

# ASSESSMENT1

**Innovation & Research**

Module: **CHANGEMAKERS: CREATIVITY & VALUE CREATION**

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# INTRODUCTION

19th century Europe:[1]

Thinkers like Matthew Arnold argued that “the exercise of a creative activity is the true function of man.” This marked a shift where creativity was seen not just as artistic expression but as a core human value. Industrial Revolution context: Despite being driven by science, technology, and economics, the cultural emphasis on creativity reflected a belief in human imagination as essential for progress. Emergence of modern belief systems: Creativity became linked to education, innovation, and personal fulfilment, laying the groundwork for later changemaker movements. [1]Formatting...

Changemaker creativity drives innovative ideas that create value for society and organizations. In entrepreneurship, it emerges through competitive systems where new knowledge benefits both individuals and communities. External pressures, such as crises, often heighten creativity by disrupting norms and fostering innovation. [2]

Therefore, in this subject I will firstly work on an area of my choice which will follow a project proposal that I will structure.

## TASK 1

### IDEATION AND MIND MAP

#### Mind Map

Mind maps are powerful tools for organizing thoughts, boosting creativity, and improving memory retention. They're widely used in education, business, and personal productivity to visualize relationships and streamline planning. Ideal for capturing ideas quickly and exploring connections between concepts. Help structure information visually, making it easier to review and recall. Break down tasks into manageable components with clear dependencies. Encourages lateral thinking by showing multiple pathways and perspectives. Enhances memory by linking topics through visual cues and associations. Supports the prewriting phase by organizing ideas into coherent structures. Clarifies pros, cons, and options around a central issue. [3]

I have chosen to study the hotel industry, focusing on how the business is managed and identifying departments that lack effectiveness

Hotel management can be viewed through organizational, operational, and ownership perspectives. A shift from functional structures to process-oriented systems emphasizes operating, management, and support processes. By treating activities like housekeeping, supply, arrivals, and food services cross-functionally, managers improve decision-making and efficiency. [4]

Hotel management is structured into a clear hierarchy of departments and roles that ensure smooth operations and excellent guest service. The management is covered by the **operation management, Sales and marketing, Human resources, finance.** [5]

## 1. Operation Management

Hotel operations management coordinates daily activities to ensure efficiency, guest satisfaction, and profitability. A key focus is preventive maintenance, managed strategically and operationally, to sustain quality and performance in 4–5 star hotels. [6] It involves **Front Office, Housekeeping and Facilities Maintenance**

## 2. Sales and Marketing Management

Hotel sales and marketing covers advertising, revenue management, technology, and HR. Studies show most hotels measure performance by revenue and room-nights, with bonuses tied to room revenue. Franchise hotels benefit more from national reservation systems, while 80% use yield-management and 75% connect to global distribution systems. Locally, print media is seen as the most cost-effective channel. [7] This department covers **Digital Marketing, Sales Channels and Promotions**

## 3. Human Resources Management

Human resource management (HRM) in the hotel industry is recognized as a critical area influencing organizational performance and competitive advantage. Studies indicate that HRM challenges vary geographically, with North American and Middle Eastern hotels focusing on attracting talent, European hotels prioritizing retention, South American hotels emphasizing training and morale, and African hotels concerned with labour shortages. This geographic variation highlights the diverse HR priorities within the global hotel sector. [8] this involves **staffing, training and development**

## 4. Finance Management

Hotel finance management improves performance, planning, and decision-making through measurement, analysis, and risk control. Key practices include evaluating profitability, predicting financial failure, and assessing labour costs to manage risks effectively, [9] This department is responsible for **Budgeting, Revenue Management, Legal and Regulatory**

The Mind Map shows in detail how each department works for an effective and efficient hotel management. Added the proposal which is the Hotel Software development

Therefore, Hotel management systems struggle to meet diverse needs, with limited support for split reservations. Guests cannot easily check in, check out, and return within the same timeframe, reducing flexibility and efficiency in reservation management [10]



**Figure1: Mind Map of Hotel Management (Mind Meister)**

## Ideation

Hotel management software exhibits several limitations that affect its effectiveness in meeting diverse user needs. One notable limitation is the inability of most existing systems to handle multiple reservations with breaks in check-in and check-out. This shortcoming restricts users who wish to check in for a certain period, check out, and then check in again at the same hotel within a given timeframe. Current hotel management software generally does not accommodate such reservation patterns, which can be a significant inconvenience for guests and operational inefficiency for hotels. [11]

Hotels with 20 or more rooms have operational complexities. They lack an affordable software solution. Existing software may be too expensive or not tailored to mid-sized operations. This research objective is to develop software cost-effective hotel management system to solve the problem.

**Research Proposal:**

## **Hotel Management Software Development for Mid-Sized Properties**

**A mid-sized Hotel needs a tailored solution because:**

**The cost-effective system does not overwhelm staff**

**The feature-rich solutions do not cover multiple departments**

**There is not an integration capability with third party services.**

## TASK 2

### AIM AND OBJECTIVES AND RESEARCH AREA

#### Aim and Objectives

##### Aim

Aim of developing hotel management software for mid-sized properties (20 and more rooms) is to deliver efficient operations, memorable guest experiences, and an evolving function, all while avoiding the high costs and complexity of enterprise-level platforms.

##### Objectives

###### **Streamline Operations**

Automate hotel operations to reduce errors, streamline bookings, personalize services, and enhance digital convenience.

###### **Optimize Resource Management**

Monitor rooms, staff, and maintenance to speed housekeeping and cut downtime

Track → Schedule → Maintain → Improve efficiency

### **Revenue Maximization**

Use dynamic pricing with OTA integration and channel managers, while driving upselling in services like spa, dining, and tours.

Price smart → Integrate channels → Upsell services.

### **Data-Driven Insights**

Analytics on occupancy, revenue per available room (RevPAR), and guest demographics.

Forecasting demand to adjust staffing and inventory.

### **Scalability & Flexibility**

Support growth without requiring a complete system overhaul.

Modular features that can be added as the property expands.

## **Research Philosophy**

Software methodology choice depends on project context. For mid-sized hotel projects, Agile and Lean Start-up offer adaptable, flexible approaches that support iterative development, evolving requirements, and active stakeholder engagement. [12]

The appropriate research philosophy remains the **pragmatism** and the **interpretivism**

### **Pragmatism**

Pragmatism emphasizes practical outcomes over abstract principles, viewing inquiry as experiential and fallible. It highlights how theories work in practice, challenges traditional assumptions, and connects philosophy to social justice, echoing John Dewey's focus on experience and inquiry. [13]

Hotel software development focuses on solving practical issues through mixed methods, combining qualitative insights and quantitative data, and measuring success by usability, efficiency, and guest satisfaction

### **Interpretivism**

Interpretivism is a perspective in social science that emphasizes understanding human action through interpretation rather than solely through natural science methods. It posits a distinction between the natural and social sciences, suggesting that the methods appropriate for studying natural phenomena may not be suitable for understanding social behaviour. However, this strict separation has been criticized, as some social research cases indicate that interpretivist claims about the uniqueness of social science methods lack strong support, and the general separation between natural and social sciences appears problematic. [14]

Hotel operations are deeply human-cantered, staff workflows, guest expectations, and service culture. Interpretivism helps you understand the social and experiential dimensions of hotel management. In application: Conduct interviews and focus groups with hotel staff and guests. Explore how different stakeholders perceive “good service” and “efficient systems.”

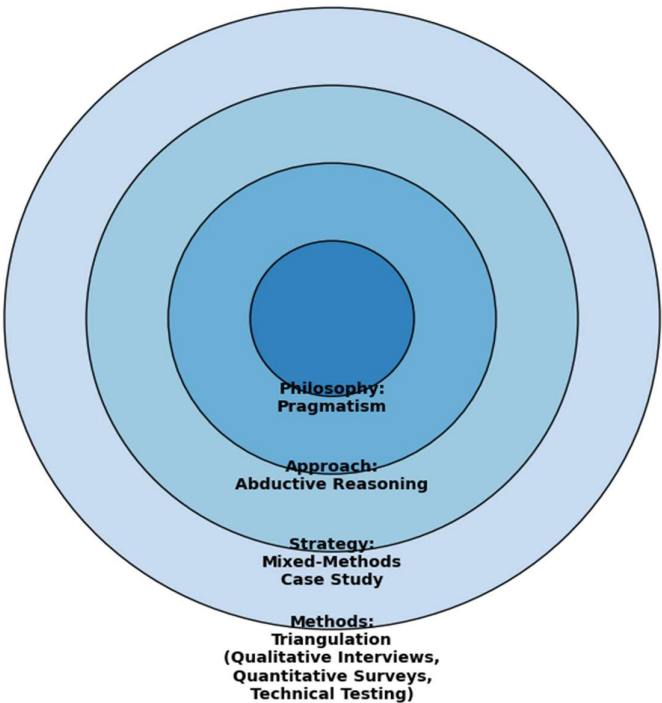


Figure2 Research Philosophy

Search Tools

| Tool          | Best for                  | Key Features                             | Cost Level |
|---------------|---------------------------|------------------------------------------|------------|
| Cloud beds    | Mid-sized Hotel           | Reservations, Channel manager, Guest CRM | Medium     |
| Hotelogix     | Growing Hotel brands      | Multi- property support, automation POS  | Medium     |
| Ezee Absolute | Budget-conscious Hotels   | Core P;S Housekeeping billing            | Low        |
| Room Raccoon  | Boutique/mid-sized hotels | Integrated reservations payment reports  | Medium     |
| Oracle Opera  | Large Chains              | Enterprise PMS advanced integrations     | High       |

[15] [16]

## Search Strategic

Start with a cloud-based PMS like Cloud beds or Hotelogix for scalability.

Integrate automation tools for housekeeping and inventory to reduce staff workload.

Adopt modular design: build APIs for payments, CRM, and channel management so the system can grow with your hotel.

Prioritize guest experience: ensure mobile-friendly booking and self-service check-in.

**Plan before searching** saves time and avoids irrelevant hits. [17]

**Adapt per database:** each has unique syntax and subject headings. [18]

**Use systematic review guidance:** transparency and reproducibility are critical. [19]

**Document everything:** search strings, filters, and rationale. [20]

## Example Search Strategy (Hotel Software Development)

**Concepts:** Hotel management, property management systems, automation.

**Keywords:** ("hotel" OR "hospitality") AND ("software" OR "property management system" OR "PMS") AND ("automation" OR "workflow" OR "integration").

**Databases:** Scopus, IEEE Xplore, Hospitality Net, Google Scholar.

**Filters:** 2020–2025, peer-reviewed, English.

# TASK 3

## Research Strategies

Strengthening validity, reliability, generalisability, and ethical standards in research requires a systematic approach that blends methodological rigor with openness and integrity. Achieving this depends on thoughtful study design, consistent implementation, and transparent reporting.

| Dimension        | Strategies                                                                                  |
|------------------|---------------------------------------------------------------------------------------------|
| Validity         | Employ triangulation, manage confounding variables, and apply ecological design.            |
| Reliability      | Apply standardisation, conduct pilot testing, and implement inter-rater reliability checks. |
| Generalisability | Employ representative sampling, ensure replication, and conduct cross-context validation.   |
| Ethics           | Ensure consent, maintain confidentiality, uphold transparency, and strengthen governance.   |

Combine quantitative rigor with qualitative trustworthiness, document methods for reproducibility, and use mixed approaches to ensure validity and generalisability. Embed ethics throughout, while gathering diverse hotel data to design software that fits operations and meets guest expectations

## Data Collection Methods in Hotel Software Development

### 1. Guest-Centric Data

Surveys & Feedback Forms: Collect satisfaction ratings, preferences, and service improvement suggestions.

Online Reviews & social media: Monitor platforms like TripAdvisor or Google Reviews for sentiment analysis.

Behavioural Data: Track booking patterns, cancellation reasons, and loyalty program engagement. [21]

### 2. Operational Data

Property Management System (PMS) Logs: Capture check-in/out times, housekeeping updates, and room status changes.

Point of Sale (POS) Transactions: Record restaurant, bar, and spa purchases for integration with billing.

Housekeeping & Maintenance Records: Monitor room readiness and service requests. [22]

**Accounting Systems:** Integrate with back-office finance for revenue and expense tracking.

### 4. External & Market Data

Channel Manager Feeds: Collect availability and pricing data across multiple booking platforms.

Competitor Benchmarking: Use market intelligence tools to compare occupancy rates and pricing strategies.

Travel Trends Data: Incorporate seasonal demand and regional tourism statistics.

**These methods meet the requirements of:**

**Validity & Reliability:** Using multiple sources (surveys + system logs) ensures accuracy and consistency.

**Generalisability:** External market data helps software scale across different hotel sizes and regions.

**Ethical Considerations:** Guest consent, anonymisation, and GDPR compliance are critical when handling personal data.

For mid-sized hotel software, Use PMS/POS logs to optimize operations, add guest data for personalization, integrate channels and payments, and unify insights with analytics dashboards

## Pilot Data Collection Methods

### 1. Small-Scale User Testing

Pilot the software in one department, observe staff interactions, and gather structured feedback on usability and workflows

### 2. Simulated Transactions

Simulate reservations and billing with test data, log system performance, and validate against hotel workflows

### 3. Pilot Surveys & Interviews

Collect staff and guest surveys, interview managers, and capture qualitative insights on usability and efficiency

### 4. Parallel Run with Existing Systems

Run the new software in parallel with the PMS, compare booking and housekeeping data, and spot mismatches before migration

### 5. Controlled Data Sampling

Run the pilot for a set time, gather data, and assess scalability under controlled conditions.

**For a mid-sized hotel, to practice, you should begin with a front desk pilot for reservations and check-in/out. Add housekeeping and billing once stable. Use system logs and staff interviews to gather insights, then document findings to refine before scaling**

# QUANTITATIVE AND QUALITATIVE ANALYSIS

## Quantitative Analysis

Quantitative analysis in hotel software development involves defining objectives, collecting and preparing system, guest, and financial data, applying descriptive and inferential statistics, using advanced techniques like forecasting and predictive modelling, validating results across contexts, and presenting insights through dashboards and reports to guide decision-making. [23]

**Define → Collect → Prepare → Analyse → Validate → Present**

### 1. Define Objectives

Measure operational efficiency (e.g., reservation speed, housekeeping turnaround).

Assess financial performance (billing accuracy, revenue growth).

Evaluate guest satisfaction quantitatively (survey scores, ratings).

### 2. Data Collection

System logs: PMS/POS transactions, booking times, check-in/out durations.

Guest data: Survey ratings, loyalty program metrics.

Financial records: Billing errors, transaction volumes, revenue streams.

Operational data: Staff schedules, housekeeping completion times.

### 3. Data Preparation

Clean logs (remove duplicates, handle missing values).

Standardize formats (dates, currencies, categories).

Encode categorical data (room types, payment methods).

### 4. Descriptive Statistics

Summarize averages (e.g., mean check-in time, average housekeeping duration).

Frequency distributions (e.g., cancellation reasons, booking channels).

Visualize trends with histograms, bar charts, dashboards.

### 5. Inferential Statistics

Hypothesis testing (e.g., does OTA integration reduce booking errors?).

Regression analysis (e.g., link guest satisfaction scores to turnaround times).

Correlation analysis (e.g., staff scheduling vs. downtime).

### 6. Advanced Techniques

Time-series analysis: Seasonal booking trends, occupancy forecasting.

Predictive modelling: Guest demand, revenue optimization.

Cluster analysis: Segment guests by booking behaviour or spending patterns.

## 7.Validation & Reliability

Replicate findings across different hotels or timeframes.

Control confounders (e.g., holiday season effects).

Cross-context validation (urban vs. resort hotels).

## 8.Presentation of Results

Dashboards for managers (KPIs, alerts).

Reports with actionable insights (e.g., optimize staff allocation).

Link findings to decision-making (pricing, service improvements). [24]

## Qualitative Analysis

Qualitative analysis explores user and staff experiences with hotel software through interviews, focus groups, observations, and document reviews. Data is transcribed, coded into themes, and analysed for patterns. Case studies and triangulation validate findings, which are then interpreted to explain operational challenges and presented with narratives and diagrams to guide improvements. [25]

### Focus

Examines hotel software development through digitalisation and IT strategy in hospitality. Based on interviews with senior IT professionals.

### Success Factors

Process agility, Workforce adaptability. Technology manageability. Strong data culture. Cybersecurity

### Challenges

Disparate systems. Weak data integrity. Barriers to digitalisation initiatives

### Implications

Software must be modular, interoperable, and secure. Alignment with **organizational culture** and **workforce readiness is essential**. Balance between **innovation and operational stability is critical**.

# CONCLUSION

To succeed, one must strike a balance between clarity, structure, and adaptability. Whether in technical initiatives, academic research, or creative problem-solving, an organized approach drives both effectiveness and meaningful results. By linking modular design to practical applications, we respond to immediate demands while ensure long-term resilience. Ultimately, the true worth of any endeavour is not only in its achievements, but in how it enables others to extend, refine, and build upon what has been created.

Therefore, the question remains is how to manage the project proposal which is the hotel software development? How to meet users and customers needs?

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## Appendix

### Customer Survey for Hotel Guests

(tick the most appropriate)

#### Section 1: Booking & Reservations

- How do you book your hotel stays usually?
  - ☐ Hotel website
  - ☐ Third-party website (Booking.com, Expedia, etc.)
  - ☐ Phone/email
- How easy was it to make your reservation?
  - ☐ Very easy
  - ☐ Easy
  - ☐ Neutral
  - ☐ Difficult
  - ☐ Very difficult

#### Section 2: Check-In & Check-Out

- Would you prefer mobile check-in/check-out options?

☐ Yes

☐ No

- How satisfied were you with the check-in process? (1–5 scale)
- How important is self-service (kiosk or app) for check-in/out?

☐ Not important

☐ Slightly important

☐ Neutral

☐ Important

☐ Very important

### **Section 3: Guest Services**

- Would you use a mobile app to request services (room service, housekeeping, spa)?

☐ Yes, definitely

☐ Maybe

☐ No

- How important is real-time communication with staff (chat or messaging)?
- Which services would you like to access digitally?

☐ Room service ordering

☐ Housekeeping requests

☐ Concierge recommendations

☐ Local attractions

### **Section 4: Payments & Billing**

- How satisfied were you with the billing/payment process? (1–5 scale)
- Would you prefer digital receipts and invoices?

☐ Yes

☐ No

- Which payment methods do you prefer?

☐ Debit or Credit card

☐ Mobile Pay (Apple Pay, Google Pay)

☐ Bank transfer

☐ Cash

### **Section 5: Overall Experience**

- How likely are you to recommend our hotel to others? (Net Promoter Score: 0–10)
- What digital features would most improve your stay?

☐ Faster Wi-Fi login

☐ Smart room controls (lights, AC, TV)

☐ Loyalty program integration

☐ Personalized offers

## **Questionnaire for Hotel Interview with a Senior IT Professional**

### **Section 1: Background & Role**

- Can you describe your role and responsibilities within the hotel's IT department?
- How long have you been working in hotel IT management?
- What systems or technologies are you currently overseeing (e.g., PMS, POS, CRM, network infrastructure)?

### **Section 2: Current Systems & Challenges**

- What hotel management software do you currently use, and how effective is it?

- What are the biggest IT challenges you face in daily operations (e.g., integration, downtime, user training)?
- How do you handle system updates and vendor support?

### **Section 3: Security & Compliance**

- What measures are in place to protect guest data and ensure GDPR/PCI compliance?
- Have you experienced any cybersecurity incidents, and how were they managed?
- How do you train staff on IT security awareness?

### **Section 4: Integration & Innovation**

- How well do your current systems integrate with third-party platforms (booking engines, payment gateways, loyalty programs)?
- What emerging technologies (AI, IoT, cloud solutions) do you see as most valuable for hotel operations?
- Do you prefer cloud-based or on-premises solutions, and why?

### **Section 5: Guest Experience & Digital Services**

- How important is mobile check-in/out and digital concierge services for your hotel?
- What role does IT play in enhancing guest satisfaction?
- Are guests requesting more digital services (apps, smart room controls, online payments)?

### **Section 6: Strategic Vision**

- What improvements would you prioritize in future hotel software development?
- How do you balance cost, security, and innovation when adopting new IT solutions?
- What advice would you give to developers building hotel software management?