

## ABSTRAK

**Abstrak.** Estimasi *Quantity Take-Off* (QTO) merupakan tahapan penting dalam perencanaan proyek konstruksi karena berpengaruh terhadap kebutuhan material dan biaya. Penelitian ini bertujuan membandingkan hasil estimasi volume material struktur menggunakan metode konvensional berbasis Microsoft Excel dengan metode *Building Information Modeling* (BIM) menggunakan Autodesk Revit pada proyek Gedung Office Champa Hotel Ayana Bali. Penelitian menggunakan metode campuran (*mixed method*) melalui analisis kuantitatif terhadap volume balok, kolom, dan pelat lantai, serta analisis kualitatif mengenai penyebab perbedaan hasil perhitungan. Hasil penelitian menunjukkan bahwa Autodesk Revit menghasilkan estimasi volume yang lebih konsisten dibandingkan metode konvensional. Perbedaan volume terutama disebabkan oleh kemampuan Revit menghitung geometri dan perpotongan elemen struktur secara otomatis, sehingga mengurangi potensi *overlap* dan kesalahan perhitungan manual. Penerapan BIM terbukti mampu meningkatkan akurasi *Quantity Take-Off* material serta mendukung penyusunan *Bill of Quantity* (BOQ) dan pengendalian biaya proyek konstruksi.

**Kata kunci.** Building Information Modeling (BIM), Autodesk Revit, Quantity Take-Off (QTO), Estimasi Material, Bill of Quantity (BOQ).

## **ABTRACT**

**Abstract.** *Quantity Take-Off (QTO) estimation is a critical step in construction project planning because it affects material requirements and costs. This study aims to compare the results of structural material volume estimates using a conventional method based on Microsoft Excel with the Building Information Modeling (BIM) method using Autodesk Revit on the Champa Hotel Ayana Bali Office Building project. The study employs a mixed-methods approach through quantitative analysis of the volumes of beams, columns, and floor slabs, as well as qualitative analysis of the causes of differences in calculation results. The results show that Autodesk Revit produces more consistent volume estimates compared to the conventional method. The differences in volume are primarily due to Revit's ability to automatically calculate the geometry and intersections of structural elements, thereby reducing the potential for overlap and manual calculation errors. The application of BIM has proven capable of improving the accuracy of material quantity take-offs and supporting the preparation of Bills of Quantities (BOQs) and the control of construction project costs.*

**Keywords.** *Building Information Modeling (BIM), Autodesk Revit, Quantity Take-Off (QTO), Material Estimation, Bill of Quantities (BOQ).*