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Analisis Komparatif Mainatinability dan Performa Antar Framework Flutter dan Ionic (Studi Kasus: Aplikasi E-Commerce Material Bangunan PT Lima Cahaya Kotim)
Ghifari Raya Ammarkahfi, Cross-Platform, Flutter, Ionic Framework, App Performance, Maintainability
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INTISARI

ANALISIS KOMPARATIF *MAINTAINABILITY* DAN PERFORMA ANTAR *FRAMEWORK* FLUTTER DAN IONIC (STUDI KASUS: APLIKASI *E-COMMERCE* MATERIAL BANGUNAN PT LIMA CAHAYA KOTIM)

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Pengembangan aplikasi *mobile* dengan pendekatan *cross-platform* semakin banyak digunakan untuk mengatasi kebutuhan efisiensi waktu dan biaya dibandingkan pengembangan *native*. Namun, pemilihan *framework cross-platform* dalam praktiknya masih sering dilakukan tanpa kajian ilmiah yang memadai, seperti yang ditemukan pada proses pengembangan aplikasi *e-commerce* material bangunan bernama Borneo Link di PT Lima Cahaya Kotim. Penelitian ini menganalisis dan membandingkan performa serta *maintainability* antara Flutter dan Ionic menggunakan studi kasus aplikasi dengan fungsionalitas yang setara pada kedua platform. Pengujian performa dilakukan pada dua perangkat fisik untuk masing-masing platform Android dan iOS, dengan mengukur *cold start time*, RAM, CPU, baterai, dan ukuran *file* aplikasi. Sedangkan pengujian *maintainability* mengacu pada standar ISO/IEC 25010 melalui lima metrik menggunakan alat SonarQube serta *static analysis tool* berbasis skrip. Hasil penelitian menunjukkan Flutter unggul konsisten pada *cold start time* dan seluruh metrik *maintainability*, sementara Ionic konsisten unggul pada ukuran aplikasi. Sedangkan hasil pengujian metrik RAM, CPU dan baterai tidak terdapat pola yang konsisten antar masing-masing platform Android dan iOS. Sehingga Kesimpulan yang di dapat adalah bahwa tidak ada *framework* yang unggul secara mutlak, harus disesuaikan lagi sesuai dengan kebutuhan teknis dan bisnis yang ingin dicapai.

Kata kunci: *Cross-Platform*, Flutter, Ionic Framework, Performa Aplikasi, *Maintainability*

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ABSTRACT

COMPARATIVE ANALYSIS OF MAINTAINABILITY AND PERFORMANCE BETWEEN FLUTTER AND IONIC FRAMEWORKS (CASE STUDY: PT LIMA CAHAYA KOTIM BUILDING MATERIALS E-COMMERCE APPLICATION)

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Cross-platform mobile application development is increasingly adopted to address the need for time and cost efficiency compared to native development. However, in practice, the selection of a cross-platform framework is often made without adequate scientific analysis. A situation observed during the development of "Borneo Link," a building material e-commerce application at PT Lima Cahaya Kotim. This study analyzes and compares the performance and maintainability of Flutter and Ionic by using applications with equivalent functionality on both platforms. Performance testing was conducted on physical devices running Android and iOS, measuring cold start time, RAM usage, CPU usage, battery consumption, and application file size. Maintainability was assessed based on the ISO/IEC 25010 standard using five metrics evaluated via SonarQube and script-based static analysis tools. The results indicate that Flutter consistently outperforms Ionic in cold start time and all maintainability metrics, whereas Ionic consistently excels in terms of application size. Regarding RAM, CPU, and battery metrics, no consistent pattern emerged across the Android and iOS platforms. Consequently, the study concludes that no single framework is absolutely superior; the choice must be tailored to specific technical and business requirements.

Keyword: Cross-Platform, Flutter, Ionic Framework, *App Performance*, *Maintainability*