

**LEVERAGING MACHINE LEARNING ALGORITHMS to LOWER
FRAUDULENT ACTIVITIES**

Student name

DB-FPX8840

Professor Name

Submission Date

_____ PhD, Dean

School of Business, Technology, and Healthcare Administration

A Capstone Work Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Business Administration

Capella University

Month & year of dean's approval

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Abstract

You will be asked to write a summary of the capstone project, documenting important aspects of the project in an abstract. The abstract should be a single block-style paragraph and indented with no starting indent. Write on the following (max 400 words). Research topic summary (1-5 sentences): Summary of your capstone research topic (without going into any detail). Provide a justification for conducting your study and a need addressed by the study in the capstone. Mark off your research questions, using the same verbiage as in your capstone sections. Research Methodology (1-2 sentences). Write a brief summary of the method of research in the study. Population and sample (one/two sentences). Explain how the population and the sample were described, and how the population is described at a high level with regard to demographics of your population. If secondary data were used, describe the data set. Data Analysis (1-2 sentences): This will be a brief summary of your data analysis. Findings (1-3 sentences): Give a brief overview of what you found out and conclude(s) in your research. Explain how your project is applied and the project product you have developed.

Tips for Developing a Quality Abstract. (a) The abstract is representative of your work. Your abstract will be read by researchers for two reasons: (1) to decide if your manuscript is worth reading and (2) to see if your manuscript is relevant for their literature search. Those who have already worked in your area will read your abstract to gain insight into how and what kind of doctoral research you have done. So the abstract is a representation of your doctoral work. Additional guidelines related to the development of an abstract can be found in section 3.3 of the APA Publication Manual (7th edition), or on Campus at Academic Writer, <https://academicwriter-apa-org.library.capella.edu/learn/browse/QG->

[59?group=All&view=list&term=abstract&sort=asc](#) (c) References are generally not used in the abstract, as the focus is the study, the research, and the findings.

Formatting for the Abstract. The abstract should be a single paragraph (not indented) and double-spaced. Align text to the left, line up to the right. Right-justify the text. Headings, bullets, and bold are not used. The Abstract page is not numbered, and “Abstract” does not appear in the Table of Contents.

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Dedication

You don't have to fill in this dedication page. It's your recognition of those things that show your appreciation and respect for important people in your life. The dedication is personal; therefore, those that are named are often not related to the topic of the capstone.

In most cases, the student invests the effort in the one or two people who taught him/her that education is important and that he or she wants to be a success in educational endeavors. Students will often choose to dedicate capstones to a loved one, family member, or important figure that has been of support and played an important role in their life.

Don't disclose who the participants were or who was involved with the research site. Use individuals' titles (no names) as in “Thanks to the research director and site proctor for their help”). Or you can mention people, but not necessarily link them to the website (e.g., “Thanks for the contributions from Abdul Ibrahim and Mary Carson”). Ideally, do not refer to the name of the site.

Note: if the Abstract runs onto a second page, change the page number of the Dedication to 4.

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Acknowledgments

This is an optional acknowledgements page. The differences between the acknowledgments and the dedication are as follows: the dedication pays tribute to those who have been involved in your personal life, while the acknowledgments are for those who have been involved in your scholarly work related to the advanced doctoral manuscript or have played a role in your academic career related to the research of the advanced doctoral manuscript. This could include a mentor and committee members, advisor, online/colloquia faculty, and/or other support persons from Capella or other organizations. Include any financial support (fellowships, grants, or other organizational support) you may have received. For thanking statisticians, transcriptionists, those who have given permission to use an instrument, and the like, the acknowledgements are also apt.

Don't disclose who the participants were or who was involved with the research site. Use individuals' titles (no names) as in "Thanks to the research director and site proctor for their help"). Generally do not mention the name of the site (except in 'Thanks to Abdul Ibrahim and Mary Carson for their help'). Those who have given permission to use an instrument are often thanked by the learners.

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SECTION 1. PROJECT DESCRIPTION

Overview of the Project

The digital age has led to an age of convenience for financial transactions that has never been seen before, but at the same time has exacerbated the size of financial fraud in the United States. From credit card scams to identity theft, wire transfers, and account takeovers, the financial industry is constantly waging against growing and increasingly complex fraud operations. Moreover, during the third quarter of 2024, American consumers reported about \$58 million in fraud committed using credit cards; this was the lowest amount reported for that year (Statista, 2025). The number underscores the urgent need for more intelligent and proactive fraud detection systems – ones that can identify and block fraudulent activities in real-time.

Currently existing fraud detection methods are generally rule-based and are typically human judgment-based systems that may not be able to respond to the new and evolving challenges of fraud in financial institutions. With the emerging technological development, advanced algorithmic approaches to fraud detection, which are more responsive using artificial intelligence (AI) and machine learning (ML) algorithms, are possible (Pattnaik et al., 2024). Whether it's APIs or AI systems, some financial institutions are not fully leveraging AI technologies to fight fraud (CIO, 2024). With the increase in sophistication in fraud schemes, leaders in various organizations need to move past technology and embrace a management approach to innovation (McKinsey & Company, 2022). Still, with technological advances, organizational obstacles, leadership changes, and suboptimal cross-functional processes, there is often a lack of fully leveraged fraud detection tools. Challenges have pointed to a need in practice: many GMs don't have a clear path or understanding of how to put AI strategic and operational frameworks in place within institutions.

The financial sector, especially banks and fintech companies, is especially susceptible to financial fraud, with high numbers and speed of financial transactions (Brogi & Lagasio, 2024). One problem with real-time payment systems is that there is little time for manual fraud prevention measures (Vanini et al., 2023). There's a huge push on institutions to be equipped with a good fraud detection system that can detect anomalies, mark those that are suspicious, and flag them for automated action in milliseconds. According to Abikoye et al. (2024), fraud cases have been significantly reduced in financial institutions when the ML capabilities and competencies are strategically aligned with the goals of the organization. Managers' skills and organizational readiness are crucial factors in unlocking the business value of ML projects, as noted by Bevilacqua et al. (2025). In order to ensure the long-term success of fraud detection efforts and risk exposure minimization, it is important to have the organizational efforts in place.

The goal of the project is to use the developed ML algorithms to help reduce fraudulent activity in the U.S. financial institutions. Managers can use an effective fraud prevention system to stop fraudulent activities as the anomaly detection capabilities of ML support them in this effort. The main problem identified was financial institutions' lack of leadership to implement the ML technology to fight fraud activities (Gupta et al., 2025). The issue here is that financial institutions (FI's) have a lack of the strategic thinking or operating models to properly use technologies like ML in combating financial fraud (Chenguel, 2020). When technological solutions are in place, the gap in action is around the management to integrate the solution into the organizational practice and decision-making process. The project's impact is to deliver significant value to financial institutions and help support a safer financial system for consumers by helping to proactively detect and prevent fraud.

Having this project is significant because it could offer financial institutions' managers new insights to help them lessen financial losses by detecting fraud quickly and accurately. Good leadership, including effective management strategies, supports the implementation of ML technology, which can be used to proactively detect fraud events (Bevilacqua et al., 2025). Therefore, adopting a culture of innovation with the use of ML would prove useful in addressing the new challenges fraud poses and improving the organization's financial stability. Thus, the project is centred around the problem of ineffective deployment and administration of smart fraud detection systems; its overall goal is to provide a solution to the problem in general management. This project's data and focus on managerial aspects of integrating ML technology could be the way forward for financial institutions eager to modernize their fraud prevention strategies to ensure future security and trust in the digital landscape.

Problem Statement and Purpose

The overall business issue is that fraud leads to a decrease in the profitability of the organization and customer satisfaction (Feingold & Wood, 2024). Traditional fraud detection systems can't identify fraud and affect the efficiency of the organization. The Federal Trade Commission (FTC) estimates that fraud caused U.S. consumers to lose \$90 - \$501 million during that period. As the losses accumulate, it is clear that fraud is not only widespread – it is becoming more sophisticated as well, posing a significant and continuous threat to consumers' confidence and the stability of organizations.

The business problem is that some technology managers in the U.S. financial sector lack good resources and technology strategies for implementing ML fraud protection (Lamey et al., 2024). However, FIs can access the technologies, but leadership incompetence and lack of strategic support can often lead to failed implementations of fraud detection technologies and

consequently affect the organization's performance (Afjal et al., 2023). Many consumers have reported fraud as a result of misaligned strategies due to a leadership gap in integrating advanced technology, which is a critical barrier, with approximately 2.6 million consumers reporting fraud (FTC, 2025). The specific business problem can result in several negative consequences such as ongoing fraud susceptibility, erosion of customer trust, and considerable financial losses (Lamey et al., 2024). Technology capability and strategic management are among the critical issues in the general management context of the financial industry.

Alignment with Program

The project on leveraging ML technology through strategic leadership in financial institutions is a great fit for a Doctor of Business Administration (DBA) program, as it involves tackling a problem with high business impact in the field of finance and relies on the use of ML technology. In the banking and financial services industry (BFSI), one of the most expensive and complicated issues continues to be financial fraud (Hilal et al., 2021). So the project centres on the factors that strategic management failures can have on unsuccessful ML adoption, resulting in financial loss, regulatory risk, and reputational damage. The issue highlighted the significance of the role of leadership in enhancing financial operations through embedding ML technology. Therefore, the project is a perfect fit in the Doctor of Business Administration (DBA) emphasis in interdisciplinary leadership and strategic management. The financial manager's authority to make the choices to implement new technology offers a benefit in understanding how to enhance the operation of a business on a financial level and curb the risk of fraud. The DBA coursework in the project is aimed at discerning a solution for complex business problems.

Purpose Statement

This is an exploratory study to gain insights into the perspectives of technology managers within the U.S. financial industry who have applied resources and technology practices to implement fraud detection and protection using machine learning. The project will discuss the concepts of leadership strategy towards the implementation of ML technology for fraud detection (Dama et al., 2024). The target population will be managers in financial institutions in the Banking and Financial Services Industry in the United States.

Gap in Practice

Some financial managers in the U.S. have a gap in practice in the sense that they have not applied effective strategies to improve fraud detection in financial institutions (Chenguel, 2020). Using typical fraud detection systems is not keeping up with the new approach of fraudsters, and these systems are prone to generating fraudulent activities. A lack of a leadership strategic approach is not a result of the unavailability of fraud detection technologies but due to the lack of a leadership strategic approach to implement the ML technology (Hariyani et al., 2024). The difference is the specific problem, which is that financial institutions are vulnerable to sophisticated fraud schemes that sidestep current fraud detection tools and are costing financial institutions money. An ideal state is where the financial institutions' managers proactively tap the predictive power of ML for real-time and accurate identification and thwarting of fraud (Pattnaik et al., 2024). Project results may prove to be of interest for practitioners who are looking for ways to bridge this divide and are interested in how the use of more advanced analytical techniques can benefit fraud prevention. Also, outcomes should be considered in the context of a firm's overall strategic plan.

Theoretical Framework

Project Context

Historical Background and Current Trends

Synthesis of the Scholarly Literature

Synthesis of the Practitioner Literature

Alignment of the Project With the Literature and Discipline

SECTION 2. PROCESS

Project Questions

Project Design/Method

Stakeholders, Participants, and Target Audience

Role of the Researcher

Project Study Protocol

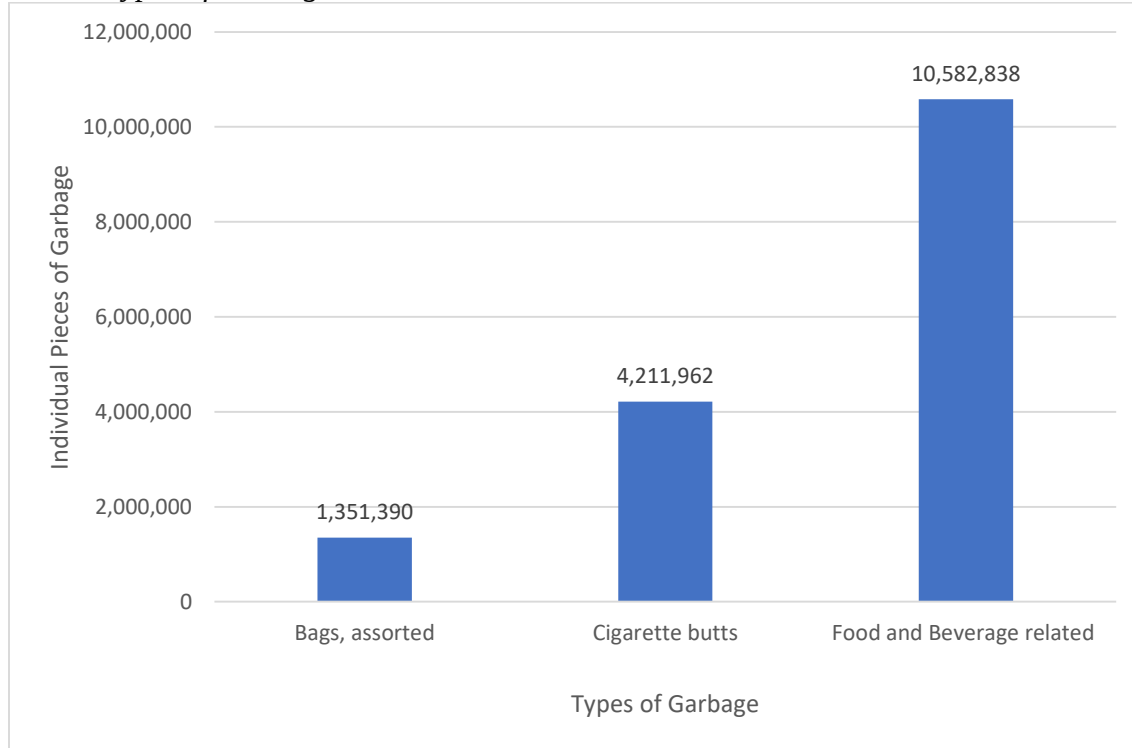
Sample

Data Collection

Ethical Considerations

Data Analysis

Figure 1
Types of Garbage



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Table 1
Demographic Information

Participant	Age	Sex	Position	Years in position
P1	25-30	Male	Chairman	10-15
P2	41-45	Female	CEO	6-10

Note. Potential participants under age 16 were omitted from the sample. Only essential notes need to be included. See [Table setup \(apa.org\)](https://academicwriter-apa-org.library.capella.edu/learn/browse/QG-44?group=All&view=list&term=tables&sort=asc) and <https://academicwriter-apa-org.library.capella.edu/learn/browse/QG-44?group=All&view=list&term=tables&sort=asc>. The [Doctoral Publications Guidebook](#) also addresses tables and figures.

SECTION 3. FINDINGS AND APPLICATION

Relevant Outcomes and Findings

Application and Benefits

Implications

Recommendations for Policy

Recommendations for Practice

Recommendations for Future Work

Conclusion

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APPENDIX A. TITLE OF APPENDIX A

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