CHAPTER V
CONCLUSION

5.1 Conclusion

Based on the results of the design, implementation, and testing that have been conducted on the OpenFund crowdfunding application on the Ethereum Sepolia (Layer 1) and Base Sepolia (Layer 2) networks. From the results of the functional testing that has been conducted, the system is proven to be able to run the entire campaign cycle stably with a full functionality success rate, which validates the smart contract logic in various operational scenarios. The transaction cost testing results show that the gas used units on the Base Sepolia network are identical to Ethereum Sepolia (average difference approaching 0%). This proves the EVM-Equivalence aspect on the Base network, where developers can migrate smart contracts from Layer 1 to Layer 2 without needing to make code modifications. Based on the testing results in several transaction scenarios, it is obtained that transaction costs on the Base Sepolia network (Layer 2) are consistently lower compared to Ethereum Sepolia (Layer 1). An average efficiency range of 99.61% to 99.77% is obtained from the comparison of transaction cost data in each testing scenario.

This reduction in cost burden makes system operations on Layer 2 very affordable, namely with an average cost below $0.01 per transaction. Overall, the research results show that the implementation of Layer 2 (Base Sepolia) has great potential in increasing transaction cost efficiency compared to Layer 1. However, this value is an average of the data obtained within a testnet environment and does not reflect the full variation that can occur under more dynamic network conditions (mainnet). Therefore, these results are interpreted as an indication of a relative efficiency trend, not as an absolute value that applies generally. Although transaction cost efficiency is one of the important factors in the development of blockchain-based crowdfunding systems, the success of a crowdfunding application is also influenced by other factors such as user trust, ease of use, and system transparency.

5.2 Recommendations

Further research is required within a live mainnet environment or utilizing more complex operational simulation scenarios. Subsequent studies can perform a broader comparative analysis encompassing Zero-Knowledge Rollup technologies (such as zkSync, Starknet, Linea, etc.) or alternative Optimistic Rollup frameworks (such as Arbitrum, Optimism, etc.).