AI Industry Analytics

DEEP KNOWLEDGE GROUP

AI in Finance Industry Analytical Framework

5th Industrial Revolution Institute

DEEP KNOWLEDGE ANALYTICS

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Introduction

Artificial Intelligence (AI) plays a pivotal role in the modern economy and particularly in the financial industry. **The primary objective of the AI in Finance Industry Framework is** to develop a precise investment tool for enthusiasts and supporters of AI in these industries. The framework offers comprehensive insights into different industry sectors and their utilization of AI. Furthermore, it furnishes industry-specific parameters for each sector, facilitating in-depth analysis of companies operating within these domains. This framework serves as a valuable resource for understanding the intersection of AI and financial industry and enables informed decision-making in investment and strategic planning.

A well-developed financial system is a key element of the modern economy. It supports efficient allocation of the economical resources, accelerates direct investments and ultimately improves the lives of millions of people. Since 2008, however, the financial industry has faced many challenges and therefore requires modern solutions. Analysis of complicated instruments and the risks associated with them are but a few of these hurdles.

Despite the relative conservatism in some areas of financial industry, over the past years, rapid development of the AI technologies has significantly disrupted the way this industry functions. The scope of AI applications ranges from credit risk assessment of a client for a mortgage loan, to financial engineering and macroeconomic predictions fueled by Big Data. Financial risks assessment, quantitative trading and fraud detection are examples of the industry disruption, that will drastically and inevitably change further. All these advancements require new, modern approaches to be applied when analyzing the financial industry. To address this challenge, the **AI in Finance Industry Framework** has been developed.

AI in Finance by Market Growth in USD Billion (from 2021 to 2030)
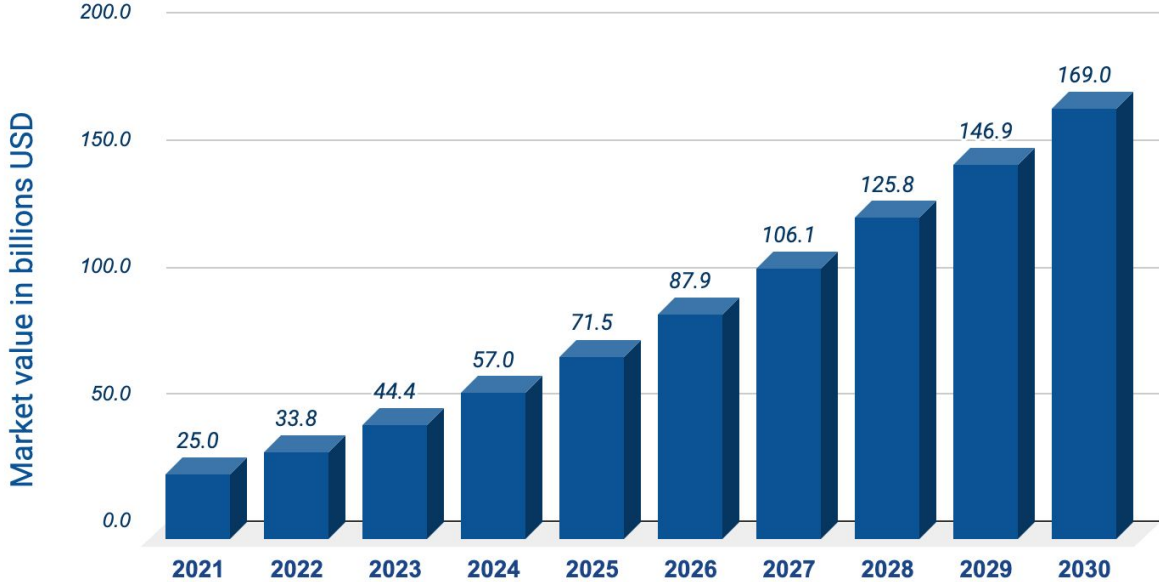
As of 2021, the global market value of artificial intelligence (AI) in finance was estimated at approximately 25 billion U.S. dollars. Projections indicate a substantial growth trajectory and $169 billion in market size by 2030. This represents a compound annual growth rate of 23.7% from 2022 to 2030, highlighting the immense potential and significance of AI in transforming the financial industry.

Structure

Being a part of multi-layer framework developed by **Artificial Intelligence Industry Analytics**, a subsidiary of the **Deep Knowledge Group**, AI in Finance Industry Framework is organized as follows. **Industry** is divided into 6 **sectors**, each of which is further subdivided into 26 **subsectors**. The classification system assigns each company to the sector / subsector according to the source of its real or potential revenue (in case of a young company) or decreased costs related to the use of AI technologies.

1 FinTech

Tailored solutions to meet the evolving needs of consumers and businesses, Including mobile payments, online banking, digital currencies, robo-advisors, and peer-to-peer lending.

2 InsurTech

Various digital solutions and platforms that enhance the efficiency, customer experience, and overall operations within the insurance sector including AI-powered underwriting, automated claims processing, IoT-based risk assessment, and digital distribution channels.

3 Asset Management

Services include portfolio construction and management, risk analysis, trade execution. Data analytics and AI are utilized to gain insights, identify trends, and make data-driven investment decisions, enhancing portfolios performance.

4 Institutional Brokerage

Sector focuses on providing financial advisory, capital raising, and merger and acquisition (M&A) services to institutional clients utilizing their expertise in structuring complex financial transactions, conducting due diligence and advisory.

5 Exchanges

Centralized platforms where various financial instruments, such as stocks, bonds, commodities, derivatives are traded. They provide a regulated marketplace where buyers and sellers meet to execute transactions in a transparent and efficient manner.

6 Credit and Finance

Encompasses a wide range of financial activities related to lending, borrowing, and managing credit risk. It involves institutions such as banks, credit unions, and financial companies that provide loans, credit facilities, and other financial services.

Each sector is further subcategorized to form the peer groups – sets of companies with similar scope of business/research activities that can be compared to each other. The categorization is used further for collection of business specific data, analysis and benchmarking within the Big Data Analytical System.

AI in Finance Industry Framework

FinTech / Digital Banking

B2B Banking	PayTech / Transaction Technology
B2C Banking	Crowdfunding

InsurTech

Life Insurance	Reinsurance
Property and Casualty Insurance	Insurance Brokers

WealthTech / Asset Management

WealthTech / PensionTech	Investment Management	Investment Companies	Private Equity	Advisory

AI in Capital Markets

Institutional Brokerage

Investment Banking	Securitization / Derivatives	Financial Engineering

Exchanges

Thematic & Alternative Exchanges	Stock Exchanges

AI in Credit and Financing

Consumer Finance

Auto Loans	Credit Cards	Student Loans

Mortgage Finance

Loan Origination	Mortgage Loan Brokers	Mortgage REITs

Commercial Finance

Industrial Leasing	Consumer Leasing

TOP AI Applications in Finance by Market Valuation in USD Billion (by 2030)

AI has been quickly recognized by financial industry as potential tool to revolutionize internal processes in various ways. In FinTech AI is widely used because of its ability to process vast amounts of data quickly. It is applied in **cybersecurity** and **fraud detection** as well as smart **KYC** and **KYB** systems. Language models improved user experience in **personalized banking**.

Leveraging AI in **InsurTech** allows for better evaluation of risks, advanced client profiling and Big Data analysis results in better pricing and bigger market share.

Asset Management sector utilizes AI to look for lucrative investment opportunities and predictive models construction. Another use is AI enhanced **Quantitative Trading**.

Application	Value
Fraud Detection	32.507
Loan Credit Risk Evaluation	11.097
Personalized Banking	9.635
KYC, KYB	7.713
Insurance Products Pricing	6.147
CCP and Exchanges	4.229
Financial Engineering	3.315
Quantitative Trading	2.817

Within the **Credit and Finance** sector, AI algorithms are able to address a fundamental issue of the business – assessment of credit risk during the loan origination process. Here, AI-driven methodologies have emerged as indispensable assets, aiding in the determination of borrowers' credit ratings while safeguarding profit margins. By leveraging advanced algorithms and machine learning techniques, these AI-enhanced approaches offer greater accuracy and efficiency in credit risk evaluation, empowering financial institutions to make informed lending decisions.

In **Capital Markets Infrastructure** AI can facilitate efficient trading operations and foster increased market transparency, being implemented into the trading systems of both centrally cleared OTC (Over-The-Counter) markets and stock exchanges.

AI-driven models play a pivotal role in the realm of **Investment Banking**, particularly in the domains of **structured products**, **derivatives pricing**, and **financial engineering**. The extensive utilization of AI technology has revolutionized these sectors, providing sophisticated tools and strategies to enhance decision-making processes.
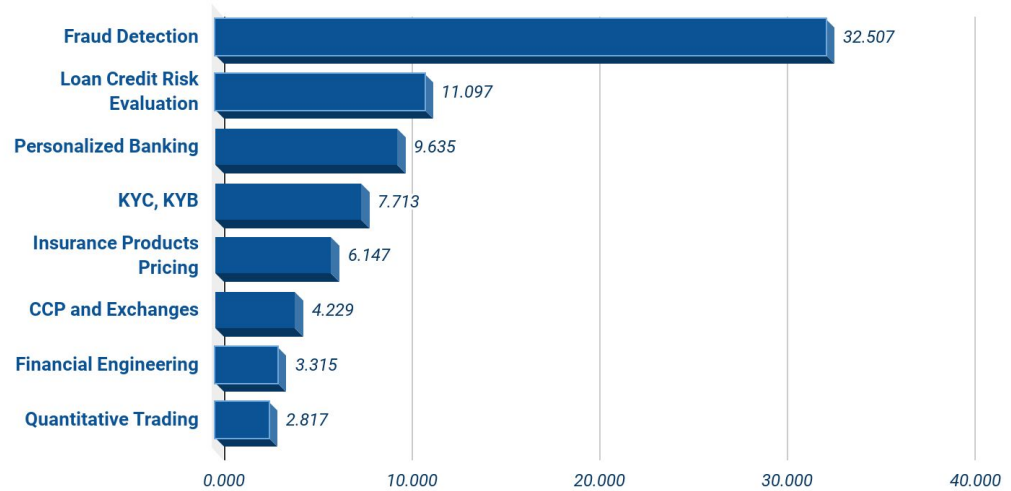
FinTech / Digital Banking

B2B Banking

Refers to the provision of specialized financial services and solutions to businesses by financial institutions. It involves catering to the unique needs and requirements of companies, ranging from small businesses to large corporations. B2B banks offer a range of services, including business accounts, loans and financing, trade and international services, and business advisory services. By understanding the specific challenges faced by businesses, B2B banks aim to provide tailored financial solutions to support their growth, optimize cash flow, manage risk, and enhance financial efficiency.

B2C Banking

Refers to the segment of the banking industry that focuses on providing financial services and solutions to individual consumers. B2C, which stands for "business-to-consumer," signifies that the primary customers of these banks are individual customers rather than businesses. B2C banks offer a wide range of services to meet the personal financial needs of consumers, including personal accounts, loans, mortgages, credit cards, savings and investment products, and online banking services.

PayTech / Transaction Technology

PayTech, short for Payment Technology, or Transaction Technology, refers to the innovative and evolving technologies that enable secure and efficient electronic payment transactions. PayTech encompasses a wide range of technologies, systems, and processes used to facilitate payments between individuals, businesses, and financial institutions. It includes various electronic payment methods such as mobile payments, contactless payments, online payments, digital wallets, and peer-to-peer transfers.PayTech solutions are designed to simplify and streamline the payment process, making it faster, and more secure.

Crowdfunding

Refers to the practice of raising funds from a large number of individuals, typically through an online platform, to finance a project, venture, or cause. It is a collective effort where individuals, often referred to as "backers" or "contributors," pool their resources to support a specific initiative. Such platforms provide a space for project creators to showcase their ideas and solicit financial contributions from the general public. These initiatives can range from artistic endeavors, innovative startups, social causes, charitable campaigns, or personal projects. Project creators typically offer various incentives or rewards to backers based on their contribution level, fostering a sense of community and engagement.

InsurTech

Life Insurance

Insurtechs in the life insurance sector offer streamlined and customer-centric solutions, making it easier for individuals to obtain and manage life insurance coverage. They provide user-friendly online platforms and mobile apps that enable users to compare policies and purchase coverage conveniently. These companies utilize data analytics and algorithms to assess risk, underwrite policies efficiently, and personalize coverage based on individuals' specific needs and preferences. This data-driven approach often leads to more accurate pricing and faster policy issuance.

Property and Casualty Insurance

Insurtech companies operating in advanced digital platforms, data analytics, artificial intelligence, and automation to revolutionize various aspects of property and casualty insurance. They provide convenient and user-friendly online platforms and mobile apps, allowing customers to easily obtain quotes, compare coverage options, and purchase policies. These digital platforms streamline the insurance process, making it more accessible and efficient for individuals and businesses.

Reinsurance

Insurtech solutions in reinsurance aim to provide improved risk assessment, underwriting, and portfolio management. By analyzing vast amounts of data, including historical claims data, market trends, and external sources, insurtech companies can assess risks more accurately and efficiently. This enables them to offer more precise and customized reinsurance coverage to primary insurance companies. Digital platforms play a significant role in the insurtech reinsurance space, enabling seamless communication and collaboration between primary insurers and reinsurers.

Insurance Brokers

Insurance brokers in the insurtech industry are professionals or firms that act as intermediaries between individuals or businesses seeking insurance coverage and insurance providers. They leverage technology and digital platforms to enhance the efficiency and effectiveness of their services. Insurtech insurance brokers offer online platforms and digital tools that simplify the insurance purchasing process. These platforms enable customers to compare quotes, explore different coverage options, and select policies that best suit their needs, all from the convenience of their computers or mobile devices.

WealthTech / Asset Management

WealthTech / PensionTech

Includes the use of advanced digital platforms, data analytics, artificial intelligence to enhance pension plan administration, and retirement planning. Pension tech solutions aim to streamline and simplify the management of pension plans for both individuals and employers and offers automated tools and calculators to assist individuals in estimating their future retirement income, setting savings goals, and determining the adequacy of their pension savings.

Investment Companies

Specialized in managing and investing money on behalf of individuals, organizations, or other entities. These companies pool funds from investors and use their expertise to make investments in various financial instruments such as stocks, bonds, mutual funds, real estate, or other asset classes. The role of these companies is to research and analyze investment opportunities, construct diversified portfolios, and actively manage those portfolios on behalf of their clients.

Investment Management

Refers to the professional management of investment portfolios on behalf of individuals, organizations, or institutions. It involves making informed investment decisions, constructing portfolios, and monitoring and adjusting investments to achieve specific financial objectives. The role of investment management is to maximize returns while managing risks effectively.

Private Equity

Refers to a form of investment where funds are invested directly into privately held companies or entities that are not publicly traded on a stock exchange. Such firms raise capital from institutional investors, such as pension funds, endowments, or high-net-worth individuals, and use these funds to acquire ownership stakes in private companies. They typically aim to enhance the value of the companies in which they invest through various strategies, such as operational improvements, strategic repositioning, or financial restructuring.

Advisory

Refers to the provision of personalized financial guidance and investment recommendations to individuals or organizations seeking to manage and grow their wealth. This advisory service combines technology-driven solutions with the expertise of financial professionals to help clients make informed investment decisions and achieve their financial goals.

AI in Capital Market

Institutional Brokerage

Investment Banking-Refers to the financial services provided by investment banks to institutional clients, such as large corporations, financial institutions, and government entities. Institutional brokerage services focus on facilitating securities transactions, providing market insights, and offering tailored investment solutions to meet the unique needs of institutional investors.

Securitization/Derivatives-They involve complex financial instruments that offer risk management, investment opportunities, and liquidity to institutional clients. Securitization refers to the process of pooling together various financial assets, such as mortgages, auto loans, or credit card receivables, and transforming them into tradable securities. Derivatives are financial contracts whose value is derived from an underlying asset, index, or reference rate. They are used for various purposes, including hedging against price fluctuations, speculating on market movements, and managing investment risks. Derivatives can include options, futures, swaps, and other structured products.

Financial Engineering-Refers to the application of mathematical and quantitative techniques to design and create innovative financial products and solutions for institutional clients. It involves the use of advanced modeling, risk analysis, and optimization techniques to address complex financial challenges and meet specific investment objectives

Exchanges

Thematic and Alternative Exchanges-Specialized stock exchanges that focus on specific themes or alternative trading platforms outside of traditional exchanges. These exchanges provide investors with unique investment opportunities and cater to specific market segments or strategies. Thematic exchanges are stock exchanges that concentrate on specific industries, sectors, or themes. They allow investors to trade securities that are related to a particular theme, such as technology, renewable energy, healthcare, or cryptocurrencies. Thematic exchanges aim to provide a targeted marketplace for investors who want to focus on specific sectors or industries that align with their investment preferences or beliefs. Alternative exchanges are platforms that provide alternative trading venues outside of the traditional stock exchanges. These exchanges offer alternative trading systems (ATS) or electronic communication networks (ECNs) that facilitate the trading of securities. They may have different trading protocols, fee structures, or regulatory frameworks compared to traditional exchanges.

Stock Exchanges-Centralized marketplace where buyers and sellers come together to trade stocks and other securities. It serves as a platform for companies to raise capital by issuing and selling shares of stock, and for investors to buy and sell those shares. The trading process on a stock exchange involves brokers or traders who act on behalf of investors. They execute buy and sell orders, matching buyers with sellers. Transactions on the stock exchange are typically conducted through electronic systems that facilitate fast and efficient trading.

AI in Credit and Financing

Commercial Finance

Encompasses a range of financial products and services designed to support businesses and individuals in acquiring assets, managing cash flow, and facilitating growth. Two important components of commercial finance are industrial leasing and consumer leasing.
Industrial leasing involves the leasing of equipment, machinery, or other assets to businesses operating in various industries. Industrial leasing provides businesses with the flexibility to access necessary equipment without the significant upfront costs associated with purchasing.
Consumer leasing refers to the leasing of goods or assets to individuals for personal use. It is commonly seen in sectors such as automotive leasing or consumer electronics leasing. Consumer leasing allows individuals to enjoy the benefits of using a product without the burden of full ownership.

Consumer Finance

Encompasses a wide range of financial products and services designed to meet the financial needs of individual consumers. It includes various lending and credit solutions such as auto loans, credit cards, and student loans. Auto loans are a type of consumer finance that enables individuals to purchase a vehicle. Lenders provide funds to borrowers to finance the purchase, and the borrower repays the loan over a specified period with interest. Credit cards are widely used consumer finance tools that provide individuals with a revolving line of credit. Cardholders can make purchases up to a predetermined credit limit and have the flexibility to repay the amount owed in full or in installments. Student loans are a form of consumer finance specifically designed to help individuals finance their education expenses. These loans are used to cover tuition fees, books, living expenses, and other educational costs.
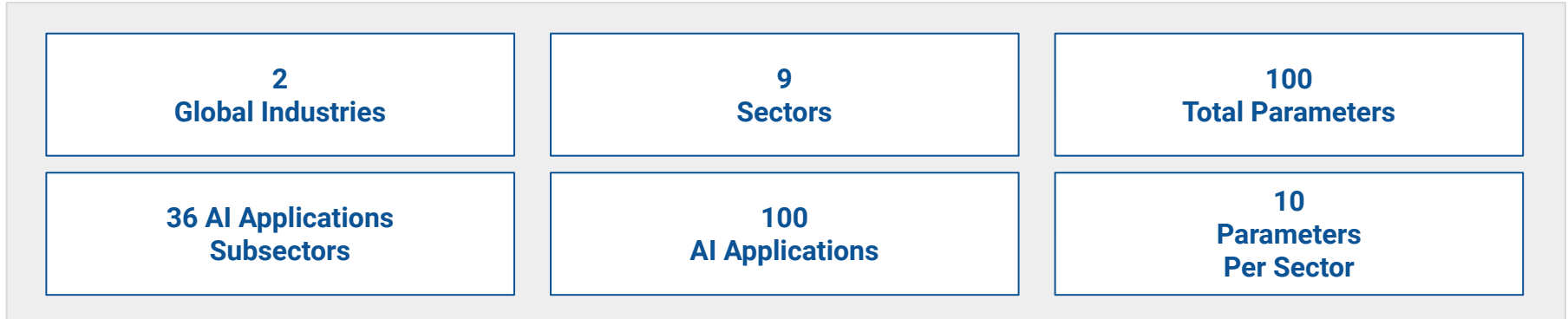
Mortgage Finance

Encompasses various entities and activities related to the provision of mortgage loans and the management of mortgage-backed assets. It involves loan origination, mortgage loan brokers, and mortgage real estate investment trusts (REITs). Loan origination is a fundamental part of the mortgage finance sector. Lenders, such as banks or mortgage companies, engage in the process of loan origination by evaluating loan applications, assessing borrower creditworthiness, and determining the terms and conditions of the mortgage loan. Mortgage loan brokers are intermediaries between borrowers and lenders. They assist borrowers in finding suitable mortgage loans from various lenders and guide them through the application process. Mortgage real estate investment trusts (REITs) are investment vehicles that specialize in owning and managing mortgage-related assets. Mortgage REITs primarily invest in mortgage-backed securities (MBS), which are financial instruments that represent an ownership interest in a pool of mortgage loans.

Conclusion

In conclusion, AI is revolutionizing the Financial industry, playing a pivotal role in driving innovation, eliminating market inefficiencies and improving client experience. The AI in Finance Industry Framework serves as a valuable tool providing detailed insights into industry sectors and their AI applications. With industry-specific parameters, the framework enables thorough analysis of companies operating within these domains, empowering informed decision-making in investment and strategic planning.

The current framework developed by the **Artificial Intelligence Industry Analytics** based on our expertise is the first iteration and requires further minor improvements. However, we believe this framework fairly represents the industry and provides insights into its current landscape.

Artificial Intelligence Industry Analytics utilizes the current framework as the basis of its **Big Data Analytical System** and inputs for its data aggregation and processing algorithms.

2 **Global Industries**	**9** **Sectors**	**100** **Total Parameters**
36 AI Applications **Subsectors**	**100** **AI Applications**	**10** **Parameters** **Per Sector**

Deep Knowledge Group