**How does a business simulation game influence player decision-making and strategic thinking?**



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## 1 Lay Summary:

This dissertation aims to answer the question: "How does a business simulation game influence player decision-making and strategic thinking?" The project will be developed using Unity and C# and will focus on the economy of small shops competing in a local market.

The game will feature various products with fluctuating costs and quality, and players will compete against AI-controlled shop owners employing different business strategies. By selecting suppliers, setting prices, and adjusting quality, players aim to outcompete the AI shops and capture market share. The game will include dynamic feedback mechanisms like customer reviews and daily performance reports to guide player decision-making.

Playtesting and interviews with players will be conducted to provide insights into how the simulated economic environment influences strategic thinking and decision-making patterns. The game will offer varying levels of difficulty, adjusting the competency of the AI and market conditions, to examine how challenge affects player engagement and choices.

The findings could offer valuable perspectives for game developers interested in creating engaging and instructive economy-based games. The research will also explore how game mechanics can effectively convey complex economic principles, thereby enhancing players' understanding and enjoyment.

## 2 Literature Review:

### Introduction and Objective

This section serves as both an introduction and an outline of the project's objective. The focus of this research is to design and develop a UI-based economy game that simulates the challenges and decisions involved in running a retail store. The game aims to serve as a tool for studying how business simulation games influence player decision-making and strategic thinking (Marchand & Hennig-Thurau, 2014, p. 1-6).

### Business Simulations in Video Games

Business simulations in video games often serve as intricate economic models that players navigate and control. These simulations can include both money-based economies and resource management systems (Higgins, 2021, p. 51-55). In the context of this project, the term "economy" refers to both financial transactions and the management of resources like inventory, time, and employee productivity. The literature reviewed here provides a foundational understanding of the impact of business simulations on player behaviour, which is directly relevant to the proposed project.

### Decision-Making and Strategic Thinking

Business simulation games significantly impact player decision-making and strategic thinking. Players analyse market conditions, assess risks and rewards, and make choices to maximize their economic outcomes (Kowert & Quandt, 2015, p. 6-7). These games also enhance players' problem-solving, decision-making, and analytical skills, making them particularly relevant to the project's focus on studying these cognitive processes. This research aims to build upon existing studies by focusing on a UI-based economy game and its specific impact on player decision-making and strategic thinking.

### Psychological Aspects

The psychological impact of business simulation games is also noteworthy. These games can serve as a manifestation of capitalism's "ideal ego," showing what economic systems might look like if they were free from real-world limitations (Higgins, 2021, p. 55). This psychological framework can be useful for understanding the cognitive processes involved in strategic thinking within the game (Camerer, 2015, p. 53-54).

### Player Engagement and Difficulty Levels

Player engagement is a crucial aspect of business simulation games. The complexity of these simulations can vary, affecting player engagement and challenge (Sotamaa & Švelch, 2021, p. 8-10). For example, difficulty levels in these games can be adjusted to impact player engagement and cognitive skill development. This project aims to explore how different UI elements and difficulty levels impact player engagement in a shop-running simulation.

### Key Question

The primary question this research aims to answer is: How do business simulation games, specifically a UI-based economy game about running a retail store, influence player decision-making and strategic thinking? This question is central to the project's objective and will guide the research process.

### Contextual Relevance

The literature reviewed here provides a foundational understanding of the impact of business simulations on player behaviour, which is directly relevant to the proposed project. This research aims to build upon existing studies by focusing on a UI-based economy game and its specific impact on player decision-making and strategic thinking.

## 3 Methodology:

### 3.1 Game Development

The primary methodology for this dissertation involves the design and development of a UI-based economy game focused on running a retail store. The game will be developed using Unity and C#. Features will include inventory management, customer interactions, pricing strategies, and employee management. Three difficulty levels (Easy, Medium, and Hard) will be implemented to vary starting conditions, item costs, customer behaviour, and market dynamics. Additionally, the game design will include elements that encourage or discourage specific player behaviours, such as ethical business practices or risk-taking.

This research aims to demonstrate that varying UI elements and difficulty levels can significantly impact player decision-making and strategic thinking.

### 3.2 Playtesting and Feedback

After the game's development, playtesting sessions will be conducted with a diverse sample of participants. Players will be asked to engage with the game across different difficulty levels. Observations will be made regarding their decision-making processes, strategies, and overall satisfaction during gameplay, which will be recorded for analysis. Instead of conducting semi-structured interviews, scaled questionnaires will be used to collect data on topics directly related to the research questions, such as perceived difficulty, engagement, and approaches to strategic thinking.

### 3.3 Data Analysis

Data collected from both the playtesting sessions and interviews will be analysed using qualitative research methods. Thematic analysis will be employed to identify key themes, patterns, and factors that influence player experiences within the retail store simulation game. This approach will allow for a nuanced understanding of how business simulation games impact player decision-making and strategic thinking. The data will be coded and categorized to facilitate the identification of recurring themes and insights.

## 4 Expected Contributions:

### 4.1 Theoretical Contributions

The theoretical contributions of this research will advance the understanding of how business simulation games impact player decision-making and strategic thinking. By exploring the influence of different UI elements and difficulty levels on these cognitive processes, this research will add to the existing body of knowledge in the field.

The study will illuminate the cognitive processes that underlie decision-making and strategic thinking in virtual retail environments. It will examine how different difficulty levels and UI elements affect players' resource allocation, pricing strategies, and customer engagement. Through participant feedback, the research will identify factors that influence players' choices, such as risk assessment, strategic goals, and perceived outcomes.

Furthermore, this research will contribute to the understanding of how business simulation games can develop and enhance players' strategic thinking abilities, including problem-solving, decision-making, and analytical skills. By investigating the effects of different UI elements and difficulty levels, the research will offer insights into how gameplay challenges encourage adaptive decision-making and strategic adjustments.

### Summary

In summary, the practical contributions of this research will offer insights and recommendations for game developers, especially those in the indie sector, to create more engaging and balanced business simulation games. The theoretical contributions will advance the understanding of how such games impact player decision-making processes, strategic thinking abilities, and overall gameplay experiences.

## 5 Ethics:

### 5.1 Informed Consent

Participants will be provided with a detailed informed consent form, which will outline the purpose of the study, the nature of the UI-based retail store simulation game, procedures involved, potential risks and benefits, and the voluntary nature of participation. They will have the opportunity to ask questions and clarify any concerns before giving their informed consent.

### 5.2 Voluntary Participation

Participation in the study is entirely voluntary. Participants will be informed that they can withdraw from the study at any point without any negative consequences.

### 5.3 Data Protection and Privacy

The study will strictly adhere to the University of Suffolk's data protection and privacy policies. All collected data will be treated with the utmost confidentiality. Measures will be implemented to ensure data security, including anonymizing or pseudonymizing any identifying information to maintain participant privacy.

### 5.4 Potential Risks

While the risks involved are minimal, they could include fatigue or mild discomfort during gameplay or interviews. Precautions will be taken to minimize these risks, and participants will be informed about potential risks in the informed consent form. Their well-being and comfort will be prioritized throughout the study.

### 5.5 Ethical Approval

Ethical approval will be sought from the relevant ethical review board at the University of Suffolk before commencing the research study. All necessary documents, including the research proposal, will be submitted for review to ensure compliance with ethical standards and guidelines.

### 5.6 Debriefing (if applicable)

Since the study does not involve any form of deception, a formal debriefing is not necessary. However, as a gesture of gratitude for their participation, participants will receive a summary of the study's findings upon its completion.

### Summary

In summary, ethical considerations have been carefully planned and will be rigorously followed throughout the study. This includes obtaining informed consent, ensuring voluntary participation, adhering to data protection and privacy guidelines, minimizing potential risks, and obtaining ethical approval.

## 6 Conclusion:

This dissertation aims to explore how a UI-based economy game focused on running a retail store influences player decision-making and strategic thinking. Utilizing Unity and C# for game development, the study will incorporate various elements of business management, from inventory control to customer interactions. Through playtesting sessions and semi-structured interviews, the research aims to delve into the cognitive processes that players engage in while navigating the game's economic systems.

The findings from this research have the potential to offer valuable insights into the design and development of business simulation games. They can inform game developers about the key factors that contribute to player engagement, strategic decision-making, and overall satisfaction. Moreover, the study will contribute to the academic understanding of how business simulation games can impact cognitive skills like problem-solving, decision-making, and strategic planning.

By addressing the gap in existing research concerning business simulation games and their impact on player cognition, this dissertation aims to make both practical and theoretical contributions to the fields of game development and cognitive psychology.

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