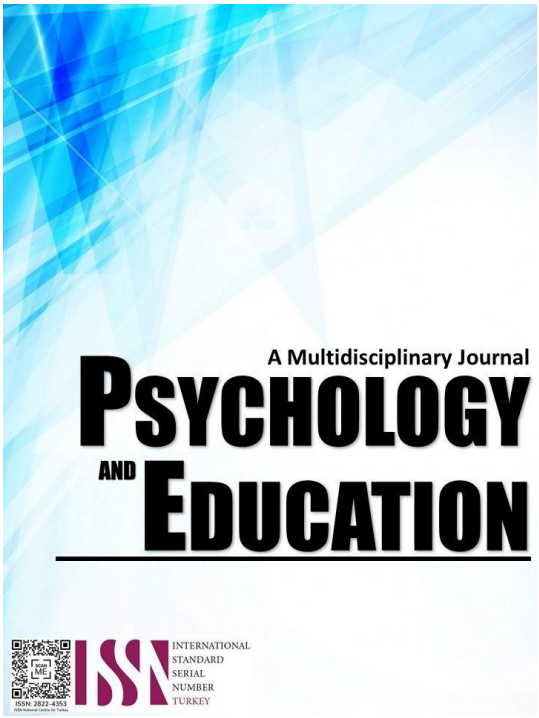
KIOSK: A HOSPITAL LOCATOR SYSTEM WITH DOCTOR'S INFORMATION



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Research Article

Kiosk: A Hospital Locator System with Doctor's Information

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Abstract

The Kiosk: A Hospital Locator System with Doctors' Information was developed to improve navigation efficiency and service accessibility at Cabuyao City Hospital. The system features interactive 2D mapping with street-view-style navigation, and a doctor directory that displays room-specific availability and specialization details. Using a descriptive, developmental design and Agile methodology, the system was evaluated against the ISO/IEC 25010 software quality model. Results from 34 respondents—30 patients and visitors and 4 administrative personnel—showed significant improvements from pre-test weighted means ranging from 1.92 to 2.09 to post-test means ranging from 3.27 to 3.54 for patients and visitors, and from 2.55 to 2.85 to 3.25 to 3.70 for administrators. The overall system quality was rated highly, with a total post-evaluation weighted mean of 3.42 (Strongly Agree). Statistical analysis confirmed the system's effectiveness, with extremely low paired t-test p-values for patients and visitors (2.49872×10^{-5} one-tailed; 4.99744×10^{-5} two-tailed) and administrators (3.01609×10^{-5} one-tailed; 6.03217×10^{-5} two-tailed), all well below the $\alpha = 0.05$ significance level. These results indicate significant improvements in navigation efficiency, information accessibility, and user satisfaction following system implementation. The study concludes that the kiosk system is an effective, secure, and user-friendly digital solution that enhances hospital operations and patient experience. Future enhancements may include real-time scheduling, dynamic mapping, AI-driven navigation, mobile QR integration, and expanded scalability across healthcare facilities.

Keywords: *online kiosk system, hospital mapping, digital wayfinding, doctor directory, PhilHealth assistance, patient experience*

Introduction

In today's fast-paced healthcare environment, efficient navigation within hospital facilities is crucial for patients, visitors, and medical staff. Hospitals, huge ones, often have complex layouts, making it difficult for individuals to locate specific departments, clinics, diagnostic centers, pharmacies, or emergency services. This challenge led to delays, missed appointments, and unnecessary stress for hospital visitors (Musa & Akande, 2023).

Traditional hospital wayfinding systems often fail to fully consider user experience, leading to unclear information transmission and increasing difficulties for patients and visitors. Studies indicate that healthcare facilities are among the most challenging architectural spaces for wayfinding due to their complex layouts and humanistic planning demands (Musa & Akande, 2023). Poor wayfinding not only increases stress and frustration but also negatively impacts healthcare efficiency. Research has shown that enhancing wayfinding systems through distinctive visual elements, staff training, and interactive digital tools can significantly improve navigation experiences (Deng & Romainoor, 2022).

To address these issues, this capstone project aims to develop a system specifically for Cabuyao City Hospital. This system will help hospital staff navigate the premises efficiently. The system will be exclusively accessible through interactive kiosks installed at strategic locations within the hospital. It is intentionally designed for on-site use only, ensuring secure, location-specific access. By limiting usage to hospital-based kiosks, the system enhances security, prevents unauthorized access, and provides patients and visitors with immediate, guided assistance exactly where it is needed.

Currently, Cabuyao City Hospital relies on static printed maps, directional signage, and manual staff assistance to guide patients and visitors. While this traditional approach works, it often leads to confusion, especially for first-time visitors or during peak hours. Patients may need to repeatedly ask for directions or rely on incomplete signage, causing delays and frustration.

Using modern web development technologies, the proposed system will feature 2D hospital mapping combined with an indoor street-view-style navigation experience. Users will be able to visually "walk through" the hospital corridors on-screen, making it easier to find their destination without confusion.

The system will also include a doctor's directory that displays room-specific schedules, indicating whether a doctor is available at a particular time and specifying their field of specialization. To protect privacy, the kiosk will not display any sensitive information such as phone numbers or other personal details.

The kiosk will help patients by guiding them to the right place to handle PhilHealth insurance matters. By integrating these features, the system aims to make hospital navigation and service access more convenient, informative, and efficient for all users. To enhance usability, the system will highlight emergency exits and evacuation routes for safety purposes.

The purpose of this capstone project is to develop the "Kiosk: A Hospital Locator System with Doctor's Information" designed to assist

hospital staff in helping patients and visitors efficiently navigate the facilities of the Cabuyao City Hospital. The system aims to provide a seamless and stress-free wayfinding experience, minimizing confusion and improving accessibility within the hospital environment.

This project introduces a digital guide available exclusively through interactive kiosks placed in key areas of the hospital, enabling users to access 2D hospital maps with street-view-style navigation, facility details, and department locations. Unlike traditional paper maps and static directories, this system enhances user engagement by incorporating dynamic visual walkthroughs and interactive navigation features, making directions more intuitive, accurate, and easy to follow.

The system will allow users to search for specific locations, medical departments, doctors' offices, and essential services, while providing detailed information such as operating hours, services offered, and consultation schedules. The doctor's directory on the kiosk displays room-specific availability, indicating whether a doctor is present at a given time and their field of specialization. To protect privacy, sensitive information such as doctor names, phone numbers, or other personal details will not be shown on the kiosk.

One of the key features of the kiosk system is its brilliant doctor selection and guidance process. After a user searches for available medical services based on time and specialization, the kiosk will display the room location where a doctor is currently available in that field. Once a location is selected, the system offers two options: either proceed directly to the assigned consultation room or verify their PhilHealth affiliation first. Suppose the user chooses to verify their PhilHealth coverage. In that case, the kiosk will provide step-by-step directions to the designated PhilHealth office within the hospital, where insurance eligibility can be confirmed. If the user prefers to continue without verification, the kiosk will immediately guide them to the doctor's room. This interactive flow enables patients to efficiently manage both PhilHealth checks and medical visits while maintaining a secure, organized experience.

By offering a modern, user-friendly, and technology-driven alternative to traditional hospital navigation methods, the system aims to improve hospital Operational efficiency, reduce navigation-related stress, and enhance the overall experience of patients and visitors.

Hospitals often have complex layouts that make navigation challenging for patients, visitors, and staff. Relying on poor signage, static maps, and traditional wayfinding methods often leads to confusion, delays, missed appointments, and increased staff workload. This issue is especially problematic for elderly patients, first-time visitors, and individuals with disabilities. The lack of an interactive navigation system also makes it difficult for users to efficiently locate specific doctors' offices or verify PhilHealth affiliations, further contributing to patient stress. A modern, user-friendly digital kiosk system featuring 2D mapping with street-view navigation, doctor information, and PhilHealth guidance is essential to improving hospital efficiency, reducing navigation-related stress, and enhancing the overall healthcare experience for all users.

Research Objectives

The objective of this project is to develop a Hospital Locator Kiosk System for Cabuyao City Hospital that improves navigation efficiency, reduces visitor confusion, and enhances accessibility through 2D indoor mapping, street-view–style navigation, and organized access to doctors' schedules and specialties. By offering a modern, user-friendly wayfinding solution with accessibility and PhilHealth guidance features, the project aims to streamline hospital operations and improve the overall healthcare experience for patients and visitors. Specifically, the study aimed:

1. To develop a system with the following key features:
    1.1. interactive digital wayfinding using static indoor maps;
    1.2. doctor availability and specialty information access; and
    1.3. PhilHealth guidance assistance.
2. To conduct a comprehensive evaluation of the system based on ISO/IEC 25010 standards.

Methodology

Research Design

The researchers adopted a descriptive research design to evaluate the system and gather relevant data. This research approach focuses on systematically collecting and analyzing information to describe a specific phenomenon, situation, or group of respondents. It enables the researchers to obtain a comprehensive understanding of the system's effectiveness and user perceptions. By providing an accurate depiction of current conditions, this design serves as a basis for informed analysis, evidence-based decision-making, and recommendations for future improvements or related studies.

Respondents

The respondents for the evaluation of the Online Kiosk System will be the Hospital Administrative and Technical Personnel and the Patients and Visitors of Cabuyao City Hospital.

Table 1. *Number of Respondents*

Respondents	*Number of Respondents*
Admin	4
Patient and Visitors	30

In the initial stage of the sampling procedure, the researchers determined the number of respondents by obtaining the count of patients and visitors within the hospital premises. Since the respondents were selected based on their availability and willingness to participate during the data collection period, the researchers employed a convenience sampling technique. A total of thirty (30) respondents, consisting of both patients and visitors, participated in the study.

For the administrative staff, the researchers utilized a purposive sampling technique, selecting four (4) administrators who were directly involved in the hospital's operations and were deemed capable of providing relevant insights for the study. This approach ensured that data were gathered efficiently from individuals who were readily accessible and possessed the necessary knowledge to contribute valuable information.

Instrument

The researchers used a structured survey questionnaire as the primary data-gathering tool to collect feedback on the system's functionality, usability, and overall effectiveness. This instrument included structured, quantifiable items that enabled respondents to evaluate key system features. To streamline distribution and improve accessibility, Google Forms was used for online data collection, automatically recording and organizing responses in Google Sheets for efficient, accurate analysis.

In addition to the online method, paper-based surveys were administered to respondents in areas with limited internet access. These manually completed forms were carefully reviewed and digitized to ensure consistency in the analysis process. By combining both digital and paper-based approaches, the researchers ensured inclusive participation, reliable data collection, and comprehensive evaluation of the system's performance.

Procedure

The initial phase of the data-gathering process begins with the researchers sending a formal permission request letter to the Administrator of Cabuyao City Hospital, seeking approval to survey within the hospital premises. Upon receiving authorization, the researchers distributed the survey questionnaires using two methods: paper-based and online. Patients and visitors were given physical copies of the questionnaire to complete manually, while hospital administrators responded via a Google Form distributed electronically. After collecting both paper-based and online responses, the researchers compiled and organized the data. The results gathered were then tallied and prepared for statistical evaluation. Finally, the dataset was submitted to a statistician for advanced analysis to ensure accurate, reliable, and meaningful interpretation of the collected data.

Data Analysis

The researchers employed the following statistical tools to interpret and analyze the survey data:

Likert Scale: A widely recognized and popular tool for measuring opinions, perceptions, and attitudes in surveys. It consists of questions that present respondents with a range of ordered response options, allowing them to indicate their level of agreement, frequency, or quality. Standard response options include Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). This structured format helps quantify subjective data by translating abstract sentiments into measurable points.

Weighted Mean: A weighted mean is a type of average where some data points contribute more to the result than others. Instead of treating every value equally, you assign different weights to each, which effectively increases or decreases the influence of that individual value on the computed average.

Table 2. *Table of Equivalence*

Limit	*Rating Scale*	*Interpretation*
3.26-4.00	4	Strongly Agree
2.51-3.25	3	Agree
1.76-2.50	2	Disagree
1.00-1.75	1	Strongly Disagree

Results and Discussion

This section presents a summary of the findings and interpretations from the data-gathering process. It further details the research locale, the study population, the statistical treatment, and the survey techniques employed. It serves as a method for evaluating the system's effectiveness with respect to its functionality, features, and interface.

Pre-Test Result for Patients and Visitors

Table 3. *Pre-Evaluation Survey in Terms of Functionality for Patients and Visitors*

	Pre-Test: Functionality					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
It is easy to locate hospital departments and offices using the system/process provided.	2	5	19	4	2.03	Disagree
Information about doctors' schedules and	0	8	18	6	2.00	Disagree

specialties is easy to access.						
Guidance for PhilHealth-related services in the hospital is clear	1	8	18	3	2.03	Disagree
Maps or directories provide useful directions.	1	6	14	9	2.03	Disagree
The navigation support provided meets the needs of patients and visitors.	1	4	19	6	1.93	Disagree
Total Weighted Mean					2.09	

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a Total Weighted Mean of 2.09, indicating that respondents disagree with the functionality of the existing system/process. The data presented shows the following: the respondents disagree that it is easy to locate hospital departments and offices using the system/process provided; that guidance for PhilHealth-related services in the hospital is clear; and that maps or directories provide useful directions, all sharing the highest weighted mean of 2.03, which is interpreted as "Disagree". Information about doctors' schedules and specialties being easy to access is also interpreted as "Disagree", with a weighted mean of 2.00. The lowest weighted mean is 1.93, where respondents disagree that the navigation support provided meets the needs of patients and visitors.

Table 4. *Pre-Evaluation Survey in Terms of Usability for Patients and Visitors*

	Pre-Test: Usability					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
Signs, maps, or directories are easy to understand.	1	7	14	8	2.03	Disagree
Instructions given by hospital staff (or the System) are clear and helpful.	0	7	16	7	2.00	Disagree
Navigation aids are accessible for elderly and differently abled individuals.	0	7	17	6	2.03	Disagree
The methods provided for finding doctors and services are simple to use.	0	4	23	3	2.03	Disagree
Hospital guidance helps reduce confusion when moving around the facility.	0	5	18	7	1.93	Disagree
Total Weighted Mean					2.01	

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a Total Weighted Mean of 2.01, indicating that respondents disagree with the usability of the existing system/process. The data presented shows the following: the respondents disagree that signs, maps, or directories are easy to understand; that navigation aids are accessible for elderly and differently abled individuals; and that the methods provided for finding doctors and services are simple to use, all sharing the highest weighted mean of 2.03, which is interpreted as "Disagree". Instructions given by hospital staff (or the System) that are clear and helpful are also interpreted as "Disagree", with a weighted score of 2.00. The lowest weighted mean is 1.93, where respondents disagree that hospital guidance helps reduce confusion when moving around the facility.

Table 5. *Pre-Evaluation Survey in Terms of Reliability for Patients and Visitors*

	Pre-Test: Reliability					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
It is easy to locate hospital departments and offices using the system/process provided.	0	6	19	5	2.03	Disagree
Guidance from staff or the system is dependable.	0	5	21	4	2.03	Disagree
Information about facilities and services is accurate.	0	7	16	7	2.00	Disagree
Navigation support works well during busy hospital hours.	0	5	17	8	1.90	Disagree
Patients and visitors can rely on the system/process to reach their destination	0	1	22	7	1.80	Disagree
Total Weighted Mean					1.95	

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a total weighted mean of 1.95, indicating that respondents disagree with the reliability of the existing system/process. The data presented show that the respondents disagree that it is easy to locate hospital departments and offices using the provided system/process, and that guidance from staff or the system is dependable, both with the highest weighted mean of 2.03, interpreted as "Disagree". Information about facilities and services being accurate is also interpreted as "Disagree", with a weighted mean of 2.00. The lowest weighted mean is shared at 1.80, where respondents disagree that patients and visitors can rely on the system/process to reach their destination. Navigation support working well during busy hospital hours is interpreted as "Disagree", with a weighted mean of 1.90.

Table 6. *Pre-Evaluation Survey in Terms of Performance for Patients and Visitors*

	Pre-Test: Performance					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
Directions or guidance are provided quickly.	1	3	20	6	1.97	Disagree
Staff (or the system) respond promptly to patient and visitor inquiries.	0	7	14	9	1.93	Disagree
Signs, maps, or digital tools help reduce waiting time when finding locations	1	6	14	9	1.97	Disagree
Navigation support works efficiently during peak hospital hours.	1	4	17	8	1.93	Disagree
Patients can find services without significant delays.	1	2	17	10	1.80	Disagree
Total Weighted Mean					1.92	

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a total weighted mean of 1.92, indicating that respondents disagree with the performance of the existing system/process. The data presented show that the respondents disagree that directions or guidance are provided quickly and that signs, maps, or digital tools help reduce waiting time when finding locations, both with the highest weighted mean of 1.97, interpreted as "Disagree". The lowest weighted mean is 1.80, where respondents disagree that patients can find services without significant delays. The indicators that staff (or the system) respond promptly to patient and visitor inquiries, and that navigation support works efficiently during peak hospital hours, both have a weighted mean of 1.93, which is interpreted as "Disagree".

Table 7. *Pre-Evaluation Survey in Terms of Security for Patients and Visitors*

	Pre-Test: Security					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
Personal information is not exposed when asking for directions	2	4	23	1	2.23	Disagree
Doctor details provided are limited to professional information only.	0	7	19	4	2.10	Disagree
Privacy is respected when asking about PhilHealth or service concerns.	0	7	20	3	2.13	Disagree
Unauthorized access to hospital information is prevented.	0	5	18	7	1.93	Disagree
Information displayed or provided is protected from tampering.	1	3	18	8	1.90	Disagree
Total Weighted Mean					2.06	

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a total weighted mean of 2.06, indicating that respondents disagree with the security of the existing system/process. The data presented show that the respondents disagree that personal information is not exposed when asking for directions, with a weighted mean of 2.23, interpreted as "Disagree". This is followed by privacy being respected when asking about PhilHealth or service concerns (2.13), and by doctor details being provided only for professional purposes (2.10). The lowest weighted mean is 1.90, indicating that respondents disagree that the information displayed or provided is protected from tampering. Unauthorized access to hospital information being prevented is also interpreted as "Disagree", with a weighted mean of 1.93.

Post-Test Result for Patients and Visitors

Table 8. *Post-Evaluation Survey in Terms of Functionality for Patients and Visitors*

	Post-Test: Functionality					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
It is easy to locate hospital departments and offices using the system/process provided.	13	13	4	0	3.30	Strongly Agree
Information about doctors' schedules and specialties is easy to access.	16	11	3	0	3.43	Strongly Agree
Guidance for PhilHealth-related services in the hospital is clear	14	13	1	2	3.30	Strongly Agree
Maps or directories provide useful directions.	16	11	3	0	3.43	Strongly Agree
The navigation support provided meets the needs of patients and visitors.	9	18	2	1	3.17	Agree
Total Weighted Mean					3.33	Strongly Agree

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a weighted mean of 3.33, indicating that respondents strongly agree with the system/process's functionality. The data presented show that respondents strongly agree that information about doctors' schedules and specialties is easy to access and that maps or directories provide helpful directions, both with the highest weighted mean of 3.43, interpreted as "Strongly Agree."

The respondents also strongly agree that it is easy to locate hospital departments and offices using the system/process provided, and that guidance for PhilHealth-related services in the hospital is clear, with a weighted mean of 3.30. The lowest weighted mean is 3.17, indicating that respondents agree the navigation support provided meets the needs of patients and visitors.

Table 9. *Post-Evaluation Survey in Terms of Usability for Patients and Visitors*

	Post-Test: Usability					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
Signs, maps, or directories are easy to understand.	16	14	0	0	3.53	Strongly Agree
Instructions given by hospital staff (or the System) are clear and helpful.	14	15	1	0	3.43	Strongly Agree
Navigation aids are accessible for elderly and differently abled individuals.	15	14	1	0	3.43	Strongly Agree
The methods provided for finding doctors and services are simple to use.	15	15	0	0	3.50	Strongly Agree
Hospital guidance helps reduce confusion when moving around the facility.	14	15	1	0	3.43	Strongly Agree
Total Weighted Mean					3.46	Strongly Agree

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a weighted mean of 3.46, indicating that respondents strongly agree with the system/process's usability. The data presented show that respondents strongly agree that signs, maps, or directories are easy to understand, with a weighted mean of 3.53, interpreted as "Strongly Agree." The respondents also strongly agree that the methods for finding doctors and services are simple to use (3.50). The lowest weighted mean is shared at 3.43 for: instructions given by hospital staff (or the system) are clear and helpful; navigation aids are accessible for elderly and differently abled individuals; and hospital guidance helps reduce confusion when moving around the facility.

Table 10. *Post-Evaluation Survey in Terms of Reliability for Patients and Visitors*

	Post-Test: Reliability					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
It is easy to locate hospital Departments and offices using the system/process provided.	15	15	0	0	3.50	Strongly Agree
Guidance from staff or the system is dependable.	14	14	2	0	3.33	Strongly Agree
Information about facilities and services is accurate.	15	15	0	0	3.50	Strongly Agree
Navigation support works well during busy hospital hours.	8	20	2	0	3.20	Agree
Patients and visitors can rely on the system/process to reach their destination	12	16	2	0	3.33	Strongly Agree
Total Weighted Mean					3.37	Strongly Agree

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a total weighted mean of 3.37, indicating that respondents strongly agree with the reliability of the system/process. The data presented show the following: respondents strongly agree that it is easy to locate hospital departments and offices using the system/process provided, and that information about facilities and services is accurate, with the highest weighted mean of 3.50, interpreted as "Strongly Agree".

The lowest weighted mean is 3.20, where respondents agree that navigation support works well during busy hospital hours. The indicators that guidance from staff or the system is dependable, and that patients and visitors can rely on the system/process to reach their destination, both have a weighted mean of 3.33, which is interpreted as "Strongly Agree."

Table 11. *Post-Evaluation Survey in Terms of Performance for Patients and Visitors*

	Post-Test: Performance					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
Directions or guidance are provided quickly.	17	13	0	0	3.57	Strongly Agree
Staff (or the system) respond promptly to patient and visitor inquiries.	19	10	1	0	3.60	Strongly Agree
Signs, maps, or digital tools help reduce waiting time when finding locations	21	7	2	0	3.63	Strongly Agree
Navigation support works efficiently during peak hospital hours.	12	17	1	0	3.37	Strongly Agree
Patients can find services without significant delays.	16	14	0	0	3.53	Strongly Agree
Total Weighted Mean					3.54	Strongly Agree

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a weighted mean of 3.54, indicating that respondents strongly agree with the system/process's performance. The data show that respondents strongly agree that signs, maps, or digital tools help reduce waiting time when finding locations, with a weighted mean of 3.63, interpreted as "Strongly Agree". This is followed by staff (or the system) promptly responding to patient and visitor inquiries (3.60) and providing directions or guidance quickly (3.57). The lowest weighted mean is 3.37, where respondents strongly agree that navigation support works efficiently during peak hospital hours.

Table 12. *Post-Evaluation Survey in Terms of Security for Patients and Visitors*

	Post-Test: Security					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
Personal information is not exposed when asking for directions	14	15	0	1	3.40	Strongly Agree
Doctor details provided are limited to professional information only.	13	14	2	1	3.30	Strongly Agree
Privacy is respected when asking about PhilHealth or service concerns.	10	16	3	1	3.17	Agree
Unauthorized access to hospital information is prevented.	13	13	2	2	3.23	Agree
Information displayed or provided is protected from tampering.	13	14	1	2	3.27	Strongly Agree
Total Weighted Mean					3.27	Strongly Agree

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a weighted mean of 3.27, indicating that respondents strongly agree with the system/process's security. The data presented show that respondents strongly agree that personal information is not disclosed when asking for directions, with a weighted mean of 3.40, interpreted as "Strongly Agree." Doctor details follow, limited to professional information only (3.30). The lowest weighted mean is 3.17, indicating that respondents agree privacy is respected when discussing PhilHealth or service concerns. The respondents also agree that unauthorized access to hospital information is prevented (3.23), and they strongly agree that information displayed or provided is protected from tampering (3.27).

Total weighted mean of the pre-evaluation survey and the post-evaluation survey

Table 13. *Pre-Test Weighted Mean for Patients and Visitors*

	Pre-Survey
Indicators	*Total Weighted Mean*
Functionality	2.09
Usability	2.01
Reliability	1.95
Performance	1.92
Security	2.06

The table shows that the total weighted mean for the Pre-Survey across all indicators is low, with all categories receiving a mean of 2.09 or lower. Functionality has the highest weighted mean at 2.09, while Performance has the lowest at 1.92. All these pre-survey values would typically be interpreted as "Disagree" according to the legend in the other tables.

Table 14. *Post-Test Weighted Mean for Patients and Visitors*

	Post-Survey
Indicators	*Total Weighted Mean*
Functionality	3.33
Usability	3.46
Reliability	3.37
Performance	3.54
Security	3.27

The table shows that the Post-Survey's total weighted mean across all indicators is high, with all categories receiving a mean of 3.27 or higher. Performance has the highest weighted mean at 3.54, while Security has the lowest at 3.27. The weighted means for all categories are interpreted as "Strongly Agree" based on the individual survey interpretations.

T-test result

Table 15. *T-test Result for Patients and Visitors*

One-tailed test - paired	2.49872E-05
Two-tailed test - paired	4.99744E-05

Table 15. T-Test Result for Patients and Visitors presents the p-values obtained from a paired t-test comparing the pre-evaluation and post-evaluation survey results of patients and visitors. The analysis yielded extremely low p-values for both the one-tailed (2.49872×10^{-5}) and two-tailed (4.99744×10^{-5}) tests. When expressed in decimal form (0.0000249872 and 0.0000499744, respectively), these values are far below the conventional significance level ($\alpha = 0.05$). This indicates a statistically significant difference between the pre-test and post-test mean scores. Therefore, it can be concluded that the implemented intervention, system, or process was effective in producing measurable, positive changes in the perceptions and evaluations of patients and visitors.

Pre-Test Result for Administrator

Table 16. *Pre-Evaluation Survey in Terms of Functionality for Admin*

	Pre-Test: Functionality					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
The system/process provides accurate information about doctors' specialties and schedules.	0	3	1	0	2.75	Agree
PhilHealth-related processes are clearly guided and supported by the system/process.	0	3	1	0	2.75	Agree
The system/process helps staff manage doctor, PhilHealth, and facility information effectively.	0	3	1	0	2.75	Agree
The system/process makes it easy to locate departments and offices for patients.	0	2	2	0	2.50	Disagree
The system/process meets the essential needs of hospital administrators.	0	2	2	0	2.50	Disagree
Total Weighted Mean					2.65	Agree

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a total weighted mean of 2.65, indicating that administrators agree with the functionality of the existing system/process, though this mean is close to the "Disagree" threshold (2.00). The data presented shows the following: the respondents agree that the system/process provides accurate information about doctors' specialties and schedules; that PhilHealth-related processes are clearly guided and supported by the system/process; and that the system/process helps staff manage doctor, PhilHealth, and facility information effectively, all sharing the highest weighted mean of 2.75, which is interpreted as "Agree". The lowest weighted mean is 2.50, where respondents disagree that the system/process makes it easy for patients to locate departments and offices, and that the system/process meets the essential needs of hospital administrators.

Table 17. *Pre-Evaluation Survey in Terms of Usability for Admin*

	Pre-Test: Usability					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
The system/process for updating hospital information is easy to understand.	0	3	1	0	2.75	Agree
Managing doctor schedules and facility information through the system/process is straightforward.	0	3	1	0	2.75	Agree
Procedures for assisting patients are organized and reduce confusion.	0	2	2	0	2.50	Disagree
The system/process requires minimal training for staff to manage	1	2	1	0	3.00	Agree
The layout and presentation of hospital records/information is simple to use.	2	1	1	0	2.25	Agree
Total Weighted Mean					2.85	Agree

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a total weighted mean of 2.85, indicating that administrators agree with the usability of the existing system/process, though this mean is close to the "Disagree" threshold (2.00). The data presented show that the respondents agree that the system/process requires minimal training for staff to manage, with a weighted mean of 3.00, interpreted as "Agree." The indicators that the system/process for updating hospital information is easy to understand and that managing doctor schedules and facility information is straightforward both have a weighted mean of 2.75. The lowest weighted mean is 2.25, indicating that respondents agree that the layout and presentation of hospital records/information are simple to use. Procedures for assisting patients, organized and designed to reduce confusion, are interpreted as "Disagree" with a weighted mean of 2.50.

Table 18. *Pre-Evaluation Survey in Terms of Reliability for Admin*

	Pre-Test: Reliability					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
The system/process consistently provides accurate information.	1	3	0	0	3.25	Agree
The system/process remains stable without frequent errors.	0	1	3	0	2.25	Disagree
The system for handling patient or visitor inquiries is dependable.	0	2	2	0	2.50	Disagree
Information given to patients rarely needs correction.	0	3	1	0	2.75	Agree
Procedures for hospital navigation and information are consistently followed.	0	3	1	0	2.75	Agree
Total Weighted Mean					2.55	Agree

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a total weighted mean of 2.55, indicating that administrators disagree with the reliability of the existing system/process, though this mean is close to the "Agree" threshold (3.00). The data presented show that the respondents agree that the system/process consistently provides accurate information, with a weighted mean of 3.25, interpreted as "Agree." The lowest weighted mean is 2.25, where respondents disagree that the system/process remains stable without frequent errors. The respondents also agree that information given to patients rarely needs correction (2.75) and that procedures for hospital navigation and information are consistently followed (2.75). The system for handling patient or visitor inquiries being dependable is interpreted as "Disagree" with a weighted mean of 2.50.

Table 19. *Pre-Evaluation Survey in Terms of Performance for Admin*

Pre-Test: Performance						
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
The system/process provides information to patients in a timely manner.	0	3	1	0	2.75	Agree
Hospital staff can respond quickly to requests for directions or doctor availability.	0	2	2	0	2.50	Disagree
The system/process can handle multiple patient inquiries without delay.	0	2	2	0	2.50	Disagree
The system/process guides patients efficiently.	0	3	1	0	2.75	Agree
Hospital staff can keep up with information requests even during peak hours.	0	2	2	0	2.50	Disagree
Total Weighted Mean					2.60	Agree

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a Total Weighted Mean of 2.60, indicating that administrators disagree with the performance of the existing system/process, though this mean is close to the "Agree" threshold (3.00). The data presented shows the following: the respondents agree that the system/process provides information to patients in a timely manner, and that the system/process guides patients efficiently, both sharing the highest weighted mean of 2.75, which is interpreted as "Agree." The lowest weighted mean is shared at 2.50, where respondents disagree that hospital staff can respond quickly to requests for directions or doctor availability; that the system/process can handle multiple patient inquiries without delay; and that hospital staff can keep up with information requests even during peak hours.

Table 20. *Pre-Evaluation Survey in Terms of Security for Admin*

Pre-Test: Security						
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
Access to hospital records and information is controlled and secure.	2	2	0	0	3.50	Strongly Agree
Sensitive data such as doctor information is well-protected.	1	3	0	0	3.25	Agree
Unauthorized access to hospital information is prevented.	0	3	1	0	2.75	Agree
The system/process ensures privacy when handling patient or PhilHealth-related concerns.	1	3	0	0	3.25	Agree
The system/process protects hospital information from misuse or tampering.	1	2	1	0	3.00	Agree
Total Weighted Mean					2.80	Agree

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a Total Weighted Mean of 2.80, indicating that administrators agree with the security of the existing system/process, though this mean is close to the "Disagree" threshold (2.00). The data presented show that respondents strongly agree that access to hospital records and information is controlled and secure, with a weighted mean of 3.50, interpreted as "Strongly Agree." The lowest weighted mean is 2.75, where respondents agree that unauthorized access to hospital information is prevented. The respondents also agree that sensitive data, such as doctor information, is well-protected (3.25); that the system/process ensures privacy when handling patient or PhilHealth-related concerns (3.25); and that the system/process protects hospital information from misuse or tampering (3.00).

Table 21. *Post-Evaluation Survey in Terms of Functionality for Admin*

Post-Test: Functionality						
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
The system/process provides accurate information about doctors' specialties and schedules.	3	1	0	0	3.75	Strongly Agree
PhilHealth-related processes are clearly guided and supported by the system/process.	1	3	0	0	3.25	Agree
The system/process helps staff manage doctor, PhilHealth, and facility information effectively.	2	2	0	0	3.5	Agree
The system/process makes it easy to locate departments and offices for patients.	2	2	0	0	3.5	Agree
The system/process meets the essential needs of hospital administrators.	2	2	0	0	3.5	Agree
Total Weighted Mean					3.35	Strongly Agree

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a total weighted mean of 3.35, indicating that respondents strongly agree with the functionality of the system/process. The data presented shows the following: the respondents strongly agree that the system/process provides accurate information about doctors' specialties and schedules, with the highest weighted mean of 3.75, which is interpreted as "Strongly Agree." The lowest weighted mean is 3.25, where respondents agree that PhilHealth-related processes are clearly guided and supported by the system/process. The respondents also agree that the system/process helps staff manage doctor, PhilHealth, and facility information effectively; that it makes it easy to locate departments and offices for patients; and that it meets the essential needs of hospital administrators, all sharing a weighted mean of 3.5.

Table 22. *Post-Evaluation Survey in Terms of Usability for Admin*

	Post-Test: Usability					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
The system/process for updating hospital information is easy to understand.	4	0	0	0	4.0	Strongly Agree
Managing doctor schedules and facility information through the system/process is straightforward.	4	0	0	0	4.0	Strongly Agree
Procedures for assisting patients are organized and reduce confusion.	1	3	0	0	3.25	Agree
The system/process requires minimal training for staff to manage	3	1	0	0	3.75	Strongly Agree
The layout and presentation of hospital records/information is simple to use.	4	0	0	0	4.0	Strongly Agree
Total Weighted Mean					3.65	Strongly Agree

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a total weighted mean of 3.65, indicating that respondents strongly agree with the usability of the system/process. The data presented shows the following: the respondents strongly agree that the system/process for updating hospital information is easy to understand; that managing doctor schedules and facility information through the system/process is straightforward; and that the layout and presentation of hospital records/information is simple to use, all sharing the highest weighted mean of 4.0, which is interpreted as "Strongly Agree".

The respondents also strongly agree that the system/process requires minimal training for staff to manage, with a weighted mean of 3.75. The lowest weighted mean is 3.25, where respondents agree that procedures for assisting patients are organized and reduce confusion.

Table 23. *Post-Evaluation Survey in Terms of Reliability for Admin*

	Post-Test: Reliability					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
The system/process consistently provides accurate information.	3	1	0	0	3.75	Strongly Agree
The system/process remains stable without frequent errors.	2	2	0	0	3.5	Agree
The system for handling patient or visitor inquiries is dependable.	2	2	0	0	3.5	Strongly Agree
Information given to patients rarely needs correction.	2	2	0	0	3.5	Strongly Agree
Procedures for hospital navigation and information are consistently followed.	1	3	0	0	3.25	Agree
Total Weighted Mean					3.35	Strongly Agree

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a total weighted mean of 3.35, indicating that respondents strongly agree with the reliability of the system/process. The data presented shows the following: the respondents strongly agree that the system/process consistently provides accurate information, with the highest weighted mean of 3.75, which is interpreted as "Strongly Agree."

The lowest weighted mean is 3.25, where respondents agree that procedures for hospital navigation and information are consistently followed. The respondents also agree that the system/process remains stable without frequent errors (3.5), and that information given to patients rarely needs correction (3.5). Finally, they strongly agree that the system for handling patient or visitor inquiries is dependable (3.5).

Table 24. *Post-Evaluation Survey in Terms of Performance for Admin*

	Post-Test: Performance					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
The system/process provides information to patients in a timely manner.	3	1	0	0	3.75	Strongly Agree
Hospital staff can respond quickly to requests for directions or doctor availability.	2	2	0	0	3.5	Strongly Agree
The system/process can handle multiple patient inquiries without delay.	1	1	2	0	2.75	Agree
The system/process guides patients efficiently.	1	3	0	0	3.25	Agree
Hospital staff can keep up with information requests even during peak hours.	3	1	0	0	3.75	Strongly Agree
Total Weighted Mean					3.25	Agree

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The table above shows a total weighted mean of 3.25, indicating that respondents agree with the performance of the system/process. The data presented shows the following: the respondents strongly agree that the system/process provides information to patients in a timely manner and that hospital staff can keep up with information requests even during peak hours, both sharing the highest weighted mean of 3.75, which is interpreted as "Strongly Agree".

The lowest weighted mean is 2.75, where respondents agree that the system/process can handle multiple patient inquiries without delay. The respondents also strongly agree that hospital staff can respond quickly to requests for directions or doctor availability (3.5), and they agree that the system/process guides patients efficiently (3.25).

The table below shows a total weighted mean of 3.70, indicating that respondents strongly agree with the security of the system/process. The data presented shows the following: the respondents strongly agree that access to hospital records and information is controlled

and secure, with the highest weighted mean of 3.5, which is interpreted as "Strongly Agree."

Table 25. *Post-Evaluation Survey in Terms of Security for Admin*

	Post-Test: Security					
Indicators	*SA*	*A*	*D*	*SD*	*WM*	*Interpretation*
Access to hospital records and information is controlled and secure.	2	2	0	0	3.5	Strongly Agree
Sensitive data such as doctor information is well-protected.	1	3	0	0	3.25	Agree
Unauthorized access to hospital information is prevented.	0	3	1	0	2.75	Agree
The system/process ensures privacy when handling patient or PhilHealth-related concerns.	1	3	0	0	3.25	Agree
The system/process protects hospital information from misuse or tampering.	1	2	1	0	3.0	Agree
Total Weighted Mean					3.70	Strongly Agree

Legend: Strongly Agree (SA)- 3.26-4.00, Agree (A)- 2.51-3.25, Disagree (D)-1.76-2.50, Strongly Disagree (SD)- 1.00-1.75

The lowest weighted mean is 2.75, where respondents agree that unauthorized access to hospital information is prevented. The respondents also agree that sensitive data, such as doctor information, is well-protected (3.25); that the system/process ensures privacy when handling patient or PhilHealth-related concerns (3.25); and that the system/process protects hospital information from misuse or tampering (3.0).

Total weighted mean of pre-evaluation survey and post-evaluation survey

Table 26. *Pre-Test Weighted Mean for Admin*

Pre-Survey	
Indicators	*Total Weighted Mean*
Functionality	2.65
Usability	2.85
Reliability	2.55
Performance	2.60
Security	2.80

The table shows the Total Weighted Mean for the Pre-Survey across all indicators in the mid-range, with a mean of 2.65. Usability has the highest weighted mean at 2.85, which is close to the threshold for "Agree" (3.0), and Reliability has the lowest weighted mean at 2.55. Based on the legend (4 → Strongly Agree, 3 → Agree, 2 → Disagree, 1 → Strongly Disagree), these values fall between "Disagree" and "Agree," suggesting a generally neutral to slightly positive perception before the intervention.

Table 27. *Post-Test Weighted Mean for Admin*

Post-Survey	
Indicators	*Total Weighted Mean*
Functionality	3.35
Usability	3.65
Reliability	3.35
Performance	3.25
Security	3.70

The table shows that the Total Weighted Mean for the Post-Survey across all indicators is high, with all categories averaging 3.25 or higher. Security has the highest weighted mean at 3.70, and Performance has the lowest at 3.25. All categories' weighted means are interpreted as "Strongly Agree" (or, in the case of Performance, bordering on "Agree" but generally interpreted as "Strongly Agree" in the table).

T-test result

Table 28. *T-test Result for Admin*

One-tailed test - paired	3.01609E-05
Two-tailed test - paired	6.03217E-05

The table shows the T-test results comparing the pre-evaluation and post-evaluation surveys. The resulting p-values are extremely low: 3.01609×10^{-5}. For the One-tailed test – paired and 6.03217×10^{-5}. For the Two-tailed test – paired. Since these values are significantly lower than the conventional significance level of $\alpha = 0.05$, the results indicate a statistically significant difference between the pre-test and post-test. The overall increase in the total weighted mean from the Pre-Survey (neutral/slightly positive) to the Post-Survey (Strongly Agree) suggests that the implemented system or process led to a significant and positive improvement across all five evaluated indicators.

Conclusions

The researchers concluded that the Online Kiosk System with Doctor's Information and Hospital Locator System offers an efficient and practical solution for improving hospital navigation and information management. By enabling patients and visitors to easily locate

doctors, offices, and departments, the system helps minimize confusion and reduce waiting time. It also supports hospital staff by automating updates and decreasing the need for manual inquiries, contributing to smoother operations.

With the implementation of the system, Cabuyao City Hospital can now provide accurate doctor schedules, intuitive navigation, and clear PhilHealth service locations through a unified digital platform. The system promotes a more organized, accessible, and technology-driven hospital environment. Furthermore, the researchers affirmed that the project complies with ISO/IEC 25010 quality standards—specifically in functionality, usability, reliability, and security—positioning it as a viable model for hospitals seeking digital modernization.

To enhance the system's capabilities, the researchers recommend integrating real-time data synchronization for doctor availability and schedules, adding QR code–enabled mobile access, and implementing dynamic maps that automatically update when hospital areas change. They also suggest incorporating features such as real-time queuing and scheduling, AI-driven navigation assistance, and secure payment processing for hospital transactions. Continuous evaluation under ISO/IEC 25010, along with potential replication and customization for other healthcare facilities, is encouraged to further support digital transformation in hospitals across the Philippines.

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