ALGORITHMS, BLOCKCHAIN & CRYPTOCURRENCY

THE FUTURE OF WORK

The future of work is a vital contemporary area of debate both in business and management research, but also in wider social, political and economic discourse. Global relevant issues, including the ageing workforce, rise of the gig economy, workplace automation and changing forms of business ownership are all regularly the subject of discussion in both academic research and the mainstream media, with wider professional and public policy implications.

The Future of Work series features books examining key issues or challenges in the modern workplace, synthesising prior developments in critical thinking, alongside current practical challenges in order to interrogate possible future developments in the world of work.

Offering future research agendas and suggesting practical outcomes for today's and tomorrow's businesses and workforce, the books in this series present powerful, challenging and polemical analysis of a diverse range of subjects in their potential to address future challenges and possible new trajectories.

The series highlights what changes still need to be made to core areas of business practice and theory in order for them to be forward facing, more representative, and able to fulfil the industrial challenges of the future.

Other Titles in the Series

Careers: Thinking, Strategising and Prototyping
Ann M. Brewer

Forthcoming Titles

Workforce Health and Productivity
Stephen Bevan and Cary L. Cooper

Spending Without Thinking: The Future of Consumption
Richard Whittle

Personnel Selection: Finding the Future of Talent Through Science and Technology
Tomas Chamorro-Premuzic, Franziska Leutner and Reece Akhtar

Cooperatives at Work
George Cheney, Matt Noyes and Emi Do

ALGORITHMS, BLOCKCHAIN & CRYPTOCURRENCY

Implications for the Future of the Workplace

GAVIN BROWN
Manchester Metropolitan University, UK

and

RICHARD WHITTLE
Manchester Metropolitan University, UK

emerald PUBLISHING

United Kingdom – North America – Japan – India
Malaysia – China

Emerald Publishing Limited
Howard House, Wagon Lane, Bingley BD16 1WA, UK

First edition 2020

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN: 978-1-83867-498-4 (Print)
ISBN: 978-1-83867-495-3 (Online)
ISBN: 978-1-83867-497-7 (Epub)

ISOQAR certified Management System, awarded to Emerald for adherence to Environmental standard ISO 14001:2004.

Certificate Number 1985
ISO 14001

INVESTOR IN PEOPLE

GB – To Fe, Laurie, Elliott, Jules and Bryony
RW – To Jen and Nina

This page intentionally left blank

CONTENTS

This page intentionally left blank

LIST OF TABLES AND FIGURES

This page intentionally left blank

INTRODUCTION

Welcome to this book In *Algorithms, Blockchain & Cryptocurrency: Implications for the Future of the Workplace*, we are taking a long position on the eventual future effects of the combination of three (and the many more accompanying) technologies, which in our view will combine to produce a world of work entirely alien to what we currently recognise. In this world, we imagine considerable, if not total, platform-based self-employment facilitated by blockchain-based smart contracts and remunerated by global cryptocurrencies. We would hope that this does not become a simple race to the bottom, as history would prophesise, but in fact through a partnership with the state and unions, becomes a future where workers' rights and conditions are improved and inequality decreases. A big ask considering historical precedent, but one that we believe is possible. However, ultimately excess profitability which arises from a new style of working, must be (mostly) reallocated to the worker, and this is where the state must come in.

In this book, we will provide a very general introduction to the key concepts including a working knowledge and understanding of the algorithmising process, the blockchain and cryptocurrencies. It must be remembered that the march of technological process continues to far outstrip our ability to pin down long-term definitions, so as a note of warning to

the reader, please remember that as the concepts of algorithmising, blockchain and in particular cryptocurrency evolve in their application to the world of work, so our understanding of their effects is must. Indeed in the writing of this book, the understanding of the effect of cryptocurrency on the world of work and the worker has far outpaced the ability of regulators and interest groups to keep up.

When we first considered this book and developing our understanding of the effect of cryptocurrency, we were in effect dealing with what we know understand as first and second generation cryptocurrency. Cryptos which in effect attempted to become monies in their own right, but were fundamentally unable to fulfil the required monetary functions due to their price volatility, and then cryptocurrency which tokenised and quantified activity and behaviours, but which were not necessarily intended for use outside of bespoke and niche (though often grand in scope and imagination) areas. As the book progressed so did cryptocurrencies, the notion of a corporate cryptocurrency incorporating a stable price design came to the fore, this in particular begins to shake the very foundations of our current world of work, and much of the future of work in this book is facilitated by the idea of a stable global cryptocurrency. However, all things continue to change, and the latest developments at the time of writing suggest that this idea has stalled under intense regulatory scrutiny, with the future of money in this space, being a devolution in price stability but an increase in decentralisation with a move back towards first-generation cryptocurrency, or an increase in price stability with a decrease in decentralisation with a movement towards central bank digital currency. Ultimately though, we consider that whatever form the future of cryptocurrency takes, an eventual outcome will be a price stable widely accepted coins, and those coins will have a striking effect on the world of work.

In order to help understand this new world from the perspective of the worker, we overweight our analysis based on cryptocurrency, we consider that whilst they may eventually have a greater if not more subtle effect, the 'back-office' functions of algorithms and blockchain, whilst they provide the structure and facilitation of a new world of work, they do not provide its face. The worker in this new world of work will interact with the platform and receive remuneration in a new currency (or currencies). In this future, the worker may well feel far more connected to their online world than the state. In this future, algorithms decide what work is needed, blockchain provides the security to the organisation and the worker and crypto facilitates payment.

Again, we must note the evolution of technology during the progress of this work, algorithmising continues to outpace expectation, and predictions from our childhoods around robotic doctors, automated assistants and artificial decision making, may be merely a few years away. The assistant on your smartphone or in your email which is helping you with dinner plans, travel arrangements or even to decide your next purchase was unimaginable even a few years ago. If you can think back to voice dialling on the first phone you had, and consider now, where you could be interacting with a bot online, conversing with your phone or household smart speaker or listening to artificial intelligence (AI) composed music. The progression is amazing and it is only getting faster. Likewise, the key concept of blockchain for this book, that of an unimaginable number of continually actioned, instantaneously generated, legally watertight contracts, is only just being explored and we would guess that there are far more applications to come. Of course, this may as yet come to naught, the blockchain world is still in its infancy and a small number of high-profile security breaches, privacy issues or misuses could, like corporate cryptocurrencies, derail its

trajectory. However, we note that part of the secret of innovation is simply knowing what once was impossible is now possible and like cryptocurrency, the end effect is in sight, even if the route to it is more murky. This end of a global, instant and cheap, microcontract world can now exist to facilitate a world of work very different to what we are presently used to.

The effect of technology on all our working lives continues to be underestimated, indeed the reader of this book may well be based at a research institution, think tank or be a working professional with a sought after skill set, which one may think immune to the ongoing march of automation. However, please consider this. One of the above paragraphs was mostly written by algorithm, using a simple email autocomplete function, again the function which makes our lives more convenient, helping us answer texts and emails, guessing our online searches or products we'd like to buy, makes a very good attempt at completing a block of prose. Of course, this was not perfect and required human oversight and editing, but the action of writing, of transferring our human thoughts to word was sped up, refined and supported by technology. In terms of an academic article, realistically how far away are we from an automated research assistant which will (at least) complete the literature review and data analysis. At least for a while, the human element is needed to direct and conceptualise the research, however a future where every possible combination of variable and test is run on a dataset, the most effective tests and significant relationships are selected and an automated academic article framework is produced to accompany them. Even a simple clumsy autocomplete algorithm can in time and with training develop into a substitute for highly skilled and complex labour.

Again history let's see how even established organisations and professions can fall to the march of technological progress. Probably, the most relevant examples are the Industrial

Revolution and the development of the internet, both of which we discuss at length in this book. The Industrial Revolution wholly transformed our ideas of work, even of time and society, the development of the internet exacerbated those changes. In this book, we propose changes similar in scope to these events, our future of work is one where ideas of time, output, money and even a job are again wholly redefined. Of particular relevance here is the parallel with finance, we explore a framework of technological progression in financial services in order to further understand the effect of these technologies on the world of work. We propose that the technological evolution of finance, that of Traditional Financial Institutions → FinTech → TechFin, can provide considerable insight for the developments in and destination of the world of work, and is a good way to conceptualise the current seismic changes in the world of work.

If we imagine that traditional financial services represent the usual post-Industrial Revolution view of work, then FinTech represents the technological development of work within the traditional infrastructure and TechFin represents the evolution of this development outside the traditional infrastructure. The phenomenon is still the same, be it financial services or work, but crucially the structure and organisation which delivers this output is practically unrecognisable to what has gone before. If we take the analogy of a mortgage, in traditional finance you went to the bank to request it and after a labour intensive and generally inefficient evaluation process, you got a decision. In the FinTech era, you still went to the bank, but perhaps online or via a phone appointment, and various back-office systems sped up the process, to the extent where in the previous traditional route, the decision which may have taken a month, now takes a few days. In the TechFin era, you may ask a big tech firm for a mortgage, which will provide you with an instant decision based on

your online activity. Likewise, in our world of work, in a traditional sense, you worked in an organisation or institution, in the FinTech sense you worked in the same infrastructure with productivity increased with technology, and in the TechFin sense you work in a wholly different infrastructure. You may log into your platform and conduct remote process jobs, your work may be a series of interviews to help marketing algorithms learn the essence of a product or online interactions to evaluate AI creative content. The output of work is the same, the route to it is wholly different.

If the route to work is wholly different, then we must alter our definition of worker. If we currently view the idea of a worker as an individual who within our infrastructure trades time for money, then in many ways we perhaps need to revert to a pre-Industrial Revolution idea of work, which is output based and not time dependent. The weaver who in a particular batch of wool found it easy to work with and their output took half the time as normal, received the same remuneration as a week where the batch was difficult to work and the output took and extra day. Platform working is in some ways more similar to that, where a freelance web designer charges the same for a project it takes them half the time to complete compared to their slower rival for the work. This is closer to a pre-industrial work pattern than a post-industrial one, where a factory worker (at least for a time) received the same weekly wage, regardless of output.

A new way of working, naturally brings into consideration what necessary changes are required to our training and skill development, including discussions around how best to school a population for ideas of highly global mobile working. Indeed, consideration here must be made of avoiding a race to the bottom where skill development and surplus result in a diminishing wage and condition and specialised bespoke training, be it through private provision or elite institutions is

the only route to success. Throughout this book, we consider that the benefits of this new world of work should be accessible, available and distributed to all, and again here we see the state as necessary in this. Frequently with the discussion of the globalised market place, online work and decentralisation of currency and information, the role of the state appears expected to diminish. In our view, the state must provide a bulwark protecting the worker and reenergise and reinvigorate itself from its gradual decline. Whereas the 'FinTech like' evolution of work potentially pushed the state out of this sphere, the 'TechFin like' evolution of work must bring a stronger role for the state and unions to protect the worker. We would hope that, against the current precarious nature of platform working, mass work in this fashion would provide considerable opportunity for mass platform unionisation, facilitated by blockchain organisation.

This page intentionally left blank