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The 1st International Conference on Computer, Science, Engineering and Technology

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1st International Conference on Computer, Science, Engineering and Technology (ICComSET)

PREFACE

It's our great pleasure to welcome you to the 1st International Conference on Computer, Science, Engineering and Technology (ICComSET-2018), Tasikmalaya, West Java, Indonesia from 27-28 November 2018.

The International Conference on Computer, Science, Engineering and Technology (ICComSET-2018), provides an excellent international forum for sharing knowledge and result in theory, methodology an applications of Computer, Science, Engineering and Technology in theoretical and practical aspects. The aim of the conference is to provide a platform to the researchers and practitioners from both academia as well as industry to meet and share cutting-edge development.

ICComSET-2018 secretariat has received 250 submissions from 6 countries: Malaysia, Taiwan, India, Mexico, Tunisia, and Indonesia. The new program held in the City of Tasikmalaya was organized by the Universitas Muhammadiyah Tasikmalaya (UMTAS) at Santika Hotel, Tasikmalaya from 27-28 November 2018, and supported by several universities including: STIKES Bakti Tunas Husada, Universitas Perjuangan Tasikmalaya, STIKES Muhammadiyah Ciamis, Universitas Muhammadiyah Sidoarjo, and Indonesian Collaboration Publication Community (Komunitas Kolaborasi Publikasi Indonesia/ KO2PI).

Each paper has been reviewed by the program committee. Only 166 paper were accepted for the oral session (acceptance rate: 65.3 %). The conference program consist of 3 keynote speakers (90 min), 6 Invited speakers (120 min), 5 parallel session, one poster session and a round table.

We would like to thank scientific committee, and reviewers, as well as the committee of the Universitas Muhammadiyah Tasikmalaya who have participated in the success of this event so that this event can be held as planned. We also conveyed to the Rector of Universitas Muhammadiyah Tasikmalaya who had supported this event both in terms of finance and other supporting facilities.

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Evaluation of Digital Partograph Application Case Study On Normal Labor by Community Midwife

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Abstract. The use of partograph in labor is still low, that is 25% Hospital, Community Health Centers 45%, and Maternity Clinic54%. The low use of partograph because it is considered difficult and takes a long time, for it needs the effort of using partograph become easier, faster, without losing the essence of partograph function. Digital partographs become one of the solutions for the use of partograph at the time of birth to be increased. The study has been done by using qualitative research method with case study approach. Sampling technique using Snowball sampling. Data collection with in-depth interviews, FGDs and document review. Analyze data with techniques, create keywords, categorize and create themes. Research shows that the information system contained in the digital partograph has met the aspect of system quality, information quality and user satisfaction. The application of digital partograph has fulfilled the use in clinical decision making, monitoring the progress of labor, documentation, monitoring of mother and fetal condition, digital partographs, and support from stakeholders for digital partograph applications. Based on the results of the study concluded digital partograph applications can already be used as a tool to monitor the progress of birth and already accessible on Google Playstore. With the digital partograph, there is a change in midwife behavior in its use.

1. Introduction

Midwives as one of the health workers have an important role in health programs and become the spearhead of health services in the community. The role of midwives is very influential on the quality of service, one of the strategic efforts that midwives can do to contribute to the quality of health services is to use partographs in monitoring the labor process. Partograph can help midwives recognize normal labor or detect early complications.[1]. Partograph is a tool to monitor the progress of labor recommended by the World Health Organization [WHO] and is able to monitor the progress of labor, the condition of the mother, the condition of the fetus, and any care taken at the time of labor, and most importantly is able to detect complications that occur during delivery, so that the expected conditions can be achieved, namely *well-born baby* and *well health mother*. [2][3][4] This is consistent with the results of a study conducted by Neal Jeremy L and Lowe Nancy K regarding *Physiologic Partograph Birth Improvement Safety and Outcomes Among Low-Risk, Nulliparous Women With Spontaneous Labor Onset* which results showed that use of partograph safely will limit the diagnosis of dystocia during the first stage of labor.[5]

Until now the use of partograph in labor is still very low. Based on the Maternal and Infant Health Quality Study conducted by the Ministry of Health, WHO and HOGSI in 2012, the results of health service facilities using partograph in labor assistance were still low, at 25% in hospitals, 45% in health centers and 54% in maternity clinics. [6] This is in line with the results of the monitoring and evaluation [monev] conducted by the Midwives Coordinator of the Tasikmalaya District Health Service in 2014, from 490 midwives spread across the Tasikmalaya Regency area, only 20% of midwives were complete and correct in filling. From the results of the monitoring and evaluation, most midwives only documented partographs in some of their labor, and the filling was incomplete. Even the results of the survey illustrated that the majority of midwives documented partograph after labor has completed.[7].

Many factors influence midwives in their use of partograph. The results of the study on *The Use Of The Partograph In Labor Monitoring: A Cross-Sectional Study Among Obstetric Caregivers In General Hospital, Calabar, Cross River State, Nigeria*, conducted by Udeme Asibong, et al show that partograph knowledge, availability partograph, labor skills, and training are factors that influence the use of partograf.[8]. In filling Partograph requires understanding and accuracy, so that the results of filling are not wrong, and finally, a midwife can decide on the clinical decision to be taken. Even so, not a few midwives considered that filling partographs was difficult and took a long time, so filling partographs seemed to "fall out of obligation" and "as long as they existed", which ultimately had an impact on midwives' mistakes in making clinical decisions. The phenomenon that has been explained showed that the use of partograph has not been fully carried out according to the procedure. The midwife actually knows the procedure but has not fully done, it means that the midwife does not use partograph completely, correctly and on time. In fact, if partograph used correctly by the midwife, it is likely that the mother and baby will get a safe, adequate and timely labor care, and help prevent the occurrence of complications that can threaten the safety of their lives. [8][9]. Looking at the various problems above, the researcher tried to make an application called **"Digital Partograph"**. Digital Partograph is designed to solve various problems that occur related to partograph use. Some researchers have previously developed partographs in other forms, such as research conducted by Bhatt *et al.* which proved that the use of partographs electronic [e-partographs] is faster than "manual" partographs.[10] The results of Rahman's research *et.al..* proved that e-partograph has a higher user level than partograph paper. [11] Results of *Underwood* et al. proved that *PartoPen* [pen-shaped partograph] is easy to use compared to paper partograph. [12]

Digital partograph application is developed by researchers using smartphone-based cellphone media. This digital partograph is equipped with a system *alarm* as a notification if there is a complication during labor monitoring, along with a pre-referral procedure that the midwife must perform if labor complications occur. Digital Partograph is designed to make it easier for midwives to monitor the progress of labor, especially in making clinical decisions when complications are found. The information system designed in the digital partograph refers to the DeLone and McLean model, in which design digital partograph applications very concerned about system quality, information quality, service quality, usage, and user satisfaction.[13] With this application, it is expected that midwives will be easier to monitor labor, so there is a change in behavior in filling partographs, because one of the behavior changes occur due to a stimulus in the form of a digital partograph. [14].

2. Research Objectives

This study aims to:

- Evaluate the application of digital partographs
- Conduct an analysis of behavior changes in use of partograph
- Identify stakeholder support in the use of digital partographs in normal labor by midwives.

3. Research Methods

Research carried out by researchers is qualitative research with a case study approach.[15] This approach is used to explore problems so that they can describe or explain in more detail the <u>use of digital partographs</u>. Subjects in qualitative research are called research subjects.[16] Primary research subjects in this study were village midwives, and secondary research subjects were the head of the puskesmas [public health center], the coordinator of the Puskesmas, the Head of the Tasikmalaya District Health Office, and the Chairperson of the Tasikmalaya Regency IBI Branch. The sampling technique in this study is to use *Snowball sampling*, so in determining the sample, the researcher will choose the person to be sampled who is considered to be providing information, then based on the data or information obtained from the previous sample, the researcher can specify the other samples considered to provide data more complete [15][17] sampling stops until it reaches data saturation and can no longer be encoded or no new data is collected.[18] The main instruments in this study are the researchers themselves, ranging from planners, implementers of data collectors, analysts, data interpreters so that eventually they become reporters of the results of the research. After the focus of the research becomes clear, it is likely that a simple research instrument will be developed, which is expected to complete the data and compare it with the data found through interviews. In carrying out this research, researchers will plunge into their own field to conduct data collection, analyze, and make conclusions, with additional instruments in the form of interview guidelines, checklist, voice recorder, and field notes.

4. Results and Discussion
4.1. Information
Information systems nowadays have developed very rapidly. Its application can be very important and very helpful for human work, especially midwives. In the world of health, especially midwifery, the use of information technology can improve the quality of services to be more effective and efficient. One solution offered related to information systems in the midwifery field is the presence of digital partographs that are implemented through applications *smartphone*. With digital partograph, every monitoring of labor during the active phase can be done easily, another advantage is that there is a notification that sounds when labor complications occur.

Several models for measuring the success rate of information systems have been developed by many researchers [4][5][6]. Of the several success models of information systems, which received more attention from researchers was the DeLone and McLean model, which was further refined to Delone and Mclean Model which stated that *information quality, system quality*, and *service quality* would have a positive effect on users [7][8], the study supported by research conducted by J. Immari which empirically examines the DeLone and McLean models, the results prove that the success of information systems is influenced by the quality of the information system and the quality of information generated from the system. Information quality measures the quality of output from information systems. Similar to system quality, the quality of information in question is the quality of information that is measured subjectively by the user. The measurement scale used in the use of this partograph application is as follows: completeness, precision, reliability, data always updated, and the form of output. [19]. Digital partographs contain all the data contained in the manual partograph, the subject already feels the data contained in the digital partograph represents the results of the monitoring carried out during labor. This shows the data in the complete digital partograph in accordance with the needs of the midwife. Completion of digital partographs is done by entering data from observations into the menu provided, and then the results can be seen in conclusions. The data entered is automatically stored, and the final conclusions are in accordance with the manual partograph. This shows the accuracy of digital partograph applications in storing data so that the final results are manual partograph. A final conclusion is a form of application output. Looking at the quality of information, this digital partograph has been very fulfilling, in addition to being very easy to use, this digital partograph is needed so that midwives are more motivated in filling. Menus contained in digital partograph

applications are in accordance with the needs of observation data. The menu creation is adjusted to the data contained in the manual partograph. For the content contained in this partograph, it already represents the needs of midwives.

System quality is used to measure the quality of information on the system itself, both software and hardware. System quality is the performance of the system that refers to how well the hardware capabilities, software, policies, procedures of the information system can provide information on user needs. System quality is measured subjectively by the user, so the quality of the system used *perceived system quality*.[19][20] Based on the results obtained through interviews, the subject of the study was very easy to use digital partograph, but from the results of several trials, there were still revisions to the application, which has now been revised. The research subjects have tried the results of the application that has been corrected using the case made by the researcher. The final results show that the application is suitable for use, and at this time digital partograph applications can be accessed on *Google Play Store*. User satisfaction *is* connected to the recipient's response from the use of the output from the information system. In this study midwives as digital partograph users were satisfied with the application that was made, especially this application increased motivation in filling partograph. The quality of the system built in this digital partograph application includes the accuracy of the application in managing the data entered based on the results of observations, so it produces appropriate conclusions such as filling partographs manually. Another indicator of the quality of the digital partograph application system is the ease of using it, as well as the menus made according to the data needs to be inputted.[19]

4.2. use of digital partographs

The results of the study show that this digital partograph has useful as clinical decision making when the subjects observe by using digital partograph, then entering the data that belongs to complicating labor, then a notification will automatically appear.[21] Notifications that occur during labor complications are used as a basis for clinical decision making to make referrals. With this notification helps midwives to make decisions promptly and quickly, so this can have an impact on the quality of services, especially in labor. The results of this partograph can be printed with the results resembling a manual partograph, and it can be stored as a documentation file. Judging from the usability aspect, this partograph has fulfilled the use of clinical decision making, monitoring the progress of labor, documentation, monitoring of maternal and fetal conditions.[22]

4.3. Behavior changes

In this study the behavior changes that occur are caused by an **individual's willingness to change** because of a stimulus in the form of innovation in the form of digital partograph, so what happens is that the research subject is very quick to accept innovation or change, which usually performs partograph after completing labor, now there is a behavior change when observing. This certainly has a positive impact, especially in the quality of care in labor.[23]

4.4. Stakeholder Support

An indicator of *stakeholder* support in this study is the process of socialization to a wide audience. The existence of digital partographs is appreciated by *stakeholders,* especially it is expected that with this digital partograph it can reduce death cases, especially in Tasikmalaya Regency. Tasikmalaya district health office in this case represented by the head of public health revealed that with the digital partograph it is expected to assist in the referral process, facilitating midwives in the referral process. For that as an effort to provide the form of support, the health office will assist the advocacy process so that this digital partograph will become part of *SIRESIK*. SIRESIK is a referral program in Tasikmalaya district, with an online system. Support was also given from the chairman of the IBI Tasikmalaya regency branch. Accrding to the chairman of IBI, digital partograph will increase compliance in monitoring labor because there are still many midwives who do not fill partographs at the time of labor. But of course, this digital partograph still needs

a lot to do, namely with the next step, which is conducting effectiveness test research. The head of the Singaparna Health Center along with his staff will continue to motivate midwives in the use of digital partographs, and each delivery report must send the application through the WA group to the coordinating midwife [24]

Figure 1. Main menu of digital partograph application.

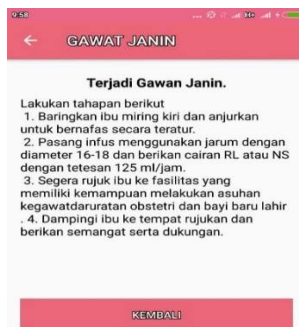**Figure 2. C**onclusion is the final result of digital partograph

Figure 3. digital partograph notification system

Figure 4. digital partograph back sheet as a labour record

5. Conclusion

5.1. The information system contained in digital partograph has fulfilled the aspects of system quality, information quality, and user satisfaction. The results show that digital partograph applications are suitable for use, and to be able to access this application, users can download via *google play store* by typing "Partograph Digital".

5.2. support in the form of policies established at Singaparna health center, that every observation of Digital partograph applications have fulfilled the use of clinical decision making, monitoring the progress of labor, documentation, monitoring of maternal and fetal conditions. The results of the study showed that the alarm notification rang when a long time period of detection was detected, namely the opening over the alert line.

5.3. There was a behavior change in using digital partograph which the research subjects usually filled out manual partographs after labor was completed. In using this digital partographs, midwives filled in when labor observation.

5.4. Stakeholder labor during the active phase must use a digital partograph. The IBI Branch Management of Tasikmalaya Regency will help conduct advocacy to the Regional Administrators and Central Administrators so that digital partographs will be one of the studies in Midwifery Up Date. The Tasikmalaya District Health Service will conduct advocacy to the Provincial Health Office so that this digital partograph application becomes part of the SIRESIK referral system.

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