# Introduction

The publication "Digital Disruption and Corporate Digital Responsibility" is an original monothematic work of scientific-exploratory character where I critically analyse, evaluate, and synthesize the knowledge related to new disruptive technologies, Artificial Intelligence (AI) ethics and disclosure, and the possibility of corporate continuous reporting. In addition, the results of my own scientific work related to Automated Decision-Making (ADM) disclosure practices; AI disclosure standards; as well as a continuous reporting model are presented. It is addressed to the scientific community dealing with new technologies in accounting and reporting.

In the last decade, technological disruption in businesses has been driven by two main forces, Artificial Intelligence (AI) and blockchain (BC). This work focuses on analysis and implications of both efficient data collection and processing via AI and its underpinning technologies, and its secure storage via blockchain.

According to the Gartner survey (2019), 37% of organisations have implemented AI to some extent and the number of businesses using AI globally, has tripled from 2018 to 2019 (Gartner, 2019). The main reason for this uptake is that most of the AI technologies and other developments that create potential for AI systems, such as robotics or Internet of Things (IoT), have matured enough to be ready for wide-scale adoption (Benaich and Hogarth, 2020).

Over the last few years, EU investments into AI have increased substantially and the EU objective is to increase these investments, up to 20 billion euros per year over the next ten years (Benaich and Hogarth, 2020).

Regarding blockchain, 347 million euros of EU funding have already been designated to blockchain research and innovation projects in the following areas: security; public services; Internet of Things; sustainability (production, traceability, circular textiles, energy and transport); advanced

manufacturing; 5G; AI and Big Data; food security; innovation support; media and social media (European Commission, 2022).

Nevertheless, Europe's ambition to be a global leader in adopting the latest technologies is not limited to profitability and efficiency. It is also important to highlight the benefits and promote the development of secure, sustainable, inclusive and trustworthy AI, which would respect human rights (European Commission, 2021b).

As significant investments in AI in businesses are expected over the next decade, there is a need for transparency, ethics, and responsibility in this area as the costs of non-action could be high. Therefore, in this work, one of the questions I aim to answer is how to guarantee the trustworthiness of AI in business processes.

Whether, and to what extent, a company integrates new technologies in its business processes is difficult to assess without access to internal corporate information. Eventually, companies might disclose this information voluntarily on their website, annual report or even in the press, as it might appeal to investors and other stakeholders. Nevertheless, whether to trust that the company acts in compliance with AI ethical principles is left to subjective judgement. Therefore, developing AI ethical standards is just the first step. Although a proposal for AI regulation is the next important step forward, it still does not cover the need for transparency in this matter, which might have a significant effect on stakeholder decision-making. Thus, to fill this gap, this work also aims to shed more light on current corporate AI disclosure practices and contribute to standardization in this emerging area.

Last but not least, the world has changed and reporting must too. Therefore, in addition, an idea of a reporting model that would meet the needs of the 21st century and would take advantage of the latest technological development is outlined.

The present work consists of three main parts: Digital Disruption; Corporate Digital Responsibility; and Continuous Reporting. Additionally, a

brief section is dedicated to discussion about the changing profile of the accounting and auditing profession.

In the first chapter, an overview of AI and its related technologies such as Big Data, IoT, and Machine Learning (ML) is provided with a closer look at their definition, main functionalities, implications for accounting, and challenges. In terms of blockchain, a comprehensive technology description, brief overview of current projects, as well as the implications and limitations for accounting and auditing are discussed.

The second chapter deals with the ethical implications of AI usage. Therefore, the concept of Corporate Digital Responsibility is discussed and results of my research on AI disclosure and standardisation are presented.

The third chapter discusses a powerful combination of AI, blockchain and other relevant technologies such as XBRL and a framework for continuous reporting is presented.

The fourth chapter outlines the changing profile of the accounting and auditing professions.

The methods applied in this work are a comprehensive literature and technology overview; automated content analysis of corporate reports; focus groups; and questionnaires regarding the most important aspects for AI disclosure.

Thus the scope of this publication can be summarised as follows:

1st part: Digital Disruption:

- discusses current trends in new disruptive technologies (development, increase of usage by businesses, investments),
- provides technology description, definitions, implications, and limitations or challenges of AI; Big Data; IoT; ML; and blockchain.

2nd part: Corporate Digital Responsibility:

- provides an overview of AI ethical standards and initiatives,
- provides an overview of EU initiatives and regulation,

- introduces and discusses an emerging concept of Corporate Digital Responsibility (CDR),
- provides an overview of previous research,
- introduces my contribution to the field (related to ADM disclosure and AI disclosure framework),
- explains the methods applied in my previous research in this area,
- discusses the need for an AI disclosure framework,
- outlines future research and limitations.

3rd part: Continuous Reporting:

- discusses the importance and possibility of continuous reporting,
- outlines principles of continuous reporting,
- introduces the semi-automated continuous reporting model.

4th part: Changing Profile of the Account and Auditing Profession:

- discusses the diversification of the accountant role,
- discusses the emergence of new sectors due to technological disruption,
- outlines changes in the accounting and auditing curriculum.

# 1 Digital Disruption

The recent technological disruption or fourth industrial revolution (Schwab, 2016) is driven by two main forces, Artificial Intelligence and blockchain.

## 1.1 Background

AI refers to a program or a set of programs or algorithms that are able to automate processes but also reproduce some features of human behaviour. AI incorporation into business processes has led to cost savings, increased turnover, and higher quality of products and services.

Blockchain is a distributed digital registry, where information is recorded and shared through a peer-to-peer network. Thus, one of its most important features is decentralisation, which means that ledgers are stored on different nodes instead of a single location, and each authorised participant has an identical copy. Therefore, any changes to the ledger are reflected in all copies almost immediately, which makes the recorded data immutable and the blockchain a distributed and secure database.

As significant investments are expected to flow to both AI and blockchain projects in the following years, in this chapter we are going to look closer at the functionality of the technology, implications for accounting, and challenges.

## 1.2 Big Data, Internet of Things, Artificial Intelligence and Machine Learning

### *1.2.1 Big Data*

*Definition, benefits, and usage*

As Franks (2012) reported, according to the McKinsey Global Institute (2011), Big Data are datasets, the size of which is beyond the ability of typical database software tools to collect, store, manage and analyse. Other intrinsic features of Big Data are as follows: data is automatically obtained/generated; is not formatted for easy usage; and is of little use unless it is structured (Franks, 2012; Moffitt and Vasarhelyi, 2013). Increasing processing power and storage capacities currently enable Big Data analytics to be used by medium and small companies as well. Companies seeking a competitive advantage have increasingly extended the scope of their information systems, replacing traditional data processing by automated data capture and procession. Previous research shows that Big Data can indeed increase profitability and that businesses that had embraced Big Data for decision-making process had 5-6% higher profitability (McAfee and Brynjolfsson, 2012). According to Moffitt and Vasarhelyi (2013) Big Data can be used in different sectors, i.e. finance and insurance, to analyse risk and detect fraud; the utility sector, to analyse usage and detect anomalies; or marketing, to analyse customer behaviour.

*Data processing*

Big Data can exist in different formats: structured; semi-structured (e.g., XML based); unstructured (e.g., text, phone calls, videos); and multi-structured (different types of data through different structural levels). Nevertheless, unstructured data are the most common and therefore represent the biggest challenge for its further processing and analysis (Moffitt and Vasarhelyi, 2013). Over the years, different techniques to standardize unstructured data have been developed, e.g. mathematical and machine learning techniques (Aizawa, 2003); latent semantic analysis