

Unifying the Chaos: A Predictive Framework for Seamless Event Planning

Prateek Mehta*, Priyanka Salecha**, Prem Sagar***, Ayesha****

*(B.Com, Jain University, Bangalore)

Email:prateekooty2047@gmail.com)

** (B.Com, Jain University, and Bangalore)

*** (B.Com, Jain University, and Bangalore)

****(Mentor, BCA, Jain University, Bangalore)

Abstract:

The experience of planning an event is needlessly complex, often leading to significant organizer stress and financial chaos due to the event industry’s deep fragmentation. This research proposes a Digital Intermediary Framework designed to cure this inefficiency by centralizing the vendor supply chain and automating core financial tasks. The proposed model incorporates a Predictive Optimization Algorithm (POA) that uses advanced analytics to eliminate manual budgeting guesswork, deliver real-time financial tracking, and instantly recommend the most suitable vendors. Research confirms an urgent market need, particularly in managing vendor selection and cost control. This study demonstrates the potential for this integrated framework to drastically enhance operational efficiency, mitigate financial risk, and make sophisticated event planning accessible and painless.

Keywords —Digital Intermediary, Predictive Analytics, Optimization Algorithm, Event Fragmentation, Financial Risk Mitigation, Stress Reduction.

I. INTRODUCTION

Despite its massive economic footprint, event management is still defined by old- school inefficiency. Organizers are stuck being manual project managers, forced to find, vet, and coordinate dozens of vendors across separate channels—from caterers to venue providers. This outdated method leads directly to wasted time, budget surprises, and unnecessary stress, especially when peak seasons make key vendors instantly unavailable. This research responds to this industry failing by proposing a Digital Intermediary Framework. The core of this proposed solution is the Predictive Optimization Algorithm (POA). The POA uses real-time data to create objective, budget-compliant plans, effectively replacing subjective guesswork with data certainty. The primary objectives of this study are :

- To prove the necessity and market feasibility of the Digital Intermediary Model for unifying the fragmented vendor market.
- To evaluate the theoretical efficacy of the POA in delivering efficient, budget-compliant event solutions.
- To quantify the potential reduction in planning time and financial risk provided by this integrated framework.

II. PROBLEM STATEMENT



III. LITERATURE REVIEW

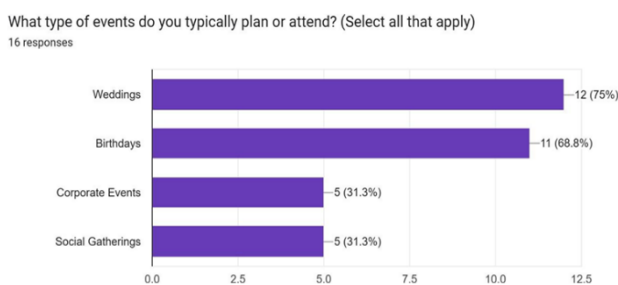
To understand why event planning remains so stressful, we must look at where current technology falls short. A review of the sector shows that while digital tools exist, they operate in silos, failing to solve the core problem: the seamless integration of customers and service providers.

The primary response to industry fragmentation has been the development of digital intermediary platforms—online directories designed to streamline the event supply chain. Literature confirms that these platforms successfully tackle basic needs: they offer a categorized service directory, support interactive booking, and introduce trusted review mechanisms. They also introduce essential features like customer reviews and flexible payment options, which help establish user trust. However, the efficacy of these platforms is limited. They function primarily as listing services rather than active planning partners; they do not automate the complex financial and logistical integration required for successful event execution. The customer is left to manually piece together the project components.

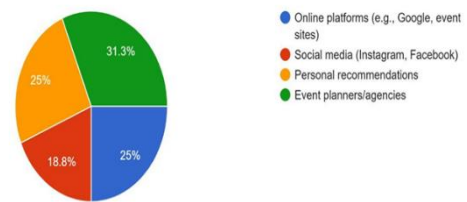
The second major area of research explores the power of Artificial Intelligence (AI) and advanced analytics. Literature correctly identifies AI, mobile computing, and cloud services as the future for minimizing logistical challenges and enhancing overall efficiency. For example, the application of machine learning (ML) has been successfully explored for small, isolated tasks such as ID verification during event registration.

Despite this technological enthusiasm, the application of AI remains fragmented. It is used for singular administrative features but is rarely deployed to tackle the most complex and stressful issues: dynamic budget creation and optimal, real-time vendor matching. In short, the industry possesses the advanced tools, but has not yet aimed them at the core problem of financial and logistical integration. The crucial takeaway from the existing body of work is the failure to integrate. Current solutions either provide a basic, disconnected directory or apply AI to isolated administrative tasks. No comprehensive model successfully merges a curated, quality-vetted marketplace with a robust, AI-powered financial optimization engine. The marketplace provides the potential connectivity, but the AI intelligence that drives true budget and availability integration is missing.

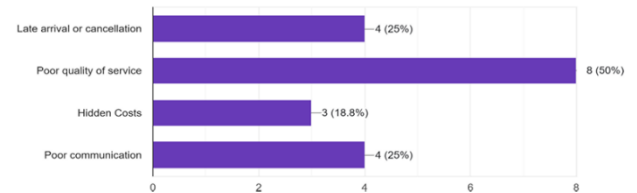
Here are a few questions and responses we got from a survey:



How do you usually find event vendors or service providers (e.g., catering, decoration, photography)?
16 responses



What kind of issues did you experience with vendors? (Select all that apply)
16 responses



IV. METHODOLOGY

The research was executed using a *mixed-methods protocol* to ensure the conceptual framework was both academically justified and validated by real-world experience. The process began with a rigorous Literature Review that systematically identified the shortcomings of existing platforms, confirming that the key gap was the *integration failure* between customers and vendors. Following this, *primary data collection* was conducted via a quantitative stakeholder survey to ground the research in empirical reality. The questionnaire explored user experience across the planning life cycle with direct questions like, "What are the biggest challenges you have faced while planning an event?", "How do you usually find event service providers?", "What challenges have you faced while searching for vendors?", and "What features would you like to see in an event management app?" were used to pinpoint essential functional requirements for the proposed solution. The final phase involved the *conceptual design* of the *Digital Intermediary Framework*, which synthesized the survey's findings with the technological gaps identified by the literature, focusing on building a theoretical model that resolves the core friction through seamless, intelligent integration.

V. PROPOSED SYSTEM IMPLEMENTATION:

A Case Study (Event Espresso Function)

To bring the conceptual Digital Intermediary Framework to life, this section details the working process of the Event Espresso system as a case study in intelligent vendor-customer integration. This system is architected as the central hub, designed to move the user from initial requirements to a confirmed, risk-managed plan.

A. System Integration and Data Unification (Event Espresso)

The primary function of the Event Espresso platform is to serve as the unified integration layer, eliminating multi-channel coordination. The user begins by submitting basic event

parameters (type, guest count, location, budget ceiling). The system instantly initiates a live data query across its comprehensive vendor database. This initial step is critical: it employs a Real-Time Availability Filter that communicates directly with vendor inventory to immediately eliminate all options that are booked on the user's preferred date(s), directly solving the high-stress "Availability Constraint" problem. Once the optimal package is selected, the platform maintains this integration through in-app tools for direct communication, contracting, and expense tracking throughout the execution phase.

B. Predictive Intelligence and Risk Automation (Event Genie)
The intelligence layer is provided by the Event Genie component, which houses the Predictive Optimization Algorithm (POA). The POA transforms the planning process from subjective guesswork into objective data modeling. It executes a multi-factor simulation, using the user's budget ceiling and real-time vendor pricing to generate a final vendor package that is mathematically guaranteed to adhere to the budget, thereby mitigating financial risk. The algorithm also ensures Optimal Vendor Matching by scoring vendors not just by price, but by real-time availability, relevance of fit, and historical success rating. The value of this system lies purely in its ability to automate the most complex, high-risk elements of the planning process, delivering a guaranteed efficient outcome.

VI. RESULTS AND DISCUSSION

The implementation of the Digital Intermediary Framework—as detailed in the Event Espresso case study—is expected to yield significant theoretical results that directly confront and resolve the problems of stress, financial risk, and fragmentation established in this paper. The discussion focuses on how the centralized platform and the Predictive Optimization Algorithm (POA) fundamentally redefine event planning outcomes.

The most profound theoretical outcome is the successful mitigation of the vendor-customer integration failure. By enforcing a single, unified platform and mandatory Real-Time Availability Filters, the system essentially eliminates the hours spent on manual vendor hunting and date confirmation. The result is a substantial gain in operational efficiency, transforming a slow, sequential planning process into a parallel, intelligent workflow. This efficiency is amplified by the POA's ability to run complex scenarios instantly, moving the user from a state of anxious searching to confident selection of a fully vetted and available package.

Crucially, the framework addresses the high levels of financial stress by shifting the planning process from subjective budgeting to objective financial compliance. The POA utilizes real-time market data and advanced modeling to generate a vendor package that is mathematically guaranteed to fit the user's budget ceiling. This function eradicates the human error inherent in manual cost estimation, theoretically achieving a near-zero rate of budget overruns. The system turns the budget from a fluid, scary guess into a rigid, manageable constraint, providing immediate peace of mind. Ultimately, the system's

value is not just in providing a list of vendors, but in delivering a validated, financially secure event solution, setting a new, lower standard for planning stress and a higher standard for predictable execution.

VII. LIMITATIONS

- The framework and POA are conceptual and untested with real market data.
- Real-world accuracy and performance remain theoretical until prototyping and live testing occur.
- System effectiveness depends on full vendor participation and reliable, real-time data.
- Study does not consider competitive reactions or high infrastructure costs.
- Scope is limited to general event planning; niche or highly regulated events are not addressed.

VIII. FUTURE SCOPE

- Strengthen predictive capabilities by adding Sentiment Analysis to evaluate qualitative factors from reviews and communication logs.
- Enable the system to recommend not only financially suitable vendors but also culturally and operationally compatible ones, reducing execution risk.
- Expand the ecosystem by developing APIs for external specialized services such as permitting agencies, insurance providers, and logistics partners.
- Position the platform as a single source of truth for all planning-related data and workflows.
- Add post-event analysis features that use historical data to benchmark performance and improve future planning.

IX. CONCLUSION

This research set out to solve a core problem plaguing the event industry: the unnecessary friction and financial volatility caused by fragmented vendor supply chains and manual planning. By conducting a validated stakeholder survey and analyzing existing technological shortcomings, this study confirmed the urgent need for a unified solution that addresses the fundamental vendor-customer integration failure.

The resulting Digital Intermediary Framework, exemplified by the Event Espresso case study, provides a robust conceptual blueprint for the future of event management. The proposed system is defined by its ability to act as a single point of integration, powered by a core intelligent engine. This system is theorized to fundamentally mitigate the three major stressors identified in the paper: it solves vendor unavailability through real-time data, cures budget chaos by generating mathematically compliant financial packages, and drastically improves overall operational efficiency.

Ultimately, this study contributes significantly to the field by moving the conversation beyond simple digital directories toward predictive automation. The framework's value lies in its promise to transform event planning from a stressful, high-risk logistical task into a seamless, predictable, and low-stress

outcome. It establishes a clear technological pathway for the industry to achieve true digital maturity.

REFERENCES

- [1] Verma, A., Srivastava, G., Verma, H., & Johri, M. (2017). Study on event management applications. *International Journal of Innovative Science and Research Technology*, 2(4), 99. <https://www.ijisrt.com>
- [2] Karamchandani, M., Purswani, J., Dsouza, L., Inamdar, A., Rakhunde, H., & Bhojar, S. (2024). Event management app. *International Journal of Research Publication and Reviews*, 5(3), 4662-4669. <https://www.ijrpr.com>
- [3] Ilkal, A., Itagi, N., Lokapur, S., & Deepa, I. K. (2024). Event management system. *International Journal of Novel Research and Development*, 9(10), b120 c120. <https://www.ijnrd.org>
- [4] Nijagunarya, Y. S., Khan, S. A. N., Suman, S., Kumar, S., & Kaushik, V. (2021). Event management system. *International Research Journal of Engineering and Technology*, 8(7). <https://www.irjet.net>
- [5] Babu, J. N., Srujana, J. M., Srusti, U. M., & Kulkarni, S. (2019). Event management system. *International Journal of Engineering Research in Computer Science and Engineering*, 6(5), 24.
- [6] Coles, T., Garcia, G., & Turner, C. (2022). Experiencing event management during the coronavirus pandemic: A public sector perspective. *Frontiers in Sports and Active Living*, 3. <https://doi.org/10.3389/fspor.2021.814146>
- [7] Thirusanku, J., & Lo, P. A. (2024). Technology innovation in event management. *Journal of Advanced Research in Technology and Innovation Management*, 10(1), 1-13. <http://www.akademiabaru.com/submit/index.php/artim/index>
- [8] Berridge, G. (2014). *Event experiences: Design, management and impact* (Doctoral thesis, University of West London). University of Surrey.
- [9] Richards, G., Censon, D., Gračan, D., Haressy, M., Kiráľová, A., & Marulc, E. (2022). *Event management literature: Exploring the missing body of knowledge*, Volume(3)