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Implementation of agile approach in developing drug education application in pharmacy environment: a case study on improving user knowledge

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ABSTRACT

The development of drug counseling and education system applications in pharmacies is an important initiative, given the challenges in providing effective drug education to users. This research addresses these issues using an Agile approach in application development. The research methods include user requirements analysis, iterative development of the application using Agile methodology, and evaluation of functionality and user acceptance. The results showed that the application of the Agile approach in developing this application successfully increased user engagement and positively contributed to improving health services in pharmacies. The contribution of this research lies in developing adaptive, responsive, and effective health applications that meet user needs and improve the quality of health services in pharmacies. Thus, this research provides a better understanding of innovative approaches in health app development and highlights the importance of implementing best practices in improving public health services.

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INTRODUCTION

Drug education in pharmacy services is crucial to providing quality health services to the community. Pharmacy is one of the essential places in drug distribution and providing proper information to drug users. Effective drug education not only aims to provide information about the correct dosage and use of drugs but also to increase users' understanding of the benefits, side effects, and drug interactions that may occur. Through good drug education, drug users can better manage their health conditions and reduce the risk of inappropriate drug use(Ali et al., 2024; Chen et al., 2023; Hohmeier et al., 2023; Tupas et al., n.d.; Yong et al., 2023).

However, in providing drug education to users, pharmacists often face complex challenges. One of them is the challenge of conveying complex information clearly and quickly understood by users with varying health literacy levels. In addition, time is also an obstacle to providing comprehensive drug education in a pharmacy environment that is often busy and crowded. The limitations of conventional methods of delivering drug

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education are a significant concern in this context. Conventional methods, such as delivering information verbally or using brochures, tend to be less effective in delivering information comprehensively and sustainably. The use of such methods also often needs to provide an opportunity for users to return to the information that has been conveyed, thus increasing the risk of misunderstanding or forgetting the instructions for drug use(Cassidy et al., n.d.; Chan et al., 2022; Gao et al., 2023; Nair et al., 2023).

The development of drug education apps is a promising solution to overcoming the challenges pharmacists face in providing drug education to users. The app can provide users with more detailed and interactive information, allowing them to understand the information better and access it whenever needed. In addition, using an Agile approach in its development, the app can be continuously updated and refined based on user feedback, thus increasing its effectiveness and relevance in providing practical drug education. Technology in healthcareHealthcare has become a significant trend that improves the accessibility, efficiency, and effectiveness of healthcare services. The development of Mobile and Web Applications has changed the traditional paradigm of Healthcare by providing direct access to health information, health condition monitoring tools, and medical consultation services online. This allows users to quickly access health information wherever and whenever needed and opens up new opportunities for disease prevention, chronic condition management, and real-time health monitoring(Alghamdi et al., 2023; Andia et al., 2022; Khan et al., 2023; Phanudulkitti et al., 2023)

In this context, Medicines Education Apps have great potential to increase user engagement with their health. By providing appropriate and relevant information about medicines in an easily accessible manner via mobile devices or the web, such apps can strengthen users' role as partners in managing their health. In addition, apps can offer interactive features, such as medication reminders, symptom or side effect logging, and online consultations with pharmacists or other healthcare professionals, enhancing users' understanding and engagement in their Healthcare.

However, developing a Medicine Education App requires a flexible and adaptive approach to meet users' varying needs and preferences. The need for a Flexible Approach in Health App Development highlights the importance of considering market dynamics, technological developments, and user feedback in every stage of app development. The Agile approach, with its focus on team collaboration, responsiveness to change, and iterative delivery, is the right choice to address the complexities and dynamics in developing health apps such as Drug Education Apps in pharmacies. Thus, combining the potential of technology with a flexible approach to developing health applications, especially the Drug Education Application, is a strategic step in improving user-based and sustainable health services(Aljaber et al., 2023; Chen et al., 2023; Coic et al., 2020; Rushton et al., 2023).

The Agile approach to software development is based on four core values listed in the Agile Manifesto: individuals and interactions more than processes and tools, working software more than complete documentation, collaboration with customers more than contract negotiations, and responsiveness to change more than following a set plan. These

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principles emphasize the importance of flexibility, adaptability, and focus on user needs in developing software. Several commonly used Agile development methodologies include Scrum, Kanban, Extreme Programming (XP), and Lean Software Development. Each methodology has a different approach to organizing teams, managing project backlogs, and performing development iterations. For example, Scrum uses short iterations called sprints, while Kanban organizes the workflow visually using Kanban boards. These methodologies provide a clear framework for implementing Agile principles in software development practices(Al-Saqqa et al., 2020; Bomström et al., 2023; Dingsoeyr et al., 2019; Dingsøyr et al., 2012; Kaur et al., 2023; Rindell et al., 2021; Santos et al., n.d.; Serrador & Pinto, 2015; Shrivastava & Rathod, 2014).

The Agile approach has several advantages in the context of health app development. First, its flexibility allows teams to respond quickly to changes in user needs or technology so that health apps can be constantly updated and refined according to the latest developments in Healthcare. Secondly, the focus on incremental development and iterative delivery allows the app to be available to users immediately so that the benefits can be felt early. However, there are also some drawbacks to note. First, sometimes too frequent adaptations can destabilize development, especially in complex environments such as healthcare applications involving strict regulations and high privacy needs. Secondly, managing constantly changing user needs can create difficulties in setting priorities and producing consistent products. Therefore, it is essential to consider these advantages and disadvantages in applying Agile approaches in developing health applications, including Drug Education Apps in a pharmacy environment(Akhtar et al., n.d.; Alami et al., 2022; Hasan et al., 2013; Meiliana et al., 2023; Michalides et al., 2023; Mishra & Alzoubi, 2023; Tøndel et al., 2022).

Although Agile approaches have been widely applied in software development, there is a significant knowledge gap in drug education application development in pharmacies. Knowledge of applying Agile principles effectively in a pharmacy environment, which often has unique challenges and needs, is limited. Therefore, this research aims to fill this knowledge gap by investigating the best practices and challenges associated with using Agile approaches to develop drug education apps in pharmacies. The selection of a case study is an appropriate approach to evaluate the effectiveness of using Agile in improving user knowledge related to medication use. Using this approach, the research can describe in depth the practical experience in implementing Agile in developing drug education applications in pharmacies. Through a case study, this research can identify factors that influence success or failure in Agile implementation and provide valuable insights for practitioners and researchers interested in health application development.

This research is expected to make a significant contribution to the improvement of health services in pharmacies. By understanding the best practices in drug education app development using the Agile approach, pharmacists and app developers can improve the effectiveness and efficiency of the services they provide to users. This research can also improve the understanding of how technology and software development approaches can

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improve public health literacy and optimize the benefits of drug use. As a result, this research will likely contribute to improving people's health and well-being.

METHODS

This study aims to develop a drug education application in pharmacies using an Agile approach to improve users' knowledge about drug use. The first stage involved analyzing user needs through surveys, interviews with pharmacists, literature studies, and stakeholder analysis. The second stage involved iterative development of the application with team building, sprint planning, feature development, and periodic testing. The final stage involved functionality evaluation and user acceptance through functionality tests, user satisfaction surveys, usage metrics analysis, and pharmacist feedback. Thus, this research is expected to contribute new knowledge about using the Agile approach in developing drug education applications in pharmacies and improve health services through more practical applications responsive to user needs.

Figure 1. Research Stages

User Requirement Analysis

The first stage of this research was user needs analysis, which was conducted through several research methods. A user survey was conducted to collect data on users' needs, preferences, and expectations for pharmacy drug education applications. In-depth interviews with pharmacists were also conducted to gain insight into their experiences in providing drug education to users. In addition, a literature study was conducted to analyze the latest trends and best practices in drug education and health app development. A stakeholder analysis was also an essential part of this stage, which involved identifying and analyzing the needs and expectations of various stakeholders, including users, pharmacists, and app developers.

Application Development

In the second stage, the app's development using the Agile approach was structured and iterative. A development team is first formed, consisting of software developers, UX/UI designers, and consultant pharmacists. The first sprint was planned by setting sprint goals,

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creating a product backlog, and designing the tasks. Iterative development was implemented in each sprint, focusing on delivering core features that add user value. Daily meetings are held to update progress, identify bottlenecks, and plan the following actions. Periodic trials were also conducted to get feedback on functionality and user experience.

User Acceptance Evaluation

The last stage of this research is the functionality evaluation and user acceptance of the developed application. Functionality tests were conducted thoroughly to ensure the application functions properly and meets the identified user needs. User satisfaction surveys were sent to users to evaluate their satisfaction with the application, including ease of use, clarity of information, and usefulness of the features provided. Usage metrics analysis was also conducted to evaluate user adoption and engagement by collecting and analyzing data on app usage. Feedback from pharmacists was also part of this evaluation to gain their perspective on the experience of using the app to provide drug education to users. Thus, this study achieved its objectives of identifying user needs, developing the app with an Agile approach, and evaluating the functionality and user acceptance of the drug education app in pharmacies.

RESULTS AND DISCUSSION

User Needs

The User Needs Analysis has generated valuable information on user preferences and expectations for drug education applications in pharmacies. Surveys conducted among potential users, such as patients and pharmacy customers, revealed a need for comprehensive and easy-to-understand drug information, as well as a demand for interactive features to monitor drug usage. Interviews with pharmacists provided in-depth insight into the challenges of providing drug education to users and the potential of the app to improve the effectiveness of health services in pharmacies. In addition, the literature analysis provided a broad understanding of trends and best practices in drug education and health app development, which can be used as a basis for designing relevant and effective apps. The stakeholder analysis also identified the needs and expectations of various stakeholders, including users, pharmacists, and app developers, which will guide further development. Thus, the results of Phase 1 will provide a solid foundation for developing drug education apps that are responsive to the needs of users and health services in pharmacies.

Table 1. Data Collection Results

Data Source	Findings
User Survey	User preferences for app features include comprehensive drug information, interactive features to monitor drug usage, and ease of navigation within the app.
Interview with Pharmacist	Challenges pharmacists face in providing drug education to users, such as time constraints and complexity of information, as well as expectations for applications to improve the effectiveness of health services in pharmacies.

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Data Source	Findings
Stakeholder Analysis	Identify the needs and expectations of various stakeholders, including users who want clear and easily accessible drug information, pharmacists who expect tools to assist in providing effective drug education, and app developers who are oriented towards good user experience and innovative solutions.

Analysis of the table shows that the results from Stage 1: User Needs Analysis have provided comprehensive insights into the preferences, challenges, and expectations related to developing a pharmacy drug education app. The user survey revealed that users want an app that provides comprehensive drug information, interactive features to monitor drug usage and an interface that is easy to navigate. This shows the importance of providing the app with relevant content and intuitive features.

Interviews with pharmacists revealed challenges faced in providing drug education to users, such as time constraints and the complexity of drug information. However, pharmacists also see the potential of apps to improve the effectiveness of health services in pharmacies. Findings from the literature review support the importance of using technology in improving public health literacy and the effectiveness of health services in pharmacies, which formed the basis for the app development.

The stakeholder analysis highlighted the needs and expectations of various stakeholders, from users who want clear drug information to pharmacists looking for tools to provide effective drug education and app developers focused on good user experience and innovative solutions. This analysis emphasized the importance of understanding the perspectives and needs of various stakeholders in designing successful drug education apps in pharmacies. As such, the results from Phase 1 provide a strong foundation for developing drug education apps that are responsive to the needs of users and health services in pharmacies.

Application Development

Agile App Development has made significant progress in developing a pharmacy drug education app. Forming a development team consisting of software developers, UX/UI designers, and consultant pharmacists has been an essential first step in ensuring practical cross-disciplinary cooperation in app development. Furthermore, careful sprint planning for the first sprint, including setting clear sprint objectives, creating a product backlog, and designing the tasks to be performed, provided a solid foundation for app development. The iterative development undertaken in each sprint, focusing on developing core features that add value to users, has enabled rapid response to changing user needs. In addition, short daily meetings held regularly have facilitated effective communication between team members and ensured conformity of progress to the development plan. Periodic user or focus group testing to obtain feedback on functionality and user experience has provided valuable input for app refinement throughout development. Thus, this stage has brought significant progress in developing a drug education app that is responsive to the needs of users and health services in pharmacies.

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Table 1. Application Features

Features	Function
Interactive Information	This feature provides an advantage in conveying drug information to users more interestingly and understandably. With the use of images, videos, or animations, drug information can be presented visually, making it easier for users to understand how to use drugs and possible side effects. This can increase the user's level of understanding and awareness of the drugs used.
Drug History	This feature provides excellent benefits in managing users' medication use. By tracking the history of drug use, including the drugs that have been used, dosage, and side effects that have occurred, users can have a better understanding of their drug use. In addition, this drug history can also be used as a reference when consulting with pharmacists or other medical personnel.
Consultation with Pharmacist	This feature lets users get additional information about a particular medicine or health issue directly from a pharmacist. The ability to consult online with a pharmacist provides easier access for users to get answers to their questions or concerns about medications. This increases users' confidence in the information received and allows them to make better decisions regarding medication use.
Personalized Medication Education	This feature ensures that drug information is customized to the user's health profile, such as age, gender, medical history, and drug allergies. In this way, users get information that is relevant and appropriate to their health conditions, which can improve their understanding of drugs and their use. In addition, this feature can also help prevent medication errors that could negatively affect the user's health.

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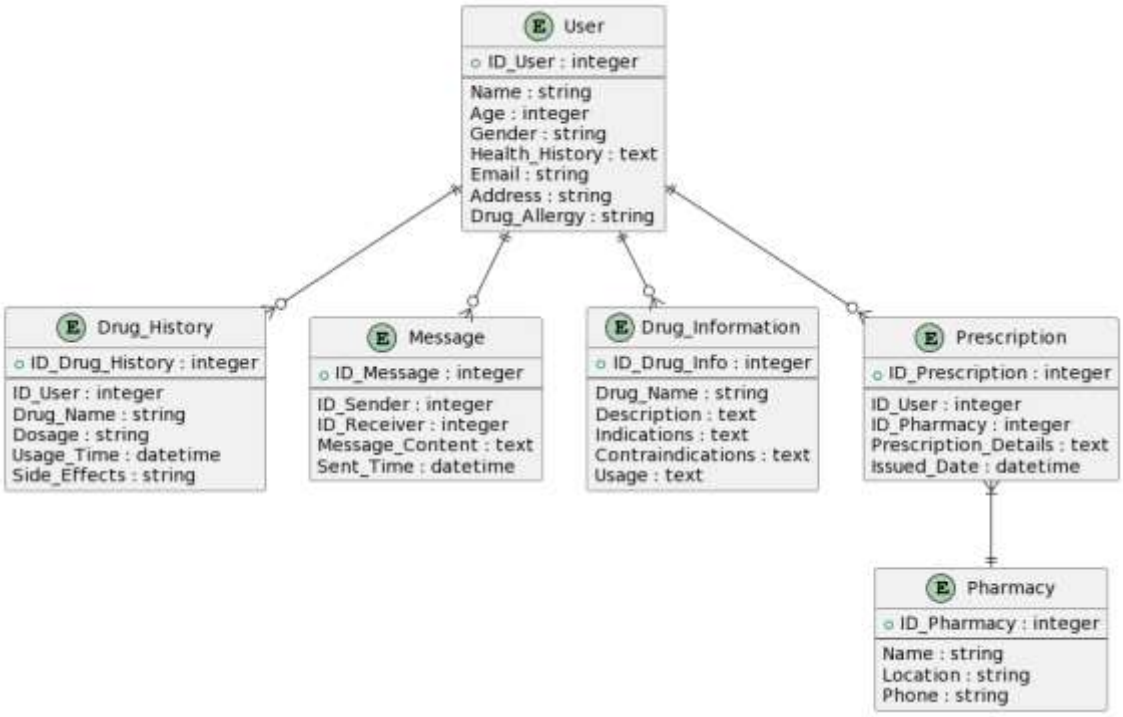
An analysis of the features used in drug education apps in pharmacies shows that these features can significantly improve the user experience and the app's effectiveness in providing helpful drug information. Interactive information features provide an engaging and easy-to-understand way for users to understand drug information. Meanwhile, the medication history feature provides users with better management of their medication usage. In contrast, the pharmacist consultation feature facilitates easy and quick access for users to obtain additional information from a healthcare professional. Furthermore, the personalized medication education feature provides relevant information tailored to users' health profiles, which can improve their understanding and adherence to medication use. Thus, integrating these features in the app can improve the quality of pharmacy healthcare services and benefit users significantly.



Gambar 2. ER Diagram

The ER diagram represents the data model for a comprehensive pharmacy education application, facilitating user interaction with drug information, prescription management, and communication features. The central entity, "User," includes a user profile with attributes that include personal information, medical history, and drug allergies. Users can access drug usage history, communicate through messages, and obtain drug-related information. The addition of entities such as "Medication History" and "Prescription" enables tracking and management of medication usage and prescription issuance, while the "Pharmacy" entity facilitates prescription fulfillment. This model provides a structured framework for developing an efficient and user-oriented pharmacy education platform, encouraging informed medication management and engagement in Healthcare for users.

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User Acceptance Evaluation

In functionality evaluation and user acceptance, various steps were taken to ensure the quality and acceptance of the application. First, a thorough functionality test was conducted to verify that the app runs appropriately and meets the previously identified user needs. Next, a user satisfaction survey was sent to users to evaluate their experience with the app, including ease of use, clarity of information, and usability of the features provided. In addition, to evaluate user adoption and engagement, usage metrics analysis was conducted by collecting data on user activity, such as number of downloads, frequency of use, and session duration. Finally, pharmacists obtained feedback on their experience in using the app to educate users, including an evaluation of the app's effectiveness in delivering drug information and its ease of use, as well as suggestions for further improvement. This stage is essential to ensure that the app functions well technically, meets the end user's needs and expectations, and facilitates the pharmacists' work efficiently.

CONCLUSION

The development of a drug counseling and education system application in pharmacies with an Agile approach in facing the challenges of providing effective drug education to users. Utilizing technologies such as mobile and web applications and applying an Agile approach in its development, the application has great potential to increase user engagement in understanding drug information and improve the quality of health services in pharmacies. Through the stages of user needs analysis, iterative development using Agile methodology, and evaluation of functionality and user acceptance, this research significantly contributed to developing health applications that are more adaptive, responsive, and effective in meeting user needs. Thus, this conclusion highlights the importance of innovative approaches in health app development to optimize user services and quality of life.

REFERENCE

Akhtar, A., Bakhtawar, B., & Akhtar, S. (n.d.). EXTREME PROGRAMMING VS SCRUM: A COMPARISON OF AGILE MODELS. *International Journal of Technology, Innovation and Management (IJTIM)*, *2*, 2022. https://doi.org/10.54489/ijtim.v2i1.77

Alami, A., Krancher, O., & Paasivaara, M. (2022). The journey to technical excellence in agile software development. *Information and Software Technology*, *150*. https://doi.org/10.1016/j.infsof.2022.106959

Alghamdi, K. S., Petzold, M., Alsugoor, M. H., Makeen, H. A., Al Monif, K. H., & Hussain-Alkhateeb, L. (2023). Community pharmacists' perspectives towards automated pharmacy systems and extended community pharmacy services: An online cross-sectional study. *Exploratory Research in Clinical and Social Pharmacy*, *12*. https://doi.org/10.1016/j.rcsop.2023.100363

Ali, M., Alsreaya, A., Alqarzi, A., Alzahrani, Y., Alhomood, I., Alruhaimi, A., Hijri, A., Mobarki, A., Najie, M., Mashyakhi, M., & Bajawi, A. (2024). Exploring the effectiveness of pharmacy curriculum in Saudi Arabia in developing leadership skills among pharmacy students from their perspective: A mixed-methods study. *Saudi Pharmaceutical Journal*, 101995. https://doi.org/10.1016/j.jsps.2024.101995

Aljaber, N., Alsaidan, J., Shebl, N., & Almanasef, M. (2023). Flipped classrooms in pharmacy education: A systematic review. In *Saudi Pharmaceutical Journal* (Vol. 31, Issue 12). Elsevier B.V. https://doi.org/10.1016/j.jsps.2023.101873

Al-Saqqa, S., Sawalha, S., & Abdelnabi, H. (2020). Agile software development: Methodologies and trends. *International Journal of Interactive Mobile Technologies*, *14*(11). https://doi.org/10.3991/ijim.v14i11.13269

Andia, T., Mantilla, C., Morales, Á., Ortiz, S., & Rodríguez-Lesmes, P. (2022). Does price-cap regulation work for increasing access to contraceptives? Aggregate- and pharmacy-level evidence from Colombia. *Social Science and Medicine*, *311*. https://doi.org/10.1016/j.socscimed.2022.115312

Bomström, H., Kelanti, M., Annanperä, E., Liukkunen, K., Kilamo, T., Sievi-Korte, O., & Systä, K. (2023). Information needs and presentation in agile software development. *Information and Software Technology*, *162*. https://doi.org/10.1016/j.infsof.2023.107265

Cassidy, S., Mawdsley, A., Langran, C., Hughes, L., & Willis, S. C. (n.d.). *A Large-scale Multicenter Study of Academic Resilience and Well-being in Pharmacy Education*.

Chan, K., Sepassi, A., Saunders, I. M., Goodman, A., & Watanabe, J. H. (2022). Effects of financial toxicity on prescription drug use and mental well-being in cancer patients. *Exploratory Research in Clinical and Social Pharmacy*, *6*. https://doi.org/10.1016/j.rcsop.2022.100136

Chen, E. Y. H., Forrester, C., McEvoy, A. M., & Singleton, J. (2023). Pharmacy students' perceptions on environmental sustainability in pharmacy education and practice. *Exploratory Research in Clinical and Social Pharmacy*, *12*. https://doi.org/10.1016/j.rcsop.2023.100366

Coic, L., Sacré, P., Dispas, A., Dumont, E., Horne, J., Bleye, C. De, Fillet, M., Hubert, P., & Ziemons, E. (2020). Talanta Evaluation of the analytical performances of two Raman handheld spectrophotometers for pharmaceutical solid dosage form quantitation. *Talanta*, *214*(December 2019), 120888. https://doi.org/10.1016/j.talanta.2020.120888

Dingsoeyr, T., Falessi, D., & Power, K. (2019). Agile Development at Scale: The Next Frontier. In *IEEE Software* (Vol. 36, Issue 2, pp. 30–38). IEEE Computer Society.

https://doi.org/10.1109/MS.2018.2884884

Dingsøyr, T., Nerur, S., Balijepally, V., & Moe, N. B. (2012). A decade of agile methodologies: Towards explaining agile software development. In *Journal of Systems and Software* (Vol. 85, Issue 6). https://doi.org/10.1016/j.jss.2012.02.033

Gao, Y., Guo, Y., Zheng, M., He, L., Guo, M., Jin, Z., & Fan, P. (2023). A refined management system focusing on medication dispensing errors: A 14-year retrospective study of a hospital outpatient pharmacy. *Saudi Pharmaceutical Journal*, *31*(12). https://doi.org/10.1016/j.jsps.2023.101845

Hasan, R., Ta, A.-, & Razali, R. (2013). Prioritizing Requirements in Agile Development : A Conceptual Framework. *Procedia Technology*, *11*(Iceei), 733–739. https://doi.org/10.1016/j.protcy.2013.12.252

Hohmeier, K. C., Baker, P., & Lobo, E. (2023). Permissionless Innovation in the Pharmacy Business Model: The Case for the Membership Pharmacy Model. *JAPhA Practice Innovations*, 100007. https://doi.org/10.1016/j.japhpi.2023.100007

Kaur, J., Singh, O., Anand, A., & Agarwal, M. (2023). A goal programming approach for agile-based software development resource allocation. *Decision Analytics Journal*, *6*. https://doi.org/10.1016/j.dajour.2022.100146

Khan, O., Parvez, M., Kumari, P., Parvez, S., & Ahmad, S. (2023). The future of pharmacy: How AI is revolutionizing the industry. *Intelligent Pharmacy*, *1*(1), 32–40. https://doi.org/10.1016/j.ipha.2023.04.008

Meiliana, Daniella, G., Wijaya, N., Putra, N. G. E., & Efata, R. (2023). Agile Software Development Effort Estimation based on Product Backlog Items. *Procedia Computer Science*, *227*, 186–193. https://doi.org/10.1016/j.procs.2023.10.516

Michalides, M., Bursac, N., Nicklas, S. J., Weiss, S., & Paetzold, K. (2023). Analyzing current Challenges on Scaled Agile Development of Physical Products. *Procedia CIRP*, *119*, 1188–1197. https://doi.org/10.1016/j.procir.2023.02.188

Mishra, A., & Alzoubi, Y. I. (2023). Structured software development versus agile software development: a comparative analysis. *International Journal of System Assurance Engineering and Management*. https://doi.org/10.1007/s13198-023-01958-5

Nair, D., Green, J. A., Houle, S. K. D., & Marra, C. A. (2023). Do entry year pharmacy students have similar personal characteristics? Comparing personalities, professional goals, and role perceptions. *Research in Social and Administrative Pharmacy*, *19*(4), 634–642. https://doi.org/10.1016/j.sapharm.2023.01.001

Phanudulkitti, C., Puengrung, S., & Farris, K. B. (2023). Patient care and customer services during the COVID-19 pandemic at accredited pharmacies: Pharmacists and patients'

perspectives. *Exploratory Research in Clinical and Social Pharmacy*, *12*. https://doi.org/10.1016/j.rcsop.2023.100336

Rindell, K., Ruohonen, J., Holvitie, J., Hyrynsalmi, S., & Leppänen, V. (2021). Security in agile software development: A practitioner survey. *Information and Software Technology*, *131*. https://doi.org/10.1016/j.infsof.2020.106488

Rushton, R., Lorraine, O., Tiong, J., Karim, M., Dixon, R., Greenshields, W., Marotti, R., & Bretaña, N. A. (2023). Forecasting inventory for the state-wide pharmaceutical service of South Australia. *Procedia Computer Science*, *219*, 1257–1264. https://doi.org/10.1016/j.procs.2023.01.409

Santos, R., Cunha, F., Rique, T., Perkusich, M., Almeida, H., Perkusich, A., & Icaro Costa, ′. (n.d.). *A Comparative Analysis of Agile Teamwork Quality Instruments in Agile Software Development: A Qualitative Approach*. https://doi.org/10.18293/DMSVIVA2023-217

Serrador, P., & Pinto, J. K. (2015). Does Agile work? - A quantitative analysis of agile project success. *International Journal of Project Management*, *33*(5). https://doi.org/10.1016/j.ijproman.2015.01.006

Shrivastava, S. V., & Rathod, U. (2014). Risks in Distributed Agile Development: A Review. *Procedia - Social and Behavioral Sciences*, *133*, 417–424. https://doi.org/10.1016/j.sbspro.2014.04.208

Tøndel, I. A., Cruzes, D. S., Jaatun, M. G., & Sindre, G. (2022). Influencing the security prioritisation of an agile software development project. *Computers and Security*, *118*. https://doi.org/10.1016/j.cose.2022.102744

Tupas, K. D., Campbell, H. E., Lewis, T. L., Leslie, K. F., Mcgee, E.-A. U., Blakely, M. L., & Kawaguchi-Suzuki, M. (n.d.). *Baseline Assessment of Systemic Racism Education in Pharmacy Curricula*.

Yong, F. R., Hor, S. Y., & Bajorek, B. V. (2023). Australian community pharmacy service provision factors, stresses and strains: A qualitative study. *Exploratory Research in Clinical and Social Pharmacy*, *9*. https://doi.org/10.1016/j.rcsop.2023.100247