

## ABSTRAK

Pada tiga proyek konstruksi bangunan gedung pendidikan di Universitas Gadjah Mada (UGM) ditemukan perbedaan biaya awal dengan pelaksanaan yang mengindikasikan terjadinya perubahan lingkup pekerjaan (*variation*). Perubahan lingkup pekerjaan dapat terjadi akibat faktor penambahan item pekerjaan baru, pengurangan item pekerjaan, penambahan dan pengurangan volume item pekerjaan pada tiap-tiap elemen pekerjaannya. Penelitian ini bertujuan menganalisa persentase perubahan elemen pekerjaan terhadap nilai/rencana awal, menganalisa elemen dengan perubahan yang dominan dan menganalisa proporsi perubahan lingkup pekerjaan struktur, arsitektur dan mekanikal-elektrikal dan plumbing (MEP) masing-masing proyek.

Penelitian ini menggunakan metode pengumpulan data daftar kuantitas dan harga kontrak awal dan akhir pada tiga proyek, klasifikasi item menurut *Uniclass 2015*, klasifikasi elemen berdasarkan zona untuk pekerjaan struktural dan arsitektur dan berdasarkan komponen untuk MEP, pengelompokan jenis perubahan dan kalkulasi data untuk mengetahui nilai perubahan, persentase perubahan, dan persentase perubahan relatif terhadap lingkup pekerjaan utama dan terhadap kontrak.

Hasil analisa perubahan pada lingkup struktur ditemukan bahwa elemen balok dan kolom beton pada 2 dari 3 proyek memiliki persentase perubahan relatif terbesar. Sedangkan elemen integral pada 2 dari 3 proyek memiliki persentase perubahan terbesar. Pada lingkup arsitektur tidak ditemukan kesamaan. Pada lingkup MEP ditemukan elemen sistem AC pada ketiga proyek memiliki nilai persentase perubahan relatif terbesar. Perubahan elemen sistem AC didominasi oleh penambahan item baru (*addition*) dan pengurangan item (*deletion*). Hasil analisa pada proyek secara keseluruhan ketiga proyek ditemukan 4 elemen yang dominan mengalami perubahan. Keempat elemen tersebut yaitu sistem AC, plesteran & acian, komunikasi data & CCTV, dan balok beton. Proyek 1 mengalami perubahan sebesar 9,88%, dimana 64,1% disebabkan oleh lingkup MEP. Proyek 2 mengalami perubahan sebesar 9,99%, dimana 58,2% disebabkan oleh lingkup Arsitektur. Proyek 3 mengalami perubahan sebesar 9,69%, dimana 54,1% disebabkan oleh lingkup Arsitektur.

Kata kunci : bangunan gedung, *variation*, RAB, konstruksi.

## ABSTRACT

In three construction projects of educational buildings at Gadjah Mada University (UGM) it was found that there were differences in initial costs with implementation which indicated a change in the scope of work (variation). Changes in the scope of work can occur due to the addition of new work items, reduction of work items, additions and reductions in the volume of work items in each work element. This study aims to analyze the percentage change in work elements to the initial value/plan, analyze the elements with dominant changes and analyze the proportion of changes in the scope of work on the structural, architectural and mechanical-electrical and plumbing (MEP) work of each project.

This study uses the method of collecting data on the bill of quantity (BoQ) of initial and final contracts on three projects, classification of items according to Uniclass 2015, classification of elements by zone for structural and architectural works and based on components for MEP, grouping of types of changes and data calculation to determine the value of changes, percentage change, and percentage change relative to the main scope of work and to the contract.

The results of the analysis of the change in the scope of the structure found that the concrete beam and column elements in 2 out of 3 projects had the largest relative change percentage. While the integral elements in 2 out of 3 projects have the largest percentage change. In the scope of architecture, there are no similarities. In the MEP scope, it was found that the elements of the AC system in the three projects had the largest relative percentage change value. Changes in the elements of the AC system are dominated by the addition of new items (addition) and item reduction (deletion). The results of the analysis on the overall project of the three projects found that 4 dominant elements experienced changes. The four elements are AC systems, plastering & plastering, data communication & CCTV, and concrete blocks. Project 1 experienced a 9.88% change, of which 64.1% was due to the MEP scope. Project 2 experienced a change of 9.99%, of which 58.2% was due to the scope of Architecture. Project 3 experienced a change of 9.69%, of which 54.1% was due to the scope of Architecture.

**Keywords :** building, variation, BoQ, construction.