

**Digitalization of Crude Palm Oil Plantation Operations Using a Web-Based
Management System**

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STATEMENT BY THE AUTHOR

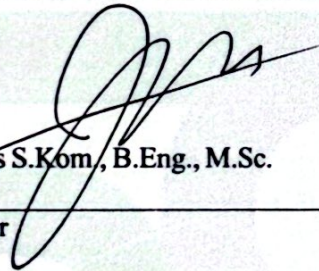
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ABSTRACT

DIGITALIZATION OF CRUDE PALM OIL PLANTATION OPERATIONS USING A WEB-BASED MANAGEMENT SYSTEM

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Crude palm oil is one of Indonesia's most important agricultural commodities, with a significant portion produced by smallholder plantations in rural areas. Many of these plantations still rely on manual record-keeping using notebooks or loose paper, which often leads to data loss and difficulty in retrieving historical information. Existing agricultural management platforms are usually too complex for workers with limited digital literacy.

This research designs and develops an accessible web-based information system to digitalize crude palm oil plantation management. The system covers plantation block management, worker management, harvest recording, role-based access control, and basic reporting. It is intentionally built to be easy to use for rural users through a minimal interface, large input fields, and a direct flow from login to the main task. The system uses Next.js and MongoDB, and follows the Waterfall Software Development Life Cycle models.

The system was evaluated through black-box testing covering 66 functional scenarios (all Pass), and User Acceptance Testing with 12 respondents using a 5-point Likert scale. The UAT produced an overall mean score of 4.73, falling within the Highly Acceptable category, confirming that the system meets its design objective of being usable by people with limited digital literacy

Keywords: crude palm oil, smallholder plantation, web-based information system, rural usability, Next.js, user acceptance testing.



DEDICATION

I dedicate this thesis to my beloved family, who have always given me endless love, support, encouragement, and prayers throughout my academic journey. Their patience, motivation, and belief in me have become one of the greatest sources of strength in completing this thesis.

I would also like to dedicate my sincere gratitude to Joseph Andreas, S.Kom., B.Eng., M.Sc., as my thesis advisor, for his valuable guidance, knowledge, feedback, and support during the process of completing this research. His direction has helped me improve and complete this thesis properly.

My deepest appreciation is also extended to Dipl.-Inf. Eng Kho, as my co-advisor, for his guidance, suggestions, and encouragement throughout the development of this thesis. His assistance and input have been very meaningful in supporting the completion of this work.

I would also like to dedicate this thesis to my dear friend, Feby. Thank you for always giving me support, encouragement, and motivation during this thesis journey. Your presence has helped me stay strong and continue working until this thesis was completed.

Finally, I dedicate this thesis to everyone who has supported me directly or indirectly during this journey. Their kindness and encouragement have played an important role in helping me reach this stage

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I would also like to extend my gratitude to my co-advisor, Dipl.-Inf. Eng Kho, for his helpful suggestions, guidance, and support during the development and completion of this thesis. His input has been very meaningful in improving the quality of this research.

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