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Bisitapp: A Tool for Jail Visitors' Information Management in Sorsogon City District Jail

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Abstract
The study aims to automate the documenting process of visits by Persons Deprived of Liberty (PDL) visitors in the Sorsogon City district jail. The name BISITAPP is a combination of the words "bisita," which applies to PDL visitors in prison, and "app, " a shortened term for application, which refers to a web-based app. This will replace the traditional and time-consuming process, where corrections staff previously kept paper logs detailing the daily activities of each offender. However, this method is inefficient and prone to mistakes. Because of technological advancements, devices like software may now offer correctional officials a straightforward, effective method of measuring, monitoring, and archiving inmates' movement data. This study employs the Agile methodology to develop the system while also utilizing a descriptive research design during the paper's development process. Similarly, assess the system's validity by using the System Usability Scale, which measures the precision and dependability of a tool for managing information among jail visitors. In developing the system, its combined face recognition and fingerprint scanners enhance security, expedite the recording process, and accurately identify anyone visiting the jail facility. The survey and evaluation of this study found that respondents thought the app was accurate and reliable, suggesting that it could be used to improve jail security. Bisitapp has cut down on the need for manual paperwork and made data management more efficient and accurate. This reduces the likelihood of unauthorized individuals entering the jail and prevents prisoners from escaping. BISITAPP can enhance PDL visitor information recording and verification. Digital recording cuts processing time to 5 minutes. Automatic verification of their faces and fingerprints reduces recording errors.
Keywords: *Visitors app, PDL visitor app, Jail visitor app, Prison visitors Record, Automated prison visitors record*

Background of the study

Many areas, including correctional facilities, use technology to run administrative and operational tasks. They need to manage information effectively and efficiently to keep things running smoothly and keep people safe. For example, when managing jail visitors, being accurate and precise with their personal information is crucial because it can affect how well the jail runs.

In correctional facilities, managing guests, tracking visitations, and updating records is tough. Manual procedures are slow and error-prone, causing delays, security threats, and inefficiencies. Palter (2021) also emphasizes that manual security practices, like personnel tracking, are always error-prone. A guard may forget a paper roster, record the wrong staff ID number, or lose their concentration.

However, personnel tracking software can reduce or eliminate errors. Tracking software maintains its accuracy, consistently enters accurate information, and securely stores its logs on a backed-up server. To create an effective jail visitor information system, Careless (2024) recommends considering various elements. To suit correctional personnel's and administrators' needs, the system should use existing 2technology and prioritize data security. Easy use requires a user-friendly interface, and the system must be scalable and flexible to meet future needs.

A correctional facility manager must monitor use and ensure visitors have a favorable experience, including controlling visitations. This includes creating and monitoring visitor procedures to provide a positive experience for visitors and ensuring that jail staff and visitors follow protocols to prevent issues and maintain a well-organized environment. Thus, facilities should establish thorough visitor registration, identification, and monitoring systems to achieve this (VPOD, 2023). Another significant innovation is a

technology being integrated into various system applications. Face recognition algorithms improve identification accuracy and reliability (Randhawa et al., 2019).

The IT Ministry reports that the NIC employs the AI Satyapikaanan API for facial recognition and the Regional Transport Offices (RTO) use face verification and liveness detection to allow driving license applications from home, and the Indian Ministry of Minority Affairs uses it to check skill development trainee attendance (Borak, 2023). The cells in Singapore's jails have CCTVs, facial recognition is utilized for headcount checks, and an AI-based behavior detection system monitors for fights and other suspicious activity."The facial recognition cameras sometimes activated unexpectedly. "If people were just exercising in the cell, the behavior detection would alert the guards," stated 26-year-old former detainee Tan (Starcever et al., 2023).

FRA (2021) states that facial recognition technology (FRT) classifies faces using video and database images. Despite the sensitivity of the data, EU law enforcement authorities conduct live facial recognition technology (FRT) studies but rarely use them. Face recognition systems now compare biometric templates using more data, computing power, and machine-learning algorithms. By matching a digital image or video frame to a face database, facial recognition may verify identity. Despite poorer accuracy, its “contactlessness” makes it more popular than fingerprint identification. It's mostly used for security, law enforcement, and finance digital onboarding (Innovatrics, n.d.).

The Bureau of Jail Management and Penology (BJMP) is vital to prison security in the Philippines. Rapid technology improvements have made it crucial for correctional institutions to adopt new security measures. Most Philippine jails lack adequate spousal visitation spaces, especially for out-of-town conjugal visits; sanitation, especially for toilet/water supply; adequate beds/bedding/mosquito nets; insufficient medical facilities; and poorly equipped facilities, according to Jones & Narag (2021). Due to overpopulation, jail visitations are unsafe.
The BJMP in Davao Oro routinely conducts “no contact” visits to its district jail. The purpose of these visits is to prevent the entry of contraband, including illegal narcotics, into the institution (Palicte, 2023).

The Philippines' World Health Organization president, Ramindra Abeyasinghe, claimed prisoner suicide rates are 10 times higher than the general population, and mental illness is more widespread. He stated jail conditions include overcrowding, poor ventilation, malnutrition, lack of medical treatment, spreading illnesses, violence, enforced solitude, and limited privacy and meaningful activities (ABS-CBN News, 2019). PDLs in the Philippines are in poor mental health due to a dearth of full-time psychiatrists, psychologists, and counselors, according to Cortez (2022).
Even though prevalence estimates vary, mental illness is too severe for jails to fully handle. In 2020, the Department of Justice (DOJ) signed a memorandum of cooperation with the justice sector and allied organizations to digitize its criminal data system. The DILG and BJMP are also parties to the agreement (Bolledo, 2020).

Lalu (2023) reports that six House members have submitted a bill to digitize Bureau of Corrections (BuCor) and Bureau of Jail Management and Penology jail records. Rep. Ferdinand Alexander Marcos, the son of the president, and five other lawmakers wrote House Bill No. 9194, the Digital Prison Record System Act, to manage and exchange prisoner data.
The BJMP District Jail in Sorsogon City is implementing Bisitapp, a tool for managing visitors using face recognition technology. This innovative solution improves security measures by reducing manual data entry and enhancing efficiency. With 380 inmates confined, the system can handle 80 to 100 visitors per day, making it difficult to manage prisoners and their relatives. Bisitapp can save and recognize visual identification of prison visitors, enhancing the precision and distinctiveness of visitor verification.

The study focuses on developing and customizing facial recognition technology, including fingerprint methods, for the jail to ensure the legitimacy of PDL visitors before granting access to the premises. The researcher must obtain a technology adoption certificate from the intended user before proceeding with the final oral defense.

Technology is crucial to security today, according to Berkoff (2022). CCTV, access control, alarm systems, and integrated IT management systems contribute to employee and organization security. Because technology changes, we have many articles about recent advances.

A facial recognition technology that uses fingerprints for speedy verification, Bisitapp, can improve security at the BJMP District Jail. This system would authenticate visitors and cross-reference them with the facility's authorized personnel database, lowering the possibility of unauthorized access or security breaches. The study could improve visitor control and operating efficiency and discourage crime. The system would streamline visitor identification, freeing up staff time for other tasks.

The technology would also enforce health regulations for guests and schedule visits for the PDL family. If successful, an adjacent province's jail bureau may adopt the strategy, making the BJMP District Jail safer and facilitating investigations. The facility can identify guests and prevent crime with facial recognition algorithms and biometric data.

The study will create and test a BisitApp to keep full data on PDL visitors and examine how well and easily it can be used for BJMP security. This project also targets the Sorsogon City District Jail, specifically PDL visitors who experience delays in recording their personal information. The Sorsogon City District Jail PDL Visit Documentation Process was formerly tedious. BISITAPP automates it. The name BISITAPP comes from “bisita,” which refers to PDL visiting in jail, and “app,” which alludes to a web-based software.

THEORETICAL AND CONCEPTUAL FRAMEWORK

The philosophy of technology explores the nature, development, and implications of technology within human life (Franssen & Lokhorst, 2009). It examines the interplay between technological innovations and philosophical concepts, addressing questions about the significance of technology, its impact on society, and its role in shaping human existence. The goal of this study is to use Safety and Security Theory, Utilization-focused Evaluation Theory, the Theory of Motivation, and Innovation Diffusion Theory to create a jail visitor information management system for the Sorsogon District Jail.

Safety and security theory- focus is on identifying potential dangers, defining their likelihood, and developing solutions to mitigate or overcome them. Lukas (2016). The study emphasizes the importance of a comprehensive jail vulnerability assessment, physical, procedural, and dynamic security in maintaining order and safety within jail facilities (Carlson, n.d.). The safety and security theories are relevant to this study, as it aims to create a system using face recognition technology and digitize the jail visitor recording process to reduce inconvenience for PDL's relatives during jail visits. Technology currently plays a significant role in improving security measures and monitoring the movement of PDL visitors, while BJMP troops assigned to the PDL visitors' section can carry out additional duties.

Utilization-Focused Evaluation (UFE) is a theoretical framework created by Michael Quinn Patton (1978) that is a way of thinking that tries to fix the problems with traditional evaluation methods so that they can meet the information needs of stakeholders and help people make decisions. This study uses UFE to develop an app that addresses the challenges in processing PDL visitors' information, ensuring it is practical, relevant, and effectively meets their needs.

This study underscores the importance of developing a system that meets the actual needs of individuals. Based on the premise, this study creates an app to help jail personnel, administrators, and visitors ensure that the information management system is practical, relevant, and satisfies their needs. Bisitapp solves Sorsogon City District Jail personnel and administrators' visitation management, security, and personal data issues using utilization and evaluation theory.

The Theory of Motivation, this is relevant to the development of a system to address the laborious process of recording PDL visitors' personal data. Maslow's theory categorizes human requirements into five groups, with the facility aiming to meet client demands by promptly documenting daily visitation data. This notion applies to the current study since the correctional facility needs a new recording technology to speed up recording. The correctional facility sought alternate methods to alleviate manual recording inefficiencies and

satisfy its clients. The facility quickly recorded jail visitors' daily visitation data to suit customer needs. **Innovation Diffusion Theory** (IDT) is another social science idea that describes how a concept or product gradually acquires traction and spreads through a community or social structure, which was created by E.M. Rogers in 1962. This theory can be applied to reduce the time needed to record jail visitors' personal data and address the inconvenience of PDL visitors visiting their relatives confined in jail. The implementation of a system for jail visitors' information management in the Sorsogon City District Jail faces challenges such as recording personal information from potential visitors during the trial operation. A consistent source of electrical power is crucial for optimal performance and a suitable installation location for monitoring BJMP personnel and visitors. We recommend strong security measures, such as passwords and fingerprints for facial recognition accuracy, to address potential threats.

After the pandemic, visitors must approach BJMP personnel for identification and face webcams for facial recognition and fingerprint verification. The system informs visitors if they are adhering to their scheduled visitation and allows them to proceed to the visiting area. The BJMP personnel are responsible for obtaining personal information and guiding visitors on using a fingerprint scanner.

The research framework focuses on the development and evaluation of Bisitapp, a tool for managing jail visitors' personal data. The tool uses Agile methodology for iterative improvements and a survey questionnaire to assess user needs and app performance. Five areas comprise Bisitapp: facial recognition, fingerprint verification, time-in and time-out tracking, PDL records admin, and PDL's visitor admin.

Figure 1. Paradigm of the Study

Objectives of the Study

1.To design the features of a tool for jail visitors' information management in Sorsogon City District Jail.

2. To assess the extent of the accuracy and reliability of a tool for jail visitors' information management in Sorsogon City District Jail.

3. To evaluate the impact of using a facial recognition app for PDL visitors, both before and after its implementation at the BJMP District Jail in Sorsogon City.

METHODOLOGY

This chapter discusses the research design and methodology of a study using Agile methodology and a descriptive research design. Agile methodology is a structured approach that emphasizes iterative development and incremental improvements, allowing for systematic progress through the project lifecycle (Williams, 2007, & Sharma et al., 2012). The study divided Bisitapp into several jobs using the AGILE Software Development's Software Development Life Cycle (SDLC) framework. The SDLC framework provided a structured approach, allowing for continuous feedback and adjustments that enhanced the overall efficiency and effectiveness of the development process.

A study by Rana, Gutierrez, and Oldroyd in 2021 used quantitative methods to check how accurate and dependable a tool is for managing information about jail visitors. They also looked at how it affects the use of facial recognition apps for people visiting detainees. The study aimed to objectively measure the app's effectiveness in enhancing visitor management at the BJMP District Jail in Sorsogon City. The accuracy,

reliability, and impact of the app were assessed through survey questionnaires, providing insights into the Bisitapp as a tool for jail visitors' information management.

Figure 2 Agile Software Development

The entity relationship diagram (ERD) is a significant database modeling paradigm; it represents graphical relationships between system data, ensuring a well-designed database.

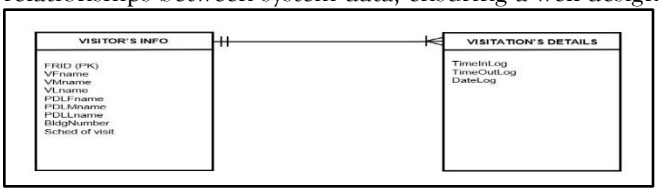

Figure 3. Entity Relationship Diagram

The developed system's database primarily consists of visitor and visitation entities, with cardinalities illustrating connections between these entities.

The process model, a vital component of system development, provides a detailed description of data flow within a system, illustrating system operations and dynamics. Data flow diagrams commonly display it, with a focus on the Sorsogon City District Jail Visitors Monitoring System.

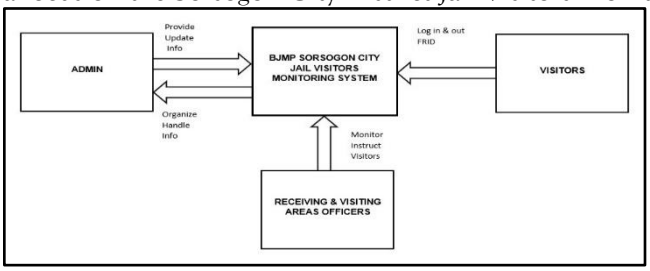

Figure 4. Data Flow Diagram

The system operates by requiring visitors to face a webcam for facial recognition and a fingerprint scanner for identity verification. The server processes the scanned fingerprints and faces. BJMP personnel are assigned in the visiting area to monitor visitors because this area is off-limits for the webcams to protect the potential exposure of suspects' identities while their case is ongoing trial.

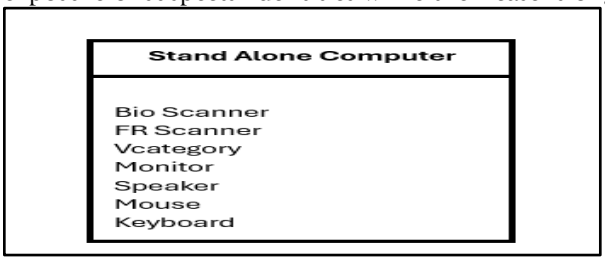

Figure 5. Standalone System

The server-to-workstation computer uses facial recognition and fingerprint technology to facilitate PDL visits at Sorsogon City District Jail. Visitors face webcams for facial recognition and tap fingers for identity verification. The system then transmits data to a database, cross-referencing it to verify visitors' identities.

Population and Locale of the Study

This study examines the process of entering visitation data for PDL relatives in Sorsogon City District Jail. The researcher gathered 60 respondents to address issues such as manual recording, time-consuming hand management, security, accurate and comprehensive recording of visitor information, real-time access, and efficient operational processes. The study was conducted with competent BJMP personnel and aimed to improve the security of visitor information, reduce data breaches, ensure accurate and comprehensive recording of visitor data, and enhance operational efficiency in the correctional facility. The findings aim to improve the overall operational efficiency of jail visitors.

Data Gathering Tools

This study collected data through a survey using SUS and ISO 9001 questionnaires. The research instrument tools were pilot tested to identify potential issues and meet requirements. The system was tested in a controlled environment, using a dataset of visitors and simulated scenarios. BJMP staff monitored the system's accuracy, efficiency, and reliability and interviewed personnel responsible for recording personal information from daily visitors.

Data Gathering Procedure

The researcher conducted a survey on the Bisitapp system for visitors to their incarcerated loved ones, ensuring compliance with the Data Privacy Act of 2012. The system collects data from visitors who pay regular visits to their loved ones, including names, addresses, and photo ID numbers. Interviews were conducted with BJMP personnel to gather relevant work information. After the system's dry-run test, the researcher sought insights from BJMP personnel about its strengths and flaws. They noted a need for improvement in the fingerprint scanner and for the system to cater to Paabot, the recipient of items or meals. They created a user manual based on visitor process flow data and technical activities. The Sorsogon City District Jail tested the system and required an adoption certificate.

Treatment of Data

The researcher used secondary information from published research, theses, and internet sources to support a survey and interview transcript. The researcher gathered quantitative data from family members of incarcerated individuals in the Sorsogon City District Jail, as well as personnel from the Bureau of Jail Management and Penology. The data assessed the necessity of developing a system and its accuracy and reliability compared to manual methods. The researcher used the 5-point scale, specifically the weighted average mean (WAM), to measure efficiency and performance.

$$WAM = (X_5 + X_4 + X_3 + X_2 + X_{1)} / N$$

In the interpretation of the average ratings, the following cut-off points was used:

Score Range	Score Rating	Description
4.50-5.00	5	Very Effective
3.50-4.49	4	Effective
2.50-3.49	3	Fairly Effective
1.50-2.49	2	Ineffective
1.00-1.49	1	Very ineffective

Ethical Consideration

The researcher conducted a study with ethical considerations, including key informants' voluntary participation, informed consent, and confidentiality. Participants were given a copy of the informed consent and waiver form, ensuring strict confidentiality and exclusivity. The researcher used codes to ensure information safety, and participants were free to withdraw at any time. Data was encrypted and organized into folders for security. The data will be retained for five years or less, and the researcher will decide whether to permanently delete it.

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PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter presents data from respondents, analyzes it, and discusses design considerations, accuracy, reliability, and the impact of Bisitapp on jail visitation, focusing on facial recognition app features.

ESSENTIAL FEATURES AND FUNCTIONALITIES OF THE BISITAPP FOR JAIL VISITOR'S INFORMATION MANAGEMENT IN SORSOGON CITY DISTRICT JAIL

Bisitapp is a web-based app designed to automate data processing for PDL visitors in prisons. It integrates facial recognition and fingerprint verification for security and improves operational processes. The app features a time-in and time-out tracking system, PDL Records Admin for data maintenance, and PDL Visitor Admin for visitor scheduling. These components ensure a secure and organized system for managing jail visitors and their interactions with PDLs.

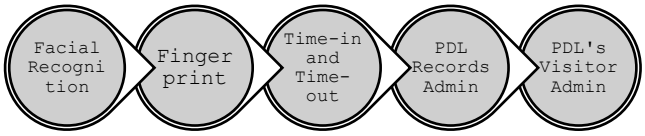

Figure 6. Enable System Boundary

Bisitapp is a digital platform developed by researcher with the help of IT specialists and purposed for stakeholders to improve visitor management in correctional facilities. It integrates with existing systems, features visitor time-in and time-out, and uses two-factor authentication for security, ensuring accurate visitor logs and efficient facility operations.

Log-in Feature

Users must enter their credentials to securely access the system, ensuring only authorized individuals can retrieve information. Administrators identify the users as either administrators or standard users.

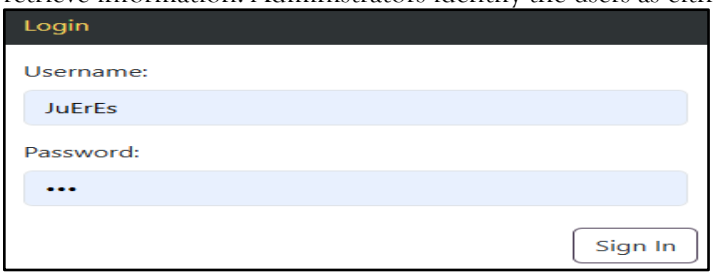

Figure 7. Login Page

The login page is important for system security, authenticating users, and regulating access to sensitive information. Credential verification ensures data integrity and confidentiality. Assign the users roles with distinct permissions, adhering to the principle of least privilege. This minimizes unauthorized access, minimizes data breaches, and enhances user accountability by maintaining an audit trail.

Manage Account Password Verifier

The administrator must reauthenticate with their password to verify their identity and maintain robust security measures when accessing the user's account page.

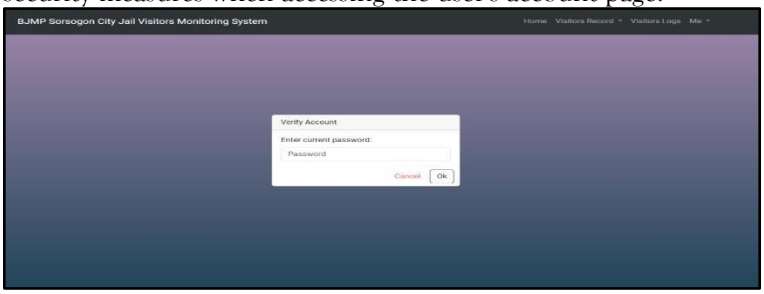

Figure 8. Verify Account

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Manage Account Update Password

The administrator can update their password, but this feature is restricted from user access to maintain security protocols.

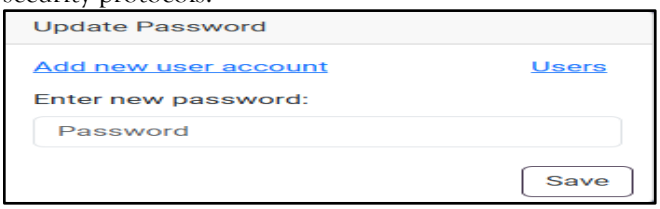

Figure 9. Update Password

Manage Account Add New User

The administrator controls system access and security by adding new users, ensuring unauthorized access and maintaining strict protocols, and designating user categories or roles.

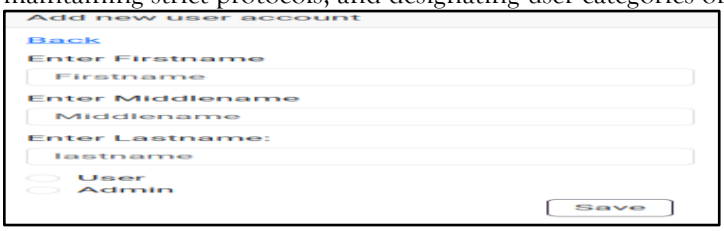

Figure 10. Add New User Account

The administrator has the exclusive privilege to view and manage the registered user list, preventing regular users from deleting other users.

Figure 11. User Accounts

The system offers a comprehensive dashboard for administrators and users, displaying monthly visitor trends and detailed statistics. It includes a bar graph and a table for real-time updates, enabling quick decision-making in visitor management and facility operations. This graphical representation is crucial for effective monitoring and management within correctional facilities.

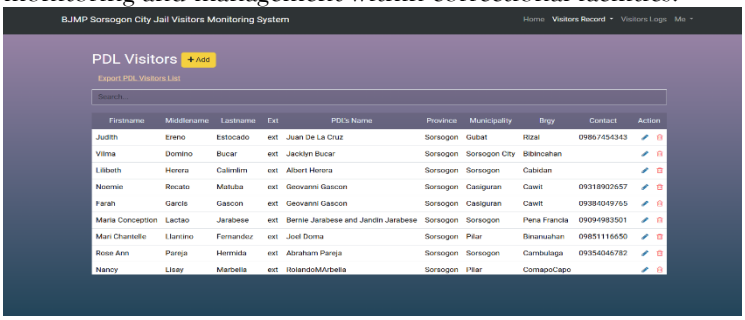

Figure 12. Monitoring System

The Visitors Page system provides administrators and users with comprehensive visitor lists categorized by type, allowing them to search for specific visitors and perform actions like editing or deleting information, enhancing operational effectiveness and compliance with facility protocols.

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Figure 13. PDL Visitors Information Modal

Edit Visitor's Information Modal

The system allows users to edit visitor details like address, contact number, and PDL name for data compatibility, ensuring consistent and accurate information management and operational continuity.

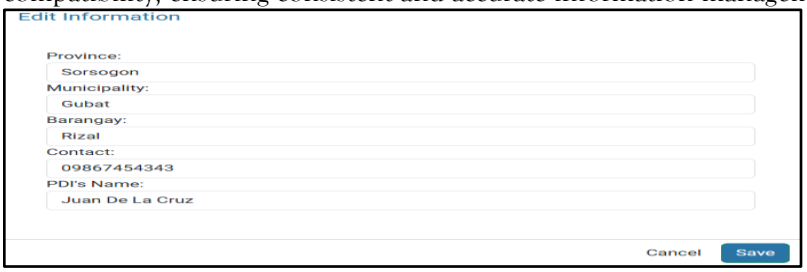

Figure 14. Editing Information

Fingerprint enrollment

User enrolls the visitor's fingerprint as a security measure, enhancing biometric data association and ensuring robust identification and authentication within the system after saving visitor information.

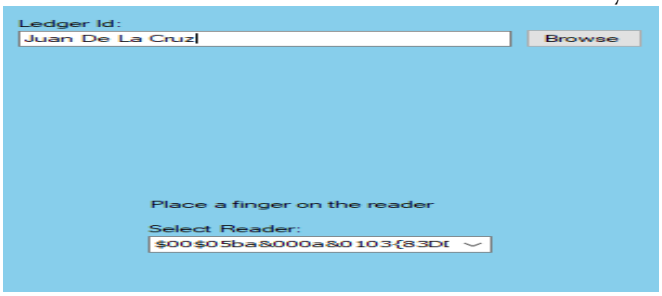

Figure 15. Fingerprint Enrollment

Select Category

Visitors must select their category before fingerprint scanning, ensuring accurate categorization for efficient monitoring and management of activities in correctional facilities.

Figure 16. Selecting Category

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Fingerprint Scanning

The app uses fingerprint scanning for initial verification, followed by face scanning for visitor identification, which enhances security measures for thorough and reliable verification.

Figure 17. Fingerprint Scanning

Fingerprint scanning is significant for logging visitor entries, confirming identities, and establishing a secure link between identities and records. It reduces unauthorized access, enhances facility security, and streamlines check-in procedures, improving visitor management in correctional facilities.

Face Recognition

The app uses fingerprint scanning and face scanning for enhanced security. Face recognition ensures accurate identification and reduces unauthorized access. It streamlines check-in, improves accuracy, and streamlines audit processes. This feature meets modern security standards and regulatory requirements, ensuring efficient management of visitor activities in correctional settings.

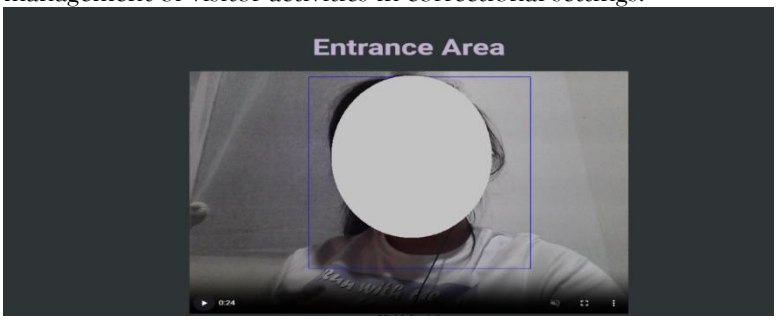


Figure 18. Sample Enrolment of Face Recognition

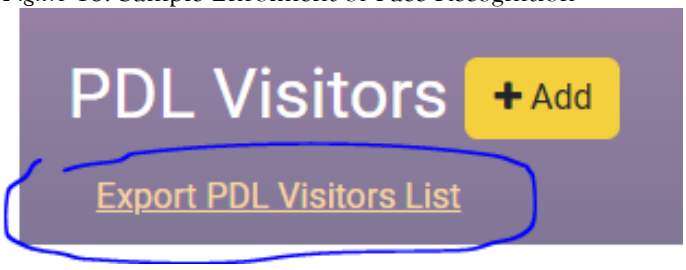
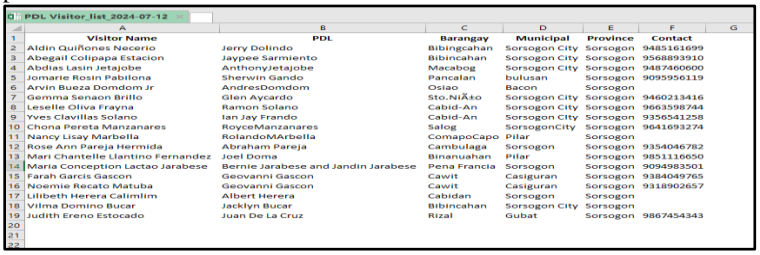


Figure 19. Export PDL Visitors List

Download Visitors List

Excel files containing visitor lists from app pages are available for users, enabling efficient management and oversight of activities in correctional facilities, enhancing operational transparency, and decision-making processes.



PDL Visitor_list_2024-07-12

Visitor Name	PDL	Barangay	Municipal	Province	Contact
Aldin Quiñones Necerio	Jerry Dolindo	Bibingcahan	Sorsogon City	Sorsogon	9485161699
Abegail Colipapa Estacion	Jaypee Sarmiento	Bibincahan	Sorsogon City	Sorsogon	9568893910
Abdias Lasin Jetajobe	AnthonyJetajobe	Macabog	Sorsogon City	Sorsogon	9487460600
Jomarie Rosin Pabilona	Sherwin Gando	Pancalan	bulusan	Sorsogon	9095956119
Arvin Bueza Domdom Jr	AndresDomdom	Osiao	Bacon	Sorsogon	
Gemma Senaon Brillo	Glen Aycardo	Sto.NiÃ±o	Sorsogon City	Sorsogon	9460213416
Leselle Oliva Frayna	Ramon Solano	Cabid-An	Sorsogon City	Sorsogon	9663598744
Yves Clavillas Solano	Ian Jay Frando	Cabid-An	Sorsogon City	Sorsogon	9356541258
Chona Pereta Manzanares	RoyceManzanares	Salog	SorsogonCity	Sorsogon	9641693274
Nancy Lisay Marbella	RolandoMArbella	ComapoCapo	Pilar	Sorsogon	
Rose Ann Pareja Hermida	Abraham Pareja	Cambulaga	Sorsogon	Sorsogon	9354046782
Mari Chantelle Llantino Fernandez	Joel Doma	Binanuahan	Pilar	Sorsogon	9851116650
Maria Conception Lactao Jarabese	Bernie Jarabese and Jandin Jarabese	Pena Francia	Sorsogon	Sorsogon	9094983501
Farah Garcis Gascon	Geovanni Gascon	Cawit	Casiguran	Sorsogon	9384049765
Noemie Recato Matuba	Geovanni Gascon	Cawit	Casiguran	Sorsogon	9318902657
Lilibeth Herera Calimlim	Albert Herera	Cabidan	Sorsogon	Sorsogon	
Vilma Domino Bucar	Jacklyn Bucar	Bibincahan	Sorsogon City	Sorsogon	
Judith Ereno Estocado	Juan De La Cruz	Rizal	Gubat	Sorsogon	9867454343

Figure 20. PDL Visitors List

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Visitors Log

The page allows users to access and manage visitor records, generate customized Excel files, and monitor visitor activities. This functionality supports strategic decision-making, regulatory compliance, and operational transparency in correctional facility management.

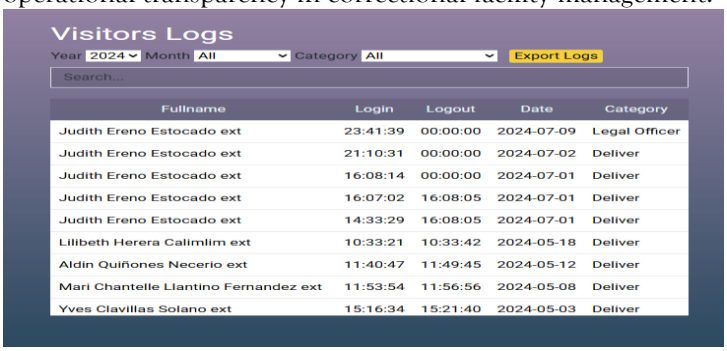

Figure 21. Visitors' Log

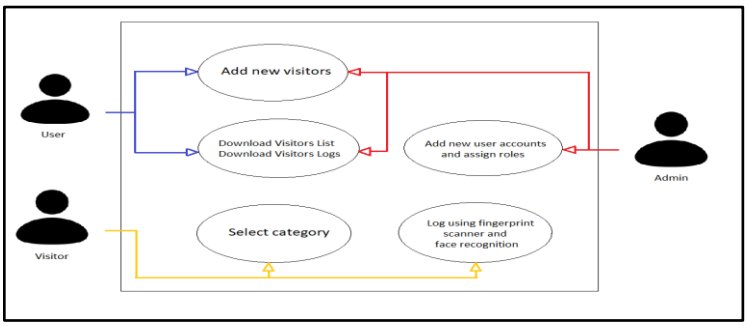

Figure 22. Admin and User Flow Diagram

The system has two main user roles: Admin and User, with Admin managing accounts and Users accessing app features. Visitors can log in using the category box, fingerprint scanner, and face recognition.

Registration Process

The BJMP personnel-in-charge will use the Bisitapp app to register PDL visitors for the jail. The system requires a valid ID card for security verification, and visitors must input their name. They then take photographs from various angles, likewise using a biometric scanner to capture fingerprint details. The jail uses facial recognition to enhance security by storing image files that allow relatives to identify visitors. The jail also uses fingerprints for authentication, identification, and tracking, ensuring they remain intact. To avoid issues for customers visiting jailed relatives, users or admins must understand the registration process. At the gate area, use the mounted webcam to capture multiple photos from different angles, ensuring accurate documentation and recording. The project aims to integrate facial and fingerprint recognition to enhance the accuracy and reliability of the system's authentication information.

The Button Device Assembly

Bisitapp has introduced category buttons, a feature designed to cater to clients' needs during busy periods or peak seasons. These buttons store visitors' visit types and serve as the final step in the registration process before allowing PDL visitors to enter the frisking area for a body search. Dashboards provide data visualization, real-time monitoring, performance tracking, decision support, customization, communication, and mobile accessibility, allowing users to track progress and identify concerns in their businesses.

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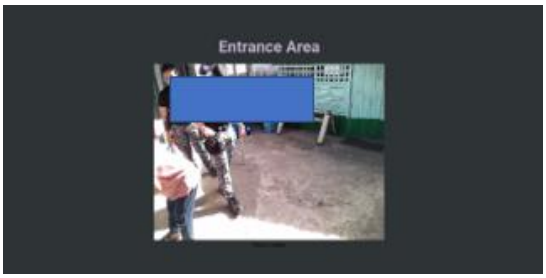

Figure 23. Sample View of Entrance Gate of BJMP SCDJ

GeeksforGeeks.org (2024) highlights the importance of galleries in online design, as they showcase content and enhance user experience. Users can access system documentation for legal purposes, monitor development, and report to IT Support. Access control in a DMS improves data security and compliance by controlling who can see sensitive data, keeping electronic data safe, and making it easier for people to work together on big engineering projects.

Figure 24. Updating Profile

The system allows users to update their profile information, ensuring security and fast performance for devices and apps. Regular OS updates protect personal and company data, improve security, and boost productivity. Automated updates and discount programs can help prevent performance or security issues.

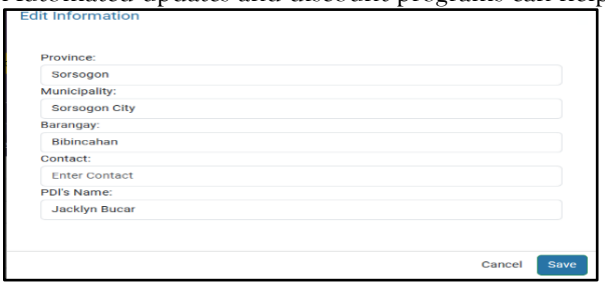

Figure 25. *Updating of Personal Information*

The Bisitapp system streamlines record searching, saving time and improving workflows at Sorsogon District Jail. The system offers a cloud-based data sharing and updating platform, enhancing decision-making and efficiency. A survey on the Bisitapp visitor information management tool revealed that the features, including complete facial recognition and automatic recognition, are highly effective. The overall score of respondents is 3.80, indicating they agree with the Bisitapp's features. The system's features aim to enhance visitor experience and productivity.

Table 1

Summary of the Results in terms of Features of the Bisitapp

Features of the BISITAPP Technology	Weighted Mean (WM)	Std. Dev. (S)	Interpretation
1. A complete facial recognition.	4.31	0.55	Agree
2. Have a fingerprint scanner.	3.43	0.70	Fairly Agree
3. A facial recognition program that verifies an individual's identification based on the collected facial image files in the system.	3.70	0.80	Agree
4. Automatic Recognition.	3.17	0.41	Fairly Agree
5. It can easily print out or search the actual records of the day, date, and time in or out of PDL visitors.	4.10	1.02	Agree
6. Applicability/efficiency.	4.10	1.00	Agree
Overall Mean	3.80	0.75	Agree

The Bisitapp tool, which integrates facial recognition and fingerprint scanners, has been evaluated for its effectiveness and user perception. The results show that the Bisitapp tool improves visitor information management at Sorsogon City District Jail, enhancing security procedures, speeding up record-taking, and accurately identifying jail guests. The system's efficient record management and strong password enhance its security. The overall score of 3.80 indicates that respondents generally agree with the Bisitapp's features, with complete facial recognition being well-received. However, there are potential areas for improvement in the fingerprint scanner's functionality. The Bisitapp also facilitates the printing and searching of jail visitors' records, and its applicability and efficiency are rated positively. The system's primary advantages include security, as traditional paper-based visitor logs are time-consuming and prone to errors. The Sorsogon district jail endorses Bisitapp's contributions to PDL visitor management. Shenzhen Newabel Electronic Co.'s 2014 study on a roll system uses facial, fingerprint, and three-dimensional personal identification from ID cards to create a secure visitor management system. The ARIXTRA palm machine allows prison guards to access the roll at any time, while Tektronik (2023) highlights its security benefits. The Sorsogon district jail has confirmed the system's functionality.

EXTENT OF ACCURACY AND RELIABILITY A TOOL FOR JAIL VISITOR'S INFORMATION MANAGEMENT IN SORSOGON CITY DISTRICT JAIL

The study evaluates the accuracy and reliability of Bisitapp as a tool for managing jail visitors' information in Sorsogon City District Jail. Results show that Item-6 improves face recognition, while Item-3 prevents security verification errors. Respondents rated Bisitapp's accuracy and reliability as effective, with an overall score of 3.93.

Table 2

Summary of the Results of Extent of Accuracy and Reliability of Bisitapp

Accuracy and Reliability	Weighted Mean (WM)	Std. Dev. (S)	Interpretation
1. It integrates face recognition and fingerprint identification with BISITAPP technology.	3.93	0.76	Effective
2. It can expedite the visitor's verification at the gate area for PDL visitors.	3.90	0.85	Effective
3. Prevent errors during the security verification procedure	3.84	0.97	Effective
4. Strengthen the security protocols to deter intruders and prevent the escape of prisoners.	3.99	0.91	Effective
5. It offers numerous advantages in terms of safeguarding jail premises.	3.90	1.02	Effective
6. Enhance the ability to recognize unknown faces.	4.00	1.00	Effective
Overall Mean	3.93	0.92	Effective

The study found that the integration of face recognition and fingerprint identification in Bisitapp's jail management can enhance security protocols, expedite visitor verification processes, and safeguard jail premises. Participant 1 talked about how important it is to digitize manual data recording processes and fix information mistakes in logbooks, pointing out how technology can help a lot with this.

"An paggamit sadi na technolohiya sa pagproseso ay sarong sa importantehon na danon sa pagdigitize kan mga mano-mano na pagproseso kan pagrekord kan datos me na mga parabisita dini sa kulungan asin pagresolba kan mga impormasyon na minsan nagkakamayon san mali-mali na pagrekord san impormasyon me sa logbook (The use of technology in the process is a significant aid in digitizing the manual process of recording data of visitors to the prison and addressing information errors that often occur when recording information in the logbook)."

The findings support Zhakom, (2011) conclusions that effective ICT use in prison administration, such as prisoner visitation, reduces staff and visitor challenges. Biometrics are also used in facial recognition apps. Facial recognition algorithms measure the eyes, eyebrows, nose, mouth, chin, and ears to create a biometric template. Match scores using two templates to establish if the photos are from the same individual. Liveness detection can also ensure the biometric sample is not digital or paper (Aware Inc., 2024). Digital inmate administration affects jail software fingerprint recognition. Biometric authentication with JMS fingerprint data improves prison security, inmate identification, tracking, and management. The jail database and inmate biometrics should sync live (Bayometric, 2024). According to Verazial Labs (2024), biometric technologies,

which use unique human body traits like fingerprints, faces, voices, and irises to accurately and securely authenticate each person, are the best way to solve identification issues.

IMPACT OF USING A BISITAPP FOR JAIL VISITORS, BEFORE AND AFTER ITS IMPLEMENTATION AT THE BJMP DISTRICT JAIL IN SORSOGON CITY

Table 3A summarizes the impact of using a BISITAPP for PDL visitors at BJMP District Jail in Sorsogon City. The process of recording data took about 10–15 minutes before implementation, with a mean score of 2.77. Manual searches were necessary for verification or addressing time concerns.

Table 3

Summary of the Results Before Implementation

Before	Weighted Mean (WM)	Std. Dev. (S)	Interpretation
1. Manual processing or recording of PDL relative visitors' information.	2.23	1.00	Disagree
2. It takes 10 – 15 minutes to record the PDL's visitor's data	2.77	1.47	Fairly Agree
3. Some visitors are unable to write their personal information/data and need the BJMP personnel's assistance to input it in the logbook or record book.	2.68	1.31	Fairly Agree
4. PDL visitors need to provide a valid identification card for verification purposes every time they come for a visit to jail.	1.75	1.05	Disagree
5. BJMP Personnel need a thorough inspection of the IDs presented by the PDL visitors to prevent unauthorized entry by not-valid jail visitors.	1.75	1.00	Disagree
6. The process involves manually searching the records of the day, date, and time, if necessary, for verification or to address any concerns about the time in or out of PDL visitors.	1.62	1.11	Disagree
Overall Mean	*2.13*	*1.16*	Disagree

The survey shows respondents understand the manual PDL data recording process and are considering integrating a new system to improve security and access to visitor records. Bisitapp has significantly improved visitor data management and security measures at Sorsogon City District Jail, enhancing operational efficiency and strengthening security protocols to prevent unauthorized entry and security breaches.

ELETS News Network (2010) highlights the challenges of managing prisoner records and monitoring visitors due to manual maintenance. Palter (2021) suggests people-tracking software can help prevent errors by logging on a backed-up server, avoiding errors, and ensuring accurate information entry.

The study found that the digitization of the process of recording information about PDL visitors and the Bisitapp application's ability to recognize facial and fingerprint verifications cut down on the need for handwriting. Respondents agreed with this finding after it was put into place.

Table 4

Summary of the Results After Implementation

After	Weighted Mean (WM)	Std. Dev. (S)	Interpretation
1. Digitalize the recording process of PDL visitors' information.	4.37	2.37	Agree
2. Reduces the duration of time spent recording information and speeds up the processing or recording of personal information, probably for 5 minutes.	4.27	2.29	Agree
3. There is no need to manually write their information since their facial and fingerprint verifications are already recognized by the application.	3.87	2.20	Agree
4. Eliminate the errors in the recording proceedure of the needed PDL visitor's information.	4.17	2.17	Agree
5. There is no need to assist the PDL visitors by BJMP personnel, particularly those PDL visitors unable to write.	4.23	2.27	Agree
6. Can perform other tasks the BJMP personnel assigned in the gate area.	4.23	2.25	Agree
Overall Mean/S	**4.19**	**2.26**	**Agree**

The study reveals that BISITAPP has significantly improved data management by automating visitor information processing and logging, leading to increased efficiency and accuracy. Additionally, facial recognition technology has improved security by eliminating the need for physical identification cards, thereby improving BJMP personnel's efficiency and productivity.

"An paggamit kaining aplikasyon sa pagbisita nagpapadali kan proseso sa paghimo kan impormasyon para sa mga parabisita digdi sa kulungan asin puwede ipatupad an paggamit kaining teknolohiya kan facial recognition asin fingerprint scanners. Magayonon ini ta mas madali na an pagproseso kay may tulos na kaming pagkakilanlan gamit ini na Bisitapp (The use of this application for visitation simplifies the process of creating information for visitors here in the jail and can implement the use of facial recognition and fingerprint scanners. This is beneficial because the processing will be quicker since we can immediately identify using this Bisitapp)."

The Bisitapp tool helps manage jail visits by using facial recognition and fingerprint scanning. This cuts down on the need for manual data entry, speeds up processing times, and reduces mistakes, which makes visitor information more accurate and improves the overall experience at the jail. Randhawa et al. (2019) highlight the integration of technology into various applications, utilizing face recognition algorithms to enhance the precision and reliability of identification processes.

Table 5 shows strong agreement among users about the usability of Bisitapp, with a mean score of 3.97 and a mean score of 3.77, indicating frequent usage and ease of use.

Table 5

Usability of BISITAPP as a Tool for Jail Visitors' Information Management in Sorsogon City District Jail.

Indicators	Weighted Mean (WM)	Std. Dev. (S)	Interpretation
1. I think that I would like to use the Bisitapp frequently.	3.97	0.18	Strong agree
2. I found the Bisitapp unnecessarily complex.	2.80	0.40	Disagree
3. I thought the Bisitapp was easy to use.	3.77	0.42	Strong agree
4. I think that I would need the support of a technical person to be able to use this Bisitapp.	2.03	0.41	Disagree
5. I found the various functions in this Bisitapp were well integrated.	3.90	0.30	Strong agree
6. I thought there was too much inconsistency in this Bisitapp.	2.14	0.43	Disagree
7. I would imagine that most jails would learn to use this Bisitapp very quickly.	3.93	0.25	Strong agree
8. I found the Bisitapp very burdensome to use.	2.20	0.40	Disagree
9. I felt very confident using the Bisitapp.	3.93	0.25	Strong agree
10. I needed to learn a lot of things before I could get going with this Bisitapp.	1.73	0.44	Strongly disagree
Overall Mean	3.04	0.35	Usable

The recent decade has seen increased interest in IT, particularly in terms of acceptance and adoption. Researchers have presented several theories to explain end-user acceptance. Ma & Liu (2017) described their thorough application and experimental study of Davis (1989)'s technology acceptance model (TAM). The survey Indicator 3—"it's thought the Bisitapp was easy to use"—had a mean score of 3.77 and a standard deviation of (S = 0.42), indicating good agreement.

Participant 3 added,

"Kinakaipuhan man san BJMP an aplikasyon o teknolohiya para madokumentaran an personal na impormasyon kan mga bisita san saindang mga kadugo na nakakulong asin madali na mahiling an aktwal na rekord kan oras asin petsa para sa mga layunin nin beripikasyon (The BJMP also needs an application or technology to document the personal information of those who visit their jailed relatives and easily search the actual records of time and date for verification purposes)."

As information technology has advanced, electronic consumer gadgets have become powerful, compact computers with many features. Designs take greater effort, expertise, and competence to succeed in all situations (Kanis et al., 2017). The results show a clear agreement for Indicator 5, "I found the different functions in this BISITAPP were well integrated," with an average score of 3.90 and a standard deviation of 0.30. Per the study, respondents understand the program's benefits in connecting with Bisitapp to record PDL visitors in jail.

Participant 4 concurred and stated,

"An Bisitapp dakulang natabang sa mga bisita kan mga PDL sa pagpapadali san proseso nin pagrekord, kumpara sa manual o tradisyonal na pamamaraan na kinakaipuhan nin ID kada beses na magbisita sinda sa saindang mga paryente sa kulungan (The Bisitapp significantly facilitates PDL visitors in speeding the recording procedure, as opposed to the manual or traditional approach that necessitates an identification card each time, they visit their relatives in jail)."

Bisitapp, a jail visitor's management system, has significantly improved visitor information management and security measures at Sorsogon City District Jail. The integration of facial recognition and fingerprint scanners improves security procedures, speeds up recording PDL visitors, and accurately identifies jail guests. The tool's efficient record management improves jail operations and organization, as traditional paper-based visitor logs are time-consuming and prone to errors.

The study found that respondents perceived Bisitapp's usability as useful, with an overall mean score of 3.04 and a standard deviation of 0.35. However, some respondents found the app unnecessarily complex, while others felt it needed technical support to use. The respondents were already aware of the positive contribution of Bisitapp in the recording process for jail visitors.

The overall mean score of 3.04 and a standard deviation of 0.35 suggest that Bisitapp is largely functional and efficient, and addressing minor issues could further enhance its usability and effectiveness as a management tool. This study is similar to Sia (2018), which found technological advancements like the Inmate and Visitor Tracking System (IVTS) to modernize jail operations, particularly in tracking and organizing visitor information.

In short, Bisitapp technology at Sorsogon City District Jail has significantly improved visitor information management and security measures. The integration of facial recognition and fingerprint scanners improves security procedures, speeds up recording PDL visitors, and accurately identifies jail guests. The tool's implementation has reduced the need for manual writing and increased efficiency and accuracy in data management. The researcher donated or gave away all the tools used in developing Bisitapp, including one set of computers, in line with the study's goals.

CONCLUSION

Based on the results mentioned in the preceding part, the following conclusions are as follows:

1. The Bisitapp offers features for managing jail visitors' activities within the SCDJ enhances security and operational efficiency. The following features of Bisitapp integration of fingerprint and face recognition were effective for verification. The app's functionalities which include visitor logs, visitor's reports, and access controls, ensure that sensitive information is protected and that only authorized personnel can manage and review data.
2. The app tool for managing jail visitors' information at the SCDJ, were effective in terms of accuracy and reliability. The integration of advanced technologies has significantly enhanced security protocols, furthered visitor verification, and reduced errors that were common in manual logbook entries. The positive feedback from users and the high mean scores across various indicators highlight Bisitapp's contribution to improving the efficiency, accuracy, and security of visitor management in correctional facility.
3. The operation of Bisitapp at the BJMP District Jail in Sorsogon City has significantly improved the efficiency and accuracy of managing jail visitor information. The time spent on these tasks was greatly reduced to approximately 5 minutes, with a marked increase in accuracy and security due to the integration of facial and fingerprint recognition technologies. Positive reception of Bisitapp by jail staff and visitors emphasizes its effectiveness as an up-to-date tool in correctional facility management.

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REFERENCES

1. ABS CBN News. (2019, November 18). Prisoners' health is a public health issue, too: Manila conference. ABS-CBN News. https://news.abs-cbn.com/spotlight/11/18/19/prisoners-health-is-public-health-issue-too-manila-conference
2. Acresecurity. (n.d.). Elevating security: The imperative role of visitor management in prisons. Acresecurity. https://acresecurity.com/blog/the-imperative-role-of-visitor-management-in-prisons
3. Aware Inc. (2024). Facial recognition algorithms and their applications. Retrieved from https://www.aware.com/facial-recognition
4. Bayometric. (2024). Fingerprint integration with jail management software. Bayometric. https://www.bayometric.com/fingerprint-integration-with-jail-management-software/
5. Berkoff, A. (2022). How does technology support security today? City Security Magazine. https://citysecuritymagazine.com/security-know-how/how-does-technology-support-security-today/
6. Borak, M. (2023, May). Questions raised over facial recognition use in Indian prisons. Biometric Update. https://www.biometricupdate.com/202305/questions-raised-over-facial-recognition-use-in-indian-prisons
7. Carlson, P. M. (n.d.). Prison and jail administration: Practice and theory. Google Books. https://www.google.com.ph/books/edition/Prison_and_Jail_Administration/hW0rAQAAQBAJ?hl=en&gbpv=1&dq=what+theory+applicable+to+enhance+security+measures+of+prisons+facilities&pg=PA456&printsec=frontcover
8. Chandran, R., & Starcevic, S. (2023). Asia-Pacific prisons deploy 'dehumanizing' facial recognition. Context News. https://www.context.news/ai/asia-pacific-prisons-deploy-dehumanising-facial-recognition
9. Elets News Network. (2010, March). Prison management and visitor management system. Elets News Network. https://egov.eletsonline.com/2010/03/prison-management-and-visitor-management-system
10. GeeksforGeeks. (2024). Importance of galleries in web design. GeeksforGeeks. https://www.geeksforgeeks.org/importance-of-galleries-in-web-design/
11. Innovatrics. (n.d.). Facial recognition technology. Innovatrics. https://www.innovatrics.com/facial-recognition-technology/
12. Kanis, C. H., Eijk, D.J.V., & Kuijk, J.I. V., (2006). Usability in the Development of Consumer Electronics: issues and actors. https://www.researchgate.net/publication/254401944_Usability_in_the_Development_of_Consumer_Electronics_Issues_and_Actors
13. Lalu, G. B. (2023, October 4). Solons want BJMP, BuCor's records system to go digital. Inquirer.net. https://newsinfo.inquirer.net/1840679/solons-want-bjmp-bucors-records-system-to-go-digital
14. Lukas, L. (2016). Theoretical sources for a theory of safety and security. Securware. https://www.iaria.org/conferences2016/filesSECUWARE16/secuware_2016_8_20_30071.pdf
15. Ma, Q. & Liu, L. (2024) The Technology Acceptance Model: A Meta-Analysis of Empirical Findings. https://www.researchgate.net/publication/220068787_The_Technology_Acceptance_Model_A_Meta-Analysis_of_Empirical_Findings
16. Narag, R., & Jones, C. R. (2016). Understanding prison management in the Philippines: A case for shared governance. The Prison Journal, 96(4), 551–573. https://journals.sagepub.com/doi/abs/10.1177/0032885516679366
17. Palicte, C. (2023, June 20). Davao Oro district jail's 'no contact' visit targets contraband. Philippine News Agency. https://www.pna.gov.ph/articles/1203899
18. Randhawa, M., Vaishya, R., & Dua, N. (2019). A steady change from RFID to facial recognition. International Journal of Scientific & Technology Research, 8(11), 3082–3086. http://www.ijstr.org/final-print/nov2019/A-Steady-Change-From-Rfid-To-Facial-Recognition.pdf
19. Sharma, S., Sarkar, D., Gupta, D. (2012). Agile Processes and Methodologies: A Conceptual Study. Sheetal Sharma et al. / International Journal on Computer Science and Engineering (IJCSE)
20. Shenzhen Newabel Electronic Co. (2014). Face recognition and prison roll call system. Google Patents. https://patents.google.com/patent/CN106682589A/en
21. Sia. (2018). Inmate and Visitor Tracking System (IVTS). [Specific source details not provided].
22. Tektronik. (2023). Visitor management software for enhanced security. [Specific source details not provided].
23. Verazial Labs. (2024). Biometric technology: The solution to secure identification in correctional facilities. Verazial Labs. https://www.verazial.com/en/biometric-technology-the-solution-to-ensure-secure-identification-in-correctional-facilities/
24. VPOD Solution. (2023). A comprehensive handbook of visitor management systems. VPOD Solution. https://vpodsolutions.com/what-is-visitor-management-system
25. Williams, L., (2007). A Survey of Agile Development Methodologies. https://www.cems.uwe.ac.uk/~pchatter/2011/isd_hk/AgileMethods.pdf
26. Zhakom,I. N., (2011). Effective use of ICT in Prisons Administration. https://www.academia.edu/37112761/EFFECTIVE_USE_OF_ICT_IN_PRISONS_ADMINISTRATION