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The Impact of a Sustainability Management System on Environmental and Economic Performance in Film Productions: A Proposed Model

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ABSTRACT

The film industry faces increasing scrutiny regarding its environmental footprint. While sustainable practices are promoted, their measurable impact is not well understood. This study investigates the effect of a structured Sustainability Management System (SMS) on production outcomes. The proposed SMS framework comprises three independent variables: the formalization of a Green Producer role, the implementation of a Carbon Budget, and the use of a Pre-Production Sustainability Assessment (PPSA). These are tested against two key dependent variables: Environmental Performance (measured by waste reduction and carbon footprint) and Economic Performance (measured by cost savings and avoidance of cost overruns). A quantitative, survey-based methodology will be employed. Data will be collected via a structured questionnaire distributed to a purposive sample of 150 film producers and production managers in Southeast Asia who have been involved in productions of similar scale. The data will be analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the hypothesized relationships. It is anticipated that the findings will provide statistically significant evidence that the implementation of a formal SMS leads to improved environmental and economic outcomes. This research aims to offer a validated, quantitative model that producers can use to justify investments in sustainability infrastructure, demonstrating that green management is not only an ethical choice but a financially sound one.

Keywords: *Sustainability Management; Film Production; Quantitative Study; Environmental Performance; Economic Performance*

INTRODUCTION

The environmental impact of the film industry, from carbon-intensive travel to resource-heavy set construction, is substantial (Deng et al., 2021). In response, various green protocols have emerged. However, adoption is often ad-hoc, and a significant research gap exists in quantitatively linking structured management systems to tangible performance outcomes (Pittman, 2023). Prior research has largely been qualitative, focusing on case studies or conceptual frameworks, leaving a lack of empirical data to persuade skeptical production companies.

This study addresses this gap by proposing and testing a quantitative model to assess the efficacy of a Sustainability Management System (SMS). Grounded in Resource-Based View theory, which posits

that unique internal capabilities can be a source of competitive advantage, this research frames a structured SMS as a strategic capability. The study aims to move beyond description to prediction and explanation by asking: To what extent do specific components of an SMS directly influence a production's environmental and economic performance?

The study proposes a model with three independent variables (IVs) and two dependent variables (DVs).

Independent Variables (IVs): Components of the SMS

IV1: Green Producer Role: The formalization of a dedicated sustainability manager. IV2:

Carbon Budgeting: The practice of setting and tracking a carbon emissions budget.

IV3: Pre-Production Sustainability Assessment (PPSA): A mandatory audit conducted before production begins.

Dependent Variables (DVs): Measured Outcomes

DV1: Environmental Performance: Measured by metrics such as the percentage of waste diverted from landfill, reduction in carbon emissions (CO2e) compared to a baseline, and the amount of materials recycled or reused.

DV2: Economic Performance: Measured by cost savings in areas like waste disposal, energy, and materials, as well as the avoidance of budget overruns related to environmental compliance or disposal fees.

Based on this framework, the following hypotheses are proposed:

H1: The formalization of a Green Producer role has a positive and significant effect on (a) Environmental Performance and (b) Economic Performance.

H2: The implementation of a Carbon Budget has a positive and significant effect on (a) Environmental Performance and (b) Economic Performance.

H3: The conduct of a Pre-Production Sustainability Assessment has a positive and significant effect on (a) Environmental Performance and (b) Economic Performance.

Methodology and Proposed Quantitative Analysis

A cross-sectional survey design will be used. The sample will consist of 150 film producers and production managers from Malaysia, Indonesia, and Singapore, identified through industry associations and film commission databases. Participants will be screened to ensure they have worked on a feature film or high-budget series in the last two years.

The survey instrument will be a structured questionnaire with sections measuring:

Implementation of SMS IVs: Using a 5-point Likert scale (1=Not Implemented, 5=Fully Implemented) to gauge the extent of use for each IV.

Environmental Performance: Using objective-like scales (e.g., "What percentage of your set materials were recycled?") and perceptual scales.

Economic Performance: Using perceptual scales on cost savings and objective data on adherence to budget.

Data analysis will be conducted using SmartPLS or similar software. The two-step process will involve:

Measurement Model Assessment: Testing for reliability (Composite Reliability) and validity (Convergent and Discriminant Validity) of the constructs.

Structural Model Assessment: Using PLS-SEM to test the hypothesized paths (H1, H2, H3) by examining the path coefficients (β), their significance levels (t-statistics via bootstrapping), and the explanatory power (R^2 value) of the model for the two DVs.

RESULTS AND DISCUSSION

The results are expected to show significant positive path coefficients for H1, H2, and H3, supporting the theory that a structured SMS drives performance. The discussion will interpret these findings, for instance, by highlighting that the Carbon Budget (IV2) might have the strongest effect on Environmental Performance, while the PPSA (IV3) might be a key driver for Economic Performance by preventing costly last-minute changes. The R^2 value will indicate how much variance in performance is explained by the model, strengthening the argument for the SMS framework.

CONCLUSION

This study provides a blueprint for quantitatively validating the impact of a Sustainability Management System in film production. By establishing testable hypotheses and a robust methodological approach, it seeks to move the conversation from anecdotal evidence to empirical proof. The anticipated findings will equip production managers and investors with data-driven insights, demonstrating that a proactive, well-managed approach to sustainability is a strategic investment that yields both ecological and financial returns. Future research could expand this model to the theatre and animation sectors.

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