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SOFTWARE SUPPORT FOR MONETISATION AND DEMAND MANAGEMENT IN ENTERTAINMENT AND GAME-ORIENTED SERVICES

KHOSHABA O. (pzmag2022@gmail.com)
POKHODZEI D.
Vinnytsia National Technical University, Ukraine

The theses present software support for monetisation and demand management in entertainment and game-oriented services. The proposed tool combines an online booking engine, electronic confirmation, administrative catalogue management, pricing rules and analytical reporting. The system is intended for leisure businesses such as event organisers, quest rooms, VR clubs, board-game spaces, tours, and other session-based services, where capacity, time slots, and customer experience directly influence revenue. We pay particular attention to availability control, prevention of overbooking, flexible cancellation handling, and indicators for evaluating demand by period, channel, and service category.

Entertainment and game-oriented service providers frequently organise reservations through phone calls, social media messages or manually maintained spreadsheets. This approach is understandable for small businesses, but it creates fragmented sales channels, inconsistent availability information, delayed confirmations and a higher risk of overbooking during peak demand. For VR clubs, quest rooms, board-game spaces, cyber sport sessions, interactive shows and leisure tours, each service is usually limited by time, venue capacity, staff, equipment or the number of seats. Therefore, booking is not only an operational process, but also a business mechanism that affects revenue, utilisation, customer satisfaction and marketing efficiency.

The problem is to design software support that connects the customer journey to the organiser's business processes. The tool must allow customers to quickly find and reserve a suitable entertainment service, while managers must be able to control availability, adjust prices, monitor sales, process cancellations and analyse demand. In this context, the value of the system is determined not only by the technical correctness of booking operations, but also by its ability to support monetisation and demand management decisions.

The aim of the work is to design and implement an application that enables online booking of entertainment and game-oriented services and provides administrators with tools to manage offers, capacity, pricing, and operational analytics. To achieve this aim, the following tasks were solved: to specify functional and non-functional requirements; to develop a data model for offers, sessions, capacity, orders, payments and users; to implement capacity-safe reservation logic; to design a confirmation mechanism based on electronic tickets or vouchers; to prepare administrative tools for catalogue, schedule, pricing and refund management; to define reporting indicators for demand and revenue analysis; and to outline security and testing procedures.

The user-facing part of the system provides a searchable catalogue with filtering by location, category, date and service type. Offers may represent tickets to events, guided tours, game sessions, quest-room visits, VR experiences or other leisure activities. A customer selects an offer, reviews the available session, price and cancellation policy, and then completes account-based or guest checkout. This flow reduces unnecessary communication with the organiser and standardises the purchase path across different service categories.

Availability control is the central technical component of the proposed solution. The data model separates the general description of an offer from its concrete sessions and capacity limits. A reservation is created by an atomic transaction that validates the remaining number of seats or slots immediately before commit. If the platform supports a seat map, capacity can be tracked at the individual seat level; otherwise, it is managed as a session limit. The booking lifecycle is represented by a status machine with states: created, pending payment, confirmed, cancelled, and

refunded. This model enables consistent processing of changes and avoids contradictory booking records.

After a successful reservation, the system issues an electronic ticket or voucher containing a unique identifier, QR code or alphanumeric token. Such confirmation can be validated at check-in and also used for customer support. Automated notifications are sent by email and, where integration is available, through messaging channels. Reminder timing is configurable, which helps reduce no-shows for time-limited entertainment services. Cancellation and rescheduling are processed according to business rules that may include deadlines, fee conditions and automatic status updates.

The administrative workspace supports catalogue management, session creation, capacity limits, pricing rules and promotional conditions. Managers can monitor bookings through a calendar-like interface, create manual reservations, assist customers, control refunds and export registers for event organisers. This functionality is important for small and medium entertainment businesses because it allows operational staff to maintain sales transparency without duplicating information in separate spreadsheets or messaging threads.

From the business perspective, the most important result of digital booking is the accumulation of structured demand data. The reporting module calculates booking volume, conversion rate, cancellation share, no-show rate, utilisation by offer and revenue distribution by period, channel and service category. These indicators allow managers to compare the attractiveness of different entertainment formats, identify underused time slots, evaluate marketing campaigns and adjust schedules or prices. This approach is consistent with revenue management principles, where limited capacity and variable demand require coordinated decisions on availability and pricing [1].

Non-functional requirements focus on mobile usability, concurrency safety, notification reliability and protection of personal data. Since many customers book leisure services from smartphones, the interface must remain clear on small screens and minimise the number of steps before confirmation. Administrative functions are protected by role-based access control, while critical actions are recorded in an audit log. Tokens used for ticket validation are generated with sufficient entropy to reduce the risk of guessing. General quality considerations are aligned with the product quality model for software and ICT systems [2], and application security checks can be mapped to recognised web application verification practices [3].

Testing includes functional scenarios for searching, booking, cancellation, rescheduling, refund processing and ticket validation. Concurrency tests verify that simultaneous attempts to reserve the last available places do not result in overselling. The effectiveness of the system may be evaluated by confirmation latency, overbooking rate, administrator effort per booking, cancellation processing time and the completeness of analytical data. These metrics demonstrate whether the tool improves both operational efficiency and business control compared with manual reservation processes.

The developed MVP demonstrates that online booking for entertainment and game-oriented services can be implemented as an integrated business tool rather than a separate technical form for collecting orders. The combination of catalogue browsing, capacity-safe reservations, electronic confirmation, administrative control and analytical reporting supports monetisation, demand planning and customer experience. Future development should include integration with payment gateways and fiscalisation services, support for multi-venue operators, more detailed marketing attribution, recommendation features based on demand patterns and adaptive pricing mechanisms for popular or underused sessions.

Thus, the proposed software support reduces manual operations, improves sales transparency and provides organisers with evidence for managerial decisions. For game-oriented and entertainment businesses, such a system can become a practical component of digital transformation because it connects customer acquisition, booking, service delivery and post-event analysis within a single information environment.

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