

ABSTRAK

TINGKAT KESIAPTERAPAN APLIKASI BIM DALAM MENGINTEGRASIKAN DESAIN BANGUNAN BERKELANJUTAN BERSTANDAR *GREENSHIP* – EDGE –WELL IRENE/22170010

Kebutuhan bangunan penunjang perekonomian penduduk semakin meningkat terutama di kota-kota besar. Di sisi lain, sektor konstruksi menghabiskan 36% energi di dunia dan menyumbang 20% dari keseluruhan emisi gas rumah kaca, seperti CO₂ di dunia yang dihasilkan oleh penggunaan energi listrik berbahan bakar fosil pada bangunan. Selain itu, durasi aktivitas penghuni bangunan di dalam ruangan juga dapat mempengaruhi kesehatan penghuninya dalam jangka panjang. Fenomena tersebut dinamakan *sick building syndrome*. Standar *Greenship*, EDGE, dan WELL yang berfokus pada kelestarian lingkungan dan kesehatan penghuni bangunan diperkenalkan untuk menyelesaikan permasalahan tersebut. Namun dalam untuk mencapai tujuan tersebut, kompleksitas desain bangunan dapat meningkat. *Building Information Modelling* (BIM) dapat membantu mengurangi kompleksitas desain berdasarkan masing-masing ketiga standar ini hingga penilaiannya. Kedepannya diharapkan akan semakin banyak pengolah bangunan yang mengedepankan pembangunan gedung berstandar *Greenship*, EDGE, dan WELL. Oleh karena itu, penelitian ini ingin mengukur tingkat kesiapterapan BIM dalam mengintegrasikan desain standar *Greenship*, EDGE, dan WELL yang diharapkan dapat membantu proses sertifikasi bangunan berkelanjutan. Metode yang digunakan adalah kuesioner dan wawancara. Kuesioner dibagikan kepada responden yang berlatarbelakang sebagai arsitek, kontraktor, maupun konsultan bangunan hijau. Wawancara dilakukan terhadap tujuh orang narasumber yang merupakan ahli dalam bidang BIM dan/atau bangunan berkelanjutan. Penelitian ini menunjukkan bahwa BIM belum dapat membantu proses integrasi penilaian standar bangunan berkelanjutan secara maksimal dan hanya terbatas dalam hal pemodelan, simulasi energi, dan perhitungan volume. Hal ini diakibatkan oleh ketidakmampuan BIM dalam tahap operasional yang merupakan salah satu aspek penting dalam penilaian bangunan berkelanjutan. Namun, BIM dapat digunakan sebagai alat komunikasi antar pemangku kepentingan agar seluruh pihak dapat mendapatkan informasi yang sama secara bersamaan sehingga dapat mengurangi kesalahpahaman dan kesalahan dalam proses konstruksi.

Kata Kunci: *Building Information Modelling*, *Greenship*, EDGE, WELL, Bangunan Berkelanjutan.

ABSTRACT

READINESS OF BIM APPLICATION IN INTEGRATING SUSTAINABLE BUILDING DESIGN WITH GREENSHIP - EDGE - WELL STANDARD

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The need for buildings to support the population's economy is increasing, especially in big cities. On the other hand, the construction sector consumes 36% of the world's energy and accounts for 20% of all greenhouse gas emissions, such as CO₂, in the world generated by the use of fossil fuel electrical energy in buildings. In addition, the duration of activity of building occupants in the room can also affect the health of its occupants in the long term. This phenomenon is called sick building syndrome. Greenship, EDGE, and WELL standards which focus on environmental sustainability and the health of building occupants were introduced to solve these problems. However, in order to achieve this goal, the complexity of building design may increase. Building Information Modeling (BIM) can help unravel the complexities of design based on each of these three standards to their assessment. In the future, it is hoped that there will be more building processors that prioritize the construction of buildings with Greenship, EDGE, and WELL standards. Therefore, this study wants to measure the level of BIM's readiness to integrate Greenship, EDGE, and WELL standard designs which are expected to assist the sustainable building certification process. The method used is a questionnaire and interviews. Questionnaires were distributed to respondents with backgrounds as architects, contractors, or green building consultants. Interviews were conducted with seven resource persons who are experts in the field of BIM and/or sustainable building. This study shows that BIM has not been able to fully integrate the assessment process of sustainable building standards and is only limited in terms of modeling, energy simulation, and volume calculations. This is caused by the inability of BIM in the operational stage which is one of the important aspects in the assessment of sustainable buildings. However, BIM can be used as a communication tool between stakeholders so that all parties can get the same information simultaneously so as to reduce misunderstandings and errors in the construction process.

Key words: Building Information Modelling, Greenship, EDGE, WELL, Sustainable Buildings.