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Artificial Intelligence in Finance: Transforming Decision-Making and Risk Management for Enhanced Financial Outcomes

By

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An Honors Thesis in partial fulfillment of the requirements for the degree Bachelor of Science in Business Administration in Finance

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Abstract

The impact of artificial intelligence on the financial sector is evaluated in this study, focusing on its management of financial risk capabilities and its role in creating tailored banking experiences. AI's rapid evolution has brought unprecedented capabilities, raising questions about human adaptability to these developments in finance. The thesis will conduct further research on how AI manages financial risks and navigates regulatory frameworks and potential mismanagement. Multiple companies will be investigated to showcase their diverse capabilities, with each one highlighting unique characteristics and contributions to the AI finance landscape. This Thesis presents a comprehensive summary of the evolving financial industry, emphasizing the critical role artificial intelligence plays in overall financial risk decisions and personalized banking.

Introduction

       Artificial intelligence has increasingly become a transformative force in the financial industry, reshaping traditional practices and revolutionizing the decision making processes related to financial risks. Companies such as Ocrolus, Zest AI, AlphaSense, and Kasisto have significantly influenced this sector by leveraging AI to streamline operations, enhance efficiency, and mitigate risks. These innovations have fundamentally altered the operational dynamics of financial institutions. Whereas the financial advising industry traditionally relied on human expertise to navigate complex financial landscapes and provide tailored advice. The arrival of AI technologies has introduced a new paradigm, offered unprecedented opportunities, and raised important questions about the future of the profession.

       The introduction of AI driven platforms by companies like Ocrolus and Kasisto has marked a shift in how financial data and customer interactions are managed, enabling more accurate and expedited decision making. Zest AI is addressing crucial issues of fairness and inclusivity in lending by utilizing AI to process loan applications and detect biases, thereby increasing loan approvals for marginalized groups without increasing risks. AlphaSense, through its AI-driven search platform, has transformed market intelligence and analysis by furnishing professionals with vital insights from diverse content sources.

       In this thesis, I will explore the impact of AI on the financial industry with a particular focus on how these four companies; Ocrolus, Zest AI, AlphaSense, and Kasisto are redefining financial risk decisions and banking experiences. I will detail how these companies utilize AI to improve operational efficiency and risk management, specifying what this entails and how it is achieved. Additionally, I will research how AI is facilitating a shift towards greater transparency and inclusivity in the financial sector, thus democratizing access to financial services. This research will compare the capabilities of AI driven platforms with traditional financial services, aiming to provide a comprehensive understanding of the technological advancements that are driving the transformation of the industry. The thesis will also address the new challenges and considerations that arise with the integration of AI in finance, including ethical, regulatory, and practical implications.

Financial Advising Pre AI

       Before the integration of artificial intelligence in the financial sector, decision making, and risk management were predominantly a human process. Which relied on personal expertise, historical data, and traditional financial theories. Financial professionals, including brokers, advisors, and analysts, played pivotal roles in guiding investment decisions, managing risks, and providing personalized financial services. These traditional methodologies laid the groundwork for understanding the financial market dynamics, client needs, and risk assessment. Historically, the financial services industry encompassed a wide array of sectors like insurance, banking, brokerage, and investment management, each operating with its unique set of rules and processes. The evolution of the financial sector witnessed significant legislative and technological shifts, particularly in the late 20th century. The Gramm-Leach-Bliley Act of 1999, which repealed the Glass-Steagall Act, allowed institutions to offer a suite of services, integrating banking, securities, and insurance under one roof (globalEDGE, n.d.). This deregulation with technological advancements, paved the way for more integrated and complex financial services. The advent of digital technology, especially the internet, transformed the financial services industry, automating processes and making information more accessible. This shift not only increased efficiency but also introduced new challenges in managing financial risks and

maintaining regulatory compliance. The market collapse in 2008 further underscored the need for robust risk management and financial oversight, spotlighting the limitations of traditional financial practices and the potential of technological innovations (globalEDGE, n.d.).

In this context, AI emerged as a revolutionary force, offering new possibilities for managing financial risks and enhancing personalized banking experiences. AI's ability to analyze large volumes of data, recognize patterns, and make predictive analyses allowed for more nuanced and dynamic risk management strategies. Financial institutions recognized the potential of AI to transform the industry, driving the rise of AI finance companies focused on leveraging this technology to offer more efficient, accurate, and personalized financial services.

AI finance companies saw an opportunity to address the inherent limitations of traditional financial practices, such as manual data analysis, time-consuming processes, and the potential for human error. By automating these processes and employing sophisticated algorithms, AI has enabled more effective risk management and personalized customer experiences, marking a significant shift in the financial services landscape.

AI dealing with Financial Risk Decisions

Ocrolus and Zest AI are focal points for examining the application of artificial intelligence in financial risk management which is driven by their contributions to the industry and their pioneering use of AI technologies. There are three main reasons that stood out to me for choosing these companies and they were their innovation in AI technology, their substantial impact on financial services, and their enhancement of customer experiences. Firstly, both Ocrolus and Zest AI have demonstrated significant advancements in AI. Whether that is in the fields of machine learning and predictive analytics, which are critical for processing complex financial data and making accurate risk assessments. This innovation helps assess how the application of new AI technologies can transform traditional financial processes. Secondly, the impact these companies have on the financial sector is remarkable, especially in how they improve credit underwriting and risk management. This aspect of the framework examines how AI driven solutions from these companies have led to more efficient and accurate financial decision making. While also highlighting their role in shaping industry standards. Lastly, a key component of their success is how these technologies have been leveraged to serve traditionally underserved populations. This evaluates the extent to which AI has been used to personalize and enhance the customer banking experience.

Artificial Intelligence is playing a transformative role in managing financial risk decisions, significantly impacting both credit decisions and risk management practices within the financial sector. In the realm of credit decisions, AI companies like Ocrolus and Zest AI are revolutionizing the way banks and credit lenders evaluate borrowers. As of 2020, with 27% of payments being made through credit cards, the integration of AI in credit underwriting has become increasingly crucial, highlighting credit's integral role in consumers' lives. These companies leverage machine learning and predictive analytics to assess credit risk more accurately, which also allows them to provide financial services to traditionally underserved borrowers. This not only enhances the accessibility and efficiency of financial services but also supports more informed decision making for consumers. In managing financial risks, AI's contribution cannot be overstated. Companies like Ocrolus and Zest AI are leading the charge in employing AI driven solutions that offer precise risk assessments and accurate forecasts. These solutions harness vast amounts of data for trend identification and risk mitigation, facilitating enhanced planning and decision making. Ocrolus and Zest AI exemplify the power of AI in reshaping the financial landscape.

Founded in 2014 and headquartered in New York City, Ocrolus is a fintech company that has significantly transformed the financial sector through innovative applications of artificial intelligence. The company primarily focuses on financial risk decisions and personalized banking solutions. They are governed by a dynamic team of finance and technology experts. Ocrolus operates under a leadership structure that prioritizes quick decision making and strategic innovation. This governance framework allows Ocrolus to quickly adapt to changing market demands and effectively deliver AI driven solutions to improve financial operations and customer interactions across the industry. With the launch of its new product, Instant, on September 20, 2023, Ocrolus has underscored its commitment to providing cost effective, AI driven solutions for analyzing financial documents. Instant enhances the efficiency of processing bank statements, pay stubs, and tax documents, enabling lenders to make faster and more accurate lending decisions (Ocrolus, 2023). The innovation of Instant represents a comprehensive approach to automating the document analysis process. By achieving over 99% accuracy and integrating features, Ocrolus addresses critical needs in minimizing fraud and credit risk. The company's success is rooted in its extensive experience, having analyzed hundreds of millions of pages of financial documents and leveraging a significant volume of training data to refine its automation capabilities (Ocrolus, 2023). Furthermore, Ocrolus' recent achievement of raising $80 million in Series C funding, valuing the company at over $500 million, is a testament to its growing influence in the financial industry. This funding round aims to expand Ocrolus' product offerings into the mortgage lending and banking sectors. Which has ultimately caused an emphasizing on the demand for digital lending technology, particularly in the wake of the COVID-19 pandemic which has accelerated the shift towards online financial services (Azevedo, 2021). Ocrolus distinguishes itself with its unique combination of OCR, machine learning/AI, big data, and Human-in-the-Loop (HITL) data validation, offering unparalleled accuracy in document processing. This technological edge, along with its fraud detection, compliance overlay capabilities, and tailored analytics, sets Ocrolus apart in a competitive market. The company's mission extends beyond operational efficiency to fostering financial inclusion, by enabling lenders to swiftly analyze diverse financial data, thereby democratizing access to credit (Azevedo, 2021). Ocrolus provides a compelling case of if AI and machine learning technologies are being leveraged to enhance decision making processes in finance. The company's trajectory and innovations offer valuable insights into the future of financial services, highlighting the critical role of AI in transforming the industry towards greater efficiency, accuracy, and inclusivity.

Zest AI was founded in 2009 and is headquartered in Los Angeles, California. They have emerged as a revolutionary force in the fintech industry by leveraging advanced artificial intelligence to transform financial risk decisions and democratize access to credit. The company's governance structure is designed to foster innovation and accountability, led by a team of industry experts who emphasize ethical AI use and transparency. Through its AI automated underwriting system, Zest AI has notably increased loan approvals for various protected classes without elevating risk levels. This remarkable work has clearly demonstrated significant strides made in enhancing financial inclusivity. This approach not only broadens access to financial services but also ensures that decision making processes remain fair and equitable across all customer demographics. Zest AI has facilitated a 49% increase in approvals for Latino applicants, 41% for Black applicants, and significant uplifts for women, the elderly, and AAPI applicants, showcasing a commitment to financial inclusivity (Zest AI, 2024). Zest AI's

impact extends beyond individual demographics, having assessed over 39 million consumer loan applications, leading to $250 billion in loans granted based on its models. The company's growth, marked by a 50% annual increase in its customer base since 2020. Zest AI's introduction of FairBoost, a tool designed to ensure lending fairness by evaluating hundreds of variables to make a thorough, fair assessment, addresses the critical issue of credit disparity exacerbated by traditional credit scoring systems (Mills, 2023). Critically, Zest AI's solutions, including nearly 400 AI underwriting models and patented technology for debiasing models, represent a significant advancement in making lending fairer and more transparent. Zest AI collaborates with financial institutions of all sizes, from the largest banks to smaller credit unions. They also not only broaden access to equitable lending but also enhances lenders' ability to make data-driven, unbiased decisions. In summary, Zest AI's innovative application of AI in financial risk decisions and credit underwriting symbolizes a pivotal shift towards more equitable, efficient, and transparent financial services. By significantly increasing loan approvals across diverse demographics and ensuring fairness in the lending process, Zest AI exemplifies the potential of AI to revolutionize financial decision-making and risk management.

As we conclude this section of the thesis, it's clear that the integration of artificial intelligence by Ocrolus and Zest AI represents a significant advancement in financial risk management. Both companies demonstrate how AI can profoundly influence the financial sector by improving efficiency, accuracy, and accessibility. Ocrolus, with its innovative solutions like Instant and Zest AI, through its AI automated underwriting system. Both companies succeeded in not only enhancing the customer experience but also in making financial services more inclusive. These strides in leveraging AI to offer precise risk assessments and democratize access to credit highlight the transformative impact AI technologies are bringing to the banking industry. As the sector continues to evolve, the work of companies like Ocrolus and Zest AI will likely serve as benchmarks for the integration of technology in finance. This makes it essential to understand their developments as we explore further into the realm of AI's potential across different sectors.

AI dealing In Personalized Banking

With the evolving landscape of financial services, artificial intelligence stands as a transformative force, particularly with the personalized banking. This transformation is exemplified by AlphaSense and Kasisto, two pioneering entities that harness AI to cater to the sophisticated demands of today's digital savvy consumers. AlphaSense, renowned for its AI-driven market intelligence search engine and Kasisto celebrated for its conversational AI platforms that enhance customer service. Both demonstrate the profound impact of AI on modern banking practices. AlphaSense represents the cutting edge of financial data analysis and decision-making tools, while Kasisto illustrates the effective application of AI in customer interaction and service enhancement.

AlphaSense, established in 2011 in New York City, has emerged as a leader in the use of AI-driven technologies in the finance industry. Particularly through its innovative search engine tailored for market intelligence. The company has recently secured a $150 million Series E funding round, showcasing its strong market position and rapid growth in valuation from $1.7 billion to $2.5 billion (FinTech Global, 2023). This significant investment, led by Bond along with contributions from Alphabet's CapitalG, Goldman Sachs, and Viking Global, underscores the burgeoning potential of AI in transforming financial services (FinTech Global, 2023). AlphaSense has pioneered the integration of large language models (LLMs) and generative AI

technologies to refine how financial data is processed and presented. The company's "insights-as-a-service" platform harnesses machine learning to combine strategic data points from both public and private sources, offering deep insights into business and finance analytics. This capability is critical in providing actionable intelligence that goes beyond the general outputs of consumer facing AI models, such as ChatGPT. The introduction of AlphaSense's generative AI product, Smart Summaries, represents a significant advancement in the application of AI within financial services. Unlike traditional methods, which typically involve manual data aggregation and analysis, Smart Summaries enable financial professionals to track and analyze a broader array of companies efficiently. By compressing key information from various sources and including earnings calls and research reports. AlphaSense equips analysts with the capability to comprehensively monitor up to 20 companies, a considerable enhancement over earlier systems that required extensive manual input and were prone to oversight (FinTech Global, 2023). Chris Ackerson, the VP of Product at AlphaSense and former IBM Watson project team member, elaborated on the evolution of generative AI from merely enhancing basic search functionalities to providing sophisticated analytical tools. AI at AlphaSense focused on improving semantic search capabilities, organizing vast amounts of content effectively. With the advent of generative AI, however, the emphasis has shifted toward creating models that not only organize but also generate insightful written content, catering to user-specific informational needs (FinTech Global, 2023). AlphaSense's transition towards a more dynamic user experience reflects broader trends in AI development, aiming to transform the platform from one that merely responds to user queries to one that proactively presents tailored information and recommendations. This strategic shift utilizes AI to predict user needs and supports a conversational interface that facilitates an interactive dialogue, thereby making data interaction more intuitive and aligned with user expectations.

      Kasisto's contributions to the banking sector, particularly through its AI-powered chatbot technology, significantly enhance customer service interactions and personalize banking experiences. Kasisto's was founded in 2013 and is based in New York. Kasisto's platform, KAI, is celebrated for its financial literacy and the capability to deliver highly personalized banking support. A notable example of KAI's deployment is with First Financial Bank, where the introduction of the AI digital assistant, Gabby. Which facilitated a 10% increase in new account openings and substantial gains across various financial products including CDs, mortgages, and personal loans (Business Wire, 2024). This demonstrates the efficiency of AI in streamlining customer interactions and its role in enhancing financial product uptake by personalizing user experiences across both digital and physical banking channels. Kasisto also deployed another of the KAI platform is with Meriwest Credit Union, where the AI-driven chatbot, Scout, was launched in February 2023. Scout achieved the workload equivalent of two full time call center employees within just two weeks of its introduction. This bot can hold conversations with the credit union's 80,000 members, offering self-service capabilities, and integrating seamlessly with digital banking. Doing this all while maintaining the unique Meriwest brand voice (Bank Automation News, 2023). Between November 2022 and January 2023, the Meriwest team developed the necessary questions and answers for Kasisto to integrate into Scout, which went live in February 2023. Scout's effectiveness is not just in customer interaction but also in its operational impact. Within the first month alone, the credit union saved between 250 to 300 hours in telephone calls. Scout assists approximately 7,000 digitally active credit union members regularly and answers customer queries even during non-working hours. The integration of Scout into the credit union uses Kasisto's ability to pull necessary data through Meriwest's digital

banking platform without direct connectivity into the credit union's core, simplifying maintenance and integration (Bank Automation News, 2023).

Kasisto's CEO, Zor Gorelov, emphasized that KAI aims to democratize financial services using conversational AI to help users make better financial decisions, a testament to its foundational mission (Bank Automation News, 2023). Significantly, the partnership with Meriwest Credit Union showcases not only the operational efficiencies achieved through KAI but also the potential revenue impacts. Members who regularly interact with Scout are 30% more profitable than typical digital banking users. This is indicative of the broader financial and strategic impacts AI can have on institutions leading to an enhanced customer experience, reducing operational costs, and driving profitability. Kasisto's KAI platform is used by prominent financial institutions globally, including JPMorgan, Standard Chartered Bank, and TD Bank, underlining its wide acceptance and effectiveness in the financial industry. This broad deployment across significant banking institutions showcases KAI's adaptability and effectiveness in diverse banking environments, from large global banks to regional credit unions. Kasisto, through its innovative KAI platform, exemplifies the transformative potential of AI in modern banking, demonstrating how technology can significantly enhance the efficiency and personalization of customer service in financial institutions. As banks and credit unions continue to navigate the complexities of financial risk management and customer service, the integration of sophisticated AI solutions like those offered by Kasisto will undoubtedly play a crucial role in shaping the future of personalized banking.

The AI solutions provided by AlphaSense and Kasisto highlight a broader trend towards more customized, efficient, and responsive banking services. This transition is largely fueled by AI's ability to process vast amounts of data to deliver personalized services and its capacity to enhance decision making processes within financial institutions. Both companies embody the shift towards democratizing financial services, making them accessible and equitable across various customer demographics. This includes traditionally underserved groups, thus promoting financial inclusivity which is a pivotal aspect of modern financial ecosystems.

In conclusion, the integration of artificial intelligence in the financial sector through innovators like AlphaSense and Kasisto not only marks a significant shift in how services are delivered but also underlines the potential for AI to drive substantive improvements in customer satisfaction and operational efficiency. AlphaSense has redefined the boundaries of market intelligence with its AI driven analytics, while Kasisto's conversational AI platforms have revolutionized customer service within the banking industry. Both companies showcase the dynamic capabilities of AI to adapt and respond to the complex needs of modern consumers. Both offer a tailored solutions that enhance both user experience and financial decision making. This transformative journey led by AlphaSense and Kasisto not only enhances the strategic and operational facets of financial institutions but also sets a new standard for the future of personalized banking.

Conclusion

The financial sector has undergone a remarkable transformation driven by the integration of artificial intelligence, reshaping how services are delivered and enhancing the decision making processes. This thesis explored the impacts of AI on the financial industry, focusing particularly on the innovations brought forth by Ocrolus, Zest AI, AlphaSense, and Kasisto. These companies have not only redefined the operational landscape of financial institutions but have also helped ensure greater transparency and inclusivity. Ocrolus and Zest AI have been

instrumental in refining financial risk management. The introduction of AI technologies by these companies has enabled more accurate and efficient processing of financial data. While creating significant altering paradigms of credit underwriting and risk assessment. The advancements in AI-driven solutions have allowed these firms to cater effectively to underserved populations, thereby enhancing financial inclusivity and equity. AI's ability to offer detailed, data-based insights has been key in improving risk management and making lending fairer. Similarly, AlphaSense and Kasisto have revolutionized personalized banking through AI-driven market intelligence and conversational AI platforms. AlphaSense has significantly elevated the capabilities of financial professionals by providing them with powerful tools to analyze and interpret vast amounts of data which enhances the market intelligence. Kasisto has transformed customer service within the banking sector through its AI-powered chatbots, which personalize the banking experience and streamline customer interactions. These innovations not only cater to the sophisticated demands of today's tech-savvy consumers but also create a more engaging and efficient customer service model.

The impact of AI in the financial sector is significant and wide reaching. As seen with the companies discussed, AI enables a move towards more interactive systems. These systems do more than just react to what users do. Instead, they actively engage with them, predicting their needs and providing personalized solutions. This forward-thinking approach helps financial institutions not only meet current customer demands but also stay ahead of future trends, keeping them competitive in a fast-changing market. Moreover, AI's role in financial services tackles several long standing issues, such as risk management, efficiency, and customer satisfaction. The shift to AI driven platforms marks a critical change in how the industry handles and leverages data. By automating complex tasks and using sophisticated analytics, AI improves the precision of financial forecasts and risk evaluations, cuts down on operational costs, and enhances the quality of service overall.

In conclusion, the journey toward AI integration in the financial sector is not just about technological advancement but also about redefining the essence of financial services in the digital age. As years go on, it is crucial for financial institutions to continue embracing these innovations, fostering an environment that supports continuous improvement and adaptation. The successes of Ocrolus, Zest AI, AlphaSense, and Kasisto highlight the transformative potential of AI, offering valuable lessons and insights that can guide the future development of the financial industry. This thesis underscores the significant role AI plays in shaping a more efficient, inclusive, and responsive financial landscape, setting a new standard for the future of finance.

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