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# VISUALIZING CHILD COVID-19 VACCINATION CONSENT BY PARENTS IN MALAYSIA

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**ABSTRACT** - In response to the COVID-19 outbreak, the Ministry of Health Malaysia has implemented a vaccination program to effectively combat the ongoing crisis. However, there is a pressing need to raise awareness among parents about the importance of vaccinating their children aged 5 to 17 and address any hesitancy they may have. To address this, the study aims to develop a web application and dashboard to demonstrate child COVID-19 vaccination consent by parents in Malaysia that display and forecast data related to child COVID-19 vaccination. The objectives of this study are to analyze the requirements of data analysis on child COVID-19 vaccination, develop an interactive dashboard that visualize child COVID-19 vaccination consent by parents in Malaysia by using Big Data tools and evaluate the usability of the dashboard by using Technology Acceptance Model (TAM). The methodology employed in this study is agile model which is one of the Software Development Life Cycle (SDLC) model. The agile model is divided into five cycles which are plan, analysis, design, develop and test. The study's findings have been useful in spreading accurate information and increasing knowledge about COVID-19 vaccination for children under the age of 18.

**Keywords:** Vaccination, COVID-19, dashboard

## 1. INTRODUCTION

Due to the COVID-19 outbreak, vaccination is necessary as a practical means of lowering and eradicating the COVID-19 burden (Syed Alwi et al., 2021). Ministry of Health Malaysia has started administering a COVID-19 vaccination programme since 24th February 2021 in the hopes that it will curb an increase in infections that has been occurring. To increase parents' consent for COVID-19 vaccination for their children and decrease their hesitancy to administer the vaccine to children between the ages of 5 and 17, there is a need for a web application and interactive dashboard that can display and forecast data related to child COVID-19 vaccination. The study's objectives were to analyze the requirements of data analysis on child COVID-19 vaccination, develop an interactive dashboard that visualize child COVID-19 vaccination consent by parents in Malaysia by using Big Data tools and evaluate the usability of the dashboard by using Technology Acceptance Model (TAM).

## 2. METHODOLOGY

The methodology employed in this study is agile model which is one of the Software Development Life Cycle (SDLC) models. The agile model is divided into five cycles which are plan, analysis, design, develop and test. The project was planned during the first phase, which is known as the planning phase. Next, to begin the project, it was essential to obtain all of the project requirements from various sources during the requirement analysis phase. The datasets for this project were acquired from the GitHub account of the Ministry of Health Malaysia. The design of the data model and the sketching of the dashboard are the two tasks that are included in the design phase. Development phase is the important phase where development starts. Lastly, the testing phase involved distributing Technology Acceptance Model (TAM) questionnaires using the Google Form platform.

## 3. RESULTS AND DISCUSSION

The evaluation of the web application and dashboard was conducted using the Technology Acceptance Model (TAM). To conduct the TAM evaluation, an online questionnaire was distributed to respondents via Google Forms. This testing phase takes place after the completion of the development process. The questionnaire was specifically targeted towards the general public, particularly parents. The questionnaire was divided into four parts which includes Demographic Information, Perceived Ease of Use (PEU), Perceived Usefulness (PU) and Intention to Use. Based on the result obtained from the testing, most of the respondents are satisfied with the web application and dashboard. The developed system was well-received by users, who found it to be user-friendly and appreciated the intuitive layout designed for

easy understanding of child COVID-19 vaccination information. Users also acknowledged the value of the system in keeping them informed about the progress of vaccinations and providing relevant statistics specifically related to children.

## 4. NOVELTY OF RESEARCH / PRODUCT

Several research studies have explored the requirements and development of dashboard visualizations, specifically focusing on health-related data, COVID-19, and vaccination information. For example, Afifah and Rahmanto (2020) developed a Health Information Analytics Dashboard as the solution for obtaining precise, comprehensive and real-time insight from big data in healthcare. Cuadros et al. (2022) proposed a project to visualize the impact of vaccination coverage disparity in the United States in the dynamics of the COVID-19 pandemic. Geospatial and data visualization analyses were utilized to determine the correlation between vaccination rates and COVID-19 incidence and fatality rates. Similarly, Talagala and Shashikala (2022) conducted research on developing an interactive dashboard to visualize the COVID-19 epidemic and vaccination administration data in Sri Lanka.

## 5. CONCLUSION

This study has successfully accomplished its objectives, which involved analyzing the data analysis requirements for child COVID-19 vaccination and developing an interactive dashboard for child COVID-19 vaccination consent using Microsoft Power BI. The dashboard effectively showcases child COVID-19 vaccination consent by parents in Malaysia, providing visualizations and predictive insights related to vaccination data.

## REFERENCES

Afifah, A., & Rahmanto, N. K. (2020). *Development of the Health Information Analytics Dashboard Using Big Data Analytics*. https://www.researchgate.net/publication/348834045

Cuadros, D. F., Moreno, C. M., Musuka, G., Miller, F. D. W., Coule, P., & MacKinnon, N. J. (2022). Association Between Vaccination Coverage Disparity and the Dynamics of the COVID-19 Delta and Omicron Waves in the US. *Frontiers in Medicine*, *9*. https://doi.org/10.3389/fmed.2022.898101

Syed Alwi, S. A. R., Rafidah, E., Zurraini, A., Juslina, O., Brohi, I. B., & Lukas, S. (2021). A survey on COVID-19 vaccine acceptance and concern among Malaysians. *BMC Public Health*, *21*(1). https://doi.org/10.1186/s12889-021-11071-6

Talagala, T. S., & Shashikala, R. (2022). *Interactive Dashboard to Monitor the COVID-19 Outbreak and Vaccine Administration*. http://arxiv.org/abs/2205.07286