

SOAC proposal 2221956

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Design and Development of a
Restaurant Discovery App with
Multiplayer Features

Research Proposal

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1487

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1. Introduction

Throughout recent history local restaurants have struggled to compete with large chain restaurants, this is exacerbated with the use of marketing budgets that dwarf gross profits of local restaurants. Local restaurants are rarely able to market through traditional media, however they typically have deeper values in the community understanding the needs and tribulations that happen throughout the community this ultimately ends in returning customers and a strong brand, however without the ability to market themselves on a platform for free they often struggle to get that initial customer engagement.

After the pandemic in 2020, a report created in 2021 by Simply Business [1] suggested that local businesses lost £18,039 on average which would still have a negative impact on businesses whose operating costs have gone up in the 3 years after that, this ultimately reduces their opportunities to increase marketing due to lacking funding from potential sales, its important to allow businesses to market themselves on a platform specifically designed for their type of business, as the customer is more likely to increase initial customer footfall.

The goal behind the project would be to provide a cheap marketing solution for restaurants to put themselves out on the market. By creating a dedicated mobile platform that highlights local restaurants, the project aims to level the playing field between small independent businesses and large chains with significant marketing power, while not eliminating fast food establishments but putting a higher priority on local restaurants. In addition to discovery features, the inclusion of multiplayer functionality allows groups of users to engage collaboratively when choosing where to eat, increasing interaction and potentially driving greater footfall to local establishments.

2. Background to the Proposed Research

Mobile phones now play a central role in how people discover and choose restaurants. Users expect quick access to menus, location information, opening hours, and reviews on their phones and many services use location and contextual data to provide personalised suggestions. Standard mobile phone application development shows the usability increase user retention for a mobile application.

Group decision making introduces additional challenges that single-user recommenders do not address. When people choose a restaurant together they must consider different preferences (cuisine, price, dietary needs), availability and proximity. Recent work specifically on group-based food recommenders attempts to manage overlapping group memberships and conflicting preferences by using hybrid frameworks and clustering methods before producing group suggestions. Such approaches show promise for improving joint recommendations in real settings [2]

Sustaining user engagement over the long term is a significant challenge for mobile applications. One of the most promising strategies identified in recent research is the use of gamification combined with cooperative features, in the article "Gamification of cooperation: A framework, literature review and future research agenda" [3] the authors argued that cooperative gamified elements such as collaborative reward systems increases user engagement.

A key research gap exists at the mixture of restaurant discovery, group decision-making, and user engagement. While there is considerable research into recommendation algorithms and interaction design, there has been limited exploration of integrating multiplayer functionality into restaurant discovery apps. Such functionality would allow groups to make real-time decisions collaboratively, this could make restaurant selection more efficient and engaging for both users and local businesses.

3. Research Problem statement

The growing number of restaurants often creates difficulties for customers to find the correct restaurant for them, existing platforms only offer a single user experience, however when planning meals they often require multiple elements such as dietary requirements from a minimum of two people. The application aims to allow multiple users find restaurants together based on different filters such as budgeting, dietary requirements and type of cuisine. The secondary goal of the application is gamification of the restaurant choosing process, as this improves user retention, increasing the likelihood of a user returning to the application.

4. Research Aim & Objectives

The primary aim of this research is to design and develop a mobile application that enhances the restaurant discovery process by integrating multiplayer and collaborative features. The system will enable users to search, share, and decide on restaurant options collectively, improving decision-making efficiency and overall user engagement. The primary objective of the research is to analyse other restaurant discovery applications and discover where they fall short to their users, and this will then fill into the other objectives for the project those include: the design of the application, the implementation, and the evaluation.

5. Methodology

This research will adopt a mixed methods approach, combining both quantitative and qualitative methodologies to obtain a comprehensive understanding of how multiplayer features affect the restaurant discovery experience.

5.1 Methods

Surveys will be the primary quantitative method, capturing user preferences, satisfaction levels, and perceptions of the multiplayer feature. This will allow for the collection of measurable data from a broad group of participants, a report in the national library of medicine supports that statement by saying “there is a need for a consensus framework on the assessment of user-centered usability evaluation” [4].

Another method that will be used is observational feedback during testing, this is watching someone who has never touched the application to see how they would interact with it. This gives better qualitative data as the developer can visualise where the flaws in the user experience are.

The research strategies chosen include surveys and software development. due to the nature of the project this is the best way of representing iterative changes, after testing the design of the application a survey can be sent out which helps speed the development along as users can simply report any thoughts or bugs that arrive in the survey.

When analysing the data the most straightforward and best way to visualise the data is putting it into a bar or line graph respective for the type of data. Throughout the development of the mobile application the graphs should change in accordance with the changes made to the application during the development. a major piece of data that sometimes can be forgotten is the needs of the user in this case, this could be tracked by a Trello board, this is a website which organises projects, and individual tasks too help break down tasks for easy consumption.

5.2 Materials

User data will be generated through the mobile application itself. The primary types of data collected will include the username, the choices made during the restaurant selection process, and information related to multiplayer room interactions. This represents the minimum required dataset to support the core functionality of the application, enabling basic user identification, interaction tracking, and multiplayer engagement analysis.

Software requirements for the project are:

React native – this will be the cross-platform development framework that will be used to build both the IOS app but also the android version as well.

NodeJS – this is used to protect API keys but also handles all server-side queries from the user reducing strain over long periods of time.

Google Maps API – this is the API that will be used to get locations and display them, due to the large scale of this application it is impossible to implement without having existing data.

Microsoft Forms – this will be used to generate the user feedback and qualitative data, Microsoft forms generate graphs for ready for exporting which reduces time spent on creating graphs.

Hardware requirements for the project are:

Desktop computer (minimum requirements)

CPU – intel I5 13600k

RAM – 32 gigabytes

Storage – 256 gigabytes

OS – Windows 11

Purpose – this will be used to develop the application. When testing the multiplayer feature, the computer will need to host two instances of the application at once. If necessary the desktop computer may host a server inside a virtual machine

Smartphone (minimum requirements)

Quantity - 2

OS – could be either IOS or Android

Purpose – these will be used for the testing the application design on different screen sizes.

Internet connection

Speed – 50 Mbps download and 10 Mbps upload

Purpose - throughout the project the use of cloud computing will be consistently used to ensure that data is restorable if any issues such as corruption occurs.

6. Project Plan

- **November – December 2025** complete research methodology, and design system architecture and wireframes.
- **January 2026 (Early)** Develop research instruments (e.g. the surveys) and plan research data collection dates
- **January – February 2026** Begin main mobile application development, focusing on core restaurant discovery features start conducting usability testing.
- **March 2026** Integrate multiplayer functionality and enhance interactive features.
- **Late March – April 2026** Finish conduct usability testing, collect user feedback, and refine the application based on findings.
- **Late April 2026** Carry out data analysis and evaluate research results.
- **Early May 2026** Finalise and submit the research report.

7. References

- [1] Simply Business, "The impact of Covid-19," Simply Business, London, 2021.
- [2] M. N. O. K. I. A. K. Rao Naveed Bin Rais, "A Hybrid Group-Based Food Recommender Framework for Handling Overlapping Memberships," *MDPI Applied Sciences*, vol. 14, no. 13, pp. 1-20, 2024.
- [3] B. M. R. Z. J. H. Marc Riar, "Gamification of cooperation: A framework, literature review and future research agenda," *International Journal of Information Management*, vol. 67, no. 1, p. 24, 2022.
- [4] C. H. M. A. A. S. T. R. Ó. S. G. R. N. Silva AG, "Procedures of User-Centered Usability Assessment for Digital Solutions: Scoping Review of Reviews Reporting on Digital Solutions Relevant for Older Adults," *National library of Medicine*, vol. 1, no. 1, pp. 1-2, 2021.

FINAL GRADE

GENERAL COMMENTS

64/100

PROJECT PROPOSAL – ACCA6020 INDEPENDENT PROJECT

Student Ryan Hopkins Mark 64

Intro / A&O (400 words)		
Project title; Identification of a specific problem to be investigated; Well-defined aims and SMART objectives; Explaining why this project is worth doing; Discussion of what the project needs to do in order to be a success; Description any deliverables that will be produced at the end of the project	20	13
The proposal presents a clear problem, focusing on the difficulties faced by local restaurants in competing with large chains and on the potential of a multi-user discovery app to support group decision-making. The introduction provides a good justification for the project and links well to financial pressures on small businesses, although some sentences are overly long and would		

benefit from clearer structuring. The aim and research problem are clearly stated, but the objectives remain quite broad; they could be made more explicitly SMART (e.g. specifying target user numbers for testing, measurable indicators of “increased engagement”, or clearly defined success criteria for the app and evaluation). Deliverables and success measures are only implicitly mentioned; an explicit list of outputs and a brief statement of what success would look like for both users and restaurants would have helped strengthen this section.		
Background to the Project / Literature Review (400 words)		
Description of how the work to be done by in the project relates to the work identified in the literature review; Discussion of any ethical issues raised by the project Identifying what has already been done within the field; Topic familiarity; Brief literature review using appropriate sources – 6-8 journal papers and book chapters rather than just websites; Selection of relevant models & concepts Your background section demonstrates an emerging familiarity with the literature around restaurant recommendation, group decision-making, and gamification. Appropriate	20	14

sources have been selected, including recent work on group-based food recommenders and cooperative gamification. The research gap at the intersection of discovery, group decision-making, and engagement is identified in a fairly straightforward way. However, the discussion tends to summarise rather than critically compare sources, and there is limited elaboration on how specific concepts or models from the literature will inform the design (for example, which aspects of the hybrid group recommendation framework will be used). Ethical considerations are mostly deferred to the ethics form; a brief mention here of issues around data, consent, and data minimisation would improve the narrative.		
Project Design (500 words)		
Clear statement of which development methods are to be used and why they are appropriate; Clear statement of which tools are to be used and why they are appropriate; Clear description of how data collected will be analysed The project design and methodology show a reasonable understanding of mixed methods, combining surveys with observational usability feedback. The choice of methods is appropriate for	30	17

evaluating user engagement and usability of the prototype. There is a sensible plan to iterate based on user feedback. However, important design details are missing or underdeveloped, such as - clearer sampling and recruitment strategies, criteria for participant inclusion, and more specific plans for data analysis beyond bar or line graphs. The proposal would be stronger if the analysis plan specified how - survey responses will be summarised (e.g. descriptive statistics, comparison across versions) and how observations will be coded and interpreted. The ethics form, by contrast, provides a relatively clear description of participants, consent procedures, risks, and data protection measures. There - is a slight inconsistency between the statement that there is no electronic transfer of data and the later description of cloud storage and encrypted transfers; this should be aligned to avoid confusion.		
Resources / Planning (200 words)		
List of any deliverables; Clear diagram showing both timing and resource use; Completed ethics form; Limited and relevant appendices The resources and planning section identifies key software (React Native, NodeJS, Google Maps API, Microsoft Forms) and hardware requirements, and the	15	10

project plan outlines a logical sequence from research and design through development, testing, and analysis with realistic dates. The ethics form is completed and demonstrates awareness of GDPR and good data management practice. Some of the hardware specifications are more powerful than strictly required for the project, this could be justified or scaled back. The plan would benefit from a short, explicit list of deliverables and from linking specific milestones to the research objectives (e.g., indicating at which stage surveys will be run, and when multiplayer features will be tested).		
Document Presentation		
Correct spelling, grammar and punctuation; Flow of narrative/fluency; Coherence; Word processed ; Correct use of referencing with bibliography; Strict word limit Document presentation is generally clear, with appropriate headings and a coherent structure. Referencing is consistent, and journal sources have been included, which is good to see. There are, however, several grammatical issues (run-on sentences, missing commas, inconsistent capitalisation) that sometimes affect clarity. A careful proof-read, along with attention to sentence	15	10

boundaries and punctuation, would improve readability. Ensuring that all citation are fully formatted and that word limits for each section are more closely adhered to will improve your mark, in this section and overall.		
TOTAL	100	64

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