

Kemajuan teknologi perangkat lunak menimbulkan peningkatan kompleksitas pada pengembangan *code-base backend*, khususnya dalam hal manajemen dependensi, kompatibilitas, serta keterpeliharaan kode. Dalam konteks ini, *Software Development Kit* (SDK) hadir sebagai solusi untuk mempercepat pengembangan. Namun, implementasi SDK benar-benar mampu meningkatkan produktivitas dan kualitas praktik pengembangan perangkat lunak dibandingkan dengan pendekatan tanpa SDK masih menjadi perdebatan di tim internal *developer*. Selain itu, adanya kebutuhan panduan terkait pemilihan SDK yang sesuai dengan kebutuhan sehingga dampaknya terhadap *revenue* dapat diestimasi. Tujuan penelitian adalah melakukan validasi empiris terhadap dampak implementasi SDK pada *code-base backend*, menganalisis persepsi dan pengalaman responden selama implementasi *coding*, serta memberikan rekomendasi strategis dalam adopsi SDK. Penelitian ini menggunakan metode *Action Research* dengan lima fase (*diagnosing, action planning, action taking, evaluation, specifying learning*) yang melibatkan responden dengan latar belakang pengalaman berbeda. Instrumen penelitian terdiri dari metrik kuantitatif (*Logical Lines of Code, Cyclomatic Complexity, Maintainability Index, dan Time-to-complete*) serta metrik kualitatif melalui survei persepsi. Hasil penelitian menunjukkan bahwa penggunaan Django SDK memberikan peningkatan signifikan pada aspek objektif. Rata-rata *Logical Lines of Code* (LLOC) berkurang dari 398 baris menjadi 320 baris, *Cyclomatic Complexity* (CC) menurun dari 3,80 menjadi 3,58, serta *Maintainability Index* (MI) meningkat dari 60,86% menjadi 87,25%. Dari sisi efisiensi waktu, rata-rata penyelesaian tugas turun dari 156,94 menit dengan *vanilla* menjadi 112,22 menit dengan Django SDK, yang berarti peningkatan efisiensi sebesar 25,2%. Selain itu, hasil survei persepsi responden menunjukkan adanya peningkatan signifikan pada aspek kualitas kode, modularitas, kemudahan *debugging*, dan kepuasan penggunaan SDK. Penelitian ini berkontribusi dalam menyediakan bukti empiris tentang dampak SDK pada *code-base backend*, sekaligus merumuskan *framework* evaluasi SDK dan rekomendasi strategis untuk pemilihan SDK sesuai kompleksitas proyek dan pengalaman tim.

Kata kunci—*Code-Base backend, Software Development Kit, Action Research, Produktivitas, Praktik Pengembangan.*

ABSTRACT

Advances in software technology have led to increased complexity in backend code base development, particularly in terms of dependency management, compatibility, and code maintainability. In this context, Software Development Kits (SDKs) offer a solution to accelerate development. However, whether the implementation of SDKs can truly improve productivity and the quality of software development practices compared to approaches without SDKs remains a subject of debate among internal developer teams. In addition, there is a need for guidance on selecting the appropriate SDK for specific needs so that its impact on revenue can be estimated. The purpose of this study is to empirically validate the impact of SDK implementation on the backend code base, analyze the perceptions and experiences of respondents during coding implementation, and provide strategic recommendations for SDK adoption. This study uses the Action Research method with five phases (diagnosing, action planning, action taking, evaluation, specifying learning) involving respondents with different backgrounds and experiences. The research instruments consist of quantitative metrics (Logical Lines of Code, Cyclomatic Complexity, Maintainability Index, and Time-to-complete) and qualitative metrics through perception surveys. The results show that the use of the Django SDK provides significant improvements in objective aspects. The average Logical Lines of Code (LLOC) decreased from 398 lines to 320 lines, Cyclomatic Complexity (CC) decreased from 3.80 to 3.58, and the Maintainability Index (MI) increased from 60.86% to 87.25%. In terms of time efficiency, the average task completion time decreased from 156.94 minutes with vanilla to 112.22 minutes with the Django SDK, which means a 25.2% increase in efficiency. In addition, the results of the respondent perception survey showed a significant improvement in code quality, modularity, ease of debugging, and satisfaction with using the SDK. This study contributes to providing empirical evidence of the impact of SDKs on backend code bases, while also formulating an SDK evaluation framework and strategic recommendations for selecting SDKs according to project complexity and team experience.

Keywords—Backend Code-Base, Software Development Kit, Action Research, Productivity, Development Practices.