Research Exhibition in Mathematics and Computer Sciences (REMACS 6.0)/
ISBN: 978-629-97440-5-4

ENDEMIC EXPLORATORY DASHBOARD FOR CONTAGIOUS DISEASES IN RAISING PUBLIC AWARENESS OF HEALTH

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ABSTRACT - Contagious diseases, or infectious diseases, are illnesses caused by microorganisms like bacteria, viruses, fungi, or parasites. They can be transmitted through physical contact, respiratory droplets, or indirectly through contaminated objects. The prevalence of diverse diseases in the world is alarming, making it difficult for people to stay informed about the latest trends and developments. This lack of awareness can have significant consequences for public health, hindering timely response, preventive measures, and effective management of these diseases. The "Endemic Exploratory Dashboard for Contagious Diseases in Raising Public Awareness of Health" is a comprehensive project aimed at raising awareness about contagious diseases. The project aims to provide real-time insights, visualizations, and information about the prevalence, trends, and impact of contagious diseases. The objectives of the study are to identify requirements for centralizing endemic cases, design an exploratory dashboard for contagious diseases, and evaluate its usability through user acceptance tests. The methodology used in this study is the Waterfall model, consisting of five phases: planning, where the first objective is achieved; design; development, where the second objective is achieved; testing; and evaluation, where the third objective is achieved. There are a total of 50 respondents which helps with the evaluation of the dashboard. This evaluation proved that this dashboard helps users become better informed about contagious diseases since it has the highest average in the Perceived Usefulness dimension.

Keywords: Contagious disease, Power BI, Hive, COVID-19, big data.

1. INTRODUCTION

Disorders produced by organisms, such as bacteria, viruses, fungus, or parasites, are known as infectious diseases (Agrebi & Larbi, 2020). The Covid-19 pandemic has led to the classification of epidemic, endemic, and pandemic. Epidemics are unanticipated increases in disease cases in a region, while pandemics are exponentially spreading diseases with daily new cases. In contrast, endemic diseases are persistent and localized to a single area, with predictable transmission rates (Madhav et al., 2017). To prevent disease spread, governments have encouraged vaccinations for contagious diseases like Influenza and Covid-19. Vaccines prepare the immune system to combat new diseases, rather than treating them once contracted. Lower intake can increase the risk of contracting the flu and increase the risk of severe, protracted, or fatal illness in high-risk groups (Murugesan, 2022).

2. METHODOLOGY

The proper project procedures must be followed in order to reach the research's final goal. In order to finish this research, the Waterfall model is used. This process consists of 5 phases. It is necessary to complete the planning phase in order to accomplish the first objective. The first stage of this research is the requirement collection phase. Phase 2 of the project officially begins once the requirements are gathered. Wireframe for the website and dashboard are the deliverables of this phase. Phase 3 is the development phase. With the help of the wireframe created in phase 2, the dashboard could be developed. Objective 2 is achieved at the end of this phase. Phase four is testing, and phase five is evaluation. After the testing phase, a user acceptance test will be performed to assess the dashboard's usability. This phase ends with the accomplishment of Objective 3.

3. RESULTS AND DISCUSSION

Figure 1 shows the comparison of the average between all four dimensions. The dimensions are Perceived Ease of Use (PEU), Perceived Usefulness (PU), Attitude (ATT), and Intention to Use (BI). As shown in Figure 1, the second dimension which is Perceived Usefulness has the highest average which is 4.58. This indicate that, most of the respondents agree that the Endemic Exploratory Dashboard is useful to them. This means that respondents highly recognize the value and benefits of the technology. They perceive it as a useful tool that can effectively meet their

needs and provide tangible advantages or improvements in their tasks, activities, or goals.

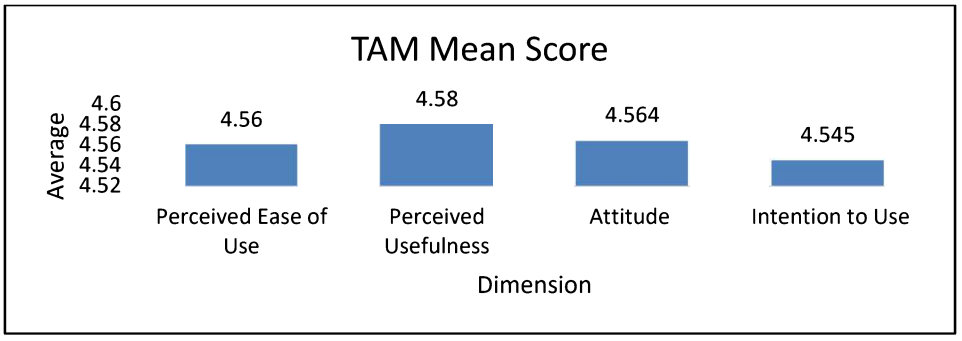

Figure 1. TAM Mean Score

4. NOVELTY OF RESEARCH / PRODUCT

The endemic exploratory dashboard for contagious diseases in raising public awareness of health introduces a groundbreaking approach by combining the power of Hive technology and the utilization of Power BI. By integrating Power BI, a powerful business intelligence tool, into the study, this research aims to revolutionize the way data is visualized and analyzed in the context of contagious diseases. Power BI provides an intuitive and interactive interface for data exploration, allowing users to gain valuable insights from complex datasets with ease. The seamless integration of Hive technology and Power BI empowers the dashboard with robust data processing capabilities and visually appealing data visualizations, enabling users to delve deeper into the trends, patterns, and correlations within contagious disease data. This innovative combination of Hive technology and Power BI sets a new standard in the field of public health informatics, enhancing the accessibility, usability, and effectiveness of the dashboard in raising public awareness and facilitating informed decision-making.

5. CONCLUSION

The Endemic Exploration Dashboard for Contagious Diseases aims to raise public awareness of health by centralizing endemic cases in Malaysia. The dashboard is designed using Balsamiq and Power BI, with Apache Hive implemented in data pre-processing. The usability of the dashboard is evaluated through user acceptance tests, using a website with an interactive dashboard and Technology Acceptance Model (TAM) testing.

REFERENCES

Agrebi, S., & Larbi, A. (2020). Use of artificial intelligence in infectious diseases. In Artificial Intelligence in Precision Health (pp. 415–438). Elsevier. https://doi.org/10.1016/b978-0-12-817133-2.00018-5

Madhav, N., Oppenheim, B., Gallivan, M., Mulembakani, P., Rubin, E., & Wolfe, N. (2017). Pandemics: Risks, Impacts, and Mitigation. In Disease Control Priorities, Third Edition (Volume 9): Improving Health and Reducing Poverty. https://doi.org/10.1596/978-1-4648-0527-1_ch17

Murugesan.M. (2022). #HEALTH: Influenza on the rise. New Straits Times. https://www.nst.com.my/lifestyle/heal/2022/08/819465/health-influenza-rise