ANALISIS KELAYAKAN *SMART GREENHOUSE* DENGAN BERBASIS METODE EKONOMI TEKNIK DAN *SOFTWARE COST ESTIMATION MODEL* (SCEM)

INTISARI

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Smart Greenhouse merupakan jenis *Greenhouse* yang mengintegrasikan teknologi informasi dari sensor, memungkinkan manajemen dan analisis yang efisien. Studi ini menerapkan analisis ekonomi teknis, mempertimbangkan biaya tetap dan biaya variabel, untuk menentukan kelayakan implementasi *Smart Greenhouse*. Tujuan dari penelitian ini yaitu unutk melakukan analisis kelayakan Smart Greenhouse dengan berbasis metode *Software Cost Estimation Method* (SCEM) dan ekonomi teknik. Dengan menggunakan metode SCEM, estimasi biaya perangkat lunak dilakukan berdasarkan pengukuran bobot kompleksitas. Penelitian ini, dilakukan di *Smart Greenhouse*, PT ADIDAYA PERTANIAN DAN PANGAN INDONESIA (AGRARISE), Tibayan, Bantul, dengan memperoleh biaya pengembangan perangkat lunak sebesar Rp. 44.850.867,34 (setara dengan nilai effort sebesar 1343,1 orang/jam). Kelayakan finansial alat dievaluasi dari nilai Net Present Value (NPV), Benefit Cost Ratio (BCR), Internal Rate of Return (IRR), Payback Periode (PBP), dan Break Even Point (BEP). Hasil penelitian menyatakan bahwa secara finansial *Smart Greenhouse* layak digunakan untuk budidaya hidroponik, dengan nilai NPV Rp. 669,439,867.2, BCR 1,48, IRR 43%, PBP 2,50 tahun, BEP Rp. 211,430,018.42.

Kata Kunci : *Smart Greenhouse*, biaya, ekonomi teknik, *Software Cost Estimation Model* (SCEM).

FEASIBILITY ANALYSIS OF SMART GREENHOUSE BASED ON ENGINEERING ECONOMICS AND SOFTWARE COST ESTIMATION MODEL (SCEM)

ABSTRACT

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Smart Greenhouse is a type of Greenhouse that integrates information technology from sensors, enabling efficient management and analysis. This study applies technical economic analysis, considering fixed costs and variable costs, to determine the feasibility of Smart Greenhouse implementation. The purpose of this study is to analyze the feasibility of smart Greenhouses based on the SCEM method and engineering economics. Using the SCEM method, software cost estimation is performed based on complexity weighting measurements. This research was conducted at the Smart Greenhouse, PT ADIDAYA PERTANIAN AND PANGAN INDONESIA (AGRARISE), Tibayan, Bantul, by obtaining a software development cost of Rp. 44,850,867.34 (equivalent to an effort value of 1343.1 people / hour). The financial feasibility of the tool was evaluated from the Net Present Value (NPV), Benefit Cost Ratio (BCR), Internal Rate of Return (IRR), Payback Period (PBP), and Break Even Point (BEP) values. The results stated that the Smart Greenhouse is financially feasible to use for hydroponic cultivation, with an NPV Rp. 669,439,867.2, BCR 1,48, IRR 43%, PBP 2,50 years, BEP Rp. 211,430,018.42.

Keywords: Smart Greenhouse, cost, engineering economics, Software Cost Estimation Model (SCEM).