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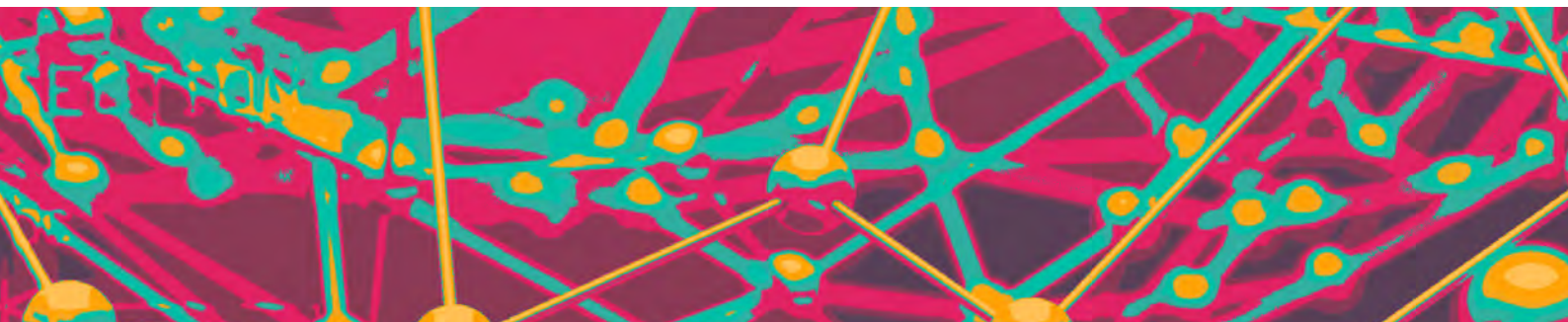
Cloud P2P Automation. Easy. Powerful. Smart.

From Artificial Intelligence to Financial Intelligence



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Introduction

Defined as being the fourth industrial revolution, Artificial Intelligence (AI) fascinates and also raises questions, concerns and excitement. In what way is it integrated into our day-to-day lives? To what extent can it have a direct impact on the economy? What will it learn about my personal preference, and more importantly, what information will it share?

Let's start by paying attention to our close environment. AI is already almost omnipresent in both our professional and personal lives. Most of the tools we use involve AI principles. Since its birth in the 1950s, AI has experienced several phases of development, and it has really become widely discussed, put into practice, and understood since 2016.

When we talk about AI, we immediately think about what we use every day, such as virtual assistants or chatbots (i.e., Siri or Cortana), smartphones that identify us through fingerprint or facial recognition, cars that are able to detect pedestrians and to park themselves (often better than humans do). We also think about these "computers" that recognize and analyze documents automatically.

There is no denying that AI makes our daily lives so much easier than it was a few years ago, much more than imagined. It is also widely present in the business environment. Evidence of this includes:

- HR departments more efficiently optimize a selection process.
- Quality assurance departments anticipate problems before they may occur.
- Marketers predict customers' needs and optimize interactions between brands and consumers.

And now AI has made its way into finance departments. How do these technologies impact finance functions and workflows? What transformations can be predicted? How will this technology shape tomorrow's finance department?

As a finance leader or accounting professional, you are certainly wondering about ways to apply AI in your day-to-day activities and how it will impact your trade.

AI is and has historically been a subject of debate and speculation, fear and fascination, and definitely raises a lot of questions. This whitepaper aims to explain clearly how artificial intelligence applies to financial and accounting processes, and its predictable effects.

1. Origins and Definitions

In 1956, the Dartmouth Artificial Intelligence Conference was organized in the United States of America. This founding event was presided by John McCarthy who was the creator of the discipline of Artificial Intelligence. It was first defined by Marvin Lee Minsky, an American mathematician, as "the science of making machines do things that would require intelligence if done by men."

These machines go further than traditional algorithmic computing.

In a classic approach, the programmer knows the solution of the problem and as a result is able to program a systematic approach to solve it.

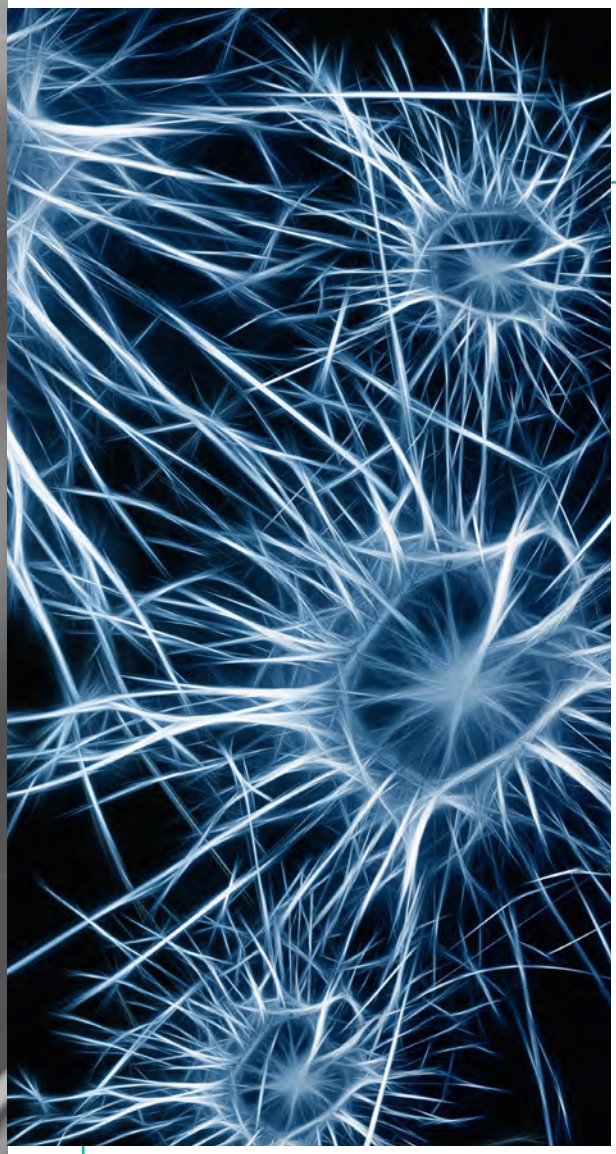
The approach is totally different with Artificial Intelligence. The aim is to create machines capable of simulating human intelligence, learning, memorizing examples and summarizing them to create a knowledge base that will be used to solve problems. This is known as 'machine learning.' It must be said that we entered in the era of zettabytes, which means the data volume is so big that it cannot be processed by humans.

Definitions

Artificial Intelligence (AI)

AI is the ability of a computer to perform tasks associated with intelligent beings. It uses several capabilities such as logic, problem solving, learning, character recognition and more. And it's important to note the distinction between strong intelligence and weak intelligence.

- Strong AI or AGI (Artificial General Intelligence) is the idea of a machine being able to perform any intellectual task that a human being can.
- Weak AI assists in helping to make decisions and predictions. It knows what a human being is able to do. Today, it is widely used across many technologies such as within customer relationship management software and software-as-a-service (SaaS) products.



... Definitions

Among the different approaches of AI, it is important to distinguish three categories of systems:

- Systems that "make" by automating repetitive human tasks such as the conversion of voice into text, the massive collection of data, or robotics in a manufacturing environment.

- Systems that "think" and act according to circumstances by respecting an algorithm logic, such as software for incidents' resolution, safety, help desk, and those based on natural language or dynamic process execution.

- Systems that "learn" according to the context and users' specificities or other systems, such as machine learning, virtual agents, financial trading, medical diagnoses, the analysis of consumers' feelings, and all the solutions based on non-structured data, unspecific rules or very evolving contexts.

Machine Learning

Machine learning represents learning methods related to AI. The machine "learns" by collecting data and summarizing it in a knowledge base in order to solve problems. For instance, in the case of character recognition, the aim is to learn many possible number and letter cases that the system will process afterwards. However, the system does not need to learn exhaustively all the variations of possible cases because it is able to generalize.

Optical Character Recognition (OCR) Technology

OCR is technology that recognizes text within a digital image, such as a scanned document, and serves many purposes. One of the more common business uses includes character extraction from printed paper data records, such as: Invoices, bank statements, computerized receipts, business cards, or mail, to name a few.

OCR allows the digitizing of printed texts so that they can be electronically edited, searched, stored more compactly, displayed on-line, and used in machine processes such as cognitive computing, machine translation, (extracted) text-to-speech, key data and text mining.

In a recent report by PayStream Advisors studying payables departments in companies in a wide range of industries, sizes, and staff size, electronic payments were cited as the most widely adopted accounts payable tool. And OCR/Automated Data Capture was named as one of the top two features that AP management tools must have.[1]

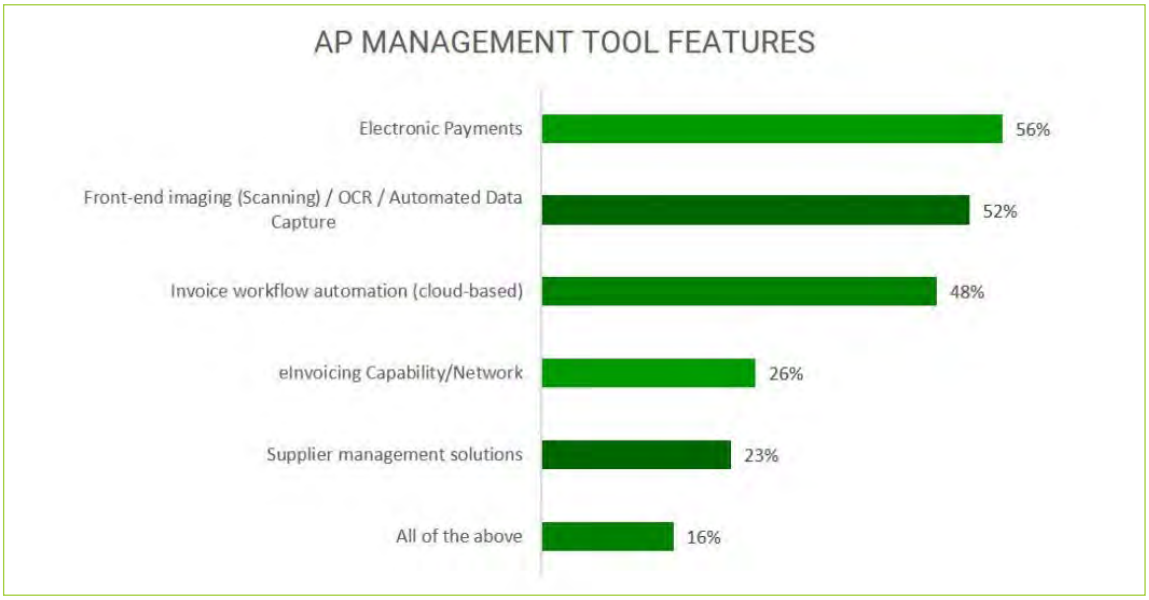
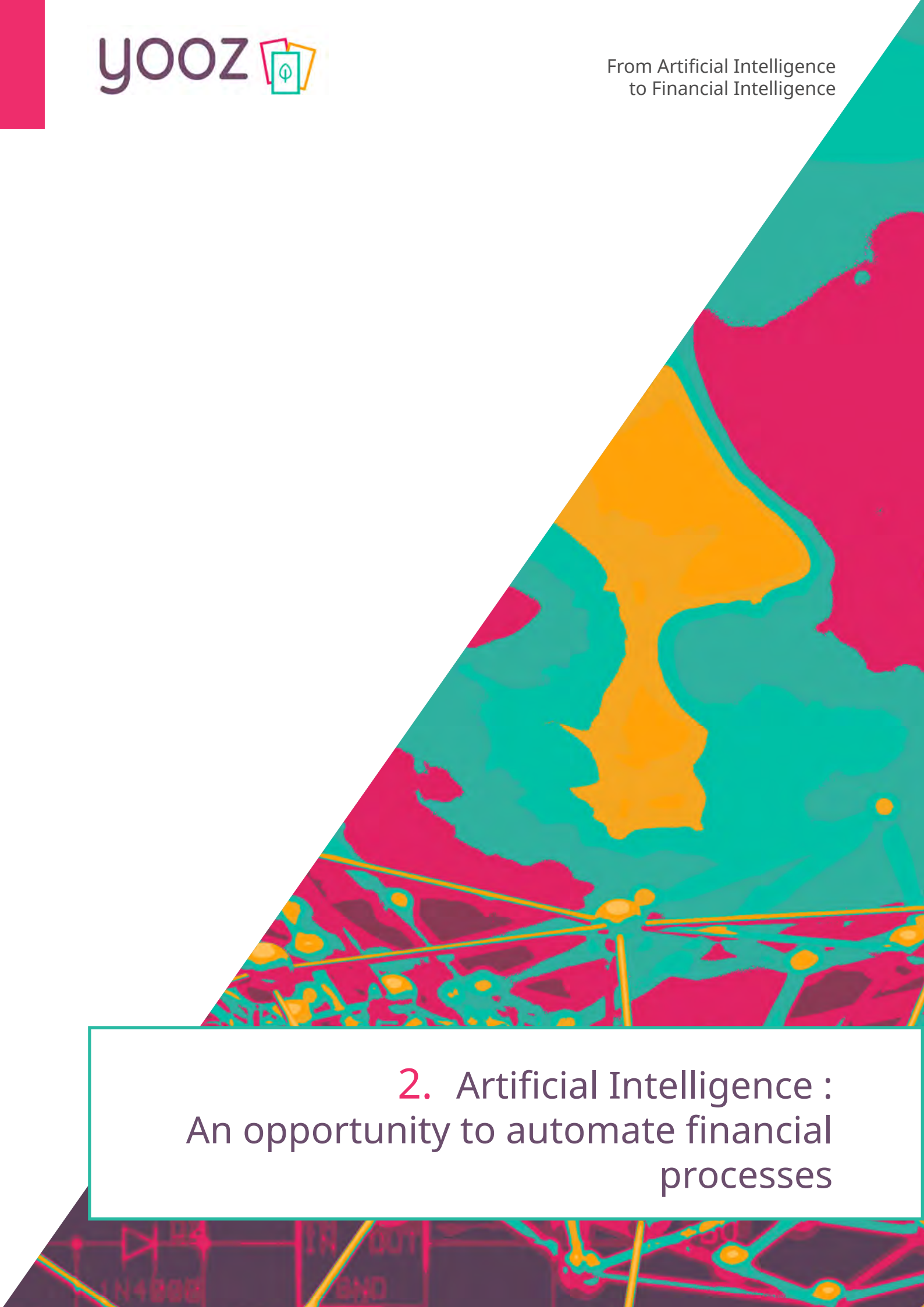


Figure 1 - PayStream advisor



2. Artificial Intelligence : An opportunity to automate financial processes

AI has actually been developing over several decades. Herbert Simon, Allen Newell, and others pioneered AI in the 1950s[5]. And AI and machine learning have been utilized by companies for more than 30 years.

The old technological approaches were mainly used to optimize the process of structured documents that were typed or handwritten, such as purchase orders and social security forms. Each of those document types had a similar pattern that made the location of data to extract easier to find. Artificial neural networks completed the rest of the task, recognizing data on the documents automatically and eliminating a large amount of manual data entry.

The concept of automating accounts payable processes first surfaced about twenty years ago. Invoices have the specificity of being documents with a variable structure. Even if the information is identical, the placement differs from one vendor to another, which makes its analysis more complex. Former solutions had nothing to do with current approaches, especially in terms of performance and reliability. They did, however, have the same objective: Automate a tedious and repetitive process to make AP personnels lives easier and optimize the efficiency of finance processes.

Before AI, accounting teams manually created and processed invoices, purchase orders or delivery orders on paper documents. Those documents were then manually entered in computer systems, coded, and finally transmitted to the managers for approval and payment. Today, with the introduction of AI, there are no more manual processes. The AP workflow process is automated by AP automation software which analyzes, recognizes, directs, and exports data into a company's ERP/ financial system. Before automating the AP workflow, suppliers had little to no insight into payment timing details; now, they have full access to this information in real time.

The use of AI in AP solutions makes a significant positive impact on the finance department, such as: Invoice processing cost reduction, streamlined workflows, optimization of employee productivity and overall corporate agility.

According to the *PayStream Advisors 2018 Payables Guide*, an AP automation solution made for the middle market will bring extra visibility and control into business operations, allowing AP departments to focus on more strategic tasks like identifying cost savings opportunities and helping their organization achieve greater competitive advantage.[2]

3. The early adoption of smart automation in finance processes

Accounts payable (AP) automation has been in existence for decades, but it has only recently become widely accessible to all sizes of firms, rather than only to enterprise level firms.

This is attributed to two factors:

- Intelligent AP automation solutions have adopted business models that are now accessible to the small and mid-sized markets.
- They more and more efficiently meet the challenges of cost reduction, fluidity, and secure processes.

The combination of the two have permitted the use of these technologies in all companies and prevented the exclusive use in enterprise companies that process millions of documents each year.

The phenomenon of maturity, reliability and industrialization of these solutions can also be easily explained:

- Algorithms have become more and more reliable, flexible, and adaptable, permitting solutions to automatically manage documents with variable structure, such as invoices. As a result, data is automatically recognized in an exhaustive and reliable way, with no prior configuration.
- SaaS (software-as-a-service) cloud solutions are available to millions of users, which results in constant technological enhancements. This contrasts to older on-premise solutions that limited usage.
- The self-learning—machine learning—capabilities of cloud-based software solutions are constantly improving. These solutions essentially "learn" from their mistakes and do not make them again once humans correct them.
- Computing power is strong and very accessible, driven by AI.

The affordability and wide availability of cloud-based SaaS solutions are driving adoption and general usage and acceptance of these types of solutions. Indeed, SaaS solutions are spreading so widely because they have a significant economic interest for business managers. Most solutions are based on pay-per-usage pricing. Users subscribe and do not need to invest additional time and money to implement the solutions, as is the case of enterprise-level on-premise solutions.

- Pay-per-usage pricing: SaaS solutions are generally presented as services and their price depends on the volume of documents processed. This characteristic represents an intriguing opportunity for widespread adoption of small and medium-size companies.
- IT investment costs reduced to zero: Cloud-based solutions are immediately operational and do not need any purchase of supplies, software, or installation (as opposed to onpremise). As a result, the total cost of software ownership is radically reduced.

If we go beyond these pure economic elements, agility, accessibility, and ease of configuration drive adoption as well:

- Users have access to their solutions from any device (computer, tablet, smartphone), anywhere and anytime.
- They get a quick operational solution, with an easy configuration and with no need to install anything.
- As solutions are accessed via web browsers, the experience is user-friendly and increases user commitment.

4. AI is leading to real profits

Although self-driving cars and AP automation are completely different, AI is the clear similarity between the two. Algorithms that make self-driving cars a reality also contribute to the optimization of AP.

AI-driven AP automation solutions are able to learn as fast and as accurately as an experienced human. They are able to:

- Identify and interact with suppliers
- Automatically intake, code, process, and route invoices
- Denote payment deadlines, approval workflows, and the approvers.

They are even capable of interacting with suppliers.

Processing cycle (time between the invoice arrival and its payment):

It can be noticed that the time spent to collect and search for documents, as well as data entry is reduced. In general, this time reduction leads to a productivity increase from 30% to 70%. Indeed, dematerialization software enables time savings thanks to Optical Character Recognition (OCR) technology. It automatically locates data to recognize with no need of prior instruction. It is also able to adapt to documents with variable structure and classify them logically (invoices, contracts, account records, etc.). Data Mining technology is able to identify new vendors from information on the invoice (phone number, tax number, etc.).

Organizations of all sizes report facing challenges related to paper-based processes, including the receipt of paper invoices and manual data entry and invoice routing (see Figure 1).[3]

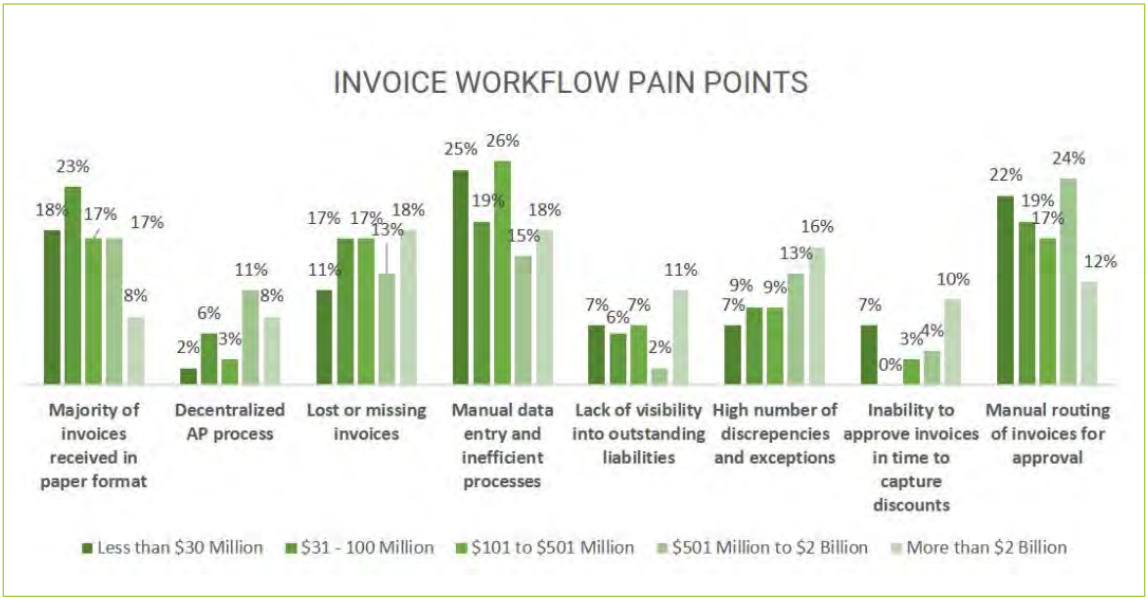


Figure 2 - PayStream advisor

Intelligent AP automation ensures finance departments mitigate or reduce many of these AP challenges and allows increased strategic influence, efficiencies, cost reduction, and effectivity across several performance indicators.

The automation of the different tasks in the AP process accelerates the entire cycle time from reception to payment. By reducing repetitive manual tasks (data entry, matching of purchase orders, delivery slips, invoices, and payments), and by directing invoices automatically in relevant approval workflows, AI significantly accelerates the end-to-end processing cycle. The gain factor is estimated to be three to 20 times faster. Similarly, the constant performance improvement contributes to making the system faster over time. Table 1 shows the different thresholds organizations typically reach based on their automation maturity, illustrating that significant improvements in processing times follow technology implementation.[4]

Metrics	Novice	Mainstream	Innovator
Average processing time from invoice receipt to approval	45 days	23 days	5 days
Average processing cost per invoice (combination of paper and electronic)	$15.00	$6.70	$2.36
Percentage of invoices received electronically	3%	9%	32%
Percentage of invoices terms discounts captured	18%	40%	75%

Table 1 - PayStream advisor

The self-learning capacities of machine learning and the ability of cloud solutions to analyze users' behaviors enable systems to benefit from each invoice processed. Experts talk about "incremental neural networks" that are capable of assimilating new data without degrading the performances of the neural network or forgetting former data entries.

«What used to take weeks now only takes about 2 ½ days, the improvements are due to capturing, automatically coding and storing invoices instead of handling paper or sending around PDF files. The system observes and learns from clerks' keystrokes, continuously improves GL coding, and reduces errors»

Bryan Schmidt, Controller, UNITE HERE HEALTH.

Data and process reliability and security (quality of financial data, removal of document losses, fraud detection): Because of intelligent AP automation, all this and more becomes possible thanks to AI-driven cloud-based solutions that serve to extract all the data from invoices, to control its relevance and its coherence, and to suggest suitable allocations. All while detecting some forms of fraud with graph metrical approaches (fraud detection on images) and frequency analysis (incoherence detection according to a user's history).

There are several qualitative performance attributes of AP automation driven by AI.

- More efficient, fluid, collaborative, and flexible processes that make interactions between finance and non-finance stakeholders faster and less complex.
- Full visibility into interventions done on a document during the processing cycle.
- Smart real-time reporting and relevant performance indicators contributing to the evaluation of the performance and its evolution over time.

According to an international study released by Ernst and Young, published in 2017, 52% of large companies' employees have already been confronted by fraud or corruption issues or informed about it.

According to another study released by Ernst & Young, 48% of CFOs from all sizes of businesses consider that robotization will enable finance departments to boost efficiency and improve internal financial control.

5. Strategic transformation of finance teams

All experts agree with the fact that AI is and will continue to be at the heart of our daily activities as well as at the center of information systems. According to David Cearley, Gartner's Vice President, *"within the next ten years, every application will use some form of AI, and 50% of analytics applications will use some form of AI within the next three to five years."*

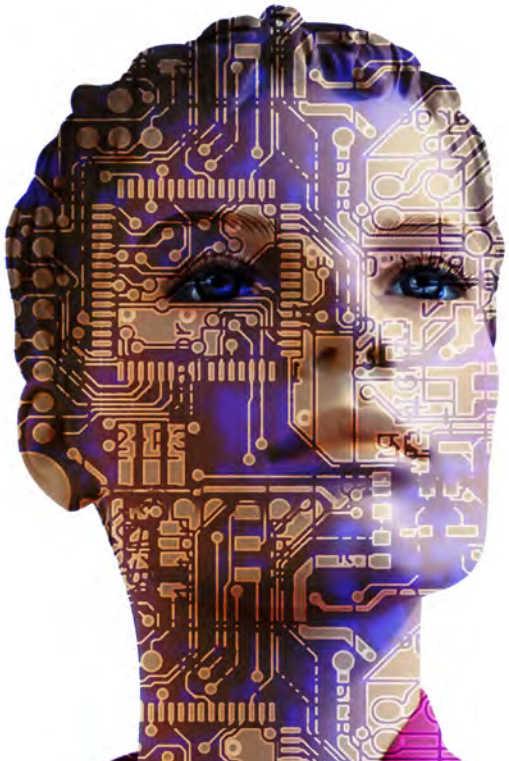
A recent report by CFO, an Argyle company, explores the positive implications of AI on finance teams citing that AI and associated natural language interfaces have the potential to change the way that the finance team and other stakeholders interact with data. "As true partners in business development and identifying opportunities for growth and expansion, the CFO plays a key role in bringing emerging technologies such as AI to the business."[6]

According to a recent Argyle article, the CFOs will be key in driving the adoption of emerging technologies. "Digital enablement is not only about having an innovative and differentiated business model, but also about having the most progressive and agile business processes, such as, using predictive analytics to identify trends, deploying cloud technologies to drive higher participation planning or leveraging social tools to dismantle functional silos."[7]

AI's current capabilities, state-of-the-art technology and use in companies actually represent the tip of the iceberg of all the opportunities that it can offer. Imagine a world in which expert systems analyze the entire financial or administrative document flow and could automatically and instantly compare information on a purchase order, a receipt or an invoice to information that you can find within the different information systems of the company. As a result, they would be able to: verify details, approve the quality of information, compare prices, analyze financial risk, anticipate a default risk, establish solvency score, and identify suspicious or fraudulent documents and report them to whom it may concern.

Similarly, we notice team skill improvement as they transition from a Taylorist approach—improving economic efficiency and labor productivity—to an empowerment one in which machines such as robots are now in charge of low value repetitive tasks—data entry, verifications, referrals, and fraud detection. Then employees are freed to do more strategic, creative tasks such as improving supplier relationships. For financial, accounting and management control experts, this opportunity would mean a more attractive position as they would only produce real added value, and would have time for analysis, strategy and decision-making.

In view of the spectacular progress of AI, this new world would be more familiar to you long before a self-driving mail truck will drop the last paper invoices in your office.



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Cloud P2P Automation. Easy. Powerful. Smart.

Yooz provides the smartest, most powerful and easiest-to-use cloud-based Purchase-to-Pay (P2P) automation solution. It delivers unmatched savings, speed and security with affordable zero-risk subscriptions to more than 2,000 customers and 100,000 users worldwide.

Yooz's unique solution leverages Artificial Intelligence and RPA technologies to deliver an amazing level of automation with extreme simplicity, traceability and end-to-end customizable features. It integrates seamlessly with more than 200 financial systems, exceeding any other solution on the market.

Yooz is a fast-growing, award-winning company that perfectly fits the expectations of mid-size organizations across all sectors. It has been recognized as a SaaS innovator, recently named as a 10 Best Cloud Solution Provider of 2018 by Industry Era, Best of SaaS Showplace (BoSS) 2018 by THINKstrategies, Top 10 Accounting Solution Provider by CFO Tech Outlook; and 2017 Top 50 Company to Watch by Spend Matters.

Contact Us

United States

info@us.getyooz.com

832-384-9669

Europe

info@uk.getyooz.com

01252 741517

Learn more at

www.getyooz.com