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**Assessment Cover Page**

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| *Module Title* | Strategical Thinking |
| *Assessment Title* | CA 1 – Capstone Project Proposal |
| *Assessment Due Date* | March 29th 2024 |
| *Date of Submission* | March 25th 2024 |

**Declaration**

By submitting this assessment, I confirm that I have read the CCT policy on academic misconduct and understand the implications of submitting work that is not my own or does not appropriately reference material taken from a third party or other source.

I declare it to be my own work and that all material from third parties has been appropriately referenced.

I further confirm that this work has not previously been submitted for assessment by myself or someone else in CCT College Dublin or any other higher education institution.

Abstract

[NOTE: This section is designated for the abstract. Abstracts are not assigned page numbers and should precede the table of contents. If an abstract is unnecessary for your work, please delete this page.]

Attention: All notes must be removed from the document before submission!!

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Title: Forecasting the Future: A Customer Service Demand Prediction Model for Efficient Resource Planning

# Introduction

Customer service is a critical touchpoint for any organization no matter if is a big, medium or small company, this help us to shaping customer perception and loyalty. To deliver exceptional service, companies must efficiently manage resources and ensure timely responses to inquiries. However, fluctuating demand for customer support can make resource allocation challenging. Some companies does not have a tool that permits them to predict the customer service demand, which makes it difficult to plan and allocate resources to address customers queries rapidly, impacting the business and the customer perception of the brand.

This capstone project aims to develop a machine learning model to predict demand for customer service interactions through multiples channels.

This project will contribute to improved customer service by: ([Highlight the benefits of your project])

* Enabling proactive resource planning to meet customer demand.
* Reducing customer wait times and enhancing satisfaction.
* Optimizing operational costs associated with customer service.

The following sections will detail the methodology employed for data collection, model development, and evaluation. We will also discuss the potential impact and limitations of this project. ([ Briefly mention what the following sections will cover])

**Introduction:** Provide a brief overview of the project and its significance. Explain why the capstone project is important, relevant, and interesting. Mention any real-world problems or challenges that the capstone project aims to address. The capstone project should aim to develop possible solutions.

# Objectives

By leveraging historical data and AI techniques, we aim to: ([List 2-3 key goals of your project])

* **Predict the number of inquiries received through various channels (phone, chat, email).**
* **Estimate average wait times for customers seeking support.**
* **Identify peak demand periods to optimize resource allocation.**

**Objectives:** Outline the specific goals of your capstone project. What do you intend to achieve through this capstone project? Ensure your objectives are clear, concise, and aligned with the project's goals. You should have between three and five objectives. There should be a business objective or hypothesis (not a statistical test hypothesis) that looks to be explored.

# Problem Definition

**Problem Definition:** Clearly state the problem or challenge the capstone project seeks to solve. Discuss the context of the problem, its impact, and why it's essential to address it.

# Scope

**Scope:** There should be plenty of scope for the two-semester capstone project. Define the scope of the capstone project. What will be included and excluded from the capstone project? List the boundaries of the capstone project to avoid any ambiguity. Since this is a two-semester project, ample scope should be provided for in-depth analysis and exploration. Describe the planned methods, techniques, and approaches you plan to accomplish in the capstone project. What do you expect to deliver by the end of semester two? Provide a high-level timeline for the capstone project. Break down the project into phases or milestones and estimate the time required for each.

# Data Sources

**Data Sources:** Where will you get your data, and how much do you need? Specify the data sources you plan to use in the capstone project. Show evidence of any permissions to access and use the data.

This dataset serves as a valuable resource for conducting Exploratory data analysis (EDA), Visualization, and Machine Learning Classification tasks pertaining to customer service performance evaluation, satisfaction forecasting, and customer behavior analysis within the e-commerce sector.

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| Dataset | Link | Tables |
|  | [Customer Support Ticket Dataset (kaggle.com)](https://www.kaggle.com/datasets/suraj520/customer-support-ticket-dataset) |  |
|  | [eCommerce Customer Service Satisfaction (kaggle.com)](https://www.kaggle.com/datasets/ddosad/ecommerce-customer-service-satisfaction) |  |
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# Ethical Considerations

**Ethical Considerations:** Discuss any ethical considerations associated with the capstone project, especially if it involves sensitive data, user privacy, or potential societal impacts. This will include dataset permissions and use of data permissions. There can be no medical capstone projects.

# Reference

SAMPSON, S. E.; CHASE, R. B. Optimizing Customer Involvement: How Close Should You Be to Your Customers? **California Management Review**, *[s. l.]*, v. 65, n. 1, p. 119–146, 2022. DOI 10.1177/00081256221118117. Disponível em: https://research.ebsco.com/linkprocessor/plink?id=2e8cc876-6c8f-3873-a9ab-5ddd18fe40c0. Acesso em: 20