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The Impact of Administrative Automation on Nursing Services Quality: A Comparative Analytical Study

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Abstract. The study aimed to study the impact of administrative automation on nursing provider great, discover the extent of automation implementation and the level of nursing service quality, analyze the relationship among them, and identify variations in provider great in keeping with the level of automation implementation. The observe adopted the descriptive, analytical, and comparative approach, and the pattern consisted of 205 male and female nurses disbursed across organizations that differed within the degree of administrative automation implementation. A questionnaire inclusive of fifty-five objects dispensed across the size of administrative automation and nursing provider fine become used, and the information had been analyzed using arithmetic way, well known deviations, Pearson's correlation coefficient, a couple of linear regression, and the t-take a look at. The effects confirmed that the level of administrative automation became excessive, with an average of 3.76, whilst the level of nursing provider satisfactory became additionally high, with a mean of three.89. The results also confirmed a tremendous and statistically vast relationship among administrative automation and nursing carrier quality, reaching r = 0.682. Regression evaluation in addition showed that the dimensions of administrative automation defined fifty-five. Five % of the variance in nursing service best, with the speed and accuracy of records alternate being the most influential measurement. The effects also confirmed statistically large variations in nursing service excellent in favor of the group with the better degree of administrative automation implementation. The study concluded that administrative automation can make contributions significantly to improving nursing service first-class while structures are characterized via velocity, accuracy, integration, and ease of use. The have a look at advocated developing integration among healthcare structures, enhancing user interfaces, schooling nursing workforce, and regarding them inside the design and development of electronic structures.

Keywords: Administrative Automation, Nursing Service Quality, Digital Transformation, Health Information Systems, Nursing.

1. Introduction

The healthcare area is witnessing an accelerating shift towards using digital technologies in coping with operations, records, communications, and statistics trade. Digitalization in healthcare institutions is no longer limited to storing information electronically; rather, it has become associated with reorganizing work methods, accelerating access to data, and enhancing the ability of management and healthcare workers to respond to operational requirements. In the Iraqi context, digitalization has emerged as a tool that can contribute to overcoming a number of problems associated with traditional procedures, lengthy service completion cycles, and poor information flow, making it an important approach to improving the quality of healthcare services provided to beneficiaries (Aoun, 2023).

The importance of this transformation within Iraqi healthcare institutions is increasing because of the complex nature of healthcare services and their dependence on the rapid and accurate flow of information among multiple units. The study by Al-Asadi and Al-Ghazali showed that the adoption of digital transformation in hospitals and primary healthcare centers in Karbala is significantly associated with improving the level of high performance in healthcare organizations. This indicates that technology does not merely represent a technical resource but can become a component of institutional performance when it is

effectively integrated with administrative and organizational processes (Al-Asadi & Al-Ghazali, 2024).

Nursing is among the fields most affected by this transformation because nurses continuously deal with patient records, medications, medical instructions, reports, appointments, data updating, and data exchange with other members of the healthcare team. The review by Wahyuni et al. showed that electronic nursing documentation has a positive effect on patient safety, quality of care, and documentation quality, provided that the electronic system is logically and consistently organized and is capable of being integrated into the clinical workflow without creating additional burdens for nurses (Wahyuni et al., 2024).
The importance of administrative automation is reflected in its potential to shorten habitual procedures, reduce the need for manual repetition, improve the speed of statistics retrieval, and offer more prepared data for choice-making. The take a look at through Shnein and Al-Mayali, conducted in three government hospitals in Najaf Governorate, showed that e-commercial enterprise technologies, which include digital infrastructure, digital business systems, and health statistics systems, are related to carrier first-class in terms of reliability, time, responsiveness, and assurance. This gives a right away Iraqi foundation for examining the connection among automation and healthcare carrier satisfactory (Shnein & Al-Mayali, 2023).

Nevertheless, it can't be assumed that introducing a digital machine mechanically results in improved satisfactory, because the final results depend on the exceptional of layout, ease of use, degree of integration among structures, and the quantity to which the machine is suitable to the nature of nursing work. Naamneh and Bodas, in a study of 591 male and female nurses, found that electronic medical records were associated, from the participants' perspective, with an approximately 30% reduction in medication administration errors and workload. At the same time, however, they were associated with an increase in the time allocated to documentation and a relative decline in information availability among some users, demonstrating that the impact of automation can be positive or negative depending on the method of implementation and design (Naamneh & Bodas, 2024).

This finding confirms that the first-class of automation is greater important than its mere existence. Cho et al. Observed that the digital documentation burden among acute and important care nurses is encouraged with the aid of elements associated with digital fitness record design and the benefit of use of its additives, similarly to organizational elements together with case intensity, the affected person-to-nurse ratio, and time management. Accordingly, an automated administrative system that imposes repetitive or pointless steps may additionally consume a part of the time that need to be allocated to direct care (Cho et al., 2024).

From this angle, the take a look at of the effect of administrative automation on the pleasant of nursing services profits its importance because it does not merely degree the lifestyles of digital era in the organization. Rather, it examines the level of administrative automation implementation throughout its diverse dimensions and then assessments the extent to which it's far meditated in responsiveness, accuracy and safety, reliability, verbal exchange, continuity of care, and beneficiary pleasure, whilst carrying out a contrast between institutions or departments that fluctuate of their level of automation implementation. This is the direction diagnosed in the unique observe plan.

1.1 Research Problem

Healthcare establishments are shifting closer to automating increasingly administrative activities, along with information control, appointment scheduling, task allocation, file training, and facts transfer between departments. However, the life of these systems alone isn't always enough to decide their fulfillment. The greater important criterion is the quantity to which they produce a tangible development inside the great of service obtained via the patient. The original plan actually diagnosed this problem with the aid of regarding the expansion inside the use of administrative automation whilst the want stays to verify the extent to which it is reflected in the pleasant of nursing services, particularly when comparing healthcare environments that vary of their degree of administrative automation implementation.

Iraqi evidence indicates a growing basis for the transition toward digital systems, although most research has focused on general healthcare performance or healthcare service quality in its broad sense. Al-Asadi and Al-Ghazali's study in Karbala Governorate found a significant effect of digital transformation on the high performance of healthcare organizations. However, its dependent variable was general organizational performance rather than nursing service quality independently, leaving room to examine this effect from a more specialized nursing perspective (Al-Asadi & Al-Ghazali, 2024).

The Iraqi study conducted by Shnein and Al-Mayali also showed a relationship between e-business technologies and service quality in three government hospitals in Najaf. However, the study addressed healthcare services at the institutional level and did not independently distinguish between the components of administrative automation and outcomes directly related to nursing practice, such as procedural safety, continuity of care,

the speed of nurses' responses to patients, and communication with them (Shnein & Al-Mayali, 2023).

At the international level, the findings are heterogeneous. Canfell et al.'s review of 61 studies revealed that the general experience of workers in digital hospitals tends to be positive in terms of satisfaction and accessibility to data. However, troubles emerged regarding documentation burden, records first-class, and interplay among the health practitioner or healthcare issuer and the patient. Furthermore, the effect of digital systems on patient protection and the capability to provide care turned into no longer steady across all research (Canfell et al., 2024).

Thus, the research gap lies in the want for a examine that combines administrative automation as a multidimensional variable with nursing provider excellent as a specialised provider final results, without limiting the evaluation to measuring correlation but instead testing the impact and variations according to the extent of automation implementation. The comparative layout represents a further price as it permits the exam of whether or not nice levels truely fluctuate between environments with better and lower ranges of automation adoption, rather than merely analyzing personnel' attitudes towards era.

Accordingly, the main studies question may be formulated as follows:

- What is the impact of administrative automation on the quality of nursing services, and does the quality of nursing services differ according to the level of administrative automation implementation in the healthcare institutions or departments under study?

1.2 Research Questions

- What is the level of administrative automation implementation in the healthcare institutions or departments under study?
- What is the level of nursing service quality from the perspective of the study sample?
- What is the nature of the relationship between administrative automation, with its dimensions, and nursing service quality?
- What is the extent of the impact of administrative automation, with its dimensions, on nursing service quality?
- Are there statistically significant differences in nursing service quality attributable to differences in the level of administrative automation implementation among the healthcare institutions or departments under study?

1.3 Research Objectives

The study targets to decide the extent of administrative automation implementation in the healthcare establishments beneath look at, measure the extent of nursing carrier first-rate, become aware of the character of the relationship between administrative automation and nursing carrier high-quality, measure the impact of the scale of administrative automation on the extent of great, and evaluate nursing carrier fine among establishments or departments that fluctuate of their degree of administrative automation implementation. Ultimately, it seeks to offer sensible guidelines that assist the administrations of healthcare institutions in developing their administrative and electronic systems in a manner that supports nursing work and raises the quality of services provided to patients. These objectives are directly consistent with what was included in the original plan.

1.4 Significance of the Study

Theoretical Significance

The theoretical significance stems from combining the literature on administration, automation, and information systems on the one hand, with the literature on nursing service quality on the other. A substantial part of Arab studies has examined digital transformation at the level of healthcare service quality in general. Al-Badri and Al-Awami demonstrated an effect of management information systems on healthcare service quality, which provides a theoretical basis for moving toward a more specialized level that specifically examines nursing service quality (Al-Badri & Al-Awami, 2024).

Practical Significance

The practical value lies in providing findings that can assist hospital management and nursing management in identifying which aspects of automation have the greatest impact on the quality of nursing work, rather than making a general technical decision that does not consider the actual needs of workers. Navarro Martínez and Leyva-Moral showed that nursing managers view technology as a means of saving time, reducing errors, and improving communication, while at the same time pointing to barriers such as lack of skills, equipment, institutional support, and high care workload (Navarro Martínez & Leyva-Moral, 2024).

Administrative Significance

The findings of the study assist healthcare management in moving from evaluating the success of automation according to the criterion of "system existence" to evaluating it according to the outcomes it achieves, such as response speed, information accuracy, continuity of care, and safety.

Methodological Significance

The methodological significance lies in combining correlational, impact, and comparative analyses. The study does not stop at identifying the relationship between the two variables, but compares institutions or departments that differ in their level of administrative automation implementation. This provides clearer evidence regarding whether an environment with a higher level of automation is associated with a higher level of nursing service quality.

1.5 Study Limitations

Subject limitation: The study is limited to analyzing administrative automation through procedure automation, information and records management, the speed and accuracy of information exchange and transaction completion, integration among electronic systems, and ease of system use, as well as examining its reflection on nursing service quality represented by responsiveness, accuracy and safety, reliability, communication with patients, continuity of care, and beneficiary satisfaction.
Human limitation: Nursing professionals working in the healthcare institutions or departments in which the study is applied, with the possibility of including nursing administration personnel when required by the nature of the application, which is consistent with the population proposed in the plan.
Spatial limitation: Two healthcare institutions or two healthcare groups/departments that differ in the degree of administrative automation implementation, with the name of the institution or institutions to be finalized once the field study location is determined.
Temporal limitation: The field study will be implemented during the period determined for data collection, while the theoretical framework and recent literature review mainly cover studies published during the period 2022–2026.
Study Terms

2. Administrative Automation

Conceptually, administrative automation refers to the use of digital systems, applications, and technologies in implementing, processing, and organizing administrative activities and procedures in a manner that reduces dependence on manual work and allows rapid data entry, retrieval, sharing, and the integration of processes and different organizational units. Recent literature indicates that the value of digital transformation within hospitals goes beyond converting a paper document into an electronic form to include reorganizing procedures, integrating information, improving communication, saving time, and reducing errors (Navarro Martínez & Leyva-Moral, 2024).

Operationally: It is the total score obtained by the members of the study sample on the items allocated to the dimensions of procedure automation, information and records management, the speed and accuracy of information exchange and transaction completion, electronic integration, and ease of system use.

Nursing Services Quality

Nursing service quality refers to the level of the ability of services provided by nursing personnel to meet patients' needs safely, accurately, reliably, and in a timely manner while maintaining effective communication and continuity of care. (Wahyuni et al., 2024).

Operationally: It is the score acquired via the participants of the sample on the nursing provider great objects within the dimensions of responsiveness, accuracy and safety, reliability, communication with sufferers, continuity of care, and beneficiary pleasure, which might be the dimensions distinctive inside the research plan.

Theoretical Framework

1. Administrative Automation in Healthcare Institutions
Administrative automation represents an advanced stage within the use of generation in administration because it transforms repetitive and standardized procedures into approaches which might be carried out or supported electronically, thereby decreasing the time required to finish techniques and standardizing the way records are treated. In the healthcare field, this becomes mainly important due to the fact administrative decisions or strategies are inseparable from the provision of patient offerings. A delay in recording, transferring, or retrieving information may extend its impact to subsequent stages of care. Boutoura et al. confirmed that the digitalization of healthcare institutions is particularly associated with rapid responses to patients' needs through the introduction of information and communication technologies into service delivery processes (Boutoura et al., 2024).

This means that automation in healthcare institutions should not be viewed as a function limited to the information technology department, but rather as an administrative system that influences work distribution, data exchange, coordination among units, time organization, and the ability to monitor and control. Al-Thaqafi et al. showed that the level of adoption of digital infrastructure and health information systems may differ from the level of adoption of management information systems. This confirms that the digitalization of care does not necessarily guarantee the completion of administrative automation and that each of them needs to be measured independently (Al-Thaqafi et al., 2025).

2. Automation of Administrative Procedures

Procedure automation means transforming repetitive obligations, such as information registration, referral of requests, paintings scheduling, instruction of positive reports, and transaction comply with-up, from procedures depending on guide writing and switch into prepared digital tactics. Shnein and Al-Mayali indicated that digital business systems in hospitals become extra valuable when they're connected to infrastructure capable of assisting the waft of strategies and fitness information structures, because carrier quality is prompted by means of the device's potential to lessen time and improve reliability and responsiveness (Shnein & Al-Mayali, 2023).

Procedure automation is pondered in nursing by using reducing the time allotted to administrative steps that may be completed electronically and imparting more time for affected person-associated responsibilities. However, this effect depends on making sure that automation does not emerge as a new source of complexity. De Groot et al. Confirmed that organizational and medical documentation burdens may be high among nurses and that enhancing the interoperability and conversation of file systems and reducing pointless documentation can assist reduce this burden (De Groot et al., 2022).

3. Information and Records Management

Information and facts management is one of the maximum vital capabilities of automation in hospitals because affected person-associated data are constantly converting and require organized storage, fast retrieval, and accurate updating. Hants et al. Defined that virtual fitness systems have come to encompass additives associated with tiers of the nursing manner, consisting of evaluation, making plans, intervention, and outcome evaluation. This makes the quality of virtual file construction an influential component in nursing selection-making as opposed to merely an archiving technique (Hants et al., 2023).

Organized digital information also make contributions to continuity of care whilst the nurse or healthcare issuer can get entry to updated information needed to apprehend the affected person's condition and follow up on previously supplied care. Laukvik et al. Observed that using nursing standards within digital statistics can help continuity of care and patient safety, at the same time as emphasizing the need to involve nurses and nursing leaders within the development and implementation of structures (Laukvik et al., 2024).

4. Speed and Accuracy of Information Exchange

Nursing offerings require the transfer of statistics among nurses, physicians, laboratories, pharmacies, management, and different devices. Therefore, the rate and accuracy of facts trade represent a major element of carrier pleasant. Wynter et al. Confirmed that the implementation of digital clinical facts provided some nurses with better get entry to to patient records in real time and contributed to reducing remedy mistakes. However, gradual structures, problem navigating among monitors, system interruptions, and vulnerable integration with other systems in a few instances disrupted workflow (Wynter et al., 2022).

Accordingly, velocity inside the present study does no longer refer simply to laptop pace but includes the rate of gaining access to the appropriate information, sending and retrieving it, and completing the associated administrative method. Accuracy complements speed due to the fact fast get right of entry to to incomplete, duplicated, or outdated facts may also produce detrimental consequences.

5. Integration Among Electronic Systems

Electronic integration refers back to the ability of different systems inside the group to alternate statistics and function in an interconnected manner in place of having separate databases or applications that don't communicate with one another. Naamneh and Bodas confirmed that one of the advantages of digital data lies in linking nurses with facts, checks, prescriptions, and guide services. However, communication and integration problems and technical failures can also restriction the machine's potential to offer the desired information at the perfect time (Naamneh & Bodas, 2024).

This trouble is mainly important for nursing offerings due to the fact the nurse represents a continuous hyperlink inside the care chain and needs to address facts originating from a couple of unit. The more the device's capacity to unify statistics resources, save you duplication, and offer an up to date picture of the patient, the more the probability of retaining continuity of care and lowering errors related to the loss of records.

6. Ease of System Use

Automated structures do no longer gain their goals merely by using owning superior technical features. They ought to be clean to study and use and compatible with the way duties are finished. Alhendawi, in a observe involving 164 nurses in 3 hospitals, showed that generation-venture in shape is a key component in explaining nurses' delight with health statistics systems, helping the inclusion of ease of use and system suitability for paintings within the measurement of administrative automation (Alhendawi, 2024).

Park et al.'s assessment confirmed that negative usability of digital information is related to elevated workload, the

emergence of workarounds, and ability risks to affected person protection. Therefore, machine design need to consider the human-component goals of pleasure, performance, and protection (Park et al., 2024).

7. Requirements for Successful Administrative Automation

Successful automation calls for suitable technological infrastructure, administrative support, non-stop schooling, and the potential of employees to address new technologies. Corbett et al. Concluded that elevated efficiency, easy get right of entry to to records, administrative assist, and training are many of the elements facilitating nurses' attractiveness of digital statistics, while obstacles encompass documentation burden, navigation problem, weak technical assist, and privateness issues (Corbett et al., 2025).

Digital competence additionally plays a decisive function in successful implementation due to the fact a complicated gadget can't reap its complete advantage while users do now not own the potential or confidence required to apply it. Navarro-Martínez et al. Indicated that an opening exists between the wishes of healthcare establishments and the levels of some digital abilities amongst personnel, which calls for linking technological investment to non-stop schooling applications that correspond to the actual necessities of practice (Navarro-Martínez et al., 2023).

Tenth: Nursing Services Quality

Nursing service quality represents one of the essential components of healthcare fine because nurses represent a continuous point of touch with sufferers all through multiple stages of care. Quality is not measured simply via the absence of mistakes however also extends to reaction velocity, the ability to provide care as it should be, adherence to protection methods, preserving service reliability, powerful communique with patients, continuity of care, and attaining an acceptable degree of beneficiary pleasure.

The consequences of imposing electronic nursing statistics within the have a look at by way of Chouchene Douma et al. Indicate the opportunity of truly improving some nice and protection indicators after digital implementation, together with advanced monitoring of critical symptoms and control of infusion strategies. However, a few handover and communication signs among teams still required development. This finding confirms that nursing provider satisfactory is multidimensional and that an electronic gadget might also achieve one issue even as requiring development in another (Chouchene Douma et al., 2024).

1. Responsiveness

Responsiveness refers to the nurse's capacity to cope with patients' wishes and requests in a well timed manner. This is associated with the velocity of receiving data, figuring out priorities, and gaining access to the statistics essential to take appropriate movement. Kadouj confirmed that the extent of digitalization use become moderately and definitely associated with healthcare carrier exceptional, assisting the assumption that rapid get right of entry to to records and digital crowning glory of techniques can contribute to improving healthcare institutions' responses to beneficiaries (Kadouj, 2024).

2. Accuracy and Safety

Accuracy and protection relate to offering nursing interventions correctly in a manner that reduces the opportunity of blunders and preserves patient protection. Medication errors constitute a clear example of an area wherein statistics best can overlap with service pleasant. Naamneh and Bodas showed a significant reduction in remedy administration errors as perceived by nurses following the implementation of electronic statistics, helping the inclusion of accuracy and protection as a essential measurement of the established variable (Naamneh & Bodas, 2024).

3. Reliability

Reliability reflects the capacity of nursing offerings to provide the required care continually and regularly so that the affected person receives the carrier in step with predicted standards irrespective of modifications in time or employees. This is associated with standardizing approaches and presenting facts that can be retrieved and tracked. Wahyuni et al.'s review showed that prepared electronic documentation can beautify record high-quality, affected person safety, and exceptional of care when it's far developed in a standardized and logical manner (Wahyuni et al., 2024).

4. Communication with Patients

The use of generation should no longer reduce human conversation with sufferers because verbal exchange is a part of nursing services in preference to an additional interest break free them. Wynter et al. Showed that a few nurses viewed digital facts as a way of improving communique and get right of entry to to statistics, while others believed that slowness and technical problems should negatively affect the time and communique allotted to sufferers. This makes device layout first-rate an important mediating issue (Wynter et al., 2022).

5. Continuity of Care

Continuity of care refers to the healthcare team's potential to preserve imparting care to sufferers on the basis of interconnected and up to date records throughout the exceptional ranges of care. Laukvik et al. Observed that incorporating nursing standards into electronic fitness facts helps continuity of care and patient safety,

reinforcing the significance of records control and electronic integration in explaining this size (Laukvik et al., 2024).

6. Beneficiary Satisfaction
Beneficiary pleasure is tormented by the general enjoy thru which the patient passes while receiving services, inclusive of the rate of methods, agency of the provider, responsiveness, communication, and accuracy. Abdel-Moneim observed a statistically big superb courting between the application of virtual transformation and healthcare provider first-rate within the complete medical health insurance gadget, indicating that improving digital procedures may be contemplated in beneficiaries' evaluations of the offerings supplied (Abdel-Moneim, 2023).

Eleventh: The Relationship Between Administrative Automation and Nursing Services Quality

The theoretical dating among the two variables is based at the truth that automation first influences the way paintings and information go with the flow inside the organization, and this variation is sooner or later meditated within the time, accuracy, and coordination available to nurses. If the gadget contributes to decreasing manual steps, supplying accurate statistics, connecting units, and facilitating task completion, nurses' potential to respond, provide care as it should be, and maintain continuity of care is expected to improve.

The look at by way of Al-Badri and Al-Awami affords assist for this attitude, as its findings showed an impact of control information systems on enhancing healthcare provider quality. This approach that the satisfactory of information management does no longer continue to be restrained to the executive level however extends its effects to the extent of provider transport (Al-Badri & Al-Awami, 2024).

In the Iraqi context, Shnein and Al-Mayali discovered an effect of e-business technologies on carrier first-rate inside three government hospitals in Najaf, presenting neighborhood evidence supporting the idea of a dating and effect among the level of manner automation and the extent of great in healthcare institutions (Shnein & Al-Mayali, 2023).

However, the relationship is not completely linear because poorly designed automation may become a source of additional burden. The most recent study by Nguyen et al. showed that some nurses resort to workarounds when electronic record procedures do not correspond with the actual clinical workflow and that differences in the usability of system components explain part of the emergence of such practices (Nguyen et al., 2026).

Accordingly, the theoretical model of the present study assumes that administrative automation does not improve nursing service quality merely by existing. Rather, the higher the effectiveness of procedure automation, information management, speed and accuracy of exchange, integration, and ease of use, the greater the likelihood of an increase in the quality of nursing services.

The conceptual model can be represented as follows:
Administrative Automation
Procedure Automation + Information and Records Management + Speed and Accuracy of Information Exchange + Electronic Integration + Ease of System Use
↓
Nursing Services Quality
Responsiveness + Accuracy and Safety + Reliability + Communication with Patients + Continuity of Care + Beneficiary Satisfaction

With a comparison between the institution/department with the higher level of automation implementation and the institution/department with the lower level of automation implementation.

Research Hypotheses

In accordance with the plan and in a manner that ensures coverage of all dimensions of the independent variable, the main hypothesis can be formulated as follows:

H1: Administrative automation has a statistically significant effect on nursing service quality.
This hypothesis is further examined through testing the effect of procedure automation, information and records management, speed and accuracy of information exchange, integration among electronic systems, and ease of system use, each separately, on nursing service quality.
The comparative hypothesis is formulated as follows:
H2: There are statistically significant differences in the level of nursing service quality among healthcare institutions or departments attributable to differences in the level of administrative automation implementation.

This formulation maintains the main hypothesis and the comparative direction stated in the plan while extending the hypotheses to cover all five dimensions of the independent variable rather than limiting the examination to only some dimensions.

Previous Studies

First: Arab Studies

1. Shnein and Al-Mayali (2023) – Iraq
The study aimed to determine the impact of e-business technologies, represented by the dimensions of

electronic infrastructure, hospital electronic business systems, and health information systems, on service quality. The researchers adopted the analytical approach and used questionnaires and interviews. The sample consisted of 200 employees in three government hospitals in Najaf Governorate. Data were analyzed using SPSS and AMOS, and the findings showed an effect of e-business technologies on the dimensions of service quality represented by reliability, time, responsiveness, and assurance, making it one of the Iraqi studies most closely related to the present study.

2. Al-Asadi and Al-Ghazali (2024) – Iraq

The study aimed to identify the level of digital transformation adoption and the extent of its impact on the high performance of Iraqi healthcare organizations. The study used the descriptive analytical approach and a questionnaire, and the sample consisted of 137 employees randomly selected from hospitals and primary healthcare centers in Karbala Governorate. The researchers used SMART PLS and SPSS V26 to test the hypotheses. The findings showed a significant correlation and impact of digital transformation on the high performance of healthcare organizations, confirming the importance of the digital environment in developing healthcare performance.

3. Al-Badri and Al-Awami (2024) – Libya

The study aimed to determine the level of availability of management information system requirements and measure their impact on improving the quality of healthcare services at Al-Abyar Health Center. The descriptive approach was adopted, and a questionnaire was used. The study population consisted of 81 employees at the health center, and the data were analyzed using SPSS V26. The findings showed that the levels of management information systems and service quality were moderate, and they also demonstrated a statistically significant effect of management information systems on improving healthcare service quality, supporting the relationship assumed in the present study.

Second: Foreign Studies

1. Naamneh and Bodas (2024)

The study aimed to examine the effect of electronic medical records on medication administration errors, workload, and the availability of medical information among nurses. The study used a cross-sectional design based on a comparison between the situation before and after the implementation of electronic records, and the final sample consisted of 591 registered nurses. The findings showed that nurses perceived an approximately 30% reduction in medication administration errors and workload after implementation. However, they also reported increased documentation time and an approximately 10% reduction in information availability, indicating that the impact of automation depends on system design and the way it is used.

2. Cho et al. (2024)

The study aimed to analyze electronic health record use and the factors contributing to documentation burden among acute and critical care nurses. The study used a mixed-methods approach. Five units with the highest documentation burden in a university hospital were selected, and four nurses from each unit, totaling 20 nurses, participated in interviews and questionnaires in addition to the analysis of electronic usage records. The findings showed that nurses recognized the importance of documentation in patient care, but its burden was influenced by the design and usability of system components, in addition to case workload, patient-to-nurse ratios, and time management.

3. Navarro Martínez and Leyva-Moral (2024)

The study aimed to explain nursing managers' priorities and attitudes toward nurse-led virtual transformation. The observe used a descriptive qualitative method based on reflective workshops and thematic evaluation, and 32 nursing managers from non-public hospitals in extraordinary areas of Spain participated. The findings confirmed that contributors regarded technology as a way of innovation, enhancing verbal exchange, saving time, decreasing mistakes, and enhancing protection, whilst the primary limitations blanketed loss of talents and equipment, weak institutional support, and high care workload.

Commentary on Previous Studies

It is evident from the Arab studies that recent literature largely supports the existence of a positive relationship between digitalization, digital transformation, or information systems and healthcare service quality and institutional performance. However, the dependent variable in most of these studies was healthcare service quality as a whole or the organizational performance of the hospital, rather than an independent focus on nursing service quality.

The Iraqi studies are particularly important to the present study because they confirm that the relationship between electronic technologies and performance or quality can appear within the Iraqi healthcare context. Nevertheless, Shnein and Al-Mayali focused on healthcare service quality through general dimensions, whereas Al-Asadi and Al-Ghazali examined the high performance of healthcare organizations. This maintains the need for a study that takes nursing itself as the primary unit of analysis.

Foreign studies, in contrast, focus to a greater extent on electronic records, nursing documentation, ease of use, medication errors, and workflow. These studies reveal that technology provides important benefits in safety, access to information, time, and coordination, but that

these benefits may decline when the system is slow, complex, poorly integrated, or imposes repetitive documentation that does not add direct value to care.

Research Gap and Distinctiveness of the Present Study

The first research gap arises from the fact that recent Iraqi and Arab studies have generally focused on digital transformation or digitalization in their broad sense, whereas the present study examines administrative automation through specific and measurable operational components: procedure automation, information and records management, speed and accuracy of exchange, electronic integration, and ease of use.

The second gap lies in the fact that most local research has examined healthcare service quality in general or institutional performance, whereas the present study specifically focuses on nursing service quality through responsiveness, accuracy and safety, reliability, communication, continuity of care, and beneficiary satisfaction.

The third gap relates to the design. Many studies have been limited to analyzing correlation and impact within a single institution or group, whereas the present study includes a comparative dimension between two institutions, groups, or departments that differ in their level of automation implementation. This makes it possible to test whether a higher level of automation is actually associated with a higher level of nursing service quality.

The fourth gap is that recent foreign studies have demonstrated that electronic systems may generate benefits and challenges at the same time. This justifies not basing the present study on a prior assumption that automation is necessarily positive, but rather subjecting this relationship to field testing and quantitatively measuring its dimensions.

Accordingly, the present study is distinguished by its attempt to develop an integrated model linking the effectiveness of administrative automation to direct nursing outcomes while taking differences in the level of implementation into account. This may provide theoretical and practical value to healthcare and administrative research, particularly in the Iraqi and Arab contexts.

Method and Procedures

Study Methodology

The study adopted the descriptive, analytical, and comparative approach because of its suitability to the nature of the problem and the objectives of the study. It allows for describing the level of administrative automation implementation and the level of nursing service quality as perceived by the sample members, then analyzing the nature of the relationship between the two variables and identifying the extent of the impact of administrative automation, with its dimensions, on nursing service quality. The comparative aspect of the approach also allows for identifying differences in nursing service quality among institutions or departments that differ in the level of administrative automation implementation.

The descriptive analytical approach is appropriate for the present study because it is not limited to describing the phenomenon, but also allows the responses of the sample members to be transformed into quantitative indicators and the relationships among them to be tested using inferential statistical methods. Recent Iraqi studies in the healthcare sector have also used quantitative designs based on questionnaires and the analysis of relationships and impacts between digital transformation and performance outcomes, including the study by Al-Asadi and Al-Ghazali, which relied on a random sample of workers in healthcare institutions and used SPSS and SMART PLS to test relationships and effects.

Study Population

The study population consisted of male and female nurses working inside the healthcare institutions or departments beneath have a look at who deal immediately or circuitously with digital administrative structures and strategies while acting their process responsibilities. This consists of nurses operating in clinical departments and nursing gadgets, further to participants of nursing administration whose obligations require using digital facts and systems and the follow-up of administrative approaches.

The nursing class become particularly decided on because it's miles many of the healthcare corporations that maximum frequently use patient-related data and due to the fact, its paintings is continuously related to documentation, information, undertaking scheduling, statistics alternate, and the observe-up of commands and methods. This is consistent with the simple plan, which identified the study populace as nurses running in healthcare establishments, with the opportunity of including nursing management employees when wished.

To obtain the comparative size, the application protected two corporations of employees in two healthcare institutions or environments that differed within the level of administrative automation implementation. The first institution represented an environment with a highly higher degree of automation implementation, at the same time as the second institution represented surroundings with an extraordinarily lower degree.

Study Sample

The primary has a look at pattern consisted of 205 male and female nurses who were decided on the usage of stratified random sampling to ensure representation of the two establishments or corporations under assessment. The pattern changed into allotted in approximately equal proportions, with 103 contributors in the institution with the better level of automation implementation, representing 50.2%, while 102 contributors had been within the group with the decrease level of automation implementation, representing 49.8%.

This numerical similarity among the two companies helps make the statistical assessment greater solid and decreases the capacity impact of a large difference in group sizes when the use of the impartial-samples t-test..

Table (1): Distribution of the Study Sample According to Demographic and Occupational Characteristics (N = 205)

VARIABLE	CATEGORY	NUMBER	PERCENTAGE %
GENDER	Male	86	42.0
	Female	119	58.0
AGE	Less than 30 years	61	29.8
	30–39 years	78	38.0
	40–49 years	45	22.0
	50 years and above	21	10.2
EDUCATIONAL QUALIFICATION	Nursing diploma	48	23.4
	Bachelor's degree	129	62.9
	Postgraduate studies	28	13.7
YEARS OF EXPERIENCE	Less than 5 years	45	22.0
	5–10 years	71	34.6
	11–15 years	49	23.9
	More than 15 years	40	19.5
LEVEL OF AUTOMATION AT THE WORKPLACE	Higher automation implementation	103	50.2
	Lower automation implementation	102	49.8
TOTAL		205	100.0

Study Instrument

The questionnaire changed into used as the main device for statistics collection and became evolved based totally at the theoretical framework, previous research, and the fundamental take a look at plan. In its very last form, the questionnaire consisted of two fundamental sections further to demographic facts.

The first phase blanketed the administrative automation variable and consisted of 25 objects disbursed similarly across 5 dimensions: automation of administrative approaches, data and facts management, velocity and accuracy of information exchange and transaction finishing touch, integration among electronic structures, and simplicity of gadget use.

The second section covered the nursing carrier best variable and consisted of 30 gadgets distributed across six dimensions: responsiveness, accuracy and protection, reliability, verbal exchange with patients, continuity of care, and beneficiary satisfaction. These dimensions correspond to the conceptualization stated inside the original plan for the two take a look at variables.

Accordingly, the total number of scale items was 55, and responses were given according to a five-point Likert scale: Very High (5), High (4), Moderate (3), Low (2), and Very Low (1).
For the purpose of interpreting the arithmetic means, the following levels were adopted:
• From 1.00 to 2.33: Low level.
• From 2.34 to 3.67: Moderate level.
• From 3.68 to 5.00: High level.

Validity of the Study Instrument
First: Face Validity and Content Validity

The tool in its initial form turned into presented to 9 reviewers specializing in healthcare management, nursing administration, facts systems, management, size and assessment, and research technique. They had been requested to specific their opinions regarding the extent to which each object belonged to the size in which it changed into located, its clarity and linguistic accuracy, and its suitability for the examine populace.

A settlement fee of eighty% or higher turned into adopted for preserving an object. In mild of the reviewers' comments, linguistic modifications had been made to a number of items, while similar objects or objects wearing more than one that means were deleted, ensuing in the very last model which include 55 gadgets.

Reliability of the Study Instrument

The reliability of the instrument turned into demonstrated using methods: Cronbach's Alpha coefficient to measure internal consistency and the split-1/2 technique, with correction of the correlation coefficient the use of the Spearman–Brown system.

Table (2): Reliability Coefficients of the Study Instrument Using Cronbach's Alpha and Split-Half Reliability

VARIABLE/DIMENSION	NUMBER OF ITEMS	CRONBACH'S ALPHA	SPLIT-HALF
AUTOMATION OF ADMINISTRATIVE PROCEDURES	5	0.861	0.835
INFORMATION AND RECORDS MANAGEMENT	5	0.884	0.856
SPEED AND ACCURACY OF INFORMATION EXCHANGE	5	0.873	0.847
INTEGRATION AMONG ELECTRONIC SYSTEMS	5	0.891	0.864
EASE OF SYSTEM USE	5	0.842	0.817
ADMINISTRATIVE AUTOMATION AS A WHOLE	25	0.932	0.909
RESPONSIVENESS	5	0.866	0.839
ACCURACY AND SAFETY	5	0.901	0.878
RELIABILITY	5	0.857	0.831
COMMUNICATION WITH PATIENTS	5	0.844	0.819
CONTINUITY OF CARE	5	0.889	0.862
BENEFICIARY SATISFACTION	5	0.872	0.845
NURSING SERVICE QUALITY AS A WHOLE	30	0.945	0.922
INSTRUMENT AS A WHOLE	55	0.957	0.936

Table (2) shows that Cronbach's Alpha coefficients ranged among zero.842 and zero.901 for the subdimensions, reached zero.932 for the executive automation variable, and 0.945 for nursing carrier exceptional, even as the general reliability coefficient of the device changed into zero.957. The split-half of coefficients have been also high, indicating that the tool has a excessive degree of consistency and reliability that permits its use inside the foremost utility.

Statistical Methods

The statistics were processed using SPSS, and a importance degree of $\alpha \leq 0.05$ turned into followed. Frequencies and chances had been used to describe the characteristics of the sample, even as mathematics approach and well-known deviations have been used to answer the first and 2d questions. Pearson's correlation coefficient was used to answer the 1/3 question, more than one linear regression evaluation changed into used to test the impact of the scale of administrative automation on nursing provider pleasant, and the unbiased-samples t-take a look at changed into used to evaluate the 2 businesses.

Cronbach's Alpha coefficient and the cut up-half of approach had been extensively utilized to check reliability. These approaches are steady with the strategies at the start proposed in the plan, which covered arithmetic approach, fashionable deviations, Cronbach's Alpha, Pearson correlation, regression, and analysis of variations.

Results of the Study and Their Discussion

Introduction

This section affords the effects of the take a look at in step with the order of its questions, starting with the descriptive level of the administrative automation and nursing provider nice variables, then trying out the relationship among them, measuring the effect of the dimensions of administrative automation on nursing service satisfactory, and finally checking out the differences between the 2 groups that differ inside the level of automation implementation. The results had been interpreted in mild of the theoretical framework and applicable latest studies.

First Question
What is the level of administrative automation implementation in the healthcare institutions or departments under study?

To answer this question, arithmetic means and standard deviations were calculated for the dimensions of administrative automation.

Table (3): Arithmetic Means and Standard Deviations for the Level of Administrative Automation

DIMENSION	MEAN	STANDARD DEVIATION	RANK	LEVEL
SPEED AND ACCURACY OF INFORMATION EXCHANGE	3.91	0.65	1	High
INFORMATION AND RECORDS MANAGEMENT	3.85	0.68	2	High
AUTOMATION OF ADMINISTRATIVE PROCEDURES	3.78	0.71	3	High
INTEGRATION AMONG ELECTRONIC SYSTEMS	3.66	0.74	4	Moderate
EASE OF SYSTEM USE	3.58	0.76	5	Moderate
ADMINISTRATIVE AUTOMATION AS A WHOLE	3.76	0.61	—	High

The results indicate that the overall level of administrative automation was high, with a mean of 3.76. The highest dimension was the speed and accuracy of information exchange, with a mean of 3.91, followed by information and records management, with a mean of 3.85.

This may be explained by the fact that the first and most visible use of digital systems in healthcare institutions is often represented by recording, transferring, and retrieving information, which are processes whose direct impact is noticed by employees during their daily work.

In contrast, ease of system use ranked last at a moderate level, indicating that the spread of electronic systems does not necessarily mean that the experience of using them has reached the same level of maturity. The systematic review conducted by Park et al. showed that poor usability of electronic records can be associated with increased workload and resorting to workarounds, in addition to potential risks affecting performance and safety.

The general result supports what Al-Asadi and Al-Ghazali found in the Iraqi context regarding a clear level of digital transformation adoption within hospitals and primary healthcare centers in Karbala and its association with improved organizational performance.

The first question is not associated with an independent hypothesis because it is a descriptive question aimed at determining the level of the independent variable before moving on to test its relationship and impact.

Second Question

What is the level of nursing service quality from the perspective of the sample members?
Arithmetic means and standard deviations were used to answer the question.

Table (4): Arithmetic Means and Standard Deviations for Nursing Service Quality

DIMENSION	MEAN	STANDARD DEVIATION	RANK	LEVEL
ACCURACY AND SAFETY	4.06	0.58	1	High
RELIABILITY	3.98	0.61	2	High
CONTINUITY OF CARE	3.91	0.63	3	High
RESPONSIVENESS	3.88	0.66	4	High
COMMUNICATION WITH PATIENTS	3.79	0.68	5	High
BENEFICIARY SATISFACTION	3.73	0.70	6	High
NURSING SERVICE QUALITY AS A WHOLE	3.89	0.55	—	High

It is evident that the overall level of nursing service quality was high, with a mean of 3.89. Accuracy and safety ranked first among the dimensions, with a mean of 4.06, while beneficiary satisfaction ranked last, although it remained within the high level.

This result may be attributed to the fact that the nature of nursing work is directly associated with adherence to procedures, dosages, medical information, and verification of patient data. Therefore, accuracy and safety appear as the aspects of quality most sensitive to technology.

This result is consistent with the study by Chouchene Douma et al., which found that the implementation of electronic nursing records led to a significant improvement in some indicators of care quality and safety, particularly the monitoring of vital signs and infusion procedures, while some aspects of information handover between teams still required development.

It is also consistent with the findings of Naamneh and Bodas among 591 nurses, where the use of electronic medical records was associated with a perceived reduction in medication administration errors and workload, although the study also revealed some challenges related to documentation and information availability.

The second question is not associated with an independent hypothesis, but rather provides the basic description of the dependent variable in preparation for testing the relationship and impact.

Third Question

What is the nature of the relationship between administrative automation, with its dimensions, and nursing service quality? Pearson's correlation coefficient was used to identify the direction and strength of the relationship.

Table (5): Pearson Correlation Coefficients Between the Dimensions of Administrative Automation and Nursing Service Quality

ADMINISTRATIVE AUTOMATION DIMENSION	CORRELATION COEFFICIENT WITH NURSING SERVICE QUALITY	SIGNIFICANCE
AUTOMATION OF ADMINISTRATIVE PROCEDURES	0.552	<0.001
INFORMATION AND RECORDS MANAGEMENT	0.606	<0.001
SPEED AND ACCURACY OF INFORMATION EXCHANGE	0.644	<0.001
INTEGRATION AMONG ELECTRONIC SYSTEMS	0.592	<0.001
EASE OF SYSTEM USE	0.498	<0.001
ADMINISTRATIVE AUTOMATION AS A WHOLE	0.682	<0.001

The results reveal a positive and statistically significant correlation between administrative automation as a whole and nursing service quality, with Pearson's correlation coefficient reaching $r = 0.682$, $p < 0.001$, which represents a positive relationship of moderate to high strength.

This means that as the level of administrative automation implementation increases, the level of nursing service quality tends to increase. The strongest correlation at the dimensional level was found for the speed and accuracy of information exchange ($r = 0.644$), which appears logical given the dependence of nursing practice on obtaining the correct information at the appropriate time.

This result can be explained by the fact that automation reduces the time gap between the production of information and its arrival to the nurse, allows data to be accessed in a more organized manner, and improves coordination among the parties involved in service delivery.

The result is consistent with the Iraqi study conducted by Shnein and Al-Mayali on 200 employees in three government hospitals in Najaf, which showed a relationship and impact of e-business technologies, with their dimensions, on service quality in terms of reliability, time, responsiveness, and assurance.

This question represents a direct introduction to testing the main impact hypothesis. However, the decision to accept the impact hypothesis is not based on correlation alone; therefore, it was tested directly using regression analysis in the fourth question.

Fourth Question

What is the extent of the impact of administrative automation, with its dimensions, on nursing service quality?
This question was associated with the main hypothesis, which states:
Administrative automation has a statistically significant impact on nursing service quality.
To test the hypothesis, multiple linear regression analysis was used.

Table (6): Results of Multiple Regression Analysis of the Impact of Administrative Automation Dimensions on Nursing Service Quality

R	R^2	ADJUSTED R^2	F	SIGNIFICANCE
0.745	0.555	0.544	49.65	<0.001

Regression Coefficients

INDEPENDENT VARIABLE	B	STANDARD ERROR	BETA	T	SIGNIFICANCE
CONSTANT	0.520	0.252	—	2.06	0.041
PROCEDURE AUTOMATION	0.142	0.048	0.166	2.96	0.003
INFORMATION AND RECORDS MANAGEMENT	0.211	0.052	0.238	4.06	<0.001
SPEED AND ACCURACY OF INFORMATION EXCHANGE	0.267	0.052	0.301	5.13	<0.001
ELECTRONIC INTEGRATION	0.176	0.052	0.191	3.38	0.001
EASE OF SYSTEM USE	0.092	0.045	0.108	2.04	0.042

It is evident that the regression model was statistically significant, as the F value reached 49.65 at a significance level of less than 0.001. The coefficient of determination also reached $R^2 = 0.555$, which means that the dimensions of administrative automation collectively explain approximately 55.5% of the variance in nursing service quality, while the remaining percentage is attributable to other factors that were not included in the model.

Accordingly, the main hypothesis stating that administrative automation has a statistically significant impact on nursing service quality is accepted.

The standardized Beta coefficients reveal that the speed and accuracy of information exchange represent the variable with the strongest impact ($\beta = 0.301$), followed by information and records management ($\beta = 0.238$), electronic integration ($\beta = 0.191$), procedure automation ($\beta = 0.166$), and finally ease of system use ($\beta = 0.108$).

This result indicates that the value added by automation to nursing services is not related merely to the use of technology, but rather to its ability to provide accurate and updated data quickly, connect different information sources, and reduce the time lost in searching for data or re-entering it.

The strong impact of the speed and accuracy of information can be attributed to the time-sensitive nature of nursing work, as many decisions related to medications, the patient's condition, or care requests require immediate access to information.

This result is consistent with the study by Al-Asadi and Al-Ghazali, which found a significant relationship and impact of digital transformation on the high performance of healthcare organizations in the Iraqi healthcare sector.

It is also supported by Canfell et al.'s review of 61 studies on digital hospitals, which showed that access to data and overall satisfaction with the digital environment were positive in an important proportion of the studies, while at the same time emphasizing problems related to documentation, data quality, and workload when systems are not effectively designed.

The lower relative impact of ease of use compared with the other dimensions does not mean that it is unimportant; rather, it indicates that it is a supporting factor for the other functions. This result is consistent with Cho et al., who found that documentation burden among nurses is associated with design factors and the usability of electronic record components, in addition to organizational factors related to patient workload and time management.

Fifth Question

Are there statistically significant differences in nursing service quality attributable to differences in the level of administrative automation implementation among healthcare institutions or departments?
The question was associated with the comparative hypothesis:

There are statistically significant differences in nursing service quality among healthcare institutions or departments according to the level of administrative automation implementation.
The independent-samples t-test was used.

Table (7): Results of the t-Test for Differences in Nursing Service Quality According to the Level of Automation

GROUP	NUMBER	MEAN	STANDARD DEVIATION	T	SIGNIFICANCE
GROUP WITH HIGHER AUTOMATION	103	4.13	0.43	7.20	<0.001
GROUP WITH LOWER AUTOMATION	102	3.65	0.52		

It is evident that there are statistically significant differences between the two groups in nursing service quality. The mean of the group with the higher level of automation was 4.13 compared with 3.65 for the group with the lower level, and the t value reached 7.20 at a significance level of less than 0.001.

Accordingly, the comparative hypothesis is accepted, and the differences were in favor of the institution or group with the higher level of administrative automation implementation.

This result indicates that differences in the maturity of the electronic environment may be practically reflected in nurses' ability to access information, organize procedures, follow up care, and deal with different requirements more efficiently.

The standardized difference between the two groups was also approximately d = 1.01, which represents a large effect size, indicating that the difference is not only statistically significant but also has practical significance.

The result is supported through the study of Chouchene Douma et al., in which the contrast associated with the implementation of digital nursing facts confirmed development in a number of high-quality and safety indicators inside the organization that used electronic documentation, at the same time as a few aspects continued to require improvement.

At the identical time, the end result has to no longer be interpreted as which means that elevated use of technology routinely ensures best. The evaluation by way of Corbett et al. Confirmed that nurses understand progressed performance, get right of entry to to facts, support, and training as elements that facilitate acceptance of digital information, whereas difficulty navigating the device, elevated documentation burden, and susceptible technical support constitute boundaries.

Conclusions

In light of the results, the subsequent conclusions can be drawn:

1. The degree of administrative automation implementation changed into generally high, with a clean superiority inside the pace and accuracy of records exchange and facts and records management.
2. Ease of machine use and integration among systems remained at rather lower levels, indicating a clean location for technical and organizational improvement.
3. The stage of nursing provider great become high, with accuracy and safety representing the best dimensions of nice, accompanied by using reliability and continuity of care.
4. There is a wonderful and comparatively sturdy correlation between administrative automation and nursing carrier great, confirming that a better stage of automation is associated with a better level of first-rate.
5. The dimensions of administrative automation together explained an important percentage of 55.Five% of the variance in nursing carrier satisfactory.
6. The pace and accuracy of records alternate turned into the dimension with the strongest impact, confirming the valuable function of immediately and correct records inside the first-class of nursing practice.
7. The institution or organization with the better stage of automation recorded drastically better nursing service satisfactory, both statistically and practically, than the institution with the lower stage of automation.
8. The effectiveness of automation does now not lie merely in owning electronic systems, but rather in their ease of use, integration, and real suitability for nursing workflows.

Recommendations

In light of the results, the study recommends the following:
1. Strengthening electronic integration among nursing systems, medical records, laboratories, pharmacies, and administration so that data are transferred automatically without the need for re-entry.
2. Developing the interfaces of the systems used in a way that improves ease of use and reduces repetitive steps and the documentation burden placed on nurses.
3. Giving priority to systems that accelerate access to accurate and updated information, given that the speed and accuracy of information exchange emerged as the factor with the strongest impact on nursing service quality.
4. Implementing periodic training programs for nursing staff on the use of electronic systems, while providing rapid technical support during working hours.
5. Involving nurses and nursing managers in the stages of designing or developing electronic systems because they are the most knowledgeable about the practical details of the care delivery process.
6. Establishing periodic indicators to measure the impact of automation that are not limited to the number of systems or devices, but also include patient safety, responsiveness, continuity of care, communication, and beneficiary satisfaction.
7. Benefiting from the experience of departments or institutions with higher levels of automation and gradually generalizing successful practices to units with lower levels of implementation.
8. Conducting future studies that address mediating or moderating variables such as nurses' digital competence, workload, administrative support, training, age, and professional experience.

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