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Indonesia, 63318 Email: heruswn@gmail.com Abstract [In the current](#)

[global era, most health information systems have been implemented with](#)

[the support of information and communication technology. This has an](#)

[impact on the enforcement of dual duties for health professionals](#) as

health workers and as operators of health information systems. This 'new

task addition' will lead to increased efforts to be able to operate the

information system properly. For some health professionals, this will feel

burdensome, which can ultimately lead to user resistance, either actively

or passively. Both types of resistance must be given serious attention

because it often leads to failure in the implementation of new information

systems. If not properly anticipated, then this will grow worse. In order for this to be prevented, the effort that must be done by the organization is always to improve and maintain organizational support for the users.

Keywords: Health information systems, User resistance, Organizational support

Introduction In this global era or information age, [health information systems have generally been implemented with the support of information and communication technology](#) (ICT)¹. In [this](#) regard, health institutions such as hospitals, community health centers, health offices, health clinics and so forth have implemented ICT-based health information systems in service management. In general, health information systems are implemented within the organization, with health professionals as users such as doctors, nurses, midwives, and other health professionals. It should be noted that in general health information systems pertained as mandatory information systems. Unlike voluntary information systems, mandatory information systems require users to run the system unconditionally. Like or dislike, interested or not interested, health professionals must continue to implement this system, in other word, has no choice whether to use the system, or not². Implementation of health information systems results in the consequence that health professionals should carry out additional duties as information system operators, while their primary duty as health providers should be well implemented. They often complain that their workload becomes significantly heavier. This condition indicates that not all health professionals are tolerant of increasing workloads as health information system operators. The facts show that many health professionals are still not proficient in operating ICT. For those who are not yet skilled to operate ICTs, they need to work hard in order to implement the health information system properly. This 'work hard' is usually known as the "increased effort"^{3,4}. "Increased efforts" as described above can be attributed to various factors, such as low levels of education, lack of training experience on ICT and change in job content³. Related to the last factor (change in job content³ or change in profession content⁵ or feel overloaded and overwhelmed⁶), the implementation of ICT-based health information systems will lead to significant changes to the job description that must be performed by health professionals. If initially they only perform tasks in their respective fields then documenting them manually (paper based), now they have to document them computerized, so they are required to be proficient in operating information and communication technology devices. The condition can lead to resistance to implementation of health information systems. This problem can have a serious impact [on the sustainability of the implementation of the health information system](#). It should be noted that healthcare professionals serve as end- users in this system, which is also an important part of the brainware. Meanwhile, experts in the field of information systems have agreed that brainware is one of the main components of information systems in addition to hardware and software⁷. Some researchers have stated emphatically that failure to make changes occurs as a result of resistance^{8,9,10,11}. Based on the above explanation, it should be emphasized that the [user resistance to the implementation of health information systems](#) should be recognized and anticipated early. This is the reason for the necessity of explaining important matters relating to [user resistance to health information systems](#). Recognize [User Resistance to The Implementation of Health Information Systems User resistance is defined as "opposition of a user to change associated with a new information systems implementation"](#) ¹² or "users' opposition to system implementation"¹³. The researchers view resistance to information systems in [three different theoretical perspectives](#), namely [people oriented, system oriented and interaction](#) theory. In [the](#) perspective of [people oriented, resistance to information systems is caused by factors](#) from within individuals or groups, such as gender, age, education level, values, beliefs and so on. In system oriented perspective, information system resistance is caused by the system used, such as [realization of](#)

[requirements, performance, reliability, and the degree of centralization, distribution, or decentralization.](#) While in the perspective of interaction theory, resistance to information systems is caused by the interaction between people with the system⁵. According to the theory of interaction, neither the system nor the characteristics of society are the cause of resistance to change. This theory explains that the 'real reason' of resistance to change is the perceived value of users [and social content](#) obtained [or lost before or after the implementation](#) of information systems¹⁴. Furthermore, this study refers to the perspective that resistance is caused by the interaction between the characteristics of people and the system implemented. As resistance to information systems in general, [resistance to the implementation of health information systems](#) can occur in various forms, ranging from closed or not shown openly to openly demonstrated, even attempts to block or otherwise interfere with the smooth implementation of health information systems. Generally known two main types of resistance are active resistance and passive resistance¹⁵. Active resistance is characterized by behaviors that openly indicate resistance to change, ranging from less aggressive rejection to highly aggressive rejection. In contrast to active resistance, passive resistance is not accompanied by open rejection behavior¹⁶. But whatever the form, user resistance will be a threat to the sustainability of the implementation of health information systems, so that should be done various studies that can produce problem solving for the existence of resistance. [Anticipate User Resistance to The Implementation of Health Information Systems Resistance to the implementation of health information systems](#) should be recognized early. Why? To be able to answer the above questions, we must look back at the theory of technology acceptance. Technology Acceptance Model (TAM) as the most popular model of "user acceptance to information technology" explains that user acceptance is evidenced by "actual system use" or actual user action to operate information systems¹⁷. So referring to this theory, if doctors, nurses, midwives or other health professionals are already running the health information system imposed, then they are considered to have accepted the implementation of health information system. But resistance theory looks at the case differently⁴. If a health professional has not run a health information system, it may be true that he or she is considered resistant to the system that has been imposed by the organization. But if someone has run a health information system, can not the person is automatically considered not resistant to the system. They may run a health information system not based on awareness to run it for the sake of organizational progress, but simply to free themselves from obligations or to avoid punishment for violations of organizational rules. In the previous section it has been stated that in general, health information systems are mandatory, so health professionals are bound by the obligation to operate the system. Often managers do not know or pay attention to whether these end-users are willing to accept this dual task voluntarily. For example, in one of the district health offices in Indonesia, when the Maternal and Child Health Information System is in place, all the midwives in the district have operated the system well. These conditions indicate that they do not have problems in terms of knowledge or skills. But a few years later, one by one end-user no longer runs the system. The results of in-depth interviews indicate that they complain that their tasks are heavier as a result of dual duties as health workers and as operators of health information systems¹⁸. The above examples show that in the early stages, some of the end-users may already be resistant to the implementation of health information systems, but they still survive to run the system, due to mandatory enforcement rules accompanied by strict supervision systems. This rigorous supervision makes end-users feel strong pressure from the organization against them to run a health information system that is certainly a program of the organization that must be run. When supervision becomes loose as in the case of a change

of leadership team, or the change of health information system managers, end-users will feel free from the pressure to run the system, so that little by little they will abandon their obligations as users of health information systems. Resistance may be initiated by negative actions at a mild level such as working slowly, procrastinating data entry, and so on^{13,15,19}. These are some examples of signs of passive resistance. In addition to working slowly, the occurrence of passive resistance can also be seen from the low passion, enjoyment and adaptability in running the information system²⁰. Furthermore, there are six main characteristics of passive resistance: 1) agreeing verbally [but not following through](#), 2) [failing to implement change](#), 3) [procrastinating / dragging feet](#), 4) [feigning ignorance](#), 5) [withholding information, suggestions, help or support](#), 6) [standing by and allowing the change to fail](#)¹⁵. The following is an explanation of each of the six main characteristics of passive [resistance to the implementation of health information systems](#).

1. Agreeing verbally but not following through In this case, the user has verbally agreed or supported the implementation of health information system, but in reality he/she did not want to run the information system seriously. In other words, the approval he/she puts is only in the words. So in this case, there is no commitment from within the user to run the system as well as possible¹⁶.
2. Failing to implement change In this case, the user is not successful in operating the health information system as well as possible, for example, often make mistakes in charging data. This can happen as a result of low passion to operate the system, as well as low enjoyment in running the system, while to be able to run the system properly, surely it takes high passion and a happy mood in carrying out the task¹⁶.
3. Procrastinating / dragging feet In this case, users often or always procrastinate their duties as operators of health information systems for various reasons. There is a user who argues still busy carrying out the main task of caring for patients, there is arguing that the deadline for submission of reports is still far, there is also a reason that still encountered many difficulties to complete the task in the near future, even some are looking for excuses that are not related With tasks within the organization¹⁶.
4. Feigning ignorance In this case, the user pretends not to know anything about the health information system that is implemented. If there is no warning against him/her, then he/she does not feel obliged to operate the system as well as possible. He/she did not feel that running a health information system was his primary duty. In this case, there is no self-awareness of the information system implemented in his/her organization, or in other words, has no "sense of belonging to information systems" that is in dire need of an active role of himself/herself¹⁶.
5. Withholding information, suggestions, help or support In this case, the user hold or hide things that are useful for the sustainability [of the implementation of the health information system](#). For example, he/she has information that is important or valuable to the development of the system, but he/she does not submit it to the authorities. He/she is passive in the sense that he/she does not want to give suggestions that are useful to managers, but he/she has ideas that can be delivered. He/she also does not want to provide assistance or support for the sustainability and progress of system implementation, when he/she has the ability to do so¹⁶.
6. [Standing by and allowing the change to fail](#) In this case, if the health information system is in an unfavorable condition, the user would feel more like it. He/she prefers waiting and prepares to welcome the failure of the system implementation. In other words, he/she does hope that the system fails to be implemented. If the [implementation of the health information system has](#) failed, then he/she will be free from this mandatory additional task. Thus, there is no longer any loyalty to the organizational program, which should require the full support of him/her¹⁶. Meanwhile, active [resistance to information systems can be](#) manifested in [the following](#) behaviors.

1. Be critical In this case, a person who is resistant to a health information system may wreak

out his or her refusal by criticizing the system. In general, this criticism is used solely as a self-defense mechanism in the form of rationalization. The usual criticisms are: the system is not built properly, the procedures used in the system are too complicated, the system has not been able to meet the needs of users, and so on¹⁶.

2. Blaming / accusing In this case, users who are resistant to the implementation of a health information system may express their rejection by blaming or accusing the initiator or manager of the system. The above aggressive behavior is intended to cover up his inability or unwillingness to implement the information system. Examples of statements that tend to blame are: the construction of health information systems only to get aid projects, information system resources not well prepared, and so on¹⁶.

3. Blocking In this case, users who are resistant to health information systems may manifest their rejection by acts intended to hinder the implementation of such information systems, such as engaging with other users to perform other activities, disrupting internet network connectivity so that the system can not operate, and so on¹⁶.

4. Fault-finding In this case, users who are resistant to health information systems may manifest their rejection by attempting to find fault with regard to the implemented information system, such as less sophisticated hardware specifications or non-up to date software¹⁶.

5. Sabotaging Users who are resistant to health information systems can manifest their rejection by committing sabotage. This act is intended to hinder the smoothness of the information system being implemented. Examples of sabotage behavior include: hiding data that should be immediately entered into the database program, or retaining the materials that will be used to support the execution of the system, and so on¹⁶.

6. Undermining In this case, users who are resistant to health information systems may manifest their rejection by undermining the existence of the implemented system, such as disrupting well-functioning computer programs or corrupting system hardware in secret, and so on¹⁶.

7. Ridiculing In this case, users who are resistant to health information systems can manifest their rejection by degrading the existence of an implemented information system. Ridicule can be directed to developers or managers of information systems or can also be addressed to fellow users. For example, a mock-resistant user that the system may not work properly because most of the users are not skilled in operating the computer¹⁶.

8. Intimidating / threatening Intimidating is a form of stronger active resistance. An example of this behavior is to intimidate or threaten fellow users not to implement health information systems. He threatens not to help, away from or exclude other users who are still actively operating the information system¹⁶.

9. Starting rumors Active resistance to health information systems can also be manifested by cowardly behavior that is secretly spreading the bad news about health information systems, in terms of hardware, software, brainware and implementation. For example is spreading rumors that health information systems are being applied only as a means of obtaining project funds from the government¹⁶.

10. Appealing to fear Active resistance to health information systems can also be manifested by frightening other users, for example, saying that if they are not adept at operating the computer there will be a trouble with the system or the computer being damaged, so they will have to take responsibility for the damage¹⁶.

11. Manipulating Active resistance to health information systems can also be manifested in the form of manipulative actions such as manipulating information that will make other users reluctant to run the information system¹⁶.

12. Arguing User resistance to health information systems can be realized by debating developers, managers or fellow users of information systems. Basically this debate is intended to lower or weaken the existence of information systems that have been implemented. Various arguments are used to show the weakness of the system. Arguments can also be intended to prevent the implementation of new information systems¹⁶.

13. Using facts selectively In this case, users who are resistant to health information

systems will choose a fact that is profitable for themselves. If there is a fact that is unfavorable to the existence of the information system, it will use it or distribute it to others to make the information system look bad and vice versa if there is a fact that is beneficial to the existence of the information system, then he does not use it so that the good of the system is not known by the people¹⁶.

14. Distorting facts Active resistance to health information systems can also be manifested in the form of factual distortion. The real facts favorable to the existence of an information system may be reversed so that it will be harmful to the sustainability of the system's implementation. For example, most of the users are ready to implement this information system this year, but when representing users, he reports to managers that new users are not ready to implement the system this year¹⁶.

15. Raising objections Users who are resistant to health information systems may manifest their rejection by expressing objection to implementing the system for various reasons. It is also possible that he invites other users to jointly express an objection to implement this system, for example by reason of not yet technically ready or there are other tasks that are more important but not yet able to be resolved¹⁶.

Based on the above explanation it is clear that user resistance is really a problem to be solved in order to ensure the sustainability of the implementation of health information systems. Surely this condition should be anticipated early. The signs of active resistance are more easily recognized by managers because they are usually manifested in the form of overt action. Thus, managers will more easily diagnose the occurrence of this type of resistance, so that it can be immediately determined steps to solve the problem. On the other hand, passive resistance tends to be hidden and when there is opportunity, then the resistance begins to look and eventually grow to be more severe. At a time when resistance is still hidden, often the management does not know it, so there is no anticipatory action to prevent it from progressing to a more severe condition. One important way to anticipate resistance is to improve or maintain organizational support for users in the implementation of health information systems. This support can be realized in the form of: 1) supervisor support such as support from direct supervisors and managers of information systems, 2) supporting working conditions such as mentoring services, technical assistance, communication between users with direct supervisor, good communication between users with system managers and the provision of adequate facilities, and 3) rewards, both financially and non financially such as self-esteem, sense of achievement, sense of development^{18,21}.

Conclusion Based on the overall explanation above it can be concluded that user resistance has become a serious problem in the implementation of health information systems, as a result of the enactment of dual duties for health professionals as health workers and as operators of information systems based on information and communication technology. One of the strategic efforts the organization must make to solve this problem is to improve and maintain organizational support.

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