The Effect of E-Logbook Use on Filling Compliance and Technology Acceptance by Executive Nurses at The Bandar Lampung Advent Hospital

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Abstract

Manual filling of logbooks triggers low satisfaction among nurses. E-Logbook is introduced as a solution to ensure compliance in the digital era. This study aims to examine the influence of E-Logbook on nurse fulfillment and technology acceptance at Bandar Lampung Adventist Hospital. This quantitative research utilized a quasi-experimental one-group pretest-posttest design involving 80 implementing nurses. The study revealed the following results: Nurse compliance significantly increased after the implementation of the E-Logbook. There was no significant difference in compliance between nurses with higher and lower levels of technology acceptance. The use of E-Logbook significantly impacted its utilization, while age, gender, and length of service were not related to compliance. The conclusion drawn is that the E-Logbook is effective in improving nurse fulfillment in logbook entries. Future implementations of E-Logbook should consider factors beyond age, gender, and length of service to enhance effectiveness.

Keywords: E-Lookbook, Nurse, Technology.

INTRODUCTION

The main role of nurses is to provide quality nursing services. The Nursing Committee ensures that nurses have the necessary competencies through a clinical quality assurance mechanism(Marriner-Tomey & Alligood, 1998). Based on PMK No.40 of 2017, nurses must take part in Continuous Professional Development (CPD) to maintain and improve their competence. Continuing professional development includes independent practice, research, knowledge creation, and volunteer work, which must be documented in a logbook (Komsiyah et al., 2018). Logbooks serve as evidence and clinical competency assessments, as well as minimizing biased performance assessments. The credentials and credentials of nurses also depend on the completeness of this logbook. According to Patricia Benner's theory, a nurse's career development is divided into five levels: novice, advanced beginner, competent, proficient, and expert. In Indonesia, nurses' career paths are arranged into five levels: PK I to PK V. However, the use of manual logbooks in many hospitals faces problems such as low compliance with filling in and the risk of lost or damaged logbooks. Research shows that manual logbooks are often incomplete due to lack of time and socialization, as well as nurse burnout.

To solve this problem, the use of electronic logbooks (E-Logbooks) is highly recommended. E-Logbooks make it easy to fill out and access through technology, improving nurse compliance (Komsiyah et al., 2018). Bandar Lampung Adventist Hospital, for example, is turning to E-Logbooks to make it easier to document and assess nurses' performance (Andry & Wijaya, 2020). The use of E-Logbook is also in accordance with Permenkes No. 24 of 2022 which requires the transition to electronic medical records. The challenges of implementing new technologies exist, especially for generation X nurses who are less familiar with technology than millennials, but this is important for improving the efficiency and accuracy of nursing documentation.

RESEARCH METHODS

This study involves the collection of initial observation data (pre-intervention) using a manual Logbook filling compliance observation sheet. Data was collected on June 28, 2023. The manual logbook that has been collected will be calculated to determine the level of compliance of the filling as the initial data. The intervention was carried out by gathering nurses in the hospital Auditorium room, in collaboration with the Education and Training department. Socialization and practice of using the E-Logbook will be carried out on July 3, 2023, for nurses who work night and evening and on July 4, 2023, for nurses who have not participated in activities (Khan & Qudrat-Ullah, 2021). Each participant logs in, and the researcher provides assistance to ensure that the E-Logbook can be completed using a cellphone or computer. Post-intervention observation is carried out after filling out the E-Logbook using the compliance observation sheet. Filling out the E-Logbook takes place from July 3, 2023, to July 27, 2023. The data from filling out the E-Logbook was collected on July 28, 2023 through Google Form, processed and analyzed. Furthermore, the technology acceptance questionnaire (UTAUT 2) will be distributed on July 28, 2023.

The method of collecting technology acceptance data using Google Form questionnaires has several advantages. Respondents can fill in their answers freely without worrying about being read by colleagues, and the answers go directly to the researcher. The anonymity of the questionnaire allows respondents to answer honestly. In addition, respondents can answer according to their own speed and leisure time, which saves researchers time in obtaining data. The method of data collection involves several steps: working with the field of Nursing to hold a morning reflection together in the Auditorium room, then the researcher explains the purpose and objectives of the research to nurses who are willing to be respondents. A Google Form is sent in the nurse group, containing the format of inform consent and a description of the study, as well as the researcher's contact for questions. The data from the questionnaire is checked for completeness and selected based on filling out the E-Logbook by the implementing nurse. Data that does not meet the criteria is not used. The collected data is processed and analyzed. In the final stage, the researcher prepares a research report and delivers the results.

RESULTS AND DISCUSSION

The results of this study will be presented in three main parts. The first part will show the frequency distribution of independent and dependent variables. The second section will check if there is a relationship between independent and dependent variables. The final section will look at whether the independent variable affects the studied dependent variable.
Univariant

Table 1. Distribution of Respondent Frequency Based on Age, Gender and Working Period of Nurses at Bandar Lampung Adventist Hospital in 2023 (n=80)

Variable characteristics	Frequency	Percentage
Age		
Generation X (43-58 years)	15	18.8
Generation Y(29-42 years)	53	66.3
Generation Z (22-28 years)	11	13.8
Gender		
Man	2	2.5
Woman	78	97.5
Length of Work		
New (< 6 Years)	26	32.5
Medium (6-10 Years)	34	42.5
Long (>10 years)	20	25
Total	**80**	**100**

Based on Table 1, most of the nurses at RSABL are Generation Y (29-42 years old), as many as 58 people (66.3%). Generation Y, who is familiar with technology and grew up in the internet era, is known to like to try new things. At RSABL, the low turnover of nurses (1-2%) and a better payroll system make them feel at home. The majority of nurses are Christian (90%), which also contributes to job comfort. This makes it easier for them to adapt to technologies such as E-Logbooks.

Most of the nurses in the inpatient room of RSABL are women, namely 78 people (97.5%). This trend is in line with a WHO report that states that two-thirds of global health workers are women. Research shows that women's interest in technology is more influenced by ease of use and social support, in contrast to men, who are more influenced by performance expectations. In addition, 42.5% of nurses in RSABL inpatient rooms have between 6-10 years of work experience. Research shows that the longer the duration of work, the better the skills and experience gained. Researchers concluded that longer use of E-Logbooks can improve proficiency and compliance with their use.

Table 2. Frequency Distribution Based on the Acceptance of E-Logbook Technology by Implementing Nurses at Bandar Lampung Adventist Hospital (n=80)

Variable	Frekquensi	Percentage
E-Logbook		
Receive (≥88)	39	48.8

Less Receptive(<88)	41	51.2
Performance Expectancy		
Helpful (≥16)	41	51.2
Less helpful (<16)	39	48.8
Effort Expectancy		
Easy to use (≥12)	54	67.5
Difficult to use (<12)	26	32.5
Social Influence		
Influenced (≥12)	44	55
Less influenced (<12)	36	45
Facilitating Conditions		
Supporting facilities (≥12)	48	60
Less Accepting Facilities(<12)	32	40
Hedonic Motivation		
Interested (≥12)	44	55
Less interested(<12)	36	45
Price Value		
Affordable (≥12)	47	58.8
Less affordable (<12)	33	41.3
Habit		
Get used to it (≥12)	41	51.2
Less Familiar(<12)	39	48.8

Based on table 2, as many as 41 respondents (51.2%) did not receive E-Logbook technology, while 39 respondents (48.8%) received it. According to Teo (2011) and Bachtiar (2015), the acceptance of information technology is related to the willingness of users to utilize it in their work. The UTAUT 2 (Unified Theory of Acceptance and Use of Technology) model by Novianti (2024) states that factors such as age, gender, and experience affect technology acceptance.

Research by Risdianty and Wijayanti (2021) and Nasir (2013) shows that competent nurses are more likely to receive an electronic medical record system. However, there are still shortcomings in the acceptance of the E-Logbook at Advent Hospital Bandar Lampung because nurses have not fully understood the benefits and feel that the existing features are too complicated. The implementation that has only lasted one month also affects the habits and comfort of use.

In the Performance Expectancy dimension, 41 respondents (51.2%) stated that E-Logbook technology was useful, but 39 respondents (48.8%) felt that it was less useful. They mentioned that the E-Logbook is not enough to help speed up the work and meet the

performance appraisal targets. This may be due to not being used to it and data that is not ready to be inputted. In the Effort Expectancy dimension, 54 respondents (67.5%) stated that the E-Logbook is easy to use, while 26 people (32.5%) find it difficult. These difficulties are related to signal constraints and a lack of in-depth understanding of the use of E-Logbooks. In the social influence dimension, 44 respondents (55%) use E-logbooks because of social influence, especially from leaders and colleagues. Encouragement from superiors and peers helps raise awareness to use E-Logbook.

In the Facilitating Conditions dimension, 60% of respondents stated that the facility supports the use of E-Logbook, but 40% feel less supportive. Factors such as internet connection and the availability of computers in the care unit influence this perception. In the Hedonic Motivation dimension, 44 respondents (55%) were interested in using the E-Logbook, but 36 people (45%) were less interested. Respondents feel happy and comfortable using e-logbooks, especially Generation Y, who are familiar with technology, but some feel uncomfortable because they have to fill in the information manually first before inputting it into the e-logbook.

In the Price Value dimension, 47 respondents (58.8%) stated that E-Logbook is affordable, while 33 people (41.3%) feel that it is less affordable because they have to use a personal internet quota. In the Habit dimension, 41 respondents (51.2%) are used to using E-Logbook, while 39 respondents (48.8%) are less familiar. This habituation still requires time and further assistance. Overall, the acceptance of E-Logbook technology at Advent Hospital Bandar Lampung still requires increased understanding, mentoring, and improvement of features to increase the ease and comfort of its use.

Table 3. Distribution of the average compliance of respondents before and after the use of the E-Logbook by the Implementing Nurse at Bandar Lampung Adventist Hospital (n=80)

Variable	Mean	Standard Deviation	Minimum	Maximum
Compliance Before using the e-Logbook	4,80	2,961	0	7
Compliance After the use of e-Logbook	6.64	0.830	0	7

Based on Table 3, the average compliance of nurses before using the E-Logbook was 4.80 (66.7%) with a variation of 2.961, and after using the E-Logbook, it increased to 6.64 (94.85%) with a variation of 0.830. This shows an increase in compliance by 1.84 (28%), proving that the use of the E-Logbook can improve nurse compliance.

According to Sackett (1976) in Ofori et al. (2018), compliance is the extent to which a nurse's behaviour is in accordance with the provisions provided by the health professional. E-Logbooks, which have been used in Indonesia but are still limited, need to be strengthened and supported by a wide range of information to be more effective (Zaharany & Hariyati, 2020). Butarbutar (2022) emphasized the importance of training before the implementation of the E-Logbook to ensure ease of use.

The researcher argues that the increase in compliance occurs because nurses already understand the benefits and convenience of the e-Logbook. With continuous feature improvements and mentoring, compliance is expected to continue to improve, supported by

technology acceptance results that show that most respondents find the E-Logbook easy to use and the facilities supportive.

Bivariate

Table 4. Distribution of the average compliance of respondents before and after the use of the E-Logbook by the Implementing Nurse at Bandar Lampung Adventist Hospital

Variable	Mean	Standard Deviation	Error Standards	N	P Value
Compliance Before using E-Logbook	4,80	2,961	0,331	80	0,001
Compliance After the use of E-Logbook	6,64	0,830	0,093		

Table 4 shows that the average compliance of nurses before the use of E-Logbook is 4.80 (68.7%) with a standard deviation of 2.961, and increases to 6.64 (94.85%) with a standard deviation of 0.830 after the use of E-Logbook. Statistical tests with a p-value of 0.001 showed a significant difference, proving that E-Logbooks increased nurses' compliance in filling out logbooks.

Compliance is defined as an individual's readiness to follow the demands of authority. Research shows that various factors, such as performance expectations and ease of use of technology, influence technology adoption. An e-logbook helps evaluate nurses' performance objectively, increasing motivation and productivity (Zaharany & Hariyati, 2020)

Interviews show that nurses are more obedient to fill out the E-Logbook because it can be accessed via smartphones. This is supported by the encouragement of SIR's leaders and facilities and the paperless culture in hospitals.

Table 5. The Relationship between Respondent Compliance and Post-intervention Technology Acceptance of E-Logbook use by Implementing Nurses at Bandar Lampung Adventist Hospital in 2023 (n=80)

	Logbook Filling Compliance		
Technology Acceptance	Me an	St.De viasi	P.value
Receive	**6.7 4**	**0.773**	**0,374**
Under-acceptance	**6.5 7**	**0.866**	

Based on Table 5., the average compliance of nurses who received technology was 6.74 (standard deviation 0.773), while those who were less receptive to technology were 6.57

(standard deviation 0.773). The results of the T-test showed a value of p=0.374, meaning that there was no significant difference in adherence between the two groups. Technology acceptance is the user's willingness to utilize technology in work (Bachtiar, 2015). Compliance is the extent to which nurses comply with the instructions of a health professional (Ofori et al., 2020). Filling out the logbook is part of this compliance.

Magribi and Yulianti (2022) stated that technology does not always improve compliance, especially for those who are less familiar with technology. In contrast, Zaharany and Hariyati (2020) found that the E-Logbook increased nurses' compliance in recording activities. Researchers argue that the E-Logbook has not had a significant effect on compliance because it has only been implemented for one month. Even so, nurses still try to comply with the rules because filling out the E-Logbook is related to performance assessment and achievement of clinical authority.

Multivariant

Table 6. Multivariate Analysis of the Effect of Simultaneous Use of E-Logbooks along with Age, Gender and Working Period on Compliance with E-Logbook Filling by Implementing Nurses at Bandar Lampung Adventist Hospital in 2023

Variable	Coefficient B	P Value
Constant	6.924	0.001
Compliance with filling out e-logbooks	0.063	0.048
Age	0.011	0.388
Gender	-0,286	0,628
Working Period	-0.208	0.89

Based on Table 6, the use of E-Logbook had a significant influence on nurse compliance ($p = 0.048$), while the variables of age ($p = 0.3888$), gender ($p = 0.628$), and working period ($p = 0.089$) were not related to compliance. This means that the increase in compliance in filling out the E-Logbook is mainly influenced by the intervention of the E-Logbook itself. Compliance is defined as the extent to which nurses comply with the instructions of health professionals (Ofori et al., 2020). E-Logbook technology makes it easier for nurses to carry out their duties, which is expected to increase compliance (Butarbutar, 2022)

Age, gender, and length of service did not affect compliance. The researchers argued that the lack of age influence may be due to the time of new use of technology, while gender had no effect because the majority of respondents were women.

In terms of tenure, there is no significant relationship with compliance with the use of the E-Logbook. This is consistent with research showing that work experience does not always improve performance (Sari, 2017). The researchers concluded that all nurses, regardless of length of service, have the same responsibility in complying with hospital regulations regarding logbook filling.

CONCLUSION

Based on the frequency distribution data of this study, the majority of nurses working at Bandar Lampung Adventist Hospital are Generation Y (66.3%) who are open to technology, with the majority of women (97.5%) and having work experience between 6 to 10 years

(42.4%). Gender and work experience influence nurses' interest in technology acceptance, demonstrating great potential in using E-Logbook technology to improve logbook filling compliance. The majority of respondents (61.2%) are less receptive to E-Logbook technology, while 38.8% are receptive to the technology. An analysis based on the technology acceptance dimension shows that the acceptance category is highest in Effort Expectancy (67.5%) and lowest in Habit (51.2%), indicating that technology acceptance will increase over time.

The difference in compliance levels before and after using E-Logbook showed an average increase from 4.80 to 6.64, with the results of the statistical test p-value = 0.001, indicating a significant difference and that the use of E-Logbook had a positive effect on the improvement of nurses' compliance in filling out the logbook. The variables of age (p-value = 0.3888), gender (p-value = 0.628), and length of service (p-value = 0.089) did not show a significant relationship with compliance, so the acceptance of technology towards compliance was not affected by these factors. A multivariate analysis showed that the use of the E-Logbook significantly improved adherence (p-value = 0.048) after being controlled by age, gender, and length of service, proving that the E-Logbook intervention was effective in improving nurse compliance.

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