

**STRATEGIES FOR IMPLEMENTING MACHINE LEARNING FRAUD
DETECTION IN THE U.S. FINANCIAL INDUSTRY**

by

Student name

DB-FPX8840

Professor Name

_____, PhD, Dean

School of Business, Technology, and Healthcare Administration

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Of the Requirements for the Degree

Doctor of Business Administration

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Abstract

The abstract is intended to give a brief summary of the capstone project and important aspects of your capstone project. Use a single block/paragraph style for the abstract, and start it at the beginning of the paragraph with no indent. Discuss these issues (_max. 400 words).

Research topic summary (1-5 sentences) – a short summary of the topic of your capstone research. Discuss how and why the need for the study you address with the capstone is important. Write your research questions, using the same verbiage as your capstone sections. Research Methodology (1-2 sentences). Summarize how the study was carried out (research methodology). Introduction to Population and Sample (1-2 sentences). Include high-level demographic information about your participant population, a description of your population and your sample. Describe the data set (or explain what type of data was used if it were secondary data). Data analysis (1-2 sentences) is a summary of your data analysis. Findings (1-3 sentences): Summarize the facts you found in your research and your conclusion(s). Explain the implications of your project and the product that you developed.

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Don't change names of participants or reveal their association with the research location. Permit the use of individuals' title plus no name (e.g., "Thank you to the research director and site proctor for their assistance. You can also mention any names, but not to the site (eg, "Thank you, Abdul Ibrahim and Mary Carson for their assistance"). In general, do not refer to the name of the site.

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Acknowledgments

This is an optional acknowledgements page. The acknowledgments are not the dedication since it lists the people who have helped you with your scholarly work on the advanced doctoral manuscript, or who have played a role in your academic career as it relates to the research of the advanced doctoral manuscript. This can include mentor(s), committee members, advisor, Capella faculty (online or colloquia), and/or other persons of assistance from Capella and other organizations. In this section, enter the name of an organization (fellowships, grants, or other financial support) from which you obtained financial assistance. Acknowledgements can also be used to acknowledge statisticians, transcriptions, permission to use an instrument, etc.

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SECTION 1. PROJECT DESCRIPTION

Overview of the Project

It's been an age of never-before convenience of financial transactions, but the digital age has also created more significant financial fraud in the United States. From credit card fraud and ID theft to wire transfer fraud and account takeovers, fraud is getting more sophisticated and complex day by day, which the financial industry is always engaged in fighting (Afjal et al., 2023). Moreover, during the 3rd quarter of 2024, American consumers reported around \$58 million in credit card fraud activity, which was the lowest reported in the entirety of 2024 (Statista, 2025). The figure underscores the critical necessity to invest in more intelligent, reactive fraud prevention and detection solutions that can be used to identify and stop fraud in real time.

Current solutions for fraud detection are mostly rule-based and subject to human supervision, and may be incapable of adapting to new threats on the rise in financial institutions. The advent of new technologies, such as artificial intelligence (AI) and machine learning (ML) algorithms, opens up opportunities for developing advanced and responsive algorithmic approaches to fraud detection (Pattnaik et al., 2024). Certain financial institutions aren't leveraging AI technologies to the fullest extent when it comes to fraud detection (CIO, 2024). At the same time, fraud schemes are getting increasingly complex; organizational leaders need to embrace more than just technology—a management-led approach to innovation (McKinsey & Company, 2022). Even with technological advances, organizational resistance and inadequate cross-functional alignment lead to insufficient use of fraud detection tools. One of the challenges is that there is a lack of practical knowledge, as many general managers lack a roadmap for establishing AI strategic and operational frameworks in institutions.

Among other sectors, the financial industry of the United States (US), comprising banks and financial technology (fintech) entities, is highly susceptible to such fraud because of the high volume and velocity of transactions carried out digitally (Brogi & Lagasio, 2024). Being quick and convenient, real-time payment systems provide little time to manually intervene against fraud (Vanini et al., 2023). Today's institutions are under extreme pressure to have an effective fraud detection system in place that can detect anomalies, recognize suspicious behavior, and automatically respond in milliseconds. According to Abikoye et al. (2024), the strategic alignment of the capabilities of ML has significantly decreased fraud incidents in financial institutions. The importance of managerial ability and organizational readiness for the business value of ML initiatives is underlined by Bevilacqua et al. (2025). This is a fundamental part of the processes ensuring continued effectiveness of fraud detection programs and reduction of risk exposure.

The aim of the project is to use ML algorithms to identify fraudulent activities in U.S. financial institutions. With anomaly detection capabilities, ML can be used to implement an effective fraud prevention system, allowing managers to detect fraudulent activities efficiently (Dama et al., 2024). The key root issue identified is that there are no leadership strategies in place to adopt ML technology in financial institutions to address fraud activities (Gupta et al., 2025). The issue is that most of the financial institutions' management lacks strategic thinking and the ability to operate with advanced technologies like ML to effectively fight financial fraud (Chenguel, 2020). The gap in practice is that, in cases where a technological solution is available, the management capability to embed the solution into the organisation's practices and decision-making systems. The project is unique because it helps financial services companies

better protect their consumers while actively seeking out and intercepting fraudulent transactions to create a safer financial system for consumers.

The role of this project can be important for financial institutions' managers to mitigate financial losses, as it can facilitate fast and more precise fraud detection. The adoption of ML technology for fraud prevention can be supported by effective leadership practices, as these strategies help implement the necessary changes and processes to ensure fraud is minimized through proactive detection (Bevilacqua et al., 2025). Therefore, promoting an innovation culture by means of ML would be helpful in mitigating potential future fraud threats and improving the organization's financial soundness. Hence, the interest of this project is to investigate a business problem, "Failure in Deploying and Managing Smart Fraud Detection System". The project's data, with its emphasis on the managerial dimensions of the integration of ML technology, might offer a pathway towards integrating such technology in the activities of financial institutions to improve the security and trust in the digital realm.

Problem Statement and Purpose

The general business problem is that the U.S. financial industry suffers from a decrease in profitability and customer satisfaction due to the number of incidents of fraud. The traditional fraud detection systems are unable to detect fraud and affect the organization's performance. The Federal Trade Commission (FTC) estimated the losses for consumers of the United States between \$90 million and \$501 million as a result of fraudulent activity (FTC, 2025). As the losses grow, it is clear that fraud isn't just a problem; it's on a progressive upward trend, a significant threat to consumer trust and organisational stability.

The specific business problem is that there is a gap for some technology managers in the financial industry in the United States to manage technology best and create effective technology

strategies to implement machine learning (ML)-based fraud protection (Lamey et al., 2024). While financial institutions possess access to sophisticated technologies, their failure to implement fraud detection systems due to a lack of leadership and strategic support has a negative impact on organizational performance (Afjal et al., 2023). Fraud committed by about 2.6 million consumers has been attributed to misaligned strategies, and leadership deficits in integrating advanced technologies are becoming a major obstacle (FTC, 2025). This particular problem in business gives rise to various bad consequences, such as a long-standing presence of fraudulent activities, a loss of trust by the customer, and significant monetary loss (Lamey et al., 2024). A lack of technological capabilities and strategic leadership is one of the key issues in the overall financial industry management.

Alignment with Program

This project on leveraging ML technology through strategic leadership in financial institutions is well suited to the Doctor of Business Administration (DBA) program because the project is related to a problem of high impact in the business world in the finance industry. Financial crimes are one of the highest and most complicated issues in the banking and financial services industry (Hilal et al., 2021). The project therefore emphasizes the role of failures in strategic management and how these failures can create unsuccessful ML adoption, thereby resulting in financial losses, regulatory risks, and reputational loss. The issue highlighted the significance of the role of leadership in enhancing financial operations through the incorporation of ML technology (Pattnaik et al., 2024). The project therefore matches very well with the emphasis of the Doctor of Business Administration (DBA) in Interdisciplinary Leadership and Strategic Management. The study of the FM's ability to make decisions to implement advanced technology offers insights for understanding the ability of the FM to improve the organization's

operational ability financially and decrease the chances of fraud (Dama et al., 2024). The DBA Project is a part of the DBA project whose main emphasis is the solution of complex problems in business via applied research.

Purpose Statement

This is a generic qualitative inquiry designed to uncover the tech managers' perspectives on the U.S. financial industry who have adopted resources and technology strategies to aid in fraud detection and protection using ML. The project will delve into the concepts of leadership strategy in adopting ML technology for fraud detection (Dama et al., 2024). The target population will be financial managers in financial institutions in the banking and financial services sector in the United States.

Gap in Practice

The difference in practice lies in the fact that some financial industry managers in the U.S. have not employed good ML-based techniques in minimizing the failure of fraud identification, which ultimately leads to the loss of their money and customer dissatisfaction (Chenguel, 2020). Fraudsters' techniques evolve faster than the fraud detection systems in place, and there is a tendency to generate fraudulent activity using these conventional systems. The issue with the practice gap is not that the fraud detection technologies are not available; rather, it is that there is a lack of a leadership strategic approach to put into practice the ML technology (Hariyani et al., 2024). A divide, which means a specific problem, as financial institutions are vulnerable to complex fraud, which cannot be identified by existing fraud control systems - a monetary loss is achieved. An ideal scenario is for financial institution managers to leverage the predictive power of ML to identify and thwart fraud in real-time with a high level of accuracy (Pattnaik et al., 2024). Project findings may be beneficial to practitioners seeking to bridge the

gap in their prevention efforts, and in demonstrating the potential value of adopting more sophisticated analytical techniques in combating fraud. Plus, outcomes have to be considered as part of a company's total strategic plan.

Theoretical Framework

The objective of the research is to analyse the perspectives of the technology decision makers in the financial sector who have implemented machine learning (ML) based fraud detection and protection systems using resources and technology measures. The qualitative research was implemented in the form of implementation on the job of practically based research on the technology acceptance model (TAM), which was developed by Davis (1989). The TAM has become a popular explanatory model of the adoption of new technologies. Today, it continues to serve as an effective means to study the strategic dimension, behavioral dimension, and managerial dimension of ML adoption within financial institutions (Davis & Granić, 2024). The theoretical underpinning grounds the concept with key insights into how successful technology integration is made possible in a high-risk financial space.

Perceived usefulness at a manager level captures managers' expectations about what the ML systems might be able to accomplish to enhance fraud detection results and deliver strategic organizational benefit. Perceived ease of use reflects managers' belief that the implementation of the ML in financial organizations will not result in high effort and complexity, and that it will not take lots of time (Joseph & Eaw, 2023). Perceived ease of use impacts managers' attitudes towards the adoption of ML, especially for decision makers who may be hesitant to integrate technology because it could be quite a difficult process. The constructs of the TAM – attitude towards use, intention to use behavior, and actual system use give a systematic survey of how the

technology acceptance proved to have a positive impact on the management of fraud in the financial sector.

The designated problem is explored in an attempt to determine the usability of the ML technology in the framework of TAM. Research questions are used to examine the impact of the perceived usefulness and the perceived ease of use on the adoption of a particular technology (ML in this context), influencing factors on behavioral intentions, and obstacles to its implementation in a particular system. A conceptual framework of “TAM by Davis” is used to understand the shaping of attitude and its formation among financial institution managers in the present project when they are trying to understand the ML technology applied to detect fraud. Thathsarani & Jianguo (2022) suggest that TAM is directly related to the project questions with constructs (perceived usefulness, perceived ease of use) for examining the usefulness of the technology adoption. In financial services, TAM and extended constructs have been used to measure technology adoption attitudes towards a more effective prevention of fraud. For instance, the TAM is being applied to Small and Medium Enterprises (SMEs) with 487 participants in Sri Lanka. Results showed that the attitude and beliefs of TAM in terms of digital adoption in a financial context significantly impacted the performance of SMEs. The focus on user acceptance in TAM makes it a particularly good fit for the investigation since it is one of the key points to understanding why strategic ML initiatives have so many challenges in terms of adoption in the financial industry.

The constructs of the TAM are five in total: perceived usefulness and perceived ease of use, which are the most important and vital to the acceptance of technology; and self-efficacy, response cost, control, and outcome expectancies, which are the least important and are not vital to the acceptance of technology at all. Perceived usefulness is a user's belief about the system's

usefulness in improving their performance at a job. The development of the idea of increased accuracy of fraud detection, efficiency of operations, and enhancement of competitive advantage is related to perceived usefulness (Ayodeji, 2024). These constructs have an impact on users' attitudes towards the technology, their intention to use, and their actual use of the system.

The study examines how organizations use ML technology to successfully implement their strategies and support systems and how the TAM constructs relate to this in the context of the adoption of ML technology. The framework contributes to the project's objective that aims to investigate the usefulness of ML technology adoption in the organization (Borhani et al., 2021). The TAM also represents a theoretical lens of combining finance, technology, and management, as this suggests that the model is also applicable to DBA-level research to understand the process of technology adoption decision-making.

While the core model is the TAM that was used in this project, the extended model offers that TAM accounts for other factors (such as subjective norms) and that the perceived usefulness is elaborated with social influence and cognitive instrumental action, thus improving the understanding of the position of TAM (Granić, 2024). Similarly, constructs like performance expectancy, effort expectancy, social influence, and facilitating conditions have been integrated into the unified theory of acceptance and use of technology (UTAUT). Zin et al. (2024) claim that the model has a wider scope of what underlies perspectives on adoption in relation to organisational and environmental factors. Although the original models (TAM2 and UTAUT) will not be used directly as primary models, the additional constructs in each model guide the development of the questions for the interviews and the thematic coding process in the data analysis.

The TAM's applicability in the context of slow technology adoption of ML in financial institutions is rooted in its ability to predict important factors that influence technology adoption. Through analysing TAM factors, the project would be able to identify the factors behind the varying attitudes and ideas among financial institutions regarding ML-based Fraud Detection systems. The results reflect the potential for implementing ML in a more effective manner that considers managerial perspectives and organizational contexts. The key components of TAM can assist organizations in creating an effective fraud detection strategy and minimizing financial losses.

TAM gives a general framework for conducting a literature review and systematically arranging and assessing literature related to technology adoption perspectives in the financial field. Masumbuko and Phiri (2024) highlighted the application of TAM and recommended that the framework be applied in improving strategic management perspective, technological capability perspective, and user acceptance perspectives. The project will bring TAM model applicability to financial sectors and fraud detection that are high-risk and high-compliance, where AI and ML adoption perspectives are critical and complex. The project adds to the literature as it provides context-specific information on ML integration readiness and perceptions from executives.

The application of TAM from the user level to technology acceptance to a strategic level perspective analysis will bring user-level capability and decision-making aspects of technology adoption together. The project will deliver tangible action steps that show fraud reduction can be achieved with better alignment between financial operations and technology utilization. The TAM will be used to structure the interview questions to get more qualitative answers from the financial executives on the financial perspective of ML adoption (Ebot, 2024). Attitudes toward

the usefulness of ML for fraud detection, beliefs surrounding the complexity or simplicity of integration, and other contextual variables that might impact attitudes toward ML for fraud detection will be explored. Although models such as TAM2 or UTAUT can be used to enhance the insight gained from the analysis, the project will remain theoretically consistent by keeping the constructs in the analysis deeply rooted in the original TAM model.

Findings from the interviews with the financial institution managers will be coded during the data collection in order to be analyzed using qualitative thematic approaches. The themes that emerge from initial coding will be interpreted using TAM constructs, although they will not explicitly be informed by the TAM constructs, but rather will provide conceptual models of adoption perspectives. The project will review common patterns in management's attitudes towards adopting and employing ML systems effectively for fraud detection (Masumbuko & Phiri, 2024). The topics of the TAM were chosen to reflect the technology adoption perspectives in an organizational context, in this case, for financial organization managers involved in strategic decisions regarding the adoption of technology. The regulatory environment within which financial institutions operate is highly demanding, and digital transformation and demands for security around customers are being accelerated (Rodrigues et al., 2023). TAM develops systematic understandings of the executive decision-making level ML adoption drivers.

Data for the project can be used in a number of ways in the literature. First, the study's results will reflect the financial managers' viewpoints on ML adoption strategies to detect and prevent fraud and to manage risks. Second, the study will focus on examining the role of organisational factors, including risk-tolerance, regulatory compliance, technological infrastructure and managerial readiness in shaping perspectives toward adoption of ML. Third, an attempt will be made to find the alignment with TAM constructs and real-world challenges in

implementing ML in Financial fraud prevention (Gupta et al., 2025). Study data can also be used to provide inputs that will help to guide more effective ML adoption strategies by practitioners and policymakers. The project, which examines the relations between TAM and SBP, may fill the gap between theory and practice in financial management, and thus lead to better organizational performance with better technology integration informed by managerial perspectives on TAM.

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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

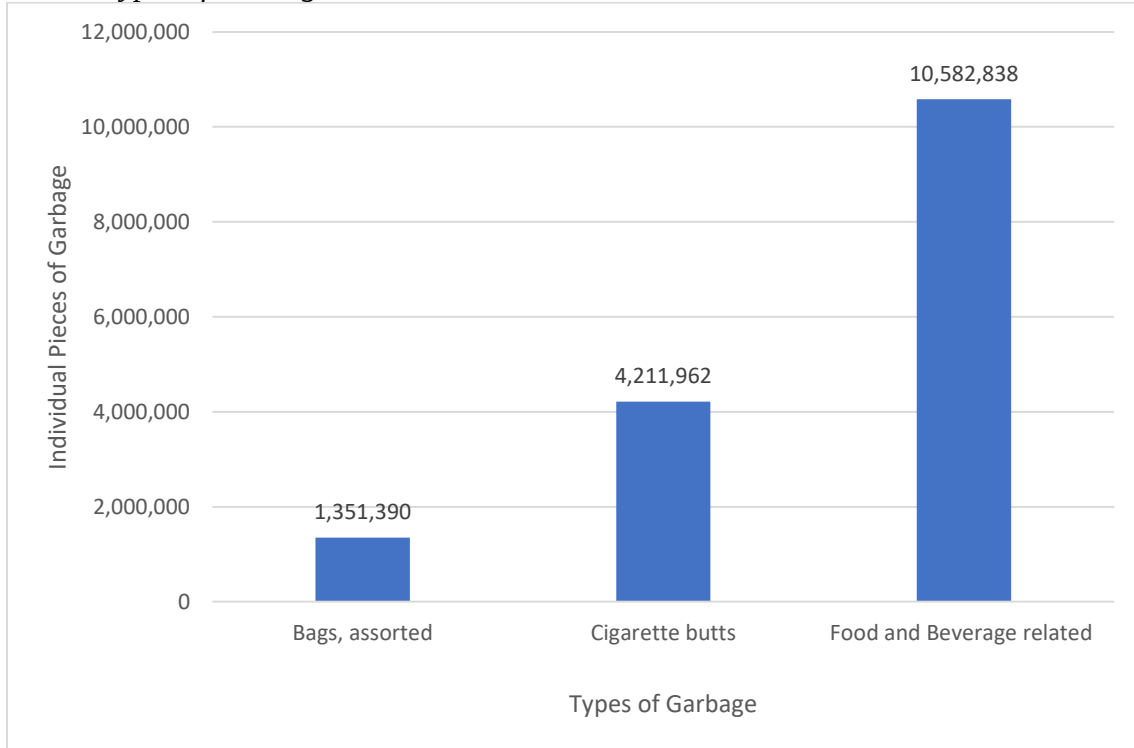
Sample

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

Format titles as shown here. Do not include recruitment flyers, permissions correspondence, invitations to subject matter experts, or informed consent forms. They should be removed before submission to committee and doctoral publications review. Place tables and figures in the sections at the point where they are discussed.

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