

AI, API, RPA and CHATBOT in Italian accounting firms

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It is undeniable that new technologies are transforming the internal processes of accounting firms as well as the methods of relating to customers. Therefore, what will the future of accounting firms be like, considering the increasingly massive use of new technologies? What changes should we expect, and what will their impacts be on the category of accountants? Certainly not simple questions that I will try to answer in this short contribution.

WHY EXAMINE ITALIAN ACCOUNTING FIRMS

In order to understand what the evolution of accounting firms could be following the massive use of technology, I think we need to examine the Italian ones. There are at least three important reasons why:

- a) Double entry was born in Italy, thus we have a long accounting tradition;
- b) In 2019 Italy was the first European State to have introduced the obligation for B2G, B2B and B2C electronic invoicing;
- c) The Italian Revenue Agency is increasingly interacting directly with taxpayers, effectively reducing the role of accountants.

For these three reasons, I believe that Italy is the State that, more than any other, allows us to understand in advance how technological evolution will affect accounting firms and the activities carried out by accountants in the coming years.

► Double entry was born in Italy, and this is the reason why we have a long accounting tradition

The double entry technique, as we know it today, is attributed to the Franciscan Friar Luca Bartolomeo de Pacioli. Better known as Fra Luca Pacioli, on 20 November 1494 he published in Venice the treatise "*Summa de arithmetica, geometria, proportioni et proportionalita*" – "Summary of arithmetic, geometry, proportion and proportionality". The double entry accounting method, defined then as "*Venetian style*", was illustrated in details for the first time.

Fra Luca Pacioli did not invent the double entry technique, as it was already in existence in those years especially in Venice, but he rather defined its operating rules in detail.

The most important part of Pacioli's *Summa*, a book of 615 pages full of content, was the "*Particularis de computis et scripturis*" ("Details of calculations and recording"), where in 27 pages he explained how bookkeeping worked with the "*Venetian*" double entry method.

Luca Pacioli's great merit was therefore that of studying consolidated methodologies for managing commercial transactions, defining their rules in detail, and spreading them out according to the new technology of that time, namely the Gutenberg press that had recently arrived in Venice. The double entry technique became known over the years throughout Europe as the "*Italian Method*". Such technique permits to quantify the profit or loss of any business and it was instrumental in creating the great wealth of the Florentine and Venetian families. The former, financed the Renaissance masterpieces we all know, and the latter created the splendors of the Republic of Venice.

The same rules had been the basis of economic and social progress since the industrial revolution, and they were the grounds for the development of current economies and today's forms of business organization. It is difficult to disagree with the authors (e.g. Werner Sombart¹) who, in addition to maintaining that double entry was crucial for modern capitalism, claim it was the true creator of it. Actually, double entry permits to determine the amount of both the profit a company generates, and the cost of the capital and labor necessary to get it.

► **Italy is the first European State to have introduced the obligation for B2G, B2B and B2C electronic invoicing**

The obligation for B2G electronic invoicing was introduced in Italy on 6 June 2014, whereas B2B and B2C have been compulsory since 1 January 2019. The "*Centralized Exchange Model*" is the type of system that has been adopted, which provides for the transmission of electronic invoices in XML format to the "*interchange system*". This is managed directly by the Italian Revenue Agency through the company SOGEI S.p.A. (General Company of Information Technology) totally owned by the Ministry of Economy and Finance.

The obligation for electronic invoicing has had a significant impact on the over 64,000 Italian accounting firms ², which in a short time have had to adapt their IT systems to the new methods of transmission and reception of invoices. They have also had to train their employees, review internal procedures, and give their customers instructions on how to send/receive electronic invoices with the new method. I would like to underline the fact that business and accounting firms have achieved remarkable economic benefits. Actually, we must consider that electronic invoices in XML format can be registered in the accounting system in automatic mode. Moreover, the acquisition of high quality data allows for valuable consultancy and innovative services.

► **The Italian Revenue Agency is increasingly interacting with taxpayers directly**

With the introduction of the obligation for electronic invoicing through the "*Centralized Exchange Model*" provided with a central hub that acts as a postman and stores the invoice data on the servers, the Revenue Agency is able to interact directly with taxpayers. They are provided with new services such as, for example, available pre-filled VAT registers, or the calculation of the VAT amounts they will have to pay.

This new model modifies substantially the scheme used for years that considered accountants as "intermediaries" between Taxpayers and the Revenue Agency, thus effectively opening up a new scenario on what role accountants will have in the future.

The Revenue Agency, through the massive use of technology, is evolving from an entity that carries out *ex-post control* activities of the fiscal data received, to a subject capable of playing an active role as a tax compliance facilitator.

As indicated by the OECD³, the direct interaction between taxpayers and the Italian Revenue Agency will lead to a series of advantages and benefits for both of them. In fact, the Revenue Agency will be able to obtain highly reliable information and efficiently combat tax evasion, while taxpayers will be

¹ W. Sombart, *Der Moderne Kapitalismus*, 1916

² *The aggregation process and digitalization in professional studios*, National Accountants Foundation , July 2019

³ *Tax Compliance by Design - Achieving improved SME Tax Compliance by Adopting a System Perspective* , OECD, 2014

able to achieve high standards in terms of tax compliance at low costs. They will also reduce the number of obligations, thus avoiding forwarding the same information multiple times.

AI, API, RPA, CHATBOT

Before examining what the uses of new technologies could be within accounting firms, we need to understand how they work, at least as far as those that seem to have the greatest impact are concerned, i.e. Artificial Intelligence (AI), Application Programming Interface (API), Robotic Process Automation solutions (RPA) and Chatbot.

ARTIFICIAL INTELLIGENCE (AI)

Artificial Intelligence (hereinafter AI) is now part of our daily lives. It is present when we use search engines, in social media, in virtual assistants (Alexa, Siri, Cortana, etc.), in simultaneous translation systems, in automatic text generation, in new generation partially self-driving cars, in security systems based on facial recognition, and in the healthcare sector to identify tumors in the early stages of development.

There are many definitions of AI, including:

- *“AI is the ability of a computer system to solve problems and to perform tasks that would otherwise require human intelligence”⁴*

- *“Artificial intelligence (AI) refers to systems that display intelligent behaviour by analysing their environment and taking actions – with some degree of autonomy – to achieve specific goals. AI-based systems can be purely software-based, acting in the virtual world (e.g. voice assistants, image analysis software, search engines, speech and face recognition systems) or AI can be embedded in hardware devices (e.g. advanced robots, autonomous cars, drones or Internet of Things applications). We are using AI on a daily basis, e.g. to translate languages, generate subtitles in videos or to block email spam. Many AI technologies require data to improve their performance. Once they perform well, they can help improve and automate decision making in the same domain. For example, an AI system will be trained and then used to spot cyberattacks on the basis of data from the concerned network or system.”⁵*

AI is essentially a set of algorithms that allow the computer to perform activities traditionally carried out by humans. It includes two areas of study: a) machine learning, and b) deep learning.

Machine learning consists of a process through which a computer autonomously learns to improve the tasks it carries out or learns to perform new ones. Practically, the learning process triggers off from the analysis of the processed data. Actually, the developers designing these algorithms foresee at least three sets of data:

- 1) The *training data set* used to *train* the algorithm. From their analysis, a learning activity or a prediction improvement will trigger off.
- 2) The *validation data set* used by the developers to stress test the training model and decide whether it can be updated or not with a new or improved model.

⁴ National Security Commission on Artificial Intelligence (NSCAI), Interim Report 8 (Nov. 2019)

⁵ COM 237 of 25 April 2018, *Artificial intelligence for Europe*.

3) The *testing data set* for the final stage of the analysis to evaluate the adaptation of the model to the data and its accuracy.

If the antispam software uses machine learning techniques, for example, it will not limit itself to blocking emails whose subject contains words belonging to a pre-established list (such as free, money, additional income, best price, etc.). It will also examine the text of blocked emails to analyze which other words or sentences are used, thus feeding the list of "suspicious" words and improve the antispam activity.

With **Deep learning**, the algorithm imitates the functioning of the biological neural networks of the human brain, and therefore the learning process is similar to that of humans. This is possible thanks to the presence of an *artificial neural network* made up of artificial neurons arranged on multiple levels. They operate in parallel and each one of them is a computational node connected to other neurons. Artificial neural networks develop from programming languages used in other contexts (e.g. Python or Java Script), whereas learning occurs through an interaction intervening among the layers of the neural network until the deepest layers where true learning occurs are reached (hence the term deep learning). Let us suppose, for instance, that the system has to identify from millions of photos those in which there is a 1976 Fiat 500 car. This car pictures may have been taken from different angles and may have different shades of light. After converting the images into data to feed the artificial neural network and allow the nodes to analyze them, the first layer will recognize all cars, the second layer will make out all the Fiat 500s, and the third layer will spot the 1976 Fiat 500.

However, when shall we have a software capable of behaving like a human being? In 1950, the English mathematician Alan Turing ⁶ asked himself this question. He was well known for his contribution in decrypting the messages that, during the Second World, the Germans transmitted in encrypted form by means of the *Enigma* machine. He essentially maintained that a computer behaves like a human being if it is able to communicate with a person that does not realize "he" is actually a computer. Known as the *Turing Test*, the test consists of an interviewer asking two hidden participants questions by means of a computer. One of the two participants is a machine. If, based on the answers given, the interviewer is not able to distinguish the human being from the computer, this means the latter is endowed with an intelligent behavior that cannot be made out from the human one.

Accounting firms are increasingly carrying out activities with the aid of AI tools, such as:

- The automatic registration of purchase invoices, with allocation of the cost to the correct ledger account, as well as the registration of the correct percentage of VAT deduction.
- The automatic recording of bank transactions.
- The accounting reconciliation activity between different IT systems.
- The reclassification of financial statements starting from simple excel files.
- The descriptive, predictive and prescriptive analyses ⁷of financial movements.
- The chatbots to answer recurring questions received from the firm's clients.

⁶ *Computing Machinery and Intelligence* , Mind, Oxford, University Press, October 1950

⁷ Whereas descriptive analyses take into account historical data and allow us to understand what has happened, predictive analyses are able to develop future predictions. Finally, prescriptive analyses "prescribe" the actions to be performed to achieve specific goals, or they tell us the conduct to be adopted to overcome any obstacles that may have emerged during the analyses carried out.

The Italian Revenue Agency themselves use AI-based techniques to monitor taxpayers' activities and counteract any possible evasive or elusive behaviors of theirs. In particular, they employ *machine learning*, *network science* and *data visualization* techniques. This is to make the most of the vast wealth of data they have available for each individual year consisting of 42 million tax returns, 750 million pieces of information communicated by third parties, 400 million active financial reports, 197 million F24 payments, approximately 2 billion electronic invoices, and over 150 million registered properties ⁸.

THE APPLICATION PROGRAMMING INTERFACE (API)

Application Programming Interfaces (henceforth APIs) are a set of predefined rules that allow two applications to communicate and exchange data. Actually, they allow organizations to convey the data and functionalities of their applications to third parties, such as suppliers or customers.

Through applications installed on a smartphone, for example, **the API webs** allow access to a web server to benefit from specific services. This is the case, for example, of an airline company application installed on a smartphone giving access to information about the availability and cost of a particular flight. The airline's web server will receive a specific request; the company will package the response data, then they will send them forward to the application so that the user can almost consult the requested information in real time.

Companies using APIs have several advantages:

- A higher integration between the IT information systems with external partners such as suppliers, customers and banks, thus giving rise to automated inner processes.
- New business opportunities, as APIs give access to a company's or an accounting firm's services that will allow interception of potential customers.
- The data valorization and upgrade since APIs permit to create an ecosystem of developers. Whereas they may initially be free, companies can subsequently charge for them.
- Greater security: A user's application giving access to a service does not match with the IT infrastructure of the service provider, and the API calls require authentication credentials and strict security policies.

In the financial sector, for example, with the publication of the second European Directive on payment services, known as PSD2⁹, and the Delegated Regulation 2018/389 of the European Commission of 27 November 2017, the so-called *Open APIs* were introduced. They opened up the possibility to have access to the data of financial intermediaries allowing the exchange of information between different operators. In this way, what is known as **Open Banking** was born, i.e. an open and digital ecosystem giving rise, even with no pre-established agreements, to the exchange of data and financial information between various financial and non-financial operators. In the latter case, the service is performed by the so-called *third party providers* who can give information, for instance, on bank accounts held by a customer in one or more banks or, at a client's request, arrange for an order of payment to be carried out on a bank account held by him/her¹⁰. Through the services supplied by *third*

⁸ U. Zanini, *Intelligence and artificial intelligence activities to combat tax evasion*, Professional Week n.33, SEAC Spa, September 2021

⁹ Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC

¹⁰It is useful to note that before the entry into force of PSD2 several operators in Europe provided information on users' online accounts through the *scraping* technique. "Scraping", currently prohibited by PSD2, consists of extracting data from web pages using techniques that "scrape" the information contained therein.

party providers, an accounting firm can obtain their customers' bank movements and automate accounting records, or feed a treasury management system.

The Italian Revenue Agency themselves, with the publication of the provision n°. 118366 of 4 April 2023, has made available to taxpayers useful APIs apt to verify the existence and validity of a *tax code* and its correspondence with the relevant personal information available at the Tax Registry Office. Taxpayers can also check a *VAT number* and get information relating to its activity status, the entity it refers to or, in the absence of this, the surname and name of the natural person it belongs to.

CHATBOT

We can define a chatbot ¹¹as a software program designed to simulate a verbal conversation with a human user (Natural Language Processing), or via chat by means of special platforms or applications on smartphones. Chatbot imitate a human interaction carried out through a voice conversation or a message exchange. In addition to their use as virtual assistants in a marketplace or in a bank portal, they can be used in many other contexts.

The first known chatbot dates back to 1966, it was called *Eliza* ¹²and had been envisaged to act as a psychotherapist that asked the user questions and formulated sentences in the interrogative form. It employed a scheme based on response patterns. The conversational ability was not good, and it would confuse users who, at the time, were not used to interacting with computers.

In the years that followed, several chatbots were devised. Today virtual assistants are very widespread: Apple Siri, Microsoft Cortana, Amazon Alexa, Google Assistant, and IBM Watson.

Chatbots can be classified according to different parameters¹³:

- The knowledge domain, i.e. chatbots that can communicate on any topic, whereas others only on specific matters (for example taxes);
- The services provided. There are chatbots capable to adapt to their user's feelings and preferences, others will simply answer questions, and some others can communicate with other chatbots (for example Alexa with Cortana);
- Their targets, i.e. chatbots designed to provide pre-established information or that is fed by defined sources, others that have been programmed to make dialogues, and chatbots that are meant to carry out specific activities such as the purchase of plane tickets;
- The type of platform. There are open-source chatbots whose developers can access the source code to improve the platform, whereas with proprietary chatbots this is not possible;
- The user's model: on-premises or cloud computing;
- The interaction channel: website, mobile application, contact center, social media.

In recent years, thanks to AI enhanced solutions, chatbots have made great strides switching from a "tennis game" type of model with a question, then an answer, then a new question, and so on, to a model where the answers are extremely articulated and cared for. This is the case, for example, of the ChatGPT-3 (Generative Pre-trained Transformer) released in November 2022 by *OpenAI*. This can be used to organize, summarize or create new texts, as well as to answer questions. Founded in San Francisco in 2015, *OpenAI* is a non-profit organization that has recently received significant funding from private companies, though according to the CEO *Sam Altman* not a single member of them is

¹¹Chatterbot is a compound word derived from "chat" and "bot", the latter being a diminutive of robot, a term that comes from the Czech word *robot*, whose meaning is "forced labor". The Czech writer Karel Capek who, following the suggestion of his brother Josef, used it in the play Rossum's universal Robots used it for the first time in 1920.

¹²Weizenbaum, Joseph: *ELIZA-a computer program for the study of natural language communication between man and machine*. Comm. ACM **9**, 36-45 (1966).

¹³Eleni Adamopoulou, *An Overview of Chatbot Technology*, May 2020

included in the Board of Directors. In March this year, *OpenAI* released ChatGPT-4, which is capable of creating much more accurate and creative outputs. For this reason, it was also decided to make available to its developers a specific API. In the USA, several start-ups, with the help of ChatGPT-4 or specific "tax chatbots" solely developed for the fiscal and accounting sector, provide services to support accountants' activities. These specific chatbots can be asked to perform activities that would otherwise require hours and hours of work (e.g. production of reports, data analysis to support consultancy, etc.). Communication with customers, who are increasingly oriented towards the interaction with instant messaging tools rather than engaging in telephone calls to be made during office hours, is also much more efficient.

By way of example, below here is a reply to a question elaborated by ChatGPT4 and, as you can see, it is anything but superficial.

Question: *How can I use ChatGPT in an accounting firm?*

Answer:



ChatGPT

Using ChatGPT in an accounting firm can bring various benefits and efficiencies to your operations. Here are some ways you can integrate it into your workflow:

1. **Automated Customer Service:** Implement ChatGPT as a first-line response tool for client inquiries. It can handle basic queries about services, fees, and appointment scheduling, freeing up time for your staff to focus on more complex issues.
2. **Document Drafting and Review:** ChatGPT can assist in drafting or reviewing standard accounting documents such as engagement letters, reports, and memos. It can also help check for compliance with relevant accounting standards and regulations.
3. **Data Analysis and Interpretation:** Although not a substitute for professional judgment, ChatGPT can help analyze large sets of financial data, providing initial insights or identifying patterns that might require further investigation.
4. **Training and Onboarding:** Use ChatGPT for training new employees or interns. It can provide explanations on various accounting concepts, software usage, and firm-specific processes.
5. **Research Assistant:** ChatGPT can quickly search for and summarize recent changes in accounting standards, tax laws, or industry trends, helping your firm stay up-to-date with minimal effort.
6. **Process Automation and Scripting:** For firms with IT resources, ChatGPT can aid in developing scripts or bots to automate repetitive tasks such as data entry, report generation, or basic analysis.
7. **Language Translation:** If your firm deals with international clients, ChatGPT can assist in translating communications and documents, though it should be supplemented with human review for accuracy in professional contexts.
8. **Meeting Summaries and Minutes:** ChatGPT can be used to draft meeting summaries or minutes, based on notes or recordings, ensuring important points and action items are captured accurately.
9. **Email and Communication Management:** It can help draft emails or manage routine correspondence, allowing for more efficient communication within the team and with clients.
10. **Support for Advisory Services:** For more advanced applications, ChatGPT can assist in providing initial advisory insights, such as financial planning suggestions or business performance analysis, which can then be further refined by experts.

Remember, while ChatGPT is a powerful tool, it's important to have a human professional review its outputs for accuracy, especially in a field as sensitive and regulated as accounting.

ROBOTIC PROCESS AUTOMATION SOLUTIONS (RPA)

Robotic Process Automation solutions (hereinafter RPA) are software capable of mimicking the actions carried out by humans when interacting with IT systems, thus allowing repetitive activities to be automated.

RPA solutions can perform different activities such as opening emails and attachments, capturing data from web pages, moving files and folders from one server to another, logging in the applications used in a company, interacting with one or multiple applications, reading and writing on a database, filling out forms, carrying out calculations and squaring data, etc.

On one hand, *attended* RPAs intervene following a request from the operator and are often used in *front-end* activities such as call centers, help desks, or in onboarding processes; on the other hand with *unattended* RPAs an activity is performed autonomously in batch mode at a pre-established time, or upon the occurrence of a pre-established event. Unattended RPAs are often employed in back office activities such as producing reports, or carrying out massive checks.

Not all processes can be automated, or are capable of generating significant benefits if automated, with an RPA solution. The processes that are usually most suitable for automation with the help of one RPA or more are:

- Processes having a low level of automation;
- Processes that require a low cognitive level to be performed;
- Processes having a high frequency of activities or instances performed;
- Standardized processes whereby the activities are known and certain;
- Stable processes with low probability of being modified;
- Processes with a high probability of generating errors by a human operator;
- Processes using a large number of software without any integration between them ("silo" situation).

As part of an accounting practice, an RPA solution can be used to automate many tasks including:

- The verification of the records belonging to an accounting system with documents part of the Revenue Agency portal reserved area;
- The verification of the records belonging to an accounting system with the *pre-filled VAT returns* made available by the Revenue Agency;
- The preparation and sending of payment models to customers;
- The sorting out of the emails received;
- The forwarding of files to be kept in the digital preservation system.

THE USE OF AI, API, RPA AND CHATBOT IN ACCOUNTING FIRMS

After defining the most representative activities that can be replaced by machines, in order to identify which ones are suitable for such substitution within an accounting firm I have singled out those that may, or may not, be replaced in the next 3 years. Moreover, I have explained in detail what technology should be adopted for such a replacement. In the table underneath there is a summary of what has emerged from the aforementioned analysis.

Please note that a variable that is not easy to estimate is nonetheless fundamental to establish the time needed to operate the replacement of man by a machine, i.e. the availability of the necessary

technology at an affordable cost. This will depend on an adequate competition between the big contenders that in the ICT sector was seldom the case in the past. Just think about Microsoft for the operating systems, or Google as a search engine.

There is no doubt, however, that bookkeeping will be totally automated within a few years, with the consequence that this service will be provided by large firms and organizations capable of making significant technological investments. The great majority of Italian accounting firms, though, will hardly be able to go on generating interesting profits with their bookkeeping since 71% of them do not exceed five employees¹⁴ including accountants and practitioners.

For those activities requiring a significant cognitive contribution such as tax, corporate and contractual consultancy activities, it is a completely different situation. In these activities, the human component will remain irreplaceable for many years, even if increasingly supported by AI tools. Therefore, if in the next three years it is conceivable to have AI tools for analyzing legislation and that are capable of preparing draft opinions, it becomes difficult to go further and consider a longer period since, as already mentioned, there are some variables that are difficult to estimate.

No.	Activities performed by the accounting firm	Activities that can be replaced (3 years)			Enabling technology			
		Yes	No	Partly	AI	API	CHATBOT	RPA
	Bookkeeping							
1	Recording of sale and purchase invoices	✓			✓			✓
2	Recording of bank and cash operations	✓			✓	✓		✓
3	Customer request for missing documents	✓					✓	
4	Exchange system check	✓						✓
5	Tax code and VAT number verification with the Revenue Agency	✓				✓		
6	Preparation of periodic customer financial statements	✓			✓			
7	Forwarding to customers of the periodic financial statements with notes	✓			✓		✓	
8	Customers' reply to recurring questions regarding VAT	✓			✓		✓	
9	Production and forwarding of payment forms to customers	✓					✓	
10	File transmission to the digital preservation system	✓						✓
	Preparation of company financial statements and tax returns							
11	Preparation of financial statements and additional note			✓	✓			
12	Preparation of the directors' report			✓	✓		✓	
13	Preparation of the auditors' report			✓	✓		✓	
14	Preparation of meeting minutes			✓	✓		✓	
15	Preparation of tax return			✓	✓			
16	Electronic submission of tax returns	✓						✓
17	Preparation of VAT declaration	✓			✓			
18	Electronic submission of VAT declarations	✓						✓
19	Collecting signatures on declarations	✓					✓	✓
20	File transmission to the digital preservation system	✓						✓

¹⁴ *The aggregation process and digitalization in professional firms*, National Accountants Foundation, July 2019

	Preparation of tax returns for natural persons							
21	Customer request for documents to be prepared	✓					✓	
22	Management of meetings for document delivery	✓					✓	
23	Electronic collection of documents	✓					✓	
24	Customer request for missing documents	✓					✓	
25	Customers' replies to deduction questions	✓					✓	
26	Preparation of the tax return			✓	✓			
27	Production and forwarding of payment form to customers	✓					✓	
28	Collecting signatures on tax returns	✓					✓	✓
29	Electronic forwarding of income forms	✓						✓
30	File transmission to the digital preservation system	✓						✓
	Consultancy and assistance activities							
31	Tax consultancy for individuals			✓	✓		✓	
32	Tax consultancy for companies			✓	✓		✓	
33	Corporate consultancy			✓	✓			
34	Contractual consultancy			✓	✓			
35	Consultancy for insolvency proceedings			✓	✓			
36	Business consultancy and management control			✓	✓		✓	
37	Financial consultancy and relationships with banks			✓	✓	✓	✓	
38	Tax litigation			✓	✓			
39	Extraordinary operations			✓	✓			
40	Expertise, evaluations and opinions			✓	✓		✓	
	Auditor activity							
41	Acquisition of financial statements and accounting records	✓				✓	✓	✓
42	Analysis of financial statements and indexes	✓			✓			
43	Sample verification activities of documents	✓			✓			✓
44	Drafting of work papers	✓			✓		✓	
45	Drafting of checklist and final report			✓	✓		✓	
	Communication and marketing activities							
46	Preparation and sending of newsletters to customers	✓					✓	✓
47	Reply to potential customers about recurrent questions	✓					✓	
48	API services provided to potential customers	✓				✓		
49	Monitoring social media news	✓			✓		✓	
50	Writing and publishing posts on social media	✓			✓		✓	

CONCLUSIONS

In the next few years, the digital transformation of accounting firms will certainly not slow down, and the technologies used will have to be increasingly integrated with each other avoiding the creation of "*silo*" situations. On one hand, repetitive and low-cognitive activities will be automated, whereas others, such as the production of reports or replies to recurrent customer questions, could be partly left to chatbots. On the other hand, algorithms will not replace the activities that require significant cognitive content such as consultancy. They will instead be of some support in making the service provided more efficient. The availability of technologies at acceptable costs will push accounting firms to get together and to activate forms of interdisciplinary collaboration for the provision of new services at competitive prices, thus continuing to remain on the market.

The technologies I have examined in this contribution will be crucial to improve the profession of accountants. They will so enjoy a better economic status and quality of life. Actually, we will save some precious time to devote to studying for a better consultancy quality and, at the same time, we shall have some more time to spare for our families and hobbies.

However, there are still many unanswered questions in the AI field: How are we going to create new security standards? Can algorithms "self-replicate"? Should the data used to train algorithms be made transparent? (e.g., it is not known how ChatGPT was trained).