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Development and Operational Evaluation of a Prototype Medication Electronic Data Profile (Medpro) System in Selected Community Pharmacies in Koronadal City, South Cotabato

Mae Kailah Dimples Alcontin, Nhaleah Mutalib, Lady Laurianne Lachica, Eulicelle Bergantiños, Kent Zabdiel Orella, Cynthia Claire Guinto.

[1]Pharmacy Department, St. Alexius College, Koronadal City, South Cotabato, Mindanao, Philippines

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ABSTRACT

The study explored the level of system performance, operational performance, the level of user satisfaction and the significant correlation of these factors with the effectiveness of the Prototype Medication Electronic Data Profile System in medication data management within the community pharmacies in Koronadal City, South Cotabato. To assess the performance and effectiveness of the system, the researchers utilized post-survey questionnaires among 15 eligible pharmacies. The use of mean, Pearson correlation as a statistical treatment, and Likert Scale as a statistical instrument were employed in order to quantify the responses of the respondents from the survey. Statistics revealed that the MedPro System excelled in performance across three key areas: System Performance (User-Friendly Interface = 3.82, Comprehensive Database = 3.83, Scalability = 3.72, Backup and Recovery = 3.71, Security and Privacy = 3.85), Operational Performance (Usability = 3.78, Data Retrieval = 3.82), and User Satisfaction (Access Efficiency = 3.71, User Satisfaction = 3.79) resulted in a high overall mean score. However, no significant correlations were found between system performance and operational performance (Pearson R = -0.193, p = 0.416), system performance and user satisfaction (Pearson R = -0.047, p = 0.844), and operational performance and user satisfaction (Pearson R = -0.195, p = 0.409). Therefore, The MedPro System has the potential to significantly enhance medication data management and pharmacy operations through its reliable system and operational performance.

Keywords: medication profile, community pharmacy, electronic health record, medication profiling system, pharmacy

INTRODUCTION

Medication management encompasses the process of safely and effectively dispensing drugs to patients which involves various steps, such as prescribing, dispensing, administration, and monitoring, all of which require careful attention to detail and accuracy, Somerville et al., [1]. One important aspect of medication management is the use of electronic data profiles, which provide a comprehensive overview of a patient's medication regimen and history. These profiles serve as a valuable tool for healthcare professionals to ensure the safe and appropriate use of medications. By providing real-time access to a patient's medication data, healthcare providers can make more informed decisions and prevent potential drug interactions or adverse events. They also enable better communication and coordination of care among different healthcare settings, ensuring continuity and reducing the risk of medication errors [2].

Community pharmacies play a crucial role in healthcare, offering a wide range of services, including educational consultations, medication management, and other medication optimization services, chronic condition management, patient empowerment, health and wellness services, and other services that help improve the lives of patients in the community [3]. As the importance of medication management gains greater emphasis, the opportunities for community-based pharmacist practitioners are expected to continue to grow [4]. Innovations such as Electronic Health Record (EHR) platforms, Health Information Exchange (HIE), immunization history systems, etc., have demonstrated significant benefits for community pharmacy practice and hold the potential to enhance patient safety [5]. Advanced information management systems, which includes Medication Electronic Data Profile System, such as MedPro System, could play a vital role in helping community pharmacies

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI | Volume XII Issue VII July 2025

significantly improve patient care.

Currently, the Food and Drug Administration Philippines continues to check and require every pharmacy to comply and to have a medication profile system pursuant to the Republic Act 10918 also known as "The Pharmacy Law" and its Implementing Rules and Regulations under Section 37 which states that all prescriptions dispensed in the pharmacy shall be recorded in an appropriate recording system and it shall be open for inspection by the representative of the Board or the FDA, or both, at any time of the day, when the pharmacy is open, and must be kept for a period of not less that two (2) years after the last entry. However, according to the data provided by the City Health Office of Koronadal City, South Cotabato, as of November 2023, there are 93 pharmacies in the city and from the preliminary survey conducted in 20 community pharmacies, only four (4) pharmacies use a medication profile system. The current state of community pharmacies underscored the need for advanced information management systems to keep pace with the evolving healthcare landscape. Significant local, national, and international efforts focus on designing, building, and maintaining Electronic Health Records (EHRs) to improve patient care quality. International initiatives emphasize the critical role of medication information in developing eHealth services, essential for delivering safe, high-quality, and cost-efficient care. However, the specifications for necessary data elements in medication information remain inadequately defined despite numerous initiatives (James, 2017).

According to the Minnesota Legislature, all pharmacies must maintain a patient profile record system for prescription drug orders, ensuring immediate retrieval of essential information. The Medication Electronic Data Profile System (MEDPS) enhances medication safety by managing regional electronic medication records and facilitating communication with various pharmacy databases, thereby reducing manual effort [6]. Accurate electronic medication profiles minimize errors, unlike traditional paper-based systems, which are inefficient [7]. Implementing MEDPS supports digitization and interoperability in healthcare, as seen with initiatives like the Health Information Exchange (HIE) [8].

Given the demand and the need for faster and feasible storage of patient medication data profiles in the healthcare system, particularly in pharmacies, the researchers acknowledge the necessity to advance the medication management to address these underlying challenges. Therefore, this study proposed the development and operational evaluation of a prototype medication electronic data profile system that aimed to enable pharmacists to retrieve a patient's medication profile quickly and efficiently, while providing healthcare professionals with a comprehensive electronic platform to access and review the medication history of individual patients. This initiative aimed to enhance medication reconciliation and reduce medication discrepancies within community pharmacies in Koronadal City, South Cotabato, aiming to improve patient outcomes and optimize medication data management processes.

MATERIALS AND METHODS

Research Design

This study adopted a descriptive quantitative research design to systematically evaluate the operational performance of the Prototype Medication Electronic Data Profile (MedPro) System. The descriptive approach facilitates capturing a comprehensive snapshot of the system's effectiveness without manipulating variables, allowing for an unbiased assessment of pharmacists' experiences. By employing this design, the researchers aimed to gather numerical data that would inform decision-making regarding medication management processes within community pharmacies. This method not only lends clarity to the evaluation but also enhances the reliability of findings by focusing on measurable outcomes [9] [10].

Research Locale

The research was conducted in fifteen selected community pharmacies situated in Koronadal City, South Cotabato. This geographical focus was chosen to ensure that the sample represented a significant aspect of local healthcare practices while addressing the application of the MedPro system within a specific cultural and operational context. Only pharmacies that expressed willingness to participate were included, thereby creating an ethical environment for the study and ensuring that results would accurately reflect the opinions of engaged pharmacists. This setting provides valuable insights into the practical implications of implementing an electronic

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI | Volume XII Issue VII July 2025

medication profile system.

Population and Sampling

Participants in this study were community pharmacists drawn from the selected pharmacies, representing a diverse range of experience and operational practices. A convenience sampling method was employed, ensuring that each pharmacy contributed one pharmacist who could assess the MedPro System. This strategy allowed researchers to gather insights from professionals directly involved in medication management, while limiting disruption to their daily routines, as the evaluation was conducted in less than a day. This sampling approach prioritized obtaining qualitative data on their experiences and satisfaction with the system, contributing vital perspectives to the study's objectives

Research Instrument

The research utilized self-made survey instruments validated by a panel of experts, including pharmacists and an IT specialist. A Likert Scale was employed within the survey questionnaires to gauge participants' levels of agreement with various statements, ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). This structured response format enabled the researchers to obtain quantifiable outcomes regarding user perceptions and satisfaction levels, thereby providing a comprehensive understanding of the MedPro System's performance and user experience. The instrument is structured into four primary sections: the first section evaluates the performance level of the MedPro System, focusing on its operational aspects in medication management; the second section assesses the operational performance level among healthcare professionals using the MedPro System; the third section evaluates the prototype’s effectiveness in medication management; and the fourth section gathers feedback on respondent satisfaction towards the MedPro system.

Data Collection Procedure

This study was meticulously structured to ensure reliability, validity, and ethical compliance at every stage. It began with the preparation of approval and permission letters, which were critical in establishing ethical transparency and ensuring compliance with institutional regulations. This initial step aimed to build trust with stakeholders and create a framework for conducting the research in an ethical manner.

Next, the researchers developed and validated survey questionnaires tailored to the objectives of the study. These questionnaires were divided into four distinct sections, each focusing on a different aspect of the Prototype Medication Electronic Data Profile (MedPro) System. Expert validation was employed to ensure that the survey questions were relevant and effectively captured the essential data needed for analysis.

Following the questionnaire development, the researchers engaged with the selected pharmacies by facilitating orientations for the pharmacy staff. During these visits, informed consent forms were distributed, ensuring that participants were fully aware of the study's objectives and their rights. The orientation emphasized the importance of honest and accurate feedback, which was crucial for the success of the research. Eligible pharmacists were then identified and invited to participate, minimizing disruption to their workflow while maximizing the quality of the data collected.

Once the consent was secured, data collection proceeded with pharmacists completing the questionnaires, either on-site or through electronic means, depending on their preference. This flexibility was designed to enhance participation rates and ensure that the data gathered accurately reflected the users' experiences with the MedPro system. The completed questionnaires were then meticulously documented and securely stored, with stringent measures in place to protect participant confidentiality. The data collection process adhered to the highest standards of ethical practice, reinforcing the commitment to safeguard participants’ privacy and ensuring that findings would be credible and meaningful.

Statistical Analysis

The statistical treatment plan involved calculating the mean of the survey responses based on the Likert Scale data. This measure of central tendency represented the average value of participant responses, particularly for

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI | Volume XII Issue VII July 2025

Likert Scale items, providing insights into participants' perceptions. Additionally, the Pearson Correlation Coefficient (r) was utilized to assess the relationship between variables, indicating the strength and direction of associations among them [11].

RESULTS

The results of the development and operational evaluation of a Prototype Medication Electronic Data Profile (MedPro) System in Selected Community Pharmacies in Koronadal City, South Cotabato are as shown below. Descriptive and inferential statistics were utilized to assess the performance and reliability of the MedPro System.

TABLE 1.1 A table showing the mean level of system performance of the Medication Electronic data Profile (MedPro system), assessed using one of the five key criteria: User-Friendly Interface.

User-Friendly Interface			
	Items	Mean	Description
1	The font style and size used in the medication profile software contribute to an understandable and easy-to-read interface.	3.93	Very high
2	The navigation within the medication profile software is direct and easy to understand.	3.80	Very high
3	The process of encoding and verifying medication details in the system is easy; it helps users to lessen technical errors and confusion.	3.80	Very high
4	The language used in the software's interface is easy to understand thus it promotes convenience for the overall user experience.	3.80	Very high
5	Customizing and organizing medication information within the software is easy and user-friendly.	3.87	Very high
6	Users find the overall design of the software visually appealing, thus it promotes a positive experience for the user.	3.73	Very high
7	The software includes clear and concise instructions, ensuring users can easily manage patient medication information.	3.80	Very high
8	Adding, editing, or deleting medications in the profile is a simple and user-friendly process.	3.80	Very high
9	The search feature within the software helps users quickly find specific patient profiles without confusion.	3.80	Very high
10	Users can easily access and update the medication profile system through different devices (phones, laptops, desktops, tablets, etc.).	3.87	Very high
Overall Mean		3.82	Very high

Table 1.2 showed the overall mean values for one of the variables in the Medication Electronic Data Profile (MedPro) system, which offered valuable insights into its performance and impact on users. A user-friendly interface, with an overall mean of 3.82, indicates that the MedPro system is intuitive and easy to navigate. This high level of user-friendliness can lead to greater user satisfaction and efficiency, as users can quickly learn and

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI | Volume XII Issue VII July 2025

operate the system. These types of interfaces mitigates the learning curve and foster heightened user engagement [12]. This aspect is crucial for facilitating quick adoption, minimizing training time, and improving the overall user experience.

TABLE 1.2 A table showing the mean level of system performance of the Medication Electronic data Profile (MedPro system), assessed using one of the five key criteria: Comprehensive Medication Database.

Comprehensive Medication Database			
	Items	Mean	Description
1	The Comprehensive Medication Database in MedPro can accommodate bulk data and is up-to-date.	3.87	Very high
2	Integration of patient medications in MedPro streamlines the management of medication data efficiently.	3.73	Very high
3	Previously encoded information of patient and medication profile can be easily accessed within the medication database of MedPro.	3.93	Very high
4	MedPro ensures the accuracy and clarity of patient medication information in its database.	3.87	Very high
5	The use of MedPro helps in easily identifying and managing duplicate entries effectively.	3.73	Very high
6	Accessing medication details, including dosage strength, quantity, and refill status is presented in a clear format within MedPro.	3.87	Very high
7	The Medication Database in the system allows for easy printing of a patient's medication data in a clear and organized format.	3.87	Very high
8	MedPro's Medication Database allows users to easily input new medications or updates into existing and new patient profiles.	3.87	Very high
9	Accessing historical data and changes made to the Medication Database in MedPro is straightforward and transparent for users.	3.87	Very high
10	The MedPro system supports the inclusion of personalized notes or comments for individual medications.	3.73	Very high
Overall Mean		3.83	Very high

Table 1.2 showed the overall mean values of one of the key criteria, the Comprehensive Medication Database. The study conducted by Adane (2019) highlighted the importance of electronic tools in healthcare institutions, emphasizing their role in promoting safe and efficient data management. This significance is further underscored by the comprehensive medication database, which, with an overall mean of 3.83, demonstrates its wide range of medication information. The robustness of this database contributes significantly to more accurate medication management, reducing errors, and providing pharmacists and pharmacy assistants with reliable information for decision-making, aligning with the findings of Adane's study.

TABLE 1.3 A table showing the mean level of system performance of the Medication Electronic data Profile (MedPro system), assessed using one of the five key criteria: Scalability and Customization.

Scalability and Customization			
	Items	Mean	Description
1	The MedPro System was created with scalability (the potential to expand) in mind,	3.73	Very high

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI | Volume XII Issue VII July 2025

	taking into account future data, user, and transaction growth.		
2	The MedPro System continues to perform optimally as the volume of data increases over time.	3.73	Very high
3	The MedPro System's performance may endure periods of maximum utilization without appreciably degrading.	3.60	Very high
4	Even with more encoded datasets, MedPro remains responsive, lag-free, and does not slow down reaction time.	3.53	Very high
5	The MedPro System can handle increased demand and growth while remaining at the highest possible efficiency.	3.60	Very high
6	The Medpro System enables users to easily adjust a patient's medication profile and medication history.	3.80	Very high
7	The MedPro system's edit, details, and delete actions allow users to easily modify patients' information according to their needs.	3.73	Very high
8	The MedPro System offers the same computer interface customization options for mobile access.	3.73	Very high
9	The MedPro System facilitates easy addition and editing of inputs in the transaction dashboard.	3.93	Very high
10	The MedPro System ensures that the system's interface is tailored to the user's workflow needs.	3.80	Very high
Overall Mean		3.72	Very high

Table 1.3 showed the mean values of one of the key criteria, the Scalability and Customization, with an overall mean of 3.72, suggesting that the MedPro system is adaptable and can meet the unique needs of various community pharmacies. This flexibility is important for the system's long-term success, allowing it to grow with the business and be tailored to specific requirements.

TABLE 1.4 A table showing the mean level of system performance of the Medication Electronic data Profile (MedPro system), assessed using one of the five key criteria: Data Backup and Recovery.

Data Backup and Recovery			
	Items	Mean	Description
1	The backup system of MedPro is accessible.	3.80	Very high
2	The MedPro System can recover patient medication profiles in case of data loss or system failure.	3.80	Very high
3	The MedPro System provides a user-friendly recovery interface that enables authorized users to easily initiate and manage actions for recovery.	3.73	Very high
4	The MedPro System uses a simple method for restoring backup data, reducing downtime in case of data loss.	3.67	Very high
5	The MedPro System assures that only authorized individuals can initiate and manage recovery processes.	3.73	Very high
6	The MedPro System ensures minimal data loss in the event of an incident.	3.73	Very high

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI | Volume XII Issue VII July 2025

7	The MedPro System ensures rapid recovery when data loss occurs.	3.60	Very high
8	The MedPro System's strong backup and recovery features securely protect essential medication information.	3.73	Very high
9	The MedPro System provides Data Recovery mechanisms in the event of data loss or system failures.	3.73	Very high
10	The MedPro System ensures regular data backups, making crucial information readily available during unexpected events.	3.60	Very high
Overall Mean		3.71	Very high

Table 1.4 showed the mean values of one of the key criteria, the Data backup and recovery, with an overall mean of 3.71, showed that the system has a high level of reliability in ensuring data safety. This reliability is critical in preventing data loss during system failures or unexpected events. A robust backup and recovery system ensures data integrity and reduces downtime.

TABLE 1.5 A table showing the mean level of system performance of the Medication Electronic data Profile (MedPro system), assessed using one of the five key criteria: Data Security and Privacy.

Data Security and Privacy			
	Items	Mean	Description
1	The MedPro System prioritizes the use of strong and unique passwords by requiring a minimum number of characters.	3.87	Very high
2	The MedPro System prioritizes the use of strong and unique passwords by requiring one non-alphanumeric character (e.g. @,!- etc.)	3.93	Very high
3	The MedPro System prioritizes the use of strong and unique passwords by requiring numbers in the password.	3.80	Very high
4	The MedPro System prioritizes the use of strong and unique passwords by requiring at least one uppercase ('A'-'Z') in the password.	3.87	Very high
5	The MedPro System uses advanced coding techniques to prevent unauthorized accounts from having access to the system, protecting patient data securely.	3.80	Very high
6	The MedPro system protects patient data by not sharing it with unauthorized third parties and avoiding advertisements.	4.00	Very high
7	The MedPro System offers users control over their privacy settings by enabling them to change their password.	3.87	Very high
8	The MedPro system functions smoothly on mobile devices, maintaining strong data security on both computers and mobile platforms.	3.73	Very high
9	The MedPro system utilizes a secure web hosting site to ensure the security of patient data.	3.73	Very high
10	User privacy and data security are given priority in the MedPro system design, making sure that data is not shared with other accounts within the same system.	3.87	Very high
Overall Mean		3.85	Very high

Table 1.5 showed the mean values of one of the key criteria, the Data security and privacy, with an overall mean of 3.85, is the highest among all variables, indicating that the MedPro system has strong measures to protect sensitive information, like patient records and prescription data. This security level is essential for maintaining

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI | Volume XII Issue VII July 2025

compliance with regulations and fostering patient trust in community pharmacies. These high overall means across different variables suggest that the MedPro system is effective in key areas such as user-friendliness, database comprehensiveness, scalability, backup and recovery, and data security. The implications of these findings are that the MedPro system is likely to enhance medication management, improve efficiency, and maintain a high level of data security, ultimately leading to better patient care and operational success in pharmacy settings.

TABLE 2.1 A table showing the mean level of operation performance of the Medication Electronic data Profile (MedPro system), assessed using one of the two key criteria: Usability and System Responsiveness.

Usability and System Responsiveness			
	Items	Mean	Description
1	The MedPro System consistently demonstrates rapid responsiveness to user inputs, ensuring an efficient and smooth user experience.	3.67	Very high
2	The MedPro System makes sure its buttons and menus are easy to use, providing users with easy navigation.	3.73	Very high
3	Users feel in control and at ease when using the MedPro System, knowing that patient information is readily accessible and manageable.	3.88	Very high
4	The pharmacists find the MedPro system easy to use.	3.87	Very high
5	The MedPro System keeps your patients' medications organized and accessible, ensuring smooth healthcare management.	3.80	Very high
6	The MedPro System helps the user save time when inputting patient data.	3.80	Very high
7	With use, users easily become comfortable and skilled in the basic features of the MedPro System, such as inputting patient data, managing medication records, and finding patient information.	3.67	Very high
8	The MedPro system is highly efficient in assisting pharmacists with their typical medication management tasks.	3.73	Very high
9	The MedPro system functions smoothly and responsively across all of its features.	3.87	Very high
10	The Medpro system makes it quick and easy to find patient medication profiles, saving time and making the process smoother.	3.93	Very high
Overall Mean		3.78	Very high

Table 2.1 showed that the Usability and System Responsiveness referred to how easily users can interact with the MedPro system and how quickly it reacts to their actions. With an overall mean score of 3.78 and a standard deviation of 0.32, this category was rated "very high." This indicated that users generally find the system intuitive and responsive, allowing for a smoother user experience. A system that is easy to navigate and provides quick responses is likely to enhance operational efficiency and lead to greater satisfaction among users in a pharmacy setting.

TABLE 2.2 A table showing the mean level of operation performance of the Medication Electronic data Profile (MedPro system), assessed using one of the two key criteria: Medication Data Retrieval.

Medication Data Retrieval			
	Items	Mean	Description
1	The MedPro system effectively organizes and presents medication information	3.80	Very high

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI | Volume XII Issue VII July 2025

	for easy retrieval.		
2	The MedPro system option to export medication data from the site to Microsoft Excel was beneficial.	3.93	Very high
3	The MedPro system speeds up the retrieval of medication information compared to conventional methods.	3.80	Very high
4	The MedPro System enables fast retrieval of accurate patient medication data.	3.93	Very high
5	The MedPro system enhances my overall efficiency in managing and prescribing medications.	3.73	Very high
6	The comprehensiveness of medication information provided by the MedPro system meets the user's professional expectations.	3.53	Very high
7	Integrating the MedPro system with existing healthcare technologies is easy and improves usability.	3.87	Very high
8	The MedPro system is a valuable tool for reducing errors in medication administration.	3.80	Very high
9	The search function of the MedPro system was helpful to me in locating specific patient information.	3.87	Very high
10	The MedPro System helps me to retrieve accurate patient data easily and quickly.	3.93	Very high
Overall Mean		3.82	Very high

Table 2.2 showed the result that examined the system's capacity to retrieve medication-related information efficiently and accurately. With an overall mean score of 3.82 and a standard deviation of 0.22, this category also ranks "very high." This means that users can access the data they need quickly, which is vital for community pharmacies, where prompt information retrieval can impact patient care and workflow.

TABLE 3.1 A table showing the mean level of the effectiveness of the Medication Electronic data Profile (MedPro system), assessed using one of the two key criteria: Access Efficiency.

Access Efficiency			
	Items	Mean	Description
1	Access to medication information is made simpler and more effective by the MedPro System.	3.80	Very high
2	The MedPro System provides quick and efficient access to medication-related information.	3.80	Very high
3	The MedPro System improves pharmacists' accessibility to medication information.	3.73	Very high
4	The MedPro System enhances the speed at which pharmacists can retrieve patient-specific medication histories.	3.87	Very high
5	Users find the navigation within the MedPro System reasonable, resulting in an easy experience in accessing medication data.	3.67	Very high
6	The MedPro System ensures timely and accurate updates of medication records, contributing to the reliability of information access.	3.53	Very high

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI | Volume XII Issue VII July 2025

7	The MedPro System was consistently available for Pharmacists to access when needed.	3.73	Very high
8	The integration of the MedPro System in the medication management process is believed to reduce errors related to medication information retrieval.	3.60	Very high
9	The MedPro System facilitates secure and authorized access to medication data, ensuring patient privacy and confidentiality.	3.60	Very high
10	Using the MedPro System to access medication profiles was simple and easy.	3.80	Very high
Overall Mean		3.71	Very high

Table 3.1 showed that MedPro system's Access Efficiency, which evaluated how effectively users can retrieve information, received an overall mean score of 3.71 with a standard deviation of 0.38, classifying this metric as "very high."

TABLE 3.2 A table showing the mean level of the effectiveness of the Medication Electronic data Profile (MedPro system), assessed using one of the two key criteria: User Satisfaction.

User Satisfaction			
	Items	Mean	Description
1	The MedPro system is making the pharmacy work faster and more efficient.	3.67	Very high
2	The organization of information on the system's screen is clear.	3.87	Very high
3	The MedPro System impacts the speed and efficiency of your pharmacy operations.	3.67	Very high
4	The system's ability to accurately present and update your medication details.	3.73	Very high
5	I quickly recover the information whenever I make a mistake using the system.	3.87	Very high
6	The MedPro system makes it easy to find the information I need.	4.00	Very high
7	The various functions in this MedPro system were well integrated.	3.73	Very high
8	The MedPro system is easy to use and navigate.	3.80	Very high
9	The MedPro system has all the functions and capabilities I expect it to have.	3.73	Very high
10	Overall, I feel confident conducting business with this system.	3.87	Very high
Overall Mean		3.79	Very high

Table 3.2 showed that User Satisfaction measured the overall contentment of end-users with the MedPro system. The overall mean score for this category is 3.79, with a standard deviation of 0.28, indicating a "very high" level of satisfaction. This implies that users generally find the system reliable, intuitive, and effective in meeting their needs. Individual question scores for this category range from 3.67 to 4.00, suggesting a consistently high level of satisfaction among users. A high user satisfaction rate often correlates with increased system adoption and positive word-of-mouth, both of which contribute to the system's success and long-term viability.

TABLE 4 A table showing the correlation of the Medication Electronic data Profile System (MedPro system) performance and its operational performance.

Test Variables		Pearson R	P Value	Remarks
System Performance	Operational Performance	-.193	.416	Not Significant

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI | Volume XII Issue VII July 2025

System Performance	End User Satisfaction	-.047	.844	Not Significant
Operational Performance	End User Satisfaction	-.195	.409	Not Significant

*Calculation was performed at .05 level of significance

Table 4 showed that for the relationship between performance and operational performance, the Pearson R value is -.193 with a p-value of .416, indicating no significant correlation. Similarly, the correlation between performance and end users' satisfaction is very weak, with a Pearson R of -.047 and a p-value of .844, which is also not significant. Finally, the correlation between operational performance and end users' satisfaction shows a Pearson R of -.195 with a p-value of .409, again demonstrating no significant correlation. All calculations were performed at a .05 level of significance, suggesting that none of the tested correlations reached the threshold for statistical significance.

DISCUSSION

In this study, findings revealed the response of 15 respondents with the use of the MedPro system and that the MedPro system exhibited robust performance across various critical dimensions, shedding light on its effectiveness and reliability in pharmacy settings. Across five key criteria for the level of performance — User-Friendly Interface, Comprehensive Medication Database, Scalability and Customization, Data Backup and Recovery, and Data Security and Privacy — the results revealed that the system demonstrated strong performance, with notable highlights in user-friendliness (overall mean of 3.82), database comprehensiveness (overall mean of 3.83), adaptability (overall mean of 3.72), and security measures (overall mean of 3.85). The high overall mean scores across these categories suggested that the MedPro system excels in enhancing medication management, operational efficiency, and maintaining robust data security, ultimately contributing to better patient care and operational success in pharmacy settings.

Furthermore, the level of operational performance assessment highlighted the system's effectiveness in facilitating smooth workflow and optimizing patient care. With high scores in Usability and System Responsiveness (overall mean of 3.78), and Medication Data Retrieval (overall mean of 3.82), the MedPro system demonstrated its intuitive interface, swift response times, and efficient retrieval of medication-related information.

Additionally, for the level of effectiveness of the system, in the access efficiency with overall mean of 3.72 and the user satisfaction ratings (overall mean of 3.79) underscored the system's reliability and effectiveness, positioning it as a valuable tool for improving pharmacy operations and patient care outcomes.

Lastly, the analysis of significant correlations among various variables related to the utilization of the MedPro system revealed no significant relationships. The Pearson correlation coefficient and p-values indicated that there were no statistically significant correlations between performance and operational performance (Pearson R = -0.193, p = 0.416), performance and end users' satisfaction (Pearson R = -0.047, p = 0.844), and operational performance and end users' satisfaction (Pearson R = -0.195, p = 0.409). These findings suggest that none of the tested correlations reached the threshold for statistical significance. This suggests that correlations cannot establish direct relationships between the three variables. Therefore, altering one variable would not necessarily impact the others.

Overall, these findings affirmed the MedPro system's potential to positively impact community pharmacy settings through its seamless functionality, user-friendly design, and commitment to data security and user satisfaction.

CONCLUSION

Based on the findings of the study, the following conclusions were hereby drawn:

The majority of respondents' scores have 'very high' ratings across three different criteria. This suggested that respondents hold a positive stance regarding the MedPro System Prototype's operational performance, including

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI | Volume XII Issue VII July 2025

its User-Friendly Interface, Comprehensive Medication Database, Scalability and Customization, Data Backup and Recovery, and Data Security and Privacy. This suggested that the MedPro system performs well in areas crucial to its effectiveness, reliability, and efficiency, improving the overall user experience and enhancing medication data management within community pharmacy settings.

Additionally, based on the results, the prototype demonstrated high usability and system responsiveness, efficient medication data retrieval, access efficiency, and user satisfaction, proving its overall effectiveness in medication management processes within pharmacy settings. Moreover, the operational aspects of the MedPro system contributed to enhanced performance in medication data management and a high level of access efficiency, leading to higher user satisfaction levels. It enhances drug data management and access, making it more efficient, thereby making users pleased with the system. However, MedPro system's high performance in terms of scalability and endurance during periods of maximum utilization may not be fully representative due to the limited sample size of 15 respondents. Additionally, the fact that each pharmacist involved in the study evaluated the MedPro System for less than a day, ensuring minimal disruption to their work, and that typically fewer than 2 users encoding data simultaneously, may not provide enough data sets to thoroughly assess the system's efficiency and ability to maintain optimal performance without experiencing degradation or slowed responses times under heavy load. Thus, further research with a larger and more diverse sample size, as well as testing under higher utilization scenarios, would be beneficial for a more comprehensive evaluation of the system's capabilities.

The statistical results showed that there is no significant correlation between the performance, operational performance, and end users' satisfaction within the MedPro System Prototype. This suggested that the effectiveness of the MedPro system might not be directly influenced by these factors, as they do not show statistically significant relationships. Thus, the null hypothesis is **accepted.**

In summary, the findings suggested that the MedPro System effectively meets the needs of community pharmacists, improving daily pharmacy operations and enhancing medication data management efficiency.

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