

ANALISIS PERHITUNGAN *QUANTITY TAKE OFF* MENGUNAKAN *BUILDING INFORMATION MODELING* (BIM) DENGAN AUTODESK REVIT PADA PROYEK REHABILITASI PUSKESMAS LUBUK MUDA KECAMATAN SIAK KECIL

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ABSTRAK

Quantity Take Off (QTO) merupakan tahapan penting dalam menghitung kuantitas pekerjaan sebagai dasar penyusunan *Bill of Quantities* (BOQ) pada proyek konstruksi. Metode konvensional masih banyak digunakan, namun memerlukan waktu yang relatif lama dan berpotensi menimbulkan human error. Oleh karena itu, penelitian ini bertujuan untuk membandingkan hasil perhitungan *Quantity Take Off* pekerjaan struktur menggunakan metode konvensional dan Building Information Modeling (BIM) dengan Autodesk Revit 2024 pada Proyek Rehabilitasi Puskesmas Lubuk Muda Kecamatan Siak Kecil, serta menentukan metode yang lebih efisien dan akurat. Penelitian ini menggunakan metode deskriptif komparatif dengan memanfaatkan data sekunder berupa *shop drawing* proyek. Perhitungan kuantitas dilakukan secara manual menggunakan Microsoft Excel dan secara otomatis menggunakan Autodesk Revit 2024, kemudian hasil kedua metode dibandingkan berdasarkan volume pekerjaan struktur. Hasil penelitian menunjukkan bahwa perhitungan volume beton menggunakan BIM memiliki deviasi sebesar 0,00–0,82% dibandingkan metode konvensional, sedangkan perhitungan pembesian memiliki deviasi sebesar 1,07–11,62%. Perbedaan terbesar terdapat pada pekerjaan cerucuk pondasi dengan deviasi sebesar 14,86% atau selisih 48 batang antara kedua metode. Perbedaan tersebut dipengaruhi oleh kemampuan Autodesk Revit dalam menghasilkan kuantitas secara otomatis berdasarkan model tiga dimensi yang lebih rinci. Berdasarkan hasil penelitian dapat disimpulkan bahwa metode *Building Information Modeling* (BIM) menggunakan Autodesk Revit 2024 menghasilkan perhitungan *Quantity Take Off* yang lebih akurat, efisien, dan konsisten dibandingkan metode konvensional karena mampu meminimalkan kesalahan perhitungan manual, mempercepat proses perhitungan kuantitas, serta mempermudah pembaruan data ketika terjadi perubahan desain.

Kata kunci: *Autodesk Revit, Bill of Quantities, Building Information Modeling, Pekerjaan struktur, Quantity Take Off.*

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INFORMATION MODELING (BIM) WITH AUTODESK REVIT
IN THE REHABILITATION PROJECT OF LUBUK MUDA
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ABSTRACT

Quantity Take Off (QTO) is an essential process for estimating work quantities as the basis for preparing the Bill of Quantities (BOQ) in construction projects. Conventional calculation methods are still widely used; however, they require considerable time and are prone to human error. Therefore, this study aims to compare the results of structural Quantity Take Off calculations using the conventional method and Building Information Modeling (BIM) with Autodesk Revit 2024 and to determine the more efficient and accurate method for the Rehabilitation Project of Lubuk Muda Public Health Center, Siak Kecil District. This research employed a descriptive comparative method using secondary data in the form of project shop drawings. Quantity calculations were performed manually using Microsoft Excel and automatically using Autodesk Revit 2024, and the results were subsequently compared. The findings indicate that the concrete volume calculated using BIM had a deviation of 0.00–0.82% compared with the conventional method, while reinforcement calculations showed deviations ranging from 1.07% to 11.62%. The largest difference was found in the pile foundation work, with a deviation of 14.86%, equivalent to 48 piles. These differences were mainly influenced by Autodesk Revit's capability to automatically extract quantities from a detailed three-dimensional model. It can be concluded that Building Information Modeling (BIM) using Autodesk Revit 2024 provides more accurate, efficient, and consistent Quantity Take Off calculations than the conventional method by minimizing manual calculation errors, accelerating the quantity estimation process, and facilitating design revisions through automatic model updates.

Keywords: *Autodesk Revit, Bill of Quantities, Building Information Modeling, Quantity Take Off, Structural Work.*