AI/ML – BASED EVENT BUDGET OPTIMIZER

Kartik Padia

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Abstract

Event planning drains budgets while delivering disappointing results because companies rely on outdated guesswork instead of data-driven intelligence. I'm developing an AI application that transforms this chaotic landscape by bringing precision to budget optimization. My system analyzes thousands of event outcomes to instantly generate smart budget breakdowns from simple inputs like "wedding for 123 people in October." The AI reveals hidden market patterns—seasonal venue pricing fluctuations, optimal spending ratios for different event types, and cost-effective vendor combinations that human planners typically overlook. Whether planning corporate celebrations, weddings, or parties, the system adapts recommendations to match specific event requirements and client preferences.

Testing with event management companies demonstrated significantly improved budget accuracy and enhanced profit margins while reducing client cost overruns.

I conclude that AI-powered budgeting represents a pivotal advancement for an industry still dependent on spreadsheets and intuition. This innovation bridges the gap between client expectations and realistic budget allocation, modernizing event management through intelligent automation and personalized optimization strategies.

1. Problem Statement

Planning a memorable event—whether it's a wedding, birthday, or company offsite—should be exciting, not exhausting. Yet for many customers, the process quickly becomes overwhelming and expensive. One of the core challenges is the *fragmented nature of the event management industry*. Clients are often forced to browse several directories, search social media, or rely on word-of-mouth to find vendors, making it difficult to compare offerings, packages, or real prices transparently. As a result, many clients *overspend or settle on vendors* without confidence in their decision, simply because there's no centralized platform to help them explore or compare options easily.

On the flip side, *small and independent event planners* face their own share of obstacles. Many talented professionals offer creative designs, quality service, and competitive rates—but still *struggle to find clients* due to limited online visibility. These planners rely on *manual networking, cold outreach, or inconsistent referrals*, which often fails to deliver reliable demand. As Perfect Venue notes, many small vendors remain *underutilized despite offering lower costs and excellent service*, primarily due to poor discoverability and outdated business processes.

Customers:

- *Limited Trust:* Without reviews, standards, or comparisons, many customers feel unsure about whether they're making the right choice.

- *Lack of Transparency:* Clients struggle to compare service packages, pricing, and offerings—often leading to higher costs or poor decision-making.

Common-Issues:

- *Budget:* According to industry data, budgeting is one of the top challenges for both planners and clients—overspending is common due to lack of accurate estimates.

- *Unified Platform:* There's no efficient, transparent digital space that helps customers find the right planner or helps vendors showcase their value.

- *Missed opportunities from both sides:* Clients overpay or make suboptimal choices, while excellent small planners remain under booked and underutilized.

Sources:

1. How to find clients as an event planning agency ? : r/Entrepreneur
2. Perfectvenue

2. Market, Customer, and Business Need Assessment

2.1 Market Analysis

The event management industry is huge—a *$1.2 trillion global market in* 2024 that's changing how people celebrate and connect. In India, this market is growing fast through *$5.23 billion* and heading toward *$7.8 billion* **by** 2029. Weddings alone make *up $899 billion globally,* driven by people's desire for amazing experiences.

By 2028, about 50% of organizations are expected to use AI to replace traditional, time-consuming bottom-up forecasting for budgeting, reflecting a strong market shift toward intelligent automation.

In India, the event management software market reached a size of *USD 319 million in 2024* and is projected to grow to *USD 1,494.50 million by 2033*, registering a *CAGR of 16.70%* between 2025 and 2033. Factors fueling this growth include:

- Rising adoption of virtual and hybrid events
- Increasing demand for automation in event planning
- Growing smartphone and internet penetration
- Rapid digitalization across industries
- Expansion of the corporate sector
- Higher investments in marketing technologies

Despite this strong growth, several challenges remain for small and medium event businesses:

- *Budget Constraints:* Small planners often operate with limited budgets and struggle to accurately forecast costs, leading to budget overruns.
- *Market Saturation:* With numerous small firms competing in the market, standing out and attracting clients is difficult.
- *Transparency and Trust Issues:* Customers frequently lack confidence in pricing fairness due to large variations in vendor costs and service quality.
- *Manual Processes:* Many planners still rely on manual spreadsheets and offline processes, increasing time and effort.
- *Limited Personalization:* Smaller businesses lack advanced tools to create highly tailored experiences for clients.

2.2 Customer Need Assessment

2.2.1 Customer Segments:

- *Individual clients* (couples, families, etc...)
- *Cooperate Clients* (businesses, product/new branch launch, events)
- *Institutions and NPOs* (schools, colleges, non-profit organizations)
- *Event Planners and vendors* (decorators, caterers, venues, etc.…)

2.2.2 Needs:

- *Efficiency:*
  - Event planners seek to reduce time spent preparing quotes, managing client data, and coordinating multiple vendors.
  - Customers want simple tools to plan events without manual calculations, phone calls.
- *Effective:*
  - Both customers and planners demand tools that help control budgets and avoid unexpected expenses.
  - Especially critical for smaller planners who operate on tight margins and can't afford costly software.
- *Personalization:*
  - Clients increasingly expect event experiences tailored to their tastes, budgets, and cultural preferences.
  - Planners need ways to offer custom solutions quickly, without starting from scratch for every customer.
- *Mobile and cloud access*
  - On-the-go professionals require mobile apps to manage events from anywhere.
- *Reliable and secure*
  - Strong privacy and data protection are essential due to sensitive client data (budgets, guest lists, personal details).

2.2.3 Customer Size and Reach

- Many Indian event businesses operate in **small teams (1-15 people)** with modest budgets, limiting their ability to invest in expensive enterprise solutions.
- Modernization is rapidly expanding into **Tier 2 and Tier 3 cities,** where people are increasingly moving away from traditional word-of-mouth planning toward digital solutions.
- *Corporate segments and larger planners* have bigger budgets and more willingness to adopt AI-driven solutions if ROI is demonstrated.

2.3 Business Need Assessment

The event industry is about creating unforgettable moments—but behind the scenes, it's often chaos.

From my own family's experience running an event business, I've seen how much time, money, and mental energy goes into making events happen. Planners spend endless hours juggling spreadsheets, vendor calls, and unpredictable costs. Meanwhile, clients want more personalized experiences but have no clear way to understand where their money goes—or whether they're overpaying.

Small and mid-sized event businesses especially face challenges like:

Time-Consuming Budgeting

- Budget planning takes days or weeks because every event is different.
- Planners have no reliable data to guide cost decisions, leading to guesswork.

Inconsistent Profit Margins

- Event businesses often quote too low to win clients, hurting profits.
- Or they quote too high and lose clients to competitors.

Market Competition & Visibility

- The market is flooded with new planners, especially in metro cities.
- Small vendors struggle to stand out online, even if they offer good prices or creative ideas.

Manual Operations

- Many still use Excel or handwritten notes to manage vendors, costs, and client preferences.
- Mistakes in manual processes can damage client trust.

Changing Client Expectations

- Clients now want personalized touches, hybrid event options, and faster responses—all requiring technology many planners can't afford or don't know how to use.

Business Model my goal supports:

- Get more clients
- Increase Profit
- Build Trust and Transparency
- Compete with big giants of the industry.

3. Target Specifications and Characterization

3.1 Primary User Segments:

Event Planners & Small Event Management Businesses

- Team Size: Often small (1–15 people)
- Typical Events Managed: Weddings, cooperate meetings, parties, events.
- Digital Maturity: Varies greatly; some use basic spreadsheets, others willing to adopt modern software if it's affordable and easy to use.
- Pain Points:
    - Time-consuming manual budgeting
    - Difficulty in offering competitive yet profitable pricing
    - Limited visibility into vendor costs or market trends
- Budget Size Managed**:** *₹2 lakh* to *₹1 crore* per event (depending on scale)

Institutes & Non-Profit Organizations (NPOs)

- Events Managed: College festivals, campaigns, functions.
- Digital Maturity: Typically moderate; comfortable with basic digital tools but less exposure to advanced analytics or AI.
- Pain Points:
    - High pressure to deliver events on strict budgets
    - Justifying expenses to management or donors
    - Limited manpower to manage complex planning
- Budget Size Managed: *₹50,000* to *₹20 lakh* per event (depending on type and scale)

3.2 Key User Needs

- Streamlined Budgeting:
  → Create budgets quickly and accurately for different types of events.
- Vendor Cost Intelligence:
  → Real-time insights into venue costs, décor pricing, catering, etc.
- Expense Management & Tracking:
  → Keep track of expenses vs. estimates throughout the planning cycle.

- Personalized Recommendations:
  → Suggestions tailored to user's city, event type, and budget constraints.
- Mobile Accessibility:
  → Ability to manage events from mobile devices.
- Transparency & Client Trust:
  → Professional, clear presentations of budgets and vendor options.

3.3 Target Performance Specifications

To meet these users' needs, the system should:

- Generate a complete budget breakdown in *under minutes.*
- Provide cost estimates with *at least 90% accuracy* based on local market data.
- Allow users *to compare at least 3 vendors* side by side.
- Operate effectively on *low to moderate internet connections*, suitable for Tier-2 and Tier-3 cities.
- Offer support for both English and at least one regional language (for greater reach).

3.4 Market Reach

- Digital Adoption: Rising quickly, even in *Tier-2* and *Tier-3* cities.
- Customer Willingness: Many event planners and institutions are actively looking for affordable tech solutions to replace manual processes.
- Market Potential:
  - The India event management software market is expected to grow at a *CAGR* of *16.7%* through *2033*.
  - AI-driven event management platforms globally are projected to reach *$1.2 billion by 2027.*

4. External Search

During research for this project, several credible sources and industry reports were reviewed to understand the current trends, market size, and emerging technologies in the event management sector. The following resources were especially valuable in shaping the product idea and validating the market need:

1. *Grand View Research (India Event Management Software Market Outlook):*
   Provides a detailed forecast and trends analysis for the Indian event management software market, including market drivers and growth projections.
   Link

2. *IMARC Group (India Event Management Software Market Report):*
   Offers insights into the size, forecast, and key drivers of the Indian market for event management software, highlighting significant growth opportunities driven by digital adoption and hybrid events.
   Link

3. *Brand Equity – Economic Times (How Gen AI Can Transform Events Industry):*
   Discusses the role of generative AI in revolutionizing the events sector, including its potential to optimize operations, enhance personalization, and improve customer engagement.
   Link

4. *KPMG Insights (Elevating the Event Management Landscape):*
   Explores evolving trends in event management, the adoption of digital tools, and challenges faced by the industry in areas such as budgeting, vendor management, and personalization.
   Link

5. *Bonafide Research:*
   Indicates that India's event management market is anticipated to grow at more than 10.2% CAGR from 2024 to 2029, supported by increased digitalization, spending on celebrations, and infrastructure improvements. Highlights the growing demand across weddings, corporate gatherings, and virtual events.
   Link

5. Benchmarking Alternate Products

Several event management software solutions already exist in the market. However, many of them either cater to larger enterprises or focus mainly on general event logistics rather than specifically on **budget optimization** and transparent vendor comparisons for small and medium-sized planners.

1. *Zoho Backstage:*
   - Comprehensive event management tool covering ticketing, registration, and analytics.
   - Lacks dedicated AI-driven budget optimizer for small business.
     Website
2. *KonfHub:*
   - Focuses on ticketing, event promotion, and analytics.
   - Primarily targets tech conferences and large-scale events, with limited budget-focused tools for small planners
     Website
3. *EventDex:*
   - A virtual and hybrid event platform, specializing in online exhibitions and webinars.
   - Does not provide features for AI-based budget estimation for in-person events.
     Website
4. *Wedd.ai:*
   - An AI-powered platform focusing specifically on wedding planning.
   - Offers vendor suggestions and personalized recommendations but remains largely wedding-specific and lacks a generalized budget optimization engine suitable for all types of events.
     Website
5. *EventX:*
   - A virtual and hybrid event platform, specializing in online exhibitions and webinars.
   - Does not provide features for AI-based budget estimation for in-person events.
     Website

Key Gaps Identified:

- Existing platforms **lack a dedicated AI-based budget optimizer** capable of calculating cost breakdowns dynamically based on vendor rates, event type, and customer preferences.
- None of the reviewed products combine **vendor cost comparison, budget prediction, and transparent recommendations** into a single solution specifically for small and medium event businesses.

This analysis highlights the opportunity for a unique solution that *focuses on optimization, Works for a variety of event types (not just weddings), serves small and medium size planners.*

6. Applicable Patents

1. US7343312B2 – *Event Scheduling with Optimization*
    - *Summary*: Describes methods for optimizing event or meeting scheduling among multiple participants using algorithmic optimization of time, requests, and resources.
    - *Relation to this project*: The patent focuses on time/calendar optimization for multi-person meetings, not on budget or vendor optimization for event planning. The proposed system differs by centering on multi-factor budget allocation, vendor cost intelligence, and market adaptive planning, going beyond scheduling to full event financial optimization.
2. US20240114362A1 – *Automated AI/ML Event Management System*
    - *Summary*: Covers automated AI/ML systems for managing various aspects of events, such as identifying affected network cells and event impact.
    - *Relation to this project*: While broad on "event management," this patent appears focused on logistics/network effects (especially telecom or networked events), not on budget calculation or vendor-specific financial planning as used in our optimizer.
3. US11410181B2 – *Event Prediction Using Artificial Intelligence*
    - *Summary*: Discloses AI techniques for predicting the occurrence of financial or operational “events” (such as invoice payment delays) based on user/transaction data.
    - *Relation to this project*: The focus is on predicting business/process disruptions, not on multi-variable budget optimization for live event planning and vendor management.
4. *IBM AI Patents for Predictive/Prescriptive Analytics* (e.g., AI for supply chain or financial forecasting)
    - *Summary*: Protect optimization and forecasting techniques for business resource allocation, using ML and AI for trend prediction and automated decision-making.
    - *Relation to this project*: Some underlying analytics frameworks are similar, but the distinct event-specific, real-time vendor and cost recommendations in our product are not directly claimed in these patents.

b. Distinguishing Features & Novelty

- Vendor Cost and Budget Optimization:
  While existing patents leverage AI for scheduling, logistics, or generic forecasting, none focus on granular, event-industry-specific budget breakdowns that dynamically reflect regional price shifts, vendor discovery, and user preference adaptation.
- Market-Adaptive & Explainable Budgeting:
  The system introduces instant budget generation from simple event specifications, outputs side-by-side vendor cost analysis, and incorporates regional/seasonal market trends—features not disclosed in the cited patents.
- Regulatory & Practical Compliance:
  The optimizer is designed with data privacy (e.g., India's DPDP Act) and practical SMB constraints in mind, making it usable and legal for the growing Indian market, where most patent coverage is generic or US-centric.

c. AI/ML Methods and Public Frameworks Utilized

- Uses common open-source frameworks (e.g., TensorFlow, Scikit-learn, NLP libraries) for ML, which are not themselves patent-protected but may implement methods in a novel combination for the event budgeting application.

d. Conclusion

The proposed AI/ML-Based Event Budget Optimizer draws on general principles from existing AI/ML and optimization patents, but applies them in an innovative, market-specific manner for real-time, automated, and personalized budget management in the Indian event sector. No known patent claims a solution that combines cost prediction, live vendor rates, dynamic optimization, and regional personalization for event budget planning as described above. However, a thorough patent search and consultation is recommended before commercial deployment.

7. Applicable Regulations

When developing and deploying an AI/ML-based Event Budget Optimizer in India, you must comply with a range of legal, financial, and operational regulations. These ensure your software is trustworthy, secure, and suitable for commercial use across varied event-industry scenarios.

7.1 Data Privacy and Protection

Digital Personal Data Protection Act (DPDP), 2023

If we handle user data like contact info, payment details, or preferences, we follow India's *Digital Personal Data Protection (DPDP) Act*:

- Get *clear consent* before collecting any data.
- Use *data minimization*, encryption, and anonymization from the start.
- Allow users to *access, correct, or delete* their data.
- Appoint a *Data Protection Officer* if the user base grows large.
- Prefer *Indian* **servers** for data storage to stay compliant with local norms.

7.2 Financial and Tax Compliance

- *GST Registration* is a must if we cross ₹20 lakhs in annual revenue.
- Our services (event tech + SaaS) generally attract *18% GST*.
- Use *GST-compliant invoicing*, file returns, and prepare for *Reverse Charge* if using unregistered vendors.
- Selling internationally? We may qualify for *zero-rated GST*—a win for exports.
- Handle payments through RBI-compliant gateways (Razorpay, Stripe, etc.).
- Register officially (as LLP, Pvt Ltd, or Proprietorship) and use *separate business bank accounts.*

7.3 Event-Specific Legal needs

- Event organizers may need *NOCs from police, fire, and municipal bodies.*
- Permissions for venues, loudspeakers, and crowd control might be required.
- For large public events, we'll *recommend insurance integration.*

7.4 Technology and IP

- Follow the *IT Act 2000:* Ensure cybersecurity, valid e-signatures, and keep proper electronic records.
- Respect *intellectual property* when using datasets or third-party APIs.
- SaaS exports must comply with *encryption/export control laws.*

8. Applicable Constraints (need for space, budget, expertise)

1. Technology Constraints

- *Talent Scarcity*: Skilled AI/ML engineers and data scientists remain in high demand and are often expensive, making it challenging for small businesses to hire or retain such talent.
- *Data Quality & Diversity*: Event data is highly diverse, covering different event types, regional pricing variations, and vendor practices, leading to challenges in standardizing and training accurate ML models.
- *Infrastructure Needs*: AI-driven platforms require robust computing resources, including servers for processing and storage, which can be costly for small businesses.

2. Financial Constraints

- *Technical Investment:* Initial costs of software development, model training, and infrastructure setup may be significant for startups and small event firms.
- *Operational Costs:* Ongoing expenses include server maintenance, cloud services, security, and periodic updates.
- *Limited Budgets:* Many small event planners operate with tight budgets, making them cautious about investing in new digital tools unless the ROI is clearly demonstrated.

3. Regulatory Constraints

- *Data Privacy Compliance:* Adherence to India's Digital Personal Data Protection Act (DPDP, 2023) requires secure data handling, consent management, and breach reporting.
- *Licensing & Taxation:* Event management businesses must navigate complex licensing and tax structures, which vary across regions and event types.

4. Industry Constraints

- *Staff Training:* Many small businesses rely on traditional processes and may face a learning curve adopting digital and AI-based tools.
- *Cost Sensitivity:* Clients in the event management industry are often highly price-sensitive, affecting the adoption of new technology solutions.
- *Competition:* The market is crowded with established platforms, making it essential for new solutions to clearly differentiate themselves.
- *Gap Between Local and Global Standards:* Smaller businesses often lag behind global best practices, both in technology adoption and customer service standards, creating additional challenges in modernizing operations.

9. Business Model (Monetization Idea)

The proposed AI/ML-based Event Budget Optimizer platform aims to serve the Indian event industry, particularly small and medium-sized businesses, through a flexible and sustainable monetization strategy. This diversified business model ensures sustainability, scalability, and affordability for users, aligning with ***the financial realities of India's event industry*.** Several revenue models can be combined to maximize reach and profitability:

1. Subscription (SaaS)

- Event organizers, planners, or venues pay a monthly or annual fee to access the platform's features.
- Tiered pricing plans (e.g., Basic, Pro, Enterprise) based on:
    - Number of users
    - Size or scale of events managed
    - Access to advanced AI-driven insights and tools
- Example Pricing (illustrative):
    - Basic Plan: ₹999/month
    - Pro Plan: ₹2,499/month
    - Enterprise Plan: ₹5,499/month

2. Per-Event Pricing

- Allows occasional users to pay a *one-time fee* for managing a single event on the platform.
- Ideal for small businesses or individuals who do not host frequent events but need professional tools.

3. Commission/Marketplace Fees

- If the platform facilitates vendor bookings (e.g., caterers, decorators, venues), a *commission* can be charged on each successful transaction.
- Example:
    - For a ₹2 lakh booking, the platform could earn a 2–5% commission (₹4,000–₹10,000).
- Benefits:
    - Low entry barrier for vendors

    - Revenue scales with platform success

4. Premium Add-Ons

- Advanced AI tools can be offered as optional upgrades, including:
    - Predictive analytics for budget forecasting
    - Personalized attendee matchmaking
    - Automated lead scoring for exhibitors
    - Real-time translation services for multilingual events
- These features can be monetized as standalone add-ons for users seeking specialized capabilities.

5. Lead Generation & Data Insights

- The platform can generate revenue by selling **anonymized, aggregated insights** to:
    - Vendors (e.g., caterers, decorators)
    - Sponsors
    - Exhibitors
- Data might include:
    - Attendee demographics
    - Engagement metrics
    - Industry trends
- *Important:* Strict compliance with India's DPDP Act and data privacy laws will be maintained.

6. Advertising & Sponsorship

- Vendors and service providers could pay for:
    - Featured listings
    - Sponsored content
    - Promoted placements on the platform (e.g., highlighted vendor profiles)
- Provides an additional revenue stream without directly charging end-users.

10. Concept Generation

The concept for an AI/ML-based Event Budget Optimizer emerged from my *personal exposure to the event management industry* through my father, who operates a business in this sector.

Despite widespread digital adoption across many industries, I observed that *event management, especially for small and medium businesses, remains heavily dependent on traditional methods* like manual budgeting, phone calls, and informal vendor negotiations. This leads to inefficiencies, hidden costs, and missed opportunities for both customers and event organizers.

As someone pursuing skills in data science, machine learning, and technology development, I began thinking:

- *Why has this sector not embraced AI the way other industries have?*
- *Could technology simplify budgeting, improve transparency, and help small businesses thrive?*

This personal connection, combined with my technical interests, inspired the idea to develop a platform that:

- Helps event planners optimize costs using AI-based predictions.
- Increases *trust and transparency* between customers and vendors.
- Empowers small and medium event businesses to **compete more effectively** with larger players in the industry.

Thus, the product idea is both *a personal mission to modernize my family's business domain* and a practical solution to a real-world gap I've observed firsthand.

11. Concept Development

The **AI/ML-Based Event Budget Optimizer** is a smart, data-driven platform built to simplify and enhance how events are planned and budgeted — especially for **small and medium event planners, institutions, and individual clients across India**. By leveraging cutting-edge AI and machine learning, the platform replaces traditional guesswork with actionable insights, making budget planning faster, smarter, and more efficient.

11.1 Vision

To **empower event planners and organizers** with an intelligent, intuitive platform that delivers personalized budget recommendations, real-time tracking, and vendor intelligence. The goal is to make every rupee count — ensuring maximum impact with minimal waste, while improving transparency, accuracy, and overall event success.

11.2 Key Features

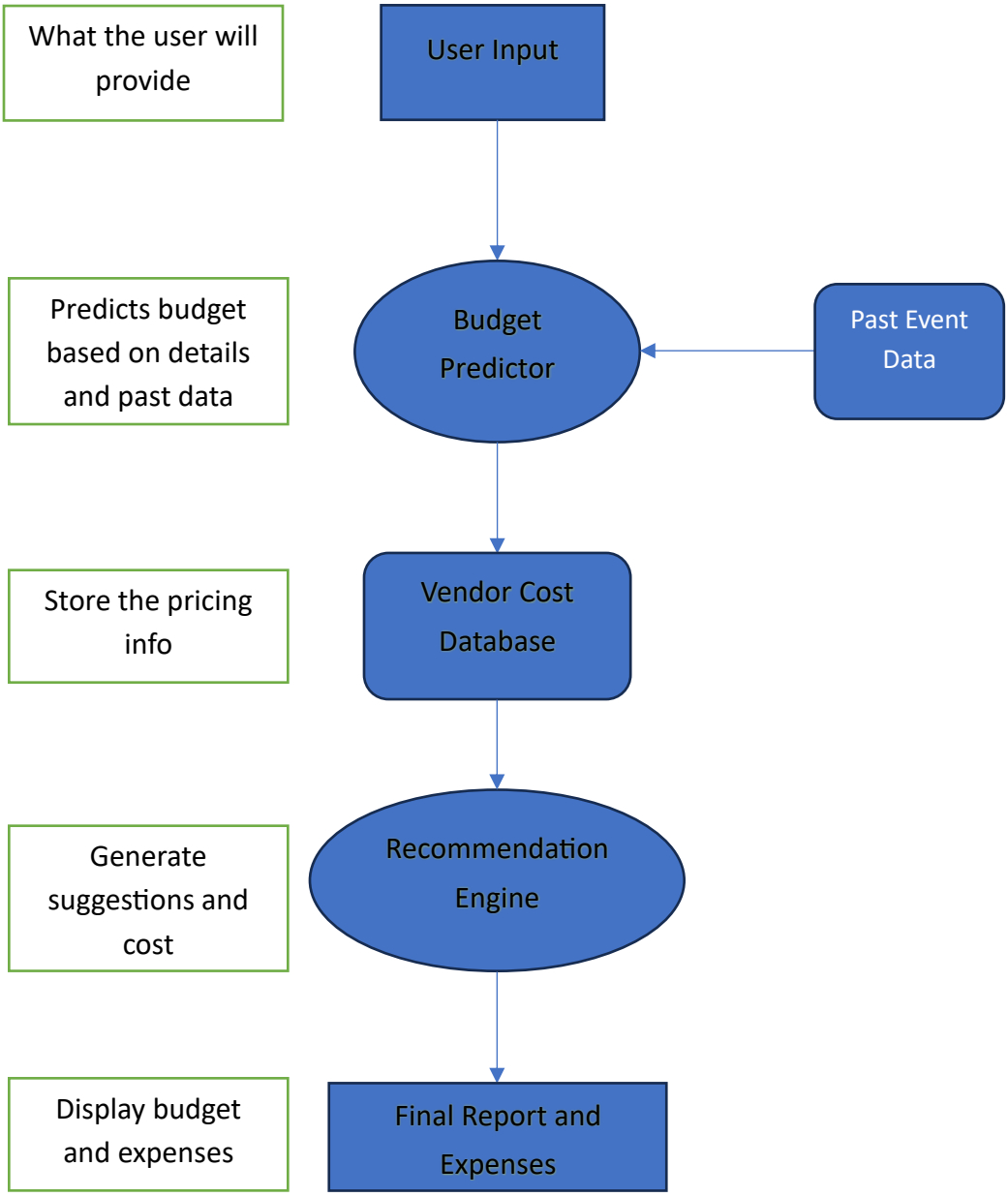
- *Automated Budget Generator***:** Enter basic details like event type, guest count, date, and location — and instantly receive a smart, optimized budget breakdown based on real vendor prices and seasonal trends.
- *AI-Powered Vendor Intelligence***:** Access a curated database of verified vendors with up-to-date pricing. Compare side-by-side and choose the best match for your event and budget.
- *Dynamic Cost Optimization***:** The system learns from thousands of past events to recommend smart allocations across categories like venue, catering, décor, entertainment, and logistics.
- *Real-Time Expense Tracking:* Monitor live spending against estimated budgets. Get alerts and real-time suggestions to stay on track and avoid overruns.
- *Personalized Planning***:** Recommendations are tailored to user preferences, cultural practices, location, and scale — whether you're planning a Gujarati wedding or a corporate launch.
- *Mobile-First Access***:** Designed to work seamlessly on both desktop and mobile, even in Tier 2 and Tier 3 cities. Low bandwidth support and multi-language options ensure accessibility for all users.
- *Transparent Reports***:** Budget breakdowns and vendor options are clearly presented — building trust with clients and improving communication.
- *Secure and Compliant:* All client and vendor data is protected using strong encryption and aligned with India’s latest data protection regulations.

11.3 Target customers and needs

- User Profiles:
    - Small planners (1–15 employees) managing weddings, corporate functions, private parties.
    - Institutes and NPOs organizing events with tight budgets and limited planning bandwidth.
- Customer needs:
    - Fast and accurate budget breakdowns.
    - Real vendor comparison by price and service quality.
    - Cost tracking across vendor categories.
    - Insights tailored to cultural and regional preferences.
    - Accessibility via mobile and low-bandwidth networks

12. Final Product Prototype

This prototype illustrates how user inputs flow through our AI engine and vendor database to generate an optimized budget breakdown and vendor comparison in real-time. It demonstrates the system's feasibility and real-world usability



This diagram shows how a user enters event details (like event type, guest count, and location), which feeds into the *Budget Forecast Module*—trained on past events—to estimate costs. The *Recommendation Engine* then matches these estimates with local vendor options and produces a polished *budget report with real-time expense tracking* for planners to review

13. Product Details

The AI/ML-based Event Budget Optimizer is envisioned as a full-stack digital solution combining modern web/mobile technologies with artificial intelligence to transform how event management businesses plan, budget, and engage with clients. Below are the technical, operational, and financial details of the proposed product.

13.1 Tech Stack

Frontend

- *Frameworks:* React or Angular for dynamic, responsive web interfaces.
- *Mobile Apps:* React Native or Flutter for cross-platform mobile development.
- *UI/UX enhancement:*
  - Potential integration of AR/VR modules (Unity, WebXR) for immersive event previews or venue navigation.

Backend

- *Languages/Frameworks:* Node.js, Django, or Flask for scalable server-side APIs.
- *Database:* PostgreSQL or MongoDB to handle structured and unstructured data.
- *Cloud Infrastructure:* AWS, Google Cloud, or Azure for hosting, storage, and scalable compute resources.
- *CI/CD:* Automated pipelines for rapid and reliable code deployment.

AI/ML Capabilities

- *Libraries/Frameworks:*
  - TensorFlow, Scikit-learn for machine learning models.
  - NLTK, spaCy for natural language processing (NLP) tasks such as chatbots and recommendation engines.
- *Planned AI Features:*
  - Personalized event recommendations.
  - Predictive analytics for budget optimization, attendance, and engagement forecasts.
  - AI-powered chatbots or virtual assistants using Dialogflow, GPT, or Rasa.

Analytics & Monitoring

- Real-time dashboards and performance analytics using tools like Google Analytics, New Relic, or custom solutions.

Security & Compliance

- Single Sign-On (SSO), Role-Based Access Control (RBAC) for user authentication and security.
- Compliance with India's Digital Personal Data Protection Act (DPDP, 2023) through:
    - Data encryption.
    - User consent management.
    - Privacy-by-design principles.
- Payment integrations via secure gateways like Razorpay or Stripe.

13.2 Team Structure

Role	Key Responsibilities
Product Manager	Vision, roadmap, market fit, stakeholder management
Frontend Developers	Web/mobile UI development, AR/VR integration
Backend Developers	APIs, server logic, database management, cloud infrastructure
AI/ML Engineers	Model development, NLP, analytics, personalization
UI/UX Designer	User flows, wireframes, design systems
QA/Test Engineers	Testing, performance checks, security validation
DevOps Engineer	CI/CD processes, cloud deployment, monitoring
Data Privacy/Compliance	Legal and regulatory compliance
Customer Support	User onboarding, issue resolution, feedback collection
Sales & Marketing	Go-to-market strategy, partnerships, customer acquisition

14. Conclusion

At its core, the Event Budget Optimizer is built to simplify planning and boost success for small event teams across India. By combining smart budget forecasts, real-time vendor insights, and user-friendly reporting, it lets planners deliver great events with ease—not guesswork. The MVP setup and future roadmap focus on *scalability, trust, and inclusivity,* making it a game-changer for planners operating in underrepresented markets.