South East Technological University

MSc in Computing (ISP)

The Impact of Artificial Intelligence on Digital Banking

Student: Malik Hashim Raza

Supervisor: Brenda O'Neill

February 16 2024

Table of Content

CHAPTER 1: INTRODUCTION

1.1   BACKGROUND:

The banking industry has been significantly impacted by the emergence of artificial intelligence (AI) and its various applications. AI, which involves human intelligence being simulated by machines, has become increasingly important in the new banking era (Noreen et al., 2023). A systematic literature review on the utilization of AI in the banking sector identified three key areas of research: Strategy, Process, and Customer(Fares et al., 2022). AI technology, particularly machine learning, allows banks to evaluate and forecast according to consumer behaviour and credit scores in order to create personalised solutions (Noreen et al., 2023). This has led to the development of AI-based technologies that aim to understand customers' perceptions and satisfaction with AI in banks (Noreen et al., 2023).

Senior banking executives believe that AI can help consumer banks meet their primary objectives, including growing revenue, managing risk and compliance, enhancing customer experience, innovating to compete, and reducing operating costs (Thowfeek et al., 2020). For instance, AI and machine learning enable banks to access more data and grow revenue in new ways, such as by proactively addressing customer needs and transforming predictive models (Thowfeek et al., 2020).

In light of these developments, it is crucial to understand the consequences of utilising AI in the banking industry, particularly in relation to the human element. This is essential for evaluating the impact of emerging technologies using AI on information systems processes. The use of AI in the banking sector presents both opportunities and challenges, and it is important to carefully consider how it can be leveraged to improve information systems processes while addressing potential risks and limitations.

1.2   PROBLEM STATEMENT:

The utilization of AI in banking has been the subject of extensive research, with a focus on various areas such as strategy, process, and customer (Fares et al., 2022). AI technology, particularly machine learning, has enabled banks to evaluate, forecast, and evaluate credit scores from customers to create targeted solutions(Noreen et al., 2023). This has led to the development of AI-based technologies that aim to understand customers' perceptions and satisfaction with AI in banks (Noreen et al., 2023).

Senior banking executives believe that AI can help consumer banks meet their primary objectives, including growing revenue, managing risk and compliance, enhancing customer experience, innovating to compete, and reducing operating costs (Thowfeek et al., 2020). On the other hand, there are difficulties associated with the use of AI in the banking industry, particularly with correlation to the human factor. It is essential to comprehend the effects of implementing AI in the banking industry and its impact on information systems processes.

In conclusion, the problem statement is: The Impact of Artificial Intelligence on Digital Banking.

1.3   RESEARCH OBJECTIVES:

The research objectives from the formal problem statement are:

1.To assess the impact of applying artificial intelligence on the digital transformation of the banking sector, with a focus on operational efficiency, customer service, and strategic decision-making (Radenković et al., 2023).

2.To systematically review the diverse uses of artificial intelligence in the banking sector and understand its impact on customer service, operational processes, and overall customer satisfaction (Garg and Jain).

3.To investigate the factors that influence customer intention to accept artificial intelligence in digital banking, and to understand how AI impacts digital banking user satisfaction (Alnaser et al., 2023).

4.To critically analyze the current state of use of artificial intelligence in the banking sector, mapping its potential benefits, risks, and challenges, especially in terms of operational costs, efficiency, and customer satisfaction (Manjaly et al., 2021).

These research objectives aim to provide a comprehensive understanding of the impact of artificial intelligence on digital banking, covering customer service in the banking sector.

1.4   RESEARCH QUESTION:

Question. "What is the impact of artificial intelligence on digital banking?"

CHAPTER 2: LITERATURE REVIEW

2.1   Literature Review:

The impact of digital transformation on the profitability and efficiency of banks with digital business models is a topic of growing interest. Research suggests that digital transformation supports the efficiency of bank operations and has a positive impact on bank profitability in the long run. The field of digital transformation in the banking sector is still developing, with a need for more research and collaboration. Factors affecting digital transformation in banking, such as organizational culture, digital technology, transformation methods, and banking services, have been identified as key areas for analysis and further research. This literature review provides valuable insights into the evolving landscape of digital transformation in the banking sector and the potential benefits it offers to banks with digital business models (Peruchini et al., 2024).

The paper "FinTech Innovations in Digital Banking" aims to analyse the idea of FinTech and its workings inside the banking sector. The study examines latest developments in selected FinTech technologies, consisting of AI and gadget mastering, blockchain, IoT, regtech, and open banking. The evaluation highlights how these technologies are revolutionizing banking, bills, and risk control, enhancing transparency and considered in monetary systems, automating regulatory compliance, and offering modern banking services and personalised economic solutions. The study aims to fill the space within the literature and offer insights into the future of the FinTech industry, making financial services more customized, convenient, and secure (Dubey, 2019).

The literature review of "An exploratory study on the effect of artificial intelligence-enabled technology on customer experiences in the banking sector" provides insights into the effect of artificial intelligence (AI) on customer experiences in the banking industry. It emphasizes the increasing popularity of customer experience as essential within the banking sector and the position of virtual banking in improving personalization and interactivity. The assessment also discusses the have an effect on of AI-powered technology at the emergence of Neo banks and its developing reputation among clients. Furthermore, it highlights using AI in predicting consumer options, offering personalised services and products, and transforming customer support, in addition to its capability to revolutionize the banking industry and improve customer-centeredness (El-Gohary et al., 2021).

The research article "Utilization of Artificial Intelligence within the Banking Sector" provides a complete evaluation of the research themes and sub-themes demonstrating the application of AI in banking. The observe categorizes the literature into three key areas: Strategy, Process, and Customer, providing treasured insights for marketers and choice-makers in the banking sector. It emphasizes the growing importance of digital improvements in digital banking and the necessity for economic establishments to embrace AI to remain competitive. The assessment also highlights the potential benefits of AI, along with cost reduction, expanded efficiency, and improved customer satisfaction, while acknowledging the related risk and challenges, along with legal and governance issues. The study's focus on the recognition of current applications of AI within the banking sector and it have an impact on the evolution of banking makes it a valuable resource for information the effect of AI on financial sector (Fares et al., 2023).

The literature review on "Artificial Intelligence in Banking" offers a comprehensive analysis of the utilization of artificial intelligence (AI) in the banking sector. The study examines the benefits and challenges of AI in banking, that specialize in its effect on approach, process, and customer experience. It highlights the growing importance of digital improvements in modern banking and the need for economic institutions to embrace AI to remain competitive. The overview also discusses the benefits of AI, such as cost reduction, increased efficiency, and improved customer satisfaction, while acknowledging the related risks and demanding situations, consisting of legal and governance

troubles. The study's focus on the current applications of AI within the banking industry and its influence on the evolution of banking makes it a valuable resource for understanding the impact of AI on the financial sector (Kaya et al., 2019).

The paper "The Rise of Artificial Intelligence in Banking Sector" offers a top-level view of the increasing adoption and impact of artificial intelligence (AI) inside the banking industry. The study highlights the growing need for financial institutions to embrace AI to remain competitive and the substantial benefits it offers, such as cost reduction, increased efficiency, and improved customer satisfaction. The review additionally acknowledges the related risks and demanding situations, which include criminal and governance issues, and the capability for AI to revolutionize the banking sector. The literature covers diverse components of AI in banking, along with its applications, benefits, and challenges, making it a valuable useful resource for current state and future potential of AI in the banking industry (Kochhar et al., 2019).

The article "Industry 4.0 in Finance: The Impact of Artificial Intelligence (AI) on Digital Financial Inclusion" gives insights into the impact of AI on digital financial inclusion. The study highlights the role of AI in risk detection, measurement, and management, as well as its impact on information asymmetry. The review emphasizes the significance of digital financial inclusion and the potential of AI to enhance credit scoring and risk assessment, enabling individuals with limited credit histories and low incomes to access loans and financial services. The study's focus on the impact of AI on digital financial inclusion makes it a valuable resource for understanding the potential of AI in promoting financial inclusion and creating more inclusive economic opportunities (Mhlanga, 2020).

The research paper "Between Artificial Intelligence and Customer Experience: A Literature Review on the Intersection" presents insights into the intersection among artificial intelligence (AI) and customer experience. The study highlights the significance of customer experience in the banking industry and the role of AI in enhancing personalization and interactivity. The review emphasizes the need for ongoing research and updates due to the ever-evolving nature of AI. The study's focus on the intersection of AI and customer experience makes it a valuable resource for understanding the impact of AI on customer-centeredness and the future of the banking industry (Peruchini et al., 2024).

In summary, the literature review provides valuable insights into the impact of digital transformation and artificial intelligence (AI) on the banking sector. It highlights the growing importance of AI in improving operational efficiency, customer experience, and profitability in digital banking. The review also emphasizes the need for more research and collaboration in understanding the evolving landscape of digital transformation and the potential benefits and challenges it offers to banks with digital business models. One potential gap in the literature is the need for more in-depth research on the specific impact of AI on different aspects of digital banking, such as risk management, regulatory compliance, and the development of socially beneficial products. This literature review shapes the research by providing a comprehensive understanding of the current state and potential of AI in digital banking, as well as identifying the areas that require further exploration and analysis. It underscores the significance of AI in revolutionizing the banking industry and the need for financial institutions to embrace this technology to remain competitive and provide innovative services to their customers.

The research paper "Does artificial intelligence (AI) boost digital banking user satisfaction? Integration of expectation confirmation model and antecedents of artificial intelligence enabled digital banking" provides valuable insights into the impact of artificial intelligence (AI) on digital banking user satisfaction. By integrating the expectation confirmation model and antecedents of AI-enabled digital banking, the study aims to analyze the factors influencing user satisfaction in the context of AI integration. This research contributes to a deeper understanding of how AI affects user satisfaction in digital banking, offering a comprehensive analysis of the factors that shape customer experiences and perceptions in the era of AI-enabled banking services (Alnaser et al., 2023).

The research paper "Digital Banking Transformation: Application of Artificial Intelligence and Big Data Analytics for Leveraging Customer Experience in the Indonesia Banking Sector" explores the application of artificial intelligence (AI) and big data analytics (BDA) in the banking sector to enhance customer experience. The study uses a literature review and interviews to gather insights on the use of AI and BDA in banking, highlighting the potential benefits of these technologies in improving customer experience and driving digital transformation. The research provides valuable insights into the application of AI and BDA in the banking sector, offering a comprehensive analysis of the factors that shape customer experiences and perceptions in the era of AI-enabled banking services (Indriasari et al., 2019).

The research paper "Opportunities and Challenges of Artificial Intelligence in Banking: Systematic Literature Review" provides a comprehensive analysis of the opportunities and challenges of artificial intelligence (AI) in the banking sector. The study identifies several opportunities for AI in the banking sector, including personalized services, smart wallets, and decision-making. The research also highlights the challenges of AI adoption, such as privacy violation concerns and the potential obsolescence of some skills due to AI-driven automation. The study provides valuable insights into the opportunities and challenges of AI in the banking sector, offering a comprehensive analysis of the factors that shape customer experiences and perceptions in the era of AI-enabled banking services (Ghandour, 2021).

The research paper "A Study on the Implementation and the Impact of Artificial Intelligence in Banking Processes" provides insights into the implementation and impact of artificial intelligence (AI) in banking processes. The study examines the use of AI in banking processes, including customer service, fraud detection, and risk management. The research highlights the potential benefits of AI in improving operational efficiency, enhancing customer experience, and driving strategic innovation in the banking sector. The study provides valuable insights into the opportunities and challenges of AI in the banking sector, offering a comprehensive analysis of the factors that shape customer experiences and perceptions in the era of AI-enabled banking services (Rashmi and Nirmal, 2021).

The research paper "Artificial Intelligence (AI) Architecture for Integrated Smart Digital Banking System" presents a detailed examination of the AI architecture for an integrated smart digital banking system. The study delves into the complex system of AI and its potential to meet the needs of the banking sector. By focusing on the architecture of AI in the context of digital banking, the research offers valuable insights into the technological underpinnings and the potential impact of AI on the banking sector. The paper provides a comprehensive analysis of the AI architecture, shedding light on its potential to revolutionize digital banking and enhance the overall customer experience (Sugiharto et al., 2023).

Table 1: Literature Review Papers

S.No	Title	Authors	Publishing Year
1	Between artificial intelligence and customer experience: a literature review on the intersection	M. Peruchini, G. M. da Silva and J. M. Teixeira	2024
2	Does artificial intelligence (AI) boost digital banking user satisfaction? Integration of expectation confirmation model and antecedents of artificial intelligence enabled digital banking	F. M. Alnaser, S. Rahi, M. Alghizzawi and A. H. Ngah	2023
3	Role of Digital Transformation on Digital Business Model Banks	R. Shanti, H. Siregar, N. Zulbainarni and Tony	2023
4	Artificial Intelligence (AI) Architecture for Integrated Smart Digital Banking System	B. Sugiharto, R. V. Simanungkalit, I. Siregar and M. Andriani	2023
5	Utilization of artificial intelligence in the banking sector: A systematic literature review	O. H. Fares, I. Butt and S. H. M. Lee	2023
6	An exploratory study on the effect of artificial intelligence-enabled technology on customer experiences in the banking sector	H. El-Gohary, A. Thayaseelan, S. Babatunde and S. El-Gohary	2021
7	A study on the implementation and the impact of artificial intelligence in banking processes	R. Rashmi and R. V. Nirmal	2021
8	Opportunities and challenges of artificial intelligence in banking: Systematic literature review	A. Ghandour	2021
9	Industry 4.0 in finance: the impact of artificial intelligence (ai) on digital financial inclusion	D. Mhlanga	2020
10	FinTech innovations in digital banking	V. Dubey	2019
11	The rise of artificial intelligence in banking sector	K. Kochhar, H. Purohit and R. Chutani	2019
12	Digital banking transformation: Application of artificial intelligence and big data analytics for leveraging customer experience in the Indonesia banking sector	E. Indriasari, F. L. Gaol and T. Matsuo	2019
13	Artificial intelligence in banking	O. Kaya, J. Schildbach, D. B. AG and S. Schneider	2019

<div align="center">**CHAPTER 3: HYPOTHESIS**</div>

3.1 Working Hypothesis:

Hypothesis: ARTIFICIAL INTELLIGENCE technology in banks improves time efficiency and can lead to the transformation of the banking profession.

<div align="center">**CHAPTER 4: METHODOLOGY**</div>

The following methodology is used for conducting research. However, some common approaches include:

4.1   Questionnaire:

The methodology used is primarily quantitative, as it involves collecting data through questionnaires to gather insights on the perceptions, experiences, and attitudes towards AI in digital banking. The data collected from the questionnaires can be analyzed to identify trends, patterns, and correlations, which are typical characteristics of quantitative research. Following tools allow researchers to create and distribute surveys, collect responses, and analyse the data. Some popular online survey software and questionnaire tools include:

Survey Software	Description	Best for Use
SurveyMonkey	Widely used online survey software that offers various question types, multilingual surveys, and real-time and custom dashboards.	Best for its wide range of question types and multilingual survey capabilities.
Typeform	User-friendly survey tool with a generative AI feature, visual logic branching, and built-in marketing capabilities.	Best for its user-friendly interface and advanced features such as AI and visual logic branching.
Google Forms	Free online survey software that allows users to create customizable surveys with real-time response info and charts, and can be connected with other Google products.	Best for its cost-effectiveness and integration with other Google products.
QuestionPro	Survey software that offers over 30 different question types, multilingual surveys, and real-time and custom dashboards.	Best for its wide range of question types and multilingual survey capabilities.

The best survey software for use would depend on the specific needs of the research. SurveyMonkey and QuestionPro are suitable for research because these tools provide a wide range of question types and multilingual questionnaire capabilities.

<div align="center">

CHAPTER 5: PROPOSED FRAMEWORK

</div>

5.1:   Proposed Framework

The proposed framework for the research topic "The Impact of Artificial Intelligence on Digital Banking" is composed of three levels of application of artificial intelligence in digital banking. The application of artificial intelligence is structured as follows:

Level	Explanation	Focus	Examples
1	This level focuses on the application of artificial intelligence to enhance operational efficiency, automate routine tasks, and improve the overall performance of banking processes.	Operational Efficiency and Automation	Data analysis, risk management, compliance
2	The second level involves the application of artificial intelligence to enhance customer experience and provide personalized services.	Customer Experience and Personalization	Customer relationship management, chatbots, personalized product recommendations
3	The third level focuses on the strategic application of artificial intelligence to support decision-making processes and drive innovation in digital banking.	Strategic Decision-Making and Innovation	Strategic planning, product development, identifying new business opportunities

This framework provides a structured approach to understanding and analyzing the impact of artificial intelligence on digital banking, covering its application across different levels to improve operational efficiency, enhance customer experience, and drive strategic innovation.

Question: What human machine symbiotics have emerged/ are emerging? Human and AI?

Human-machine symbiosis in the context of AI and digital banking has seen several emerging trends and applications:

1. Chatbots and Virtual Assistants: AI-powered chatbots and virtual assistants have become prevalent in digital banking. These systems handle customer inquiries, provide account information, offer financial advice, and even execute transactions. They leverage natural language processing (NLP) and machine learning to understand and respond to customer queries effectively.

2. Fraud Detection and Prevention: AI algorithms are employed to analyze vast amounts of transaction data in real-time to detect fraudulent activities. These systems use pattern recognition and anomaly detection techniques to identify suspicious behaviour and prevent unauthorized access to accounts.

3. Personalized Recommendations: AI algorithms analyze customer transaction histories, spending patterns, and financial goals to offer personalized product recommendations. This includes suggesting suitable credit cards, investment opportunities, and savings plans tailored to individual preferences and financial situations.

4. Risk Assessment and Credit Scoring: AI-powered risk assessment models analyze customer data to evaluate creditworthiness and determine loan approval decisions. These models consider factors such as credit history, income levels, debt-to-income ratios, and spending behaviors to assess risk and set interest rates accordingly.

5. Algorithmic Trading: In the realm of investment banking, AI algorithms are increasingly used to automate trading processes and optimize investment strategies. These algorithms analyze market trends, news sentiment, and historical data to make real-time trading decisions and maximize returns.

6. Natural Language Processing (NLP): NLP technology is utilized to analyze customer feedback, reviews, and social media conversations to gain insights into customer sentiment and preferences. Banks can use this information to improve their products and services, enhance customer experiences, and address potential issues proactively.

7. Biometric Authentication: AI-powered biometric authentication methods, such as facial recognition and fingerprint scanning, offer enhanced security for digital banking transactions. These systems verify the identity of customers quickly and securely, reducing the risk of identity theft and fraud.

These symbiotic relationships between humans and AI in digital banking aim to streamline processes, improve customer experiences, and enhance security while also presenting challenges related to privacy, transparency, and ethical considerations.

CHAPTER 6: PROJECT PLANNING

The following structure may be used to organise the project planning for the research on the impact of artificial intelligence on digital banking:

6.1.   Introduction

Provide an overview of the research topic and its significance in the banking industry.

Define the research objectives and the specific areas of impact to be explored.

6.2.   Literature Review

Conduct a comprehensive review of existing literature on the application of AI in digital banking.

Identify the benefits, challenges, and potential impact of AI on operational efficiency, customer experience, and strategic decision-making.

6.3.   Methodology

Define the research methods to be used, such as systematic literature review, surveys, interviews, and data analysis.

Detail the data collection process, including the sources of data and the target audience for surveys and interviews.

6.4.   Data Collection

Collect data through surveys, interviews, and other relevant sources to gather insights on the impact of AI on digital banking.

6.5.   Data Analysis

Analyze the collected data using appropriate tools and techniques to identify trends, patterns, and correlations.

6.6.   Findings

Present the key findings related to the impact of AI on digital banking, including its influence on operational processes, customer satisfaction, and strategic decision-making.

6.7.   Discussion

Discuss the implications of the findings and their significance for the banking industry.

Address the potential for AI to shape the future of digital banking and the associated ethical and regulatory considerations.

6.8.   Conclusion

Summarize the main findings and insights from the research.

Provide recommendations for financial institutions and policymakers based on the research outcomes.

6.9.   References

Cite all the sources and references used in the research.

CHAPTER 7: CONCLUSION

7.1   Conclusion:

In conclusion, the impact of artificial intelligence (AI) on digital banking has been a topic of growing interest in recent years. The literature review highlights the benefits and challenges of AI in digital banking, focusing on its impact on strategy, process, and customer experience. AI has the potential to revolutionize the banking sector by enhancing operational efficiency, personalizing customer experiences, and improving risk management. However, it also poses challenges related to legal and governance issues, as well as the need for careful consideration of ethical implications. As AI continues to advance, it is crucial for financial institutions to embrace this technology to remain competitive and provide innovative services to their customers. The future of digital banking will be shaped by the integration of AI, and it is essential for banks to adapt and leverage this technology to stay ahead in the rapidly evolving financial landscape.

It seems that the Human-Centered Systems (HCS) approach, which emphasizes the value of human tacit knowledge, the creation of socially beneficial products, and the development of a human-machine symbiosis, is indeed a significant focus within the INSYTE-Cooley Research meetings and the broader research initiatives. The HCS approach, as championed by Professor Michael Cooley, has been deeply integrated into the ethos of the research lab, with a strong emphasis on the digitization of Cultural Heritage using the HCS framework and the co-evolution of HCS with AI and smart data. Additionally, the lab's multi-disciplinary composition and its long tradition of human-centered systems education and research further underscore the centrality of this approach within the research activities. Therefore, it is evident that the HCS approach is a fundamental and pervasive element of the research landscape at the INSYTE-Cooley Research Lab, as exemplified by the various research initiatives and educational endeavors that have been undertaken.

References:

Alnaser, f. M., rahi, s., alghizzawi, m. & ngah, a. H. 2023. Does artificial intelligence (ai) boost digital banking user satisfaction? Integration of expectation confirmation model and antecedents of artificial intelligence enabled digital banking. *Heliyon,* 9.

Dubey, v. 2019. Fintech innovations in digital banking. *International journal of engineering research & technology (ijert),* 8**,** 597-601.

El-gohary, h., thayaseelan, a., babatunde, s. & el-gohary, s. 2021. An exploratory study on the effect of artificial intelligence-enabled technology on customer experiences in the banking sector. *Journal of technological advancements (jta),* 1**,** 1-17.

Fares, o. H., butt, i. & lee, s. H. M. 2022. Utilization of artificial intelligence in the banking sector: a systematic literature review. *Journal of financial services marketing***,** 1-18.

Fares, o. H., butt, i. & lee, s. H. M. 2023. Utilization of artificial intelligence in the banking sector: a systematic literature review. *Journal of financial services marketing,* 28**,** 835-852.

Garg, n. & jain, n. Artificial intelligence technology in banking sector: a systemmatic literature review.

Ghandour, a. 2021. Opportunities and challenges of artificial intelligence in banking: systematic literature review. *Tem journal,* 10**,** 1581-1587.

Indriasari, e., gaol, f. L. & matsuo, t. Digital banking transformation: application of artificial intelligence and big data analytics for leveraging customer experience in the indonesia banking sector. 2019 8th international congress on advanced applied informatics (iiai-aai), 2019. Ieee, 863-868.

Kaya, o., schildbach, j., ag, d. B. & schneider, s. 2019. Artificial intelligence in banking. *Artificial intelligence*.

Kochhar, k., purohit, h. & chutani, r. The rise of artificial intelligence in banking sector. The 5th international conference on educational research and practice (icerp) 2019, 2019. 127.

Manjaly, j., varghese, r. M. & varughese, p. 2021. Artificial intelligence in the banking sector—a critical analysis. *Shanlax international journal of management,* 8**,** 210-216.

Mhlanga, d. 2020. Industry 4.0 in finance: the impact of artificial intelligence (ai) on digital financial inclusion. *International journal of financial studies,* 8**,** 45.

Noreen, u., shafique, a., ahmed, z. & ashfaq, m. 2023. Banking 4.0: artificial intelligence (ai) in banking industry & consumer's perspective. *Sustainability,* 15**,** 3682.

Peruchini, m., da silva, g. M. & teixeira, j. M. 2024. Between artificial intelligence and customer experience: a literature review on the intersection. *Discover artificial intelligence,* 4**,** 4.

Radenković, s. D., hanić, h. & bugarčić, m. Applying artificial intelligence in the digital transformation of banking sector. Proceedings, 2023. Mdpi, 19.

Rashmi, r. & nirmal, r. V. 2021. A study on the implementation and the impact of artificial intelligence in banking processes. *Asian journal of management,* 12**,** 47-54.

Sugiharto, b., simanungkalit, r. V., siregar, i. & andriani, m. 2023. Artificial intelligence (ai) architecture for integrated smart digital banking system. *Jurnal penelitian pendidikan ipa,* 9**,** 876-882.

Thowfeek, m. H., samsudeen, s. & sanjeetha, m. B. F. 2020. Drivers of artificial intelligence in banking service sectors. *Solid state technology,* 63**,** 6400-6411.