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Tradeoff Analysis for Soldier Equipment

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Author Note: Our capstone group consists of four students that attend the United States Military Academy. Cadets Brook Solheim and Shane Ko are studying Engineering Management, Cadet Jeremy Mortensen is studying Operations Research, and Cadet Seamus Hurley is studying Systems Design and Management. All four group members are scheduled to graduate with a Bachelor of Science in May of 2018.

Abstract: The purpose of this project is to build a total value model that helps Program Executive Office (PEO) Soldier, an organization responsible for the acquisition/integration of all individual Soldier equipment/weapons, understand the effects of Soldier load. Currently, PEO Soldier does not have a way to quantify the value of soldiers based on their equipment configurations. To address this, we modeled individual equipment specifications provided by PEO Soldier relative to five characteristics that determine a soldier's overall capability/value (Lethality, Survivability, Sustainability, Mobility, and Command and Control). Our research considers the specified type of soldier to account for the variation in significance of each characteristic between different soldier roles. The analysis shows that each characteristic for a given soldier type is weighted differently and provides PEO Soldier with a tool that enables them to value a unique soldier type based on their equipment configuration and provides tradeoff analysis when acquiring new equipment.

Keywords: Tradeoff Analysis, Total Value Model, Soldier Load, Equipment Configuration

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