

# Artificial Intelligence and human collaboration in financial planning

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## Abstract

Artificial intelligence (AI) can assist business leaders in automating time-consuming and labor-intensive operations such as data collection, aggregation, and purification. This enables them to devote more time to high-value tasks and make more informed business decisions. While AI has been shown to offer a number of advantages when it comes to data analysis and delivering insight for investment plan creation, it lacks the emotional intelligence required to meet more complicated investing needs. The privacy and security of clients is another issue that has developed as a result of the usage of artificial intelligence in financial planning. Because AI is still a relatively new breakthrough in an industry with millions of dollars invested, some industry insiders are concerned that cyber-security may not be as advanced as the technology itself, putting the company at risk of hacking. This research outlined several advantages that AI offer during financial planning, followed by limitations and challenges that come in decision making process with AI. Last, this article discusses how humans and AI might cooperate to provide a more strategic and realistic perspective when corporate decision-making processes are complex, unpredictable, and ambiguous.

**Keywords:** AI, Planning, unpredictability, complexity, ambiguity

## 1. Introduction

Financial planning includes examining a company's overall financial flows, anticipating the implications of various investments, financing, and dividend decisions, and weighing the pros and disadvantages of various options. Financial management begins with financial planning. Because of the intricacy of the company, management must place a higher emphasis on financial planning in order to obtain and deploy capital resources in the amount and proportion required to improve the efficiency of remaining components of production. Both dynamic and ideal economic conditions necessitate financial planning. It assists management in avoiding waste by providing policies and processes that enable greater coordination across various corporate departments (Denby Brandon and Oliver Welch 2009).

Many businesses use a variety of tactics, including financial planning and control. Financial planning and control is an important aspect of financial management, which is concerned with the administration of a company's funds in order to maximize profit and shareholder value (Greenwood 2002). Financial planning is used to figure out where a company has been, where it is now, and where it is heading. It also calculates deviations from the most likely result. The study of the challenges involved in the acquisition and use of cash by a business, as well as the role of profit planning for the business organization, is referred to as financial planning. Control is a management action that ensures conformity with a plan or budget. Planning

determines objectives and goals as well as the future course of action to achieve them. Many will create one-year comprehensive plans as well as three- to five-year financial strategies.

As artificial intelligence (AI) becomes more advanced and pervasive across businesses and industries, its use in planning will become more common. Human decision-making is flawed, with cognitive biases and rationality gaps that can lead to suboptimal outcomes. In decision-making, AI can be employed in a multi-agent system to augment the cognition of individuals or groups of people. The systems let a human-agent team accomplish cognitive tasks more effectively than human or software agents alone, particularly in high-stakes decision-making (Tzafestas and Verbruggen 2012).

To aid in the process of planning, the AI system allows groups of decision makers to successfully interact with a vast amount of information utilizing speech, gesture, and data visualization approaches.

### Advantages of implementing AI in financial planning

After moving away from old methods and technology, many businesses now use contemporary planning methods and technologies. The notion of best practice planning in businesses is changing and will continue to change as a result of digital transformation. As a result, the next phase in company planning focuses on two important areas: AI and machine learning breakthroughs, and more automation.

Most organizations are either actively involved in or have recently concluded business planning for the following year at the end of the year. Regardless of the business planning process, almost everyone involved would say that it has been a difficult experience. To discuss financial data, most businesses still use archaic traditional tools. Too often, there isn't a lot of agreement on whether the data in those spreadsheet programs is correct.

Accurate forecasting leads to solid, data-driven decisions, but the task is often done haphazardly and compartmentalized across departments. CFOs and senior management require financial models that feed business strategy at the speed and insight of true innovation as finance enters a new era of digital transformation. The correct FP&A solution is critical to success – and it will determine company's financial health in five months and five years.

AI backed modern planning tools are quick and adaptable, and they give the organizations a complete picture of company's data. They help users to streamline planning and financial reporting, as well as evaluate thousands of data points in real time, by providing transparency into FP&A operations. Organizations can make rolling projections, timely financial statements such as income statements and balance sheets, and engaging data visualizations to help the decision makers put their findings into action. Data from numerous sources is kept in a central database using these FP&A systems, allowing all parties to work with the same (Phillips-Wren and Ichalkaranje 2008) information. Having a central repository reduces errors and contradicting data, allowing teams to attain a single source of truth as well as dependable and accurate financial data.

To enhance team performance, organizations can start transitioning digitally by automating essential procedures like data gathering and validation. The resources spend less time on manual activities and more time on analysis with modern planning solutions, gaining visibility into their data and unearthing important insights. In-depth what-if scenario analysis can be performed by FP&A analysts to evaluate different assumptions for future enterprise performance and see the impact of decisions before making them to improve real results (Sucar and Enrique 2011).

Fast, flexible planning and analysis are required by operations, sales, finance, human resources, and other departments and disciplines. To give insight and manage performance, they can all use the same tools. All operations will be better coordinated – and create higher results – when workers in one part of the business see, through AI tools, how their decisions affect other parts of the organization (Torra et al. 2014). Furthermore, a single integrated system that streamlines planning, budgeting, and forecasting across the organization can result in significant cost savings.

AI can help business leaders automate time-consuming and labor-intensive operations like data collecting, aggregation, and purification. This allows resources to allocate more time on high-value tasks and make smarter business decisions (Doumpos and Grigoroudis 2013). Data can be used to create a feedback loop that informs current and future operations after financial planning, and performance management KPIs and measurements have been optimized. Predictive skills can also be incorporated into FP&A practices to produce more precise and trustworthy forecasts (Bolton et al. 2018).

The basic difficulty that organizations face is twofold. The first is that they frequently lack confidence in the evidence they do have in order to make a sound judgment. The second issue is that the data they do have is spread across multiple platforms. All too often, each corporate unit makes decisions without consulting the others. There has been significant progress in the previous two years as organizations embrace the concept of connected planning, but there is still a lot of work to be done.

Predictive forecasting identifies and assesses trends and seasonality patterns in historical values using statistical and predictive analytics, considerably enhancing prediction accuracy (Kingdon 2012). It also reduce overall turnaround time to generate accurate profit and balance sheet forecasts, allowing users to focus on process improvement, exception management, and adjustment.

In financial planning, AI has proven to be excellent at completing the more laborious and dull portions of a planner's job, allowing them to focus on the more vital components of their role. By utilizing this type of technology to improve efficiencies in financial planning also by giving AI access to areas like investment portfolios and document vaults – it can analyze massive amounts of financial data, providing valuable insight for financial advisers when developing investment strategies and managing portfolios. In addition, it gives advisers additional opportunities to strengthen their client communications and gives them more time to contact investors and modify their services to better meet their changing needs.

## Limitations of AI with financial planning

While AI has been shown to offer a number of advantages when it comes to data analysis and delivering insight for investment plan creation, it lacks the emotional intelligence required to meet more complicated investing needs (Beck and Libert 2017).

The ability of AI to build an emotional connection or empathize is one of its limitations when it comes to offering financial planning services. These characteristics are necessary for establishing client relationships and trust. When a client's financial situation becomes more complicated, such as when clients want to start a family or allocate in their own business, a human financial adviser will empathize with them and assess their priorities before assisting them in making the necessary financial changes to achieve their objectives (Schuller and Schuller 2018).

The privacy and security of clients is another issue that has developed as a result of the usage of artificial intelligence in financial planning. Because AI is still a relatively new breakthrough in an industry with millions of dollars invested, some industry insiders are concerned that cyber-security may not be as advanced as the technology itself, putting the company at risk of hacking (Xiao et al. 2018).

Because there are now no restrictions in place between these two technologies, this could lead to problems in the future. The vast number of fake financial news available online may have an impact on this technology's financial decision-making capabilities when it comes to investments. Cyber-security isn't the only risk that's been recognized in relation to AI being used for financial planning; there's also a concern that the large number of fake financial news available online may have an impact on this technology's financial decision-making capabilities when it comes to investments (Wong et al. 2013); (Subramanian 2017).

## Human-AI coordination in planning

Humans and AI might complement each other in corporate decision-making processes that are generally characterized by unpredictability, intricacy, and ambiguity, in order to provide a more strategic and realistic perspective.

### 1. Unpredictability

Unpredictability is defined as a lack of knowledge about all of the options or their repercussions, making it more difficult to assess a situation and make a decision. Unpredictability can be caused by a lack of knowledge about both the internal and external settings of the company (e.g., shortage of human resources, emergence of disruptive technologies, new markets and competitors, and new government policies) (Kent Baker and Ricciardi 2014).

Through probabilistic and data-driven statistical inference methodologies, AI and other intelligent technologies can produce new ideas, and AI's particular affordances for discovering links among multiple aspects can help human decision makers collect and act on new sets of data more efficiently. One of the key tasks of predictive analytics, for example, is the generation of fresh data and predictions about customers, assets, and operations.

## 2. Intricacy

A multitude of elements or variables characterizes complex situations. They necessitate the processing of large amounts of data at a rate that exceeds the cognitive capacities of even the most capable human decision makers. In recent years, AI has overtaken humans in complicated tasks due to its better quantitative, computational, and analytical capabilities. Algorithmic decision-making, when combined with big data, has opened up new possibilities for dealing with intricacy and offers more effective means of arming human decision-makers with comprehensive data analytics (Phillips-Wren and Ichalkaranje 2008). Artificial intelligence (AI) has the benefit of brute force, making it a reliable tool for acquiring and processing large sets of data, reducing the intricacy of a problem area. For example, AI can aid in the reduction of a problem's intricacy by recognizing causal linkages and stating the appropriate cause of action among many options via causal loops.

AI can help with everything from determining a person's credit risk by looking at their Facebook friends list to pricing advertising in digital marketing and underwriting mortgages in the US real estate business. Deep learning has taken this to a whole new level in recent years, allowing machines to learn from raw data and expand their capabilities by incorporating larger data sets. There may be too much data for humans to master in these complex scenarios; machines routinely give greater decision quality.

Combining AI's speed in collecting and processing data with people's greater intuitive judgement and insight is one way to materialize the synergic interaction between AI and humans. Correlation Ventures, for example, a venture capital business that invests startups, evaluates investment opportunities in two weeks by combining the predictive power of AI analytics that seamlessly integrate vast amounts of data with a more holistic examination of the results by human specialists. Bots now detect unsuitable or contentious web or social media content by sifting through and digesting terabytes of user-generated data, but the ultimate decision to remove social media postings or videos is typically made by on-demand personnel behind the AI curtain, who use superior human judgment. AI technologies help humans make better judgments because AI can filter through massive volumes of data to highlight the most intriguing things, at which point managers may drill down, using human intelligence, to form conclusions and take actions.

## 3. Ambiguity

There might occur numerous simultaneous yet differing interpretations of a decision area referred to as equivocality. Due to the competing interests of eight stakeholders, customers, and policymakers, ambiguity is common. This changes decision-making from an objective, unbiased process (as anticipated in an analytical, rational approach) to a subjective, political one that tries to meet the competing interests and objectives of different stakeholders. Parties whose power and interests are influenced by the intended and unexpected implications of a decision can obstruct even the most analytically determined reasonable conclusion in practice. AI can provide decision-makers with certain tools to help them overcome ambiguous situations and solve pertinent competing needs (Boutillier 2000). For example, AI systems that analyze sentiment across internal and external channels (e.g., social media) tend to provide a more accurate outlook of prospective reactions to organizational decisions.

Nonetheless, human actors are primarily responsible for dealing with ambiguity. They will almost certainly retain their outstanding ability in interpreting the political landscape both inside and outside the business, as well as in laying the necessary invisible groundwork for making, negotiating, and implementing choices successfully (e.g. building coalitions and alliances). Even if robots can figure out what is the most ideal decision, they are unlikely to be able to sell it to a wide range of stakeholders. Many intuitive decisions made in companies are subjective, emotionally charged, and contextually sensitive, and the machine's objective, impersonal approach can be at odds with this (Stacey et al. 2000). Both formal and informal leaders play an important role in rallying people around a choice by making it compatible with a variety of agendas.

The ability of organizational leaders to generate credible goals and objectives and then persuade others (both their employees and external stakeholders) of the importance of their decisions is a vital capability (Simões-Marques and Figueira 2019). This necessitates emotional and social intelligence, which serves as a basis for the application of interpersonal skills. Furthermore, informal leaders (not necessarily managers with formal power) play a critical role in coping with decision-making ambiguity. By virtue of their social relationships and skills, as well as their delicate awareness of the social fabrics of their organizations, organization scientists have long viewed informal leaders as well-positioned to align people's interests, iron out potential conflicts, and generate agreement.

Even the most sophisticated judgments may contain an element of ambiguity, necessitating the use of human input. For example, by employing intuitive approaches, humans can determine which variables or future events (among an infinite number of possibilities) may have a greater impact on outcomes, assisting in determining which factors should be prioritized in data collection and analysis primarily carried out by smart technologies' analytical approach. Furthermore, research may yield numerous other routes with about equal factual support in many circumstances; humans can assist in selecting the one that appears to be more intuitively sensible.

## Conclusion

The more traditional tools are used inside a company, the higher the danger of human error and risk. Due to poor data quality, and ineffective collaboration techniques, traditional tools frequently produce faulty models and wrong results. Organizations needed to be able to quickly shift gears or pivot plans, incorporate external factors to mitigate risk, adapt business vision to new business models, also on cash flow and capital assets as part of a continuous plan, and integrate financial planning across the organization to achieve a holistic view of performance if they were to survive the uncertainties of today's world.

It is crucial to highlight that all three traits (unpredictability, intricacy, and ambiguity) are frequently present in the decision-making process, and that these characteristics are not mutually exclusive. The majority of organizational decision-making is best handled by combining (to varied degrees) analytical and intuitive approaches. In the coming years, the most successful businesses will strike a mix between analytical proficiency and instinctive

originality. For managers relying solely on analysis or intuition is insufficient when it comes to persuading others in collaborative decision-making.

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