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I hereby declare that this report represents my own work at the University of Bolton. All sources used have been appropriately cited and referenced.

Signature:

Date:

Abstract

Abstract will be written after Chapter 06.

Keywords:

Artificial Intelligence, Aged People Care, Caregiver Support

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List of Abbreviations

Abbreviation	Definition
AI	Artificial Intelligence
NLP	Natural Language Processing
UI	User Interface
WHO	World Health Organization

1. Introduction

Global life expectancy has significantly increased, leading to a rapid rise in the proportion of elderly individuals across all countries Organization (2015). According to the World Health Organization (WHO), the global population aged 60 and above is expected to rise from 1.1 billion in 2023 to 1.4 billion by 2030, with the most rapid growth occurring in developing regions *Ageing: Global population --- who.int* (2025). This figure will reach 2.1 billion by 2050, while the number of people aged 80 years and above will triple to 426 million. Although population ageing began in high-income nations, the most significant demographic shifts are now occurring in low- and middle-income countries, which will host nearly two-thirds of the global elderly population by 2050 *Ageing and health --- who.int* (2024).

This demographic shift brings profound implications for public health, social structures, and caregiving practices. Maintaining the health and independence of older adults is critical to enabling their active participation in community life and reducing the societal and economic burden of age-related diseases Prince et al. (2015). Preventative healthcare, early intervention, and effective management of chronic illnesses are essential to improving the quality of life for the elderly. However, current healthcare systems and support applications in many regions are inadequately prepared to meet this growing demand Jaul & Barron (2017).

1.1 Research Motivation

The increasing need for elderly care has highlighted the essential role of caregivers, including family members and professional health workers. These caregivers often face numerous challenges, including managing complex health routines, providing emotional support, coordinating medical appointments, and navigating fragmented service systems Ploeg et al. (2017). Additionally, many existing tools for elderly care are either static in nature or not user-friendly, lacking the technological sophistication required to provide proactive and personalized support. Most platforms do not leverage Artificial Intelligence (AI) to offer predictive assistance or tailored recommendations, and they rarely incorporate community-building or emotional well-being features, which are equally vital for holistic care.

Against this backdrop, there is a pressing need for an integrated, intelligent solution that can assist caregivers in managing their responsibilities efficiently while also enhancing the quality of life for elderly individuals. The current digital solutions are limited in interactivity, scalability, and adaptability, particularly for users who are not tech-savvy. This thesis seeks to address these limitations by proposing and developing a smart, AI-driven web-based platform tailored to the unique needs of both elderly individuals and their caregivers.

1.2 Problem Statement

Applications developed to support elderly care are not keeping pace with the growing demand for effective solutions. Most existing platforms are static websites that lack interaction and are difficult for average users to navigate. Caregivers struggle to find reliable advice, track appointments or medications, and locate nearby services for seniors. As a result, many experience stress, frustration, and isolation. Current systems also lack automation that could ease their mental load. Few platforms apply AI to provide timely recommendations or proactive support. Community connections and emotional care are often overlooked, and poor design choices make many tools inaccessible to elderly users or those with limited technical skills.

From a software engineering perspective, there is both an opportunity and a challenge: to design scalable, trustworthy, and user-friendly technology that supports caregivers. This research aims to build an AI-powered web portal offering real-time support, personalized guidance, and integrated local services, with a focus on secure data handling, ease of use, and ethical AI interactions.

1.3 Aim of the Thesis

This thesis aims to design and implement a comprehensive AI-based web app that supports elderly care by assisting caregivers with real-time help, personalized guidance, and engagement tools. The system will leverage modern full-stack development practices and AI technologies to deliver a solution that is functional, accessible, secure, and user-centric.

1.4 Objectives of the Thesis

- To develop a responsive caregiving portal using modern full-stack frameworks
- To incorporate an AI-driven conversational agent to provide caregiving guidance and emotional support
- To implement a recommendation module that delivers tailored resources, tips, and elderly-friendly services.
- Design an automated reminder feature for medications, appointments, and daily activities
- To ensure the system complies with accessibility standards, making it usable for seniors and individuals with limited technical skills
- To apply secure login methods and strong privacy measures to address ethical and data protection requirements
- To conduct real-world testing to measure usability, user satisfaction, and the accuracy of AI responses
- To evaluate how AI-enabled assistance influences caregiver workload, stress reduction, and overall care quality

1.5 Research Questions

1. What ethical, privacy, and security challenges arise when applying AI in elderly caregiving, and how can system design mitigate these risks?
2. How can AI be leveraged to provide tailored and context-sensitive support for caregivers through a web-based platform?
3. To what extent can an AI-driven recommendation engine deliver accurate and reliable suggestions for caregiving tips, services, and local resources?
4. Which design strategies and interface features improve usability and accessibility for both

caregivers and older adults?

1.6 Significance of the Study

This research contributes to the intersection of AI, web development, and gerontechnology by addressing an urgent societal need: effective and sustainable care for a growing elderly population. By introducing a platform that combines real-time AI support, personalized services, and social interaction tools, the proposed system enhances both the caregiving process and the well-being of elderly users. Moreover, the study provides a model for how software engineering principles can be applied to build ethically responsible and socially beneficial digital health tools. The outcomes of this thesis have the potential to inform future innovations in elderly care systems, particularly in low-resource settings where scalable and intelligent solutions are essential.

1.7 Scope of the Thesis

The scope of this thesis is confined to the development and evaluation of a web-based elderly care assistance platform. The system will include AI-based features such as a chatbot and recommendation engine, a reminder system, and community interaction tools. It will be developed using widely adopted full-stack technologies and will emphasize accessibility and data security. The project does not aim to replace professional medical services or provide clinical diagnosis but will instead serve as a supportive tool for caregivers and elderly individuals in non-critical, daily life contexts.

1.8 Limitations of the Thesis

This thesis does not include integration with wearable devices or IoT-based medical monitoring systems. The system will be web-based and may not offer full offline support or a mobile-native version. Due to time and resource constraints, user testing will be limited to a small sample of caregivers and elderly users. Additionally, while AI-driven features will be implemented, their complexity will be constrained to rules-based logic and basic natural language processing due to project scope limitations.

1.9 Structure of the Thesis

This thesis is organized into six chapters. Chapter 1 (Introduction) provides the motivation, research problem, aim, objectives, significance, scope, and limitations of the study. Chapter 2 (Background) offers a comprehensive review of literature related to elderly care technologies, AI in healthcare, and existing web-based caregiver platforms. Chapter 3 (Methodology) details the research design, development tools, AI techniques, and evaluation strategies used to construct the proposed system. Chapter 4 (Implementation) presents the technical development of the AI-powered portal, including system architecture, user interface design, and integration of key features. Chapter 5 (Discussion) interprets the evaluation results in the context of the research objectives, assesses the usability and performance of the system, and reflects on its limitations. Chapter 6 (Conclusion) summarizes the research contributions, highlights key findings, and outlines future directions for enhancing the platform and expanding its functionality.

1.10 Summary of the Chapter

This chapter introduced the context and motivation for developing an AI-powered elderly care assistance portal. It outlined the demographic shift towards an ageing global population and the resulting challenges faced by caregivers and healthcare systems. The chapter highlighted the limitations of existing digital solutions and emphasized the need for an intelligent, accessible, and user-friendly platform to support elderly individuals and their caregivers. The problem statement, aim, and specific objectives of the research were presented in detail, followed by a discussion of the study's significance, scope, and limitations. Lastly, the chapter provided an overview of the thesis structure, summarizing the content and focus of each subsequent chapter. This foundation establishes the basis for the background review in the next chapter, which will explore related technologies, research studies, and design approaches relevant to the proposed system.

2. Background

This chapter provides an in-depth examination of the technological, clinical, and social contexts that inform the development of an AI-powered elderly care assistance portal. It begins with a critical review of existing web-based elderly care applications, AI-driven recommendation systems, and conversational AI technologies. The chapter then identifies gaps in current solutions, particularly the lack of integrated, intelligent, and accessible platforms that address the multidimensional needs of caregivers and elderly individuals. The analysis culminates in a comparative synthesis that justifies the necessity for the proposed research.

2.1 Existing Web-Based Elderly Care Applications

Over the past decade, a number of digital platforms have emerged to support elderly care through web and mobile interfaces.

Lotsa Helping Hands is a web and mobile platform facilitating community-based caregiving coordination. It allows caregivers to organize help through calendars, share updates, and assign tasks to volunteers. Its strength lies in fostering community support, reducing caregiver burden. Pros include ease of use and strong community features. Cons involve limited personalization and no AI-driven recommendations. Limitations include lack of advanced automation and data analytics for caregiving insights. It excels in group coordination but lacks real-time AI assistance *Care Calendar Website | Lotsa Helping Hands --- lotsahelpinghands.com* (2025).

CaringBridge is a web and mobile platform focused on health journey communication, enabling caregivers to share updates and receive emotional support via a journal-like interface. Its strength is fostering community engagement through personalized health updates. Pros include a supportive user community and accessibility. Cons are the absence of AI tools, medication tracking, or task management. Limitations include minimal caregiving-specific features and no integration with health systems. It prioritizes emotional support but lacks technical sophistication for comprehensive care management *CaringBridge --- caringbridge.org* (2025).

AgingCare is a web-based platform offering resources, forums, and articles for caregivers, em-

phasizing education and peer support. Its functions include discussion boards and expert advice, fostering community engagement. Pros include rich content and active forums. Cons are the lack of AI personalization and task automation. Pricing is free, with optional paid services like caregiver hiring. Limitations include no integrated reminders. It serves as an informational hub but falls short in delivering dynamic, AI-driven caregiving solutions *AgingCare: Find In-Home Care, Assisted Living and Caregiver Support --- agingcare.com* (2025).

MyLifeLine is a web-based platform focused on cancer patient and caregiver support, offering tools for sharing updates and organizing help. Its strength lies in community engagement and emotional support. Pros include a supportive user base and accessibility. Cons are limited caregiving features and no AI integration. Pricing is free, supported by donations. Built with standard web technologies, it lacks a dedicated mobile app. Limitations include no task automation or health tracking. It excels in emotional support but is not suited for comprehensive caregiving needs *MyLifeLine Online Cancer Community --- mylifeline.org* (2025).

CareZone is designed to streamline caregiving tasks through medication management, appointment tracking, and shared care plans. Its interface supports caregivers by centralizing health information, enabling secure communication with family members, and offering reminders for medications and tasks. However, it lacks AI-driven personalization and community engagement tools, limiting proactive support. Pricing is free for basic features, with premium options undisclosed. Limitations include minimal integration with local services and no chatbot functionality *CareZone - Caregivers --- smartpatients.com* (2025).

Applications such as CareZone, Lotsa Helping Hands, CaringBridge, ClearCare (WellSky), and AlayaCare offer task management, scheduling, communication tools, or caregiver coordination. CareZone, for instance, focuses on medication tracking and calendar integration, providing a secure space for family members to share information. Lotsa Helping Hands enables volunteer coordination through a shared task calendar, while CaringBridge is designed primarily for emotional support and health journaling.

Despite their utility, these platforms are limited in scope. They tend to address isolated aspects of elderly care, such as appointment reminders or peer support, without integrating AI

for predictive assistance or decision support. Moreover, they often lack adaptive user interfaces suitable for elderly individuals with sensory or cognitive impairments. Personalization is typically rule-based and static, failing to reflect the dynamic needs of elderly users over time.

2.2 AI-Based Recommender Systems in Healthcare

Recommender systems have become instrumental in personalized health services, ranging from suggesting wellness plans to identifying local health resources. AI recommender systems analyze patient data, medical histories, and preferences to suggest tailored interventions. In caregiving, they recommend local services, medication schedules, or emotional support resources. For instance, systems can match elderly patients with accessible transportation or community programs based on location and needs. In clinical settings, they suggest treatment plans or predict patient outcomes, reducing decision-making burdens for healthcare providers.

Ada Health is an AI-powered symptom checker and recommender system available on web and mobile platforms. It uses natural language processing (NLP) and machine learning to analyze user-reported symptoms and recommend potential diagnoses or care steps. In caregiving, it assists by suggesting when to seek medical help. Pros include high accuracy and accessibility; cons involve limited integration with caregiving-specific resources. Pricing is free for basic use, with premium features undisclosed. Ada Health

Woebot is a conversational AI platform designed for mental health support, using NLP to recommend coping strategies and emotional support resources. For caregivers, it provides stress management tips via chatbot interactions. Pros include ease of use and emotional support capabilities; cons are its focus on mental health over comprehensive caregiving tasks. Pricing is free with optional in-app purchases. Built with cloud-based technologies, it supports iOS and Android. Woebot

CarePredict is a wearable-based AI system for seniors, recommending interventions like activity adjustments based on real-time health data. It uses machine learning to predict health declines and suggest preventive measures. Pros include proactive monitoring; cons are high costs (around $400 for the device plus $70/month subscriptions) and limited community features.

Built with IoT and cloud technologies, it supports mobile apps. CarePredict

However, these systems are often standalone modules embedded in mobile health apps and lack integration with broader care workflows. They do not factor in caregivers' perspectives, and few systems offer location-based recommendations or integrate social services and community support. Furthermore, these recommenders rarely adapt to users' evolving conditions, behaviors, or emotional states, which are critical in elderly care scenarios. As such, there is a significant need for intelligent recommender systems that consider not only clinical parameters but also psychosocial contexts.

2.3 Conversational AI for Caregiving Support

Recent advancements in natural language processing (NLP) have led to the emergence of intelligent chatbots that can simulate human conversation, provide information, and offer emotional support. Systems such as Woebot and Replika use machine learning models to recognize user intent, deliver personalized content, and maintain contextual memory. In healthcare, conversational AI has been used for mental health screening, medication adherence, and self-care coaching.

Nonetheless, applications of conversational AI in elderly care remain underdeveloped. While some research prototypes demonstrate the feasibility of empathetic agents for senior users, real-world adoption is minimal due to issues of trust, data privacy, and limited customization. Most elderly users find it difficult to engage with chatbots that use complex sentence structures, lack voice input/output features, or fail to respond empathetically to emotional needs. Furthermore, integration with task-oriented care systems (such as medication management or scheduling) is almost nonexistent.

2.4 Research Gap Identification

The analysis of existing systems reveals several critical gaps. First, current elderly care applications do not provide an integrated solution that combines task management, personalized recommendations, emotional support, and social connectivity in a unified platform. Second,

while recommender systems and conversational AI have made substantial progress individually, their application in the context of elderly care remains fragmented and superficial. Third, most platforms are not designed with accessibility as a core requirement, making them unsuitable for users with age-related impairments.

Moreover, current systems often neglect the caregiver's perspective, treating them as peripheral users rather than core stakeholders. There is limited use of AI to reduce caregiver burden through predictive assistance or emotional coaching. Ethical considerations such as data protection, algorithmic transparency, and trust-building mechanisms are also insufficiently addressed.

2.5 Comparative Analysis of Technologies

The Table 1 summarizes the strengths and weaknesses of the major technologies reviewed:

Table 1: Comparative Analysis of Technologies

Technology / Application	Personalization	AI Integration	Emotional Support	Accessibility	Caregiver Tools	Community Features	
CareZone	Moderate	None	Low	Moderate	Yes	No	
CaringBridge	Low	None	High	High	No	Yes	
ClearCare / AlayaCare	High (admin)	Limited (backend)	Low	Low	Yes (enterprise)	No	
AI Recommender Systems	High	Yes	Low	Depends	No	No	
Conversational AI (Woebot)	High	Yes	High	Moderate	No	No	
Proposed System	High	Yes (chatbot + recommender)	High	High	Yes	Yes	

2.6 Relevance to Current Work

Explain how the previous research and background information relate to the current study, setting the stage for the research question and methodology.

2.7 Literature Synthesis Matrix

Recent Publications	Relevance to Current Research	Theme	Research Methodology	Research Methods	Results	Limitations
Title, year, authors	1-5					

Table 2: Literature Synthesis Matrix

3. Methodology

This chapter outlines the methodology employed to design, develop, and evaluate the AI-powered Elderly Care Assistance Portal. The approach combines software engineering practices with user-centered design and AI model integration to produce a scalable, accessible, and intelligent web-based system. The methodology covers research design, sampling strategy, data collection and analysis methods, ethical considerations, and justification of the chosen approach. Each section ensures that the research maintains academic rigor while supporting replication and reproducibility.

3.1 Research Design

The research adopts a design-based development approach, integrating both qualitative insights and quantitative evaluation. The primary focus is on building and evaluating a software artifact, rather than hypothesis testing. This aligns with a developmental research methodology, commonly used in software engineering and human-computer interaction (HCI), where the aim is to produce a working prototype that addresses a real-world problem. Since the study uses secondary data, and the product is developed iteratively with the help of industry best practices (e.g., Agile model), the research is non-experimental in nature. A qualitative review of existing elderly care platforms and a quantitative analysis of user satisfaction, system usability, and AI performance metrics are used to measure system effectiveness.

3.2 Sampling

The sampling strategy targets two user groups: caregivers (formal or informal) and elderly individuals who are potential end-users of the portal. A purposive sampling technique is used, selecting participants based on their relevance to the research problem. For prototype evaluation, 10 to 15 users are selected for usability testing and feedback through simulated user interaction sessions. These participants include family caregivers, healthcare assistants, and computer-literate elderly users. Although the sample size is small, it is appropriate for usability testing in early-stage design (Nielsen, 2000). The limitation lies in generalisability, but detailed

qualitative feedback ensures rich insight into user needs.

3.3 Data Collection

Data collection is twofold. First, secondary datasets are used to train and evaluate AI models integrated into the platform. These datasets include:

- AI chatbot training dataset: Dialogue datasets from open-source conversational corpora (e.g., Persona-Chat, EmpatheticDialogues).
- Recommendation engine: Elderly care service datasets and public healthcare APIs.

Second, primary data is collected during user testing through surveys, interviews, and system logs. A standardized usability questionnaire (such as System Usability Scale - SUS) and semi-structured interviews gather user experiences, suggestions, and pain points. Logging user interactions (e.g., chatbot usage, task reminders) supports measuring effectiveness quantitatively.

3.4 Data Analysis

For the AI modules, performance metrics such as accuracy, precision, recall, and F1-score are computed to assess model quality. For the recommender system, mean reciprocal rank (MRR) and precision at k (P@k) evaluate the relevancy of service suggestions. Chatbot performance is assessed using BLEU scores and human evaluation for response quality. For qualitative data (user interviews), thematic analysis is used to identify recurring themes related to usability, emotional support, and system value. Survey responses are statistically analysed using descriptive statistics and basic inferential techniques to assess trends in satisfaction and usability.

3.5 Ethical Considerations

Ethical adherence is critical in elderly-focused systems. All user testing was conducted with informed consent, ensuring participants were aware of their rights, the study's purpose, and how their data would be used. Personal data collected through the system was anonymised and stored securely. The portal complies with GDPR guidelines and applies secure authentication for user access. The AI components are designed to offer support without replacing professional

advice, maintaining transparency in recommendation generation. Participants could withdraw from the study at any time without consequences.

3.6 Limitations

Several limitations constrain the research. The reliance on secondary datasets for AI model training may introduce bias or domain mismatch, limiting generalisability. The sample size for usability testing is small, typical for pilot studies, but insufficient for broader demographic validation. Also, real-time deployment and feedback from non-tech-savvy elderly users were simulated due to accessibility challenges. Furthermore, the AI models may produce occasional inaccuracies, which could affect user trust.

3.7 Validity and Reliability

To ensure validity, the system features were aligned with validated instruments and evidence-based practices in elderly care. Face and content validity were established through expert review from domain specialists. For reliability, the AI components were tested across multiple data samples, and usability tests followed consistent procedures. Triangulation of data sources (log data, interviews, and survey responses) enhanced research trustworthiness. Repeating the experiments with a different user group or data configuration would likely yield similar results, suggesting internal reliability.

3.8 Justification of Approach

The chosen methodology supports the research aim: to build a personalized, intelligent, and interactive web-based portal to aid caregivers of elderly individuals. A development-focused design allows for practical experimentation, rapid prototyping, and iterative refinement based on feedback. By incorporating AI tools, the research aligns with the objective of easing caregiver burden and offering context-aware, ethical, and personalized support. Combining software engineering with user-centered evaluation enables the study to balance technical sophistication with human usability.

3.9 Procedure

The research procedure followed a structured Agile development cycle:

- Requirement Gathering: Analysis of caregiver pain points through literature review and informal expert interviews.
- System Architecture Design: Modular system blueprint created using component-based design.
- AI Integration: Chatbot trained using a pre-trained transformer (e.g., DialoGPT), and recommendation engine implemented with cosine similarity on vectorized elderly needs.
- Front-end and Back-end Development: Portal built using React.js (frontend) and Node.js with MongoDB (backend).
- User Testing: Simulated interaction sessions conducted with test users to evaluate functionality.
- Evaluation and Refinement: Collected user feedback and performance data used to refine features and improve usability.

3.10 Materials

The project used the following tools and materials:

- Software: React.js, Node.js, MongoDB, Python (for AI modules), TensorFlow, Flask (for chatbot API), Postman, VS Code.
- Datasets: EmpatheticDialogues (for chatbot), U.S. elder services open datasets (for recommender).
- APIs: Google Maps API (for local services), healthcare.gov public API.
- Evaluation Tools: SUS questionnaire, interview templates, and log analysis scripts.

4. Implementation

The implementation chapter of a paper, particularly in the context of a software development or technical project, typically contains the following key components:

4.1 System Development Methodology

Outline the approach and techniques used to develop the system, including the tools, methods, and practices employed throughout the development process.

4.2 Framework Section

Describe the main technologies, frameworks, and tools used in the implementation. Explain how these components come together to form the system or solution.

4.3 System Design

Provide a detailed explanation of the most interesting and significant design elements of the implementation. This includes the rationale behind design decisions and the principles employed to ensure the system's security and functionality.

4.4 System Requirements and Specifications

Outline the system requirements, including hardware and software specifications needed to run the implemented system.

4.4.1 Specification Details

Provide details on the system requirement specifications, such as input and output designs, and the structure of the database.

4.5 Diagrams and Figures

Use UML and wireframe figures to illustrate the system architecture, data flow, and component interactions. This helps in providing a clear understanding of the implementation.

4.6 Implementation Details

Explain the details of the prototype implementation. This includes the specific methods and techniques used to develop and integrate the system components.

4.7 Code and Algorithms

Include details about the code structure, algorithms, and any custom scripts or programs developed for the project.

4.8 Testing and Validation

Describe the strategies used to test the implementation, such as unit testing, integration testing, and system testing. Explain how these tests were conducted and what aspects of the system were evaluated.

4.9 Results of Testing

Summarise the results of the testing process, highlighting any issues found and how they were addressed.

4.10 Maintenance and Support

Discuss the maintenance aspects of the implemented system, including corrective, preventive, and adaptive maintenance strategies.

4.11 Support Issues

Address any potential support issues and how they can be managed to ensure the system's longevity and reliability.

4.12 Integration with Existing Systems

Describe the existing system in which the new subsystem or system will be integrated. Include details on the main components, technologies used, and data flow between components.

4.13 Integration Process

Explain how the new implementation integrates with the existing system, including any modifications or adaptations required.

4.14 Security Considerations

Describe the adversary model that the implementation is intended to resist. This includes any security measures taken to protect the system from potential threats and vulnerabilities.

4.15 Comparison with Existing Work

Compare and contrast the implemented system with similar systems or subsystems developed by others. Highlight the unique contributions and advancements made by the current implementation.

5. Discussion

The discussion chapter of a paper is a critical section that interprets and describes the significance of the research findings in relation to the research problem. It provides a comprehensive analysis of the results, their implications, and their contribution to the existing body of knowledge.

5.1 Reiterate Findings

Briefly summarise the main findings of the study without repeating the results section verbatim. Highlight the most significant results that address the research questions or hypotheses.

5.2 Explain Findings

Provide a detailed explanation of the findings, discussing what the results mean and why they are important. This includes interpreting any unexpected or particularly significant results.

5.3 Compare with Previous Research

Compare the findings with those from previous studies. Discuss how the results align with, support, or contradict existing literature.

5.4 Practical Implications

Highlight the practical implications of the findings. Discuss how the research can be applied in real-world settings and what benefits or changes it might bring.

5.5 Limitations of the Study

Identify and discuss any limitations in the study design, data collection, or analysis process. Explain how these limitations might affect the interpretation of the results and the overall conclusions.

5.6 Address Potential Biases

Discuss any potential biases or confounding factors that could have affected the results.

5.7 Unexpected Results

Address any unexpected or anomalous results. Discuss potential reasons for these anomalies and their implications for the research.

5.8 Deduction and Generalisation

Discuss how the findings can be applied more generally. This might include describing lessons learned, proposing recommendations for improving a situation, or recommending best practices.

5.9 Future Research Directions

Provide recommendations for future studies based on the findings and limitations of the current research.

6. Conclusion

6.1 Restatement of the Research Problem

Reiterate the main research problem or question addressed in the paper. This helps to remind the reader of the central focus of the study.

6.2 Summary of Main Findings

Provide a concise summary of the key findings or results of the research. This should include the most significant outcomes that directly address the research questions.

6.3 Implications of the Findings

Discuss the broader implications of the research findings. Explain how the results contribute to the existing body of knowledge, address practical issues, or suggest new areas for further research.

6.4 Synthesis of Key Points

Synthesise the main arguments and evidence presented in the paper. This involves bringing together the key points to provide a cohesive understanding of the research and its significance.

6.5 Discussion of Limitations

Acknowledge any limitations in the study design, data collection, or analysis process. Discuss how these limitations might affect the interpretation of the results and the overall conclusions.

6.6 Future Research Directions

Suggest areas for future research based on the findings and limitations of the current study. This could include new questions that have emerged from the research or recommendations for further investigation.

6.7 Concluding Remarks

Provide a final statement that encapsulates the main takeaway from the research. This could be a call to action, a reflection on the significance of the findings, or a closing thought that leaves a lasting impression on the reader.

7. GIA Declaration

Declaration: At the end of the assessment, you should also include a declaration of any software tools including Generative AI (GAI) applications that you used in developing and completing the assessment.

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