternative payment methods that can operate under limited connectivity conditions, the utility provider can promote inclusivity and ensure that consumers in underserved communities are not excluded from digital payment services.

- ✓ Goal: To ensure accessible and convenient digital payment services for consumers regardless of internet connectivity limitations.
- ✓ Strategic Objectives: The strategy aims to expand the accessibility of digital payment systems in rural communities by providing alternative payment channels that require minimal internet usage. It also seeks to reduce payment delays caused by connectivity issues and encourage consumers in remote areas to gradually adopt digital payment methods through reliable and simplified payment solutions.
- ✓ Mechanics: The electric utility provider may collaborate with telecommunications companies to strengthen mobile network coverage within underserved service areas. The provider may also introduce SMS-based and USSD payment systems that allow consumers to complete transactions without internet access or smartphones. Payment kiosks equipped with offline transaction recording capabilities may be installed in barangay halls, satellite offices, and community centers. Additionally, mobile payment assistance teams may be deployed periodically to remote communities to facilitate bill payments and educate consumers regarding available digital payment alternatives.

- *Issue:*

Some consumers are unfamiliar with mobile apps, online banking, or e-wallets, leading to hesitation or errors in transactions.

- ✓ Refinement Strategy: Implementation of a comprehensive consumer digital literacy and education program.
- ✓ Rationale: A large portion of consumers may hesitate to use digital payment platforms because of limited knowledge and unfamiliarity with digital technologies. Consumers who lack digital skills are more likely to commit transaction errors or fear making mistakes that could result in financial loss. Without proper guidance and education, these consumers may continue relying on traditional payment methods despite the convenience offered by digital systems. Educating consumers and improving their digital competency can increase confidence, reduce anxiety, and encourage broader participation in digital payment programs.
- ✓ Goal: To improve consumer confidence, knowledge, and capability in using digital payment systems.
- ✓ Strategic Objectives: The strategy seeks to enhance the digital literacy of consumers by providing accessible learning opportunities and practical demonstrations regarding the use of digital payment platforms. It also aims to reduce transaction errors caused by unfamiliarity with mobile applications and online systems while strengthening public trust and confidence in digital payment technologies.
- ✓ Mechanics: The utility provider may organize barangay-based orientations, seminars, and hands-on demonstrations that teach consumers how to use mobile banking applications, e-wallets, and online payment systems. Educational materials such as instructional videos, infographics, and brochures written in local languages may also be distributed through social media platforms, customer service centers, and community assemblies. Customer assistance desks and hotlines may be established to provide technical guidance and real-time support to consumers experiencing difficulties during transactions. Incentive programs for first-time users may also be introduced to encourage participation and increase digital payment adoption.

- *Issue:*

System downtime, app crashes, or failed transactions can cause frustration and delays.

- ✓ Refinement Strategy: Strengthening of digital infrastructure reliability and technical support systems.
- ✓ Rationale: Frequent system interruptions, application crashes, and delayed payment confirmations can negatively affect consumer trust and satisfaction. Consumers who repeatedly experience technical difficulties may lose confidence in the reliability of digital payment systems and revert to traditional payment methods. Reliable technological infrastructure is essential to ensure uninterrupted payment processing, timely transaction posting, and positive user experiences. Improving system stability and responsiveness can help increase customer satisfaction and sustain long-term digital payment adoption.
- ✓ Goal: To provide stable, efficient, and uninterrupted digital payment services for consumers.
- ✓ Strategic Objectives: The strategy aims to reduce the occurrence of system downtime, improve payment processing efficiency, and strengthen the reliability of digital payment platforms. It also seeks to enhance customer satisfaction by ensuring that consumers can complete transactions smoothly and receive immediate payment confirmations.
- ✓ Mechanics: The electric utility provider may upgrade its digital payment infrastructure by investing in cloud-based servers, backup systems, and scalable technologies capable of handling large transaction volumes. Regular system maintenance, stress testing, software updates, and vulnerability assessments may be conducted to minimize technical failures and optimize platform performance. A dedicated technical support and monitoring team may operate continuously to identify and resolve system issues promptly. Partnerships with multiple payment gateways may also be established to provide alternative processing channels whenever one payment platform becomes temporarily unavailable.

- *Issue:*

Transactions may fail due to incorrect account details, insufficient funds, or system errors.

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- ✓ Refinement Strategy: Enhancement of transaction validation and payment verification systems.
- ✓ Rationale: Transaction failures and payment errors create inconvenience for consumers and may lead to delayed bill settlements and customer dissatisfaction. Errors involving incorrect account information, insufficient account balances, and technical system glitches can undermine consumer confidence in digital payment platforms. Strengthening transaction verification processes and simplifying payment procedures can minimize errors and improve the overall efficiency and accuracy of digital payment transactions.
- ✓ Goal: To minimize transaction failures and improve payment processing accuracy.
- ✓ Strategic Objectives: The strategy intends to reduce payment processing errors by implementing more accurate verification systems and improving transaction monitoring procedures. It also aims to increase successful transaction completion rates while enhancing customer confidence and convenience during digital payment transactions.
- ✓ Mechanics: The provider may introduce automated account validation systems that verify customer account information before payment confirmation. QR-code-based billing systems may also be implemented to reduce manual data entry errors during transactions. Automatic notifications and electronic receipts may be sent immediately after successful payments to provide transaction confirmation to consumers. In addition, a dedicated customer assistance and dispute resolution process may be established to address failed transactions, delayed postings, and refund concerns efficiently and transparently.

- *Issue:*

Not everyone has access to bank accounts, credit cards, or e-wallets, limiting digital payment adoption.

- ✓ Refinement Strategy: Expansion of financial inclusion initiatives and diversified payment partnerships.
- ✓ Rationale: Many consumers, especially those in low-income and rural communities, remain excluded from formal financial systems and lack access to banking services, credit cards, or e-wallet applications. This limitation prevents them from participating fully in digital payment programs and restricts the overall adoption of cashless transactions. Expanding partnerships with alternative financial institutions and creating more accessible payment options can help bridge the gap between unbanked consumers and digital financial services.
- ✓ Goal: To provide inclusive and accessible digital payment opportunities for all consumers.
- ✓ Strategic Objectives: The strategy seeks to increase financial inclusion by expanding the availability of alternative digital payment channels for underserved consumers. It also aims to reduce barriers to participation in digital payment systems and encourage broader adoption among unbanked and underbanked households.
- ✓ Mechanics: The electric utility provider may collaborate with cooperatives, remittance centers, community stores, and microfinance institutions to facilitate cash-to-digital payment services for consumers without formal bank accounts. Simplified e-wallet registration campaigns may also be conducted to assist consumers in opening and using digital accounts. Furthermore, prepaid payment cards and over-the-counter digital payment arrangements may be introduced to ensure that consumers without traditional banking access can still participate in digital payment programs conveniently.

- *Issue:*

Some platforms charge convenience fees, which can discourage frequent use.

- ✓ Refinement Strategy: Reduction or subsidization of digital payment transaction fees.
- ✓ Rationale: Additional convenience fees associated with digital payment platforms may discourage consumers from regularly using online payment systems, particularly among low-income households. Consumers may perceive digital payments as more expensive than traditional payment methods when transaction charges are applied frequently. Reducing transaction costs and offering incentives can encourage consumers to shift toward digital payment platforms and sustain long-term usage.
- ✓ Goal: To encourage consistent use of digital payment systems by minimizing additional transaction costs.
- ✓ Strategic Objectives: The strategy aims to increase the volume of digital payment transactions by making digital payment services more affordable and attractive to consumers. It also seeks to reduce customer resistance related to transaction fees while encouraging the use of cost-efficient payment channels.
- ✓ Mechanics: The utility provider may negotiate reduced transaction fees with banks, e-wallet providers, and payment gateway companies to minimize additional charges imposed on consumers. Promotional campaigns offering zero-fee payment periods, cashback rewards, or digital payment incentives may also be implemented to encourage participation. In some cases, the provider may subsidize a portion of transaction fees during promotional periods or encourage consumers to use direct bank transfer options that involve lower service charges.

- *Issue:*

Fear of fraud, phishing, and identity theft discourages people from trusting digital payment platforms.

- ✓ Refinement Strategy: Strengthening of cybersecurity measures and consumer awareness programs.
- ✓ Rationale: Concerns regarding cybercrime, online fraud, and unauthorized access to financial accounts remain major barriers to the adoption of digital payment systems. Consumers who fear losing money or compromising their personal information may avoid using digital platforms altogether. Establishing strong cybersecurity measures and educating consumers about safe online practices can improve public trust and reduce vulnerability to fraudulent activities.
- ✓ Goal: To enhance consumer trust and confidence in the security of digital payment systems.

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- ✓ Strategic Objectives: The strategy seeks to reduce fraud-related incidents through improved cybersecurity measures and consumer awareness initiatives. It also aims to educate consumers about safe online payment practices while strengthening the overall security of digital payment platforms.
- ✓ Mechanics: The utility provider may implement multi-factor authentication systems, one-time password verification, and encrypted payment gateways to protect customer accounts and transactions. Public awareness campaigns regarding phishing scams, online fraud prevention, and safe digital payment practices may also be conducted through text advisories, social media platforms, and community seminars. A dedicated fraud reporting hotline and rapid-response assistance team may likewise be established to assist consumers in reporting suspicious activities and resolving security concerns promptly.

- *Issue:*

Many consumers still prefer physical payment centers because they feel more secure with face-to-face transactions.

- ✓ Refinement Strategy: Adoption of a gradual hybrid payment transition strategy.
- ✓ Rationale: Consumers who are accustomed to traditional payment methods may feel more comfortable conducting transactions in physical payment centers where they can interact directly with personnel and receive printed receipts. Abruptly shifting consumers to fully digital systems may create resistance and anxiety among customers who are unfamiliar with digital technologies. A gradual transition approach that combines digital and traditional services can help consumers build confidence while adapting to new payment methods.
- ✓ Goal: To gradually encourage consumers to transition from traditional payment methods to digital payment systems.
- ✓ Strategic Objectives: The strategy aims to strengthen consumer trust in digital payment platforms through guided and assisted digital transactions. It also seeks to encourage gradual behavioral change among consumers while maintaining accessible payment services for individuals who still prefer traditional payment arrangements.
- ✓ Mechanics: The electric utility provider may establish assisted digital payment booths within existing payment centers where staff members can guide consumers through digital payment procedures. Printed receipts and transaction confirmations may continue to be provided to reassure consumers regarding payment security and accuracy. The provider may also conduct digital payment demonstrations, promotional campaigns, and express lane incentives for digital payers to gradually familiarize consumers with the convenience and efficiency of digital transactions.

- *Issue:*

Users worry about how their personal and financial data is stored, shared, or potentially misused.

- ✓ Refinement Strategy: Strengthening of data privacy governance and transparency practices.
- ✓ Rationale: Consumers are more likely to trust digital payment platforms when they are assured that their personal and financial information is properly protected. Concerns regarding unauthorized data sharing, identity theft, and privacy breaches can discourage participation in digital payment systems. Ensuring compliance with data privacy regulations and maintaining transparent information management practices can help improve consumer trust and confidence.
- ✓ Goal: To ensure the secure, transparent, and responsible handling of consumer information.
- ✓ Strategic Objectives: The strategy seeks to strengthen compliance with data privacy laws and improve consumer trust regarding the management of sensitive personal and financial information. It also aims to minimize risks associated with data breaches and unauthorized access to customer records.
- ✓ Mechanics: The electric utility provider may establish strict data privacy policies aligned with the requirements of the National Privacy Commission and the Data Privacy Act. Regular cybersecurity audits, vulnerability assessments, and security monitoring activities may be conducted to identify and address potential risks. Consumers may also be informed through privacy notices and awareness campaigns regarding how their information is collected, stored, and protected. Access to sensitive customer data should be restricted to authorized personnel only, while incident response procedures must be established to address data breaches and security concerns promptly and effectively.

IV. CONCLUSION

- The digital payment schemes of SORECO II in terms of platform connectivity and payment accuracy and customer access and payment convenience are effective.
- The consumers are satisfied in using the different digital payment schemes implemented by the SORECO II.
- The challenges in adopting digital payment schemes are the unstable internet connectivity, unfamiliarity with mobile applications and e-wallets, system downtime and transaction failures, alongside issues include as the absence of e-wallet apps on smartphones, the imposition of convenience fees, and persistent fears of fraud.
- The proposed Digital Payment Optimization Plan addresses consumer challenges by improving connectivity, enhancing user familiarity, reducing system errors, expanding app accessibility, lowering costs, and ensuring fraud protection.

RECOMMENDATIONS

- The digital payment schemes of SORECO II be further enhanced by continuously improving connectivity through infrastructure upgrades and ensuring accuracy with regular system audits.
- The satisfaction level of SORECO II consumers can be further enhanced through wider payment app

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accessibility, reduced transaction costs, and strengthened fraud protection.

- The challenges in adopting digital payment schemes be addressed by enhancing user familiarity with mobile applications and e-wallets through training and awareness programs, strengthening system reliability with regular maintenance and error-checking, and expanding app availability through wider device compatibility.
- The Proposed Digital Payment Optimization Plan, particularly the identified strategies in the promotion of digital payment schemes be adopted by the cooperative.

➢ *Significance of the Present Study*

The significance of this study is noted on its contribution to understanding the effectiveness of SORECO II's digital payment schemes, which have proven reliable in terms of connectivity, accuracy, access, and convenience. By confirming consumer satisfaction, the study highlights the cooperative's success in implementing systems that meet user expectations and foster trust. At the same time, it underscores the importance of sustaining these strengths to ensure continued efficiency in collection processes. This provides a foundation for further institutional improvements and policy support.

Likewise, the study identifies critical challenges such as unstable internet connectivity, limited user familiarity, system downtime, app unavailability, convenience fees, and fraud concerns. Addressing these issues through the proposed Digital Payment Optimization Plan demonstrates the study's practical value in guiding strategic interventions. By recommending infrastructure upgrades, user training, system audits, wider app integration, fee adjustments, and enhanced security, the research offers actionable solutions. Thus, the study is significant not only for improving SORECO II's operations but also for advancing consumer confidence and promoting sustainable digital payment adoption in local cooperatives.

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