

Sofia Papadopoulou

The Impact of Artificial Intelligence on Workforce Management within the Banking and Finance Industry

Master's Thesis

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Sofia Papadopoulou

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FOM Hochschule für Oekonomie & Management
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**The Impact of Artificial Intelligence on Workforce Management
within the Banking and Finance Industry**

von

Sofia Papadopoulou

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List of Abbreviations

AML	Anti-Money Laundering
APAC	Asia Pacific
App	Application
ATM	Automated Teller Machine
AUM	Assets Under Management
CEMEA	Central Europe, Middle East and Africa
CEO	Chief Executive Officer
COIN	Contract Intelligence
CV	Curriculum Vitae
DL	Deep Learning
DM	Data Mining
ECB	European Central Bank
ETF	Exchange Traded Funds
EU	European Union
FED	Federal Reserve System (Central Bank of America)
GTRF	Global Trade and Receivables Finance
HFT	High Frequency Trading
HR	Human Resources
HSBC	The Hongkong and Shanghai Banking Corporation Limited
ICICI	Indian Credit and Investment Corporation of India
ID	Identification Document
IDS	Intelligent Decision Systems
IP	Internet Protocol
JP	JP Morgan & Chase
KYC	Know Your Customer
MEA	Middle East, Africa
ML	Machine Learning
NA	North America

NLP	Natural Language Processing
OCR	Optical Character Recognition
QR	Quick Response Code
UAE	United Arab Emirates
US	United States
USA	United States of America
WFM	Workforce Management

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1 Introduction

Banks and other financial institutions have a long history of working with data. One use of this information is analytics which helps develop better insights and more profitable business models. It can also help to meet customer needs and remain competitive (compare *Middleton, J., McCahon, W., Rosenshine, K. et al.*, 2019, p. 4). During the last several decades, banks and other financial institutions have persistently revised their technology tools and then reviewed how customers interact with them. This began in the 1960s with ATMs. In the 1970s payment cards were introduced, before finally, in the 2000s banks became available 24/7 to their customers through online and mobile-based banking. Although this briefly summarizes the progression of consumer banking, the investment banking industry has also been using Artificial Intelligence (AI) tools to boost revenues, lower costs and make overall improvements to both the speed and accuracy of their services. Technology-based innovations lead to higher levels of automation and better control of risks as well as improving human decision making. AI technologies are efficient enough to recommend actions, foresee and automate key decisions or tasks. They can also offer banking proficiencies with relevant products and services (compare *Biswas, S., Carson, B., Chung, V. et al.*, 2020, no page number).

In recent years, big data has initiated a technological revolution, creating an enormous impact on the labor market and workforce. For instance, banks have introduced virtual workforces, the so-called chatbot assistants. These virtual assistants learn and adapt as more big data becomes available, in order to meet the business' model and need (compare *Jubraj, R., Graham, T., Ryan, E.*, 2018, pp. 9–10). In investment banking, banks use AI tools to scan through hundreds of pages of financial statements, confirmations, and newly published information. This can help with tasks such as analyzing stocks, when previously large teams were needed to complete these tasks. Other financial firms, such as insurance companies, have implemented AI tools that can autonomously process front-to-back insurance claims without any human intervention.

While the business model of many organizations finds itself becoming more technology based, a major issue for banks and other financial organizations is understanding the role of multi-skilled employees within their business function. In other words, employers are confronted with the question of how many full-time employees are required for them to

meet any assignment. Another challenge is determining schedules and efficiency gains when using multi-skilled employees. Subsequently, the failure to predict when and how employees can be shared across multiple streams can lead to poor decisions and poor customer service.

1.1 Problem Definition

There are many consequences of banks and other financial institutions implementing more AI technology. In his book, *Competing in the Age of AI*, Iansiti and Lakhani mention that it is critical for leaders to understand the choice of model along with “navigating the ethics of digital scale” (Iansiti, M., Lakhani, K. R., 2020, pp. 184–196). The author emphasizes that leaders must be able to build a strong organization of safety, security and sustainability.

Firms spend billions of dollars on new AI related technologies and innovations. Despite this, banks and other financial institutions face three main issues. The first challenge is an outdated operating model. The second challenge is the lack of a fitting talent strategy. Both challenges are interconnected to each other. Likewise, as a third challenge, Workforce Management (WFM), the core process that boosts performance levels and competency for an organization, has been reformed and disrupted by the introduction of AI.

Currently, artificial intelligence is used to enhance workforce management by looking closer into forecasting. Enhanced Machine Learning (ML) tools and models scan historical data for volume and work time. These tools can determine which, of all models suggested for a specific task, will lead to the strongest results. Accenture are a global services and consulting company that offers strategy, consulting digital, technology and operations services. They state that AI introduces new ways of growth “while reinforcing the role of people to drive growth in business” (compare *Accenture*, 2016, no page number). The consulting company forecasts that AI based businesses can double annual economic growth rates by 2035. This will take place “by changing the nature of work and creating a new relationship between man and machine” (compare *Accenture*, 2016, no page number).

The author has defined a knowledge gap about the current and future impact of WFM and Human Resources (HR) teams within the banking and other finance industries. There is a lack of specific research and literature available that highlights how AI may shift the WFM processes in the banking and finance sector. The majority of the literature highlights the disruption the industry will face, the nature of jobs that AI will take over as well as the increasing gap between top AI leaders and the rest (compare *Dr. Lee, K.-F.*, 2018, p. 5). Studies that provide information as to what this impact means for the WFM and HR teams were notably absent.

With that in mind, the aim of this study will be to collect related data via interviews. The interview questions will be posed to executive leaders and AI specialists. Their answers will inform a better understanding on the challenges and opportunities AI has introduced to WFM and HR teams in the banking and finance industry.

1.2 Purpose of this Study

The purpose and objective of this thesis is to examine the degree of impact WFM is facing due to implementation of AI-based tools within the banking and finance industry. To do this the author will select and classify under the chapter ‘Literature Review’ how, in which departments, and to what degree, banks and other financial institutions have implemented AI tools within their organization. Secondly, the author will conduct interviews with executive leaders as well as with AI researchers and experts, and analyze the data received.

1.3 Research Questions

For this study, the author focuses on AI’s impact on WFM within the banking and finance industry. The purpose of the following questions is to refine the present knowledge gap within the banking and finance industry regarding the WFM impact of AI. The author will emphasize via a literature review and interviews exactly how AI-based technology tools have been implemented in the banking and finance industry. To do so, three research questions have been chosen and will be further analyzed throughout this study paper.

The first question focuses on WFM and HR teams. It predicts how many people and what kind of qualifications will be deployed. As well as where and when they will be deployed.

Research Question 1

What is the impact that AI has on WFM and HR teams?

The second question aims to give answers about the skills required for WFM teams when looking for new candidates. It aims to form the basis of practical advice for recruiters.

Research Question 2

What is the current HR and WFM support regarding talent acquisition?

Question three addresses the jobs and tasks that are currently automated by AI. It also looks at what impact this may have on WFM teams.

Research Question 3

Which fields have been automated and taken over by AI?

The author's objective is to study and analyze these three questions for this study via interviews and literature research.

2 Background Information

In this chapter the author will provide information of what AI and Workforce Management is. It introduces the history of AI and goes into the details of Artificial Intelligence by explaining some of the AI branches. Finally, the author explains the main WFM processes.

2.1 What is Artificial Intelligence?

What is Artificial Intelligence? As simple this question might seem, its answer is varied. AI is a field of study that is as close as human intellectual abilities, automating several of them completely and even topping what humans can do in others (compare *Nilsson, N. J.*, 2009, p. 589). Other researchers suggest that AI is the idea of using machines to perform “a wide variety of tasks, conduct highly generalized reasoning, apply common sense, and solve problems creatively with a computer’s ability to apply rapid computation to vast stores of data” (*Arslanian, H., Fischer, F.*, 2019, p. 168).

The term AI is widely used in the media. However, it does not refer to a specific technology of field or study. Instead it covers many different approaches, such as machine learning (ML), deep learning (DL), data mining (DM) etc. (compare *Arslanian, H., Fischer, F.*, 2019, p. 168). These will be explored further in section 2.3. Throughout all industries, large and small, AI is being used to address a wide range of challenges by allowing interaction with other machines and systems of simple or demanding nature (compare *Jubraj, R., Graham, T., Ryan, E.*, 2018, p. 2).

AI has accomplished impressive achievements in the past 50 to 60 years. It derives its foundation from philosophy (views on reasoning, logical process, mind-generated conclusion), mathematics (principles of computation, logical interference, probability, decision making), psychology (behaviorism) and computer engineering (compare *Russell, S. J., Norvig, P.*, 1995, pp. 8–16).