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Artificial intelligence in the curricula of postgraduate studies in financial management: Survey results

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ABSTRACT

Objective: The aim of this article is to determine the awareness, preferences, significance, and effectiveness of application of artificial intelligence (AI) among participants of postgraduate studies in the field of financial management.

Research Design & Methods: The pilot study was conducted with the use of a survey, and the findings were analysed using the Importance-Performance Analysis (IPA) method. The survey group was composed of individuals working on final projects developed within the framework of postgraduate studies in finance management, carried out in collaboration with e.g. ACCA, CIMA, CFA.

Findings: The obtained findings have identified a demand for the incorporation of knowledge in the field of AI in the process of education in the area of finance management. The survey results will be used to modify the content of the curricula adopted for postgraduate studies in the field of finance management.

Implications & Recommendations: The only chance for experienced professionals and managers to gain knowledge about AI is to enrol in postgraduate studies. The existing postgraduate curricula are flexibly modified, which makes it possible to incorporate the knowledge about state-of-the-art IT solutions and AI on an ongoing basis. This requires, however, permanent research into the needs of the developing market.

Contribution & Value Added: The progressing digitalisation in the socio-economic sphere of our life translates into huge amounts of data being transmitted, collected, and stored, and calls for a need to implement new technologies and solutions utilising techniques and algorithms based on artificial intelligence (AI). The SARS-CoV-2 pandemic has increased the demand for modern IT solutions in the field of e.g. finance management.

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INTRODUCTION

Artificial intelligence (AI), defined as a field of science dealing with solving effectively non-algorithmic problems based on computational methods, is gaining in significance in the age of progressing digitalisation in the socio-economic sphere of our life (Sieja & Wach, 2019). The research problem addressed in the article is the need to incorporate elements of AI in the curricula of postgraduate studies in the field of finance management. Accounting education is gaining its importance in the modern business and present day global economy (Grabiński & Wójtowicz, 2019). To this end, a set of curricula adopted for ACCA (The Association of Chartered Certified Accountants), CIMA (The Chartered Institute of Management Accountants), and CFA (Chartered Financial Analyst) postgraduate programmes has been analysed and confronted with the perspective of individuals working

on final projects developed within the framework of these postgraduate programmes, being also finance management specialists by profession.

Experienced managers, having the biggest influence on the rate and the direction of development of organisations, are aware of the growing importance of AI. When they were still in education, they didn't have an opportunity to learn about AI, and now, the only chance to acquire this knowledge is to pursue additional forms of education, including postgraduate studies. It is true that the curricula of postgraduate studies are much more flexible than those adopted for traditional studies (bachelor's, engineering, master's degree-level). Many universities include postgraduate studies in their portfolios. They adapt their offering to the needs of the labour market and the current developments in the socio-economic domain of reality. This requires continued research in the domain in question.

The aim of this article is to determine the awareness, preferences, significance, and effectiveness of application of AI among participants of postgraduate studies in the field of finance management. The survey group was composed of individuals working on final projects developed within the framework of postgraduate studies in finance management, carried out in collaboration with e.g. ACCA, CIMA, CFA.

RESEARCH METHODOLOGY

The pilot study was conducted with the use of a survey, and the findings (n = 48 responses) were analysed using the Importance-Performance Analysis (IPA) method. The survey group was composed of individuals working on final projects developed within the framework postgraduate studies in finance management. The survey form consisted of 12 questions divided into four main sections encompassing the perceived awareness, effectiveness, and importance of AI in finance management and the preferences regarding the application of AI in finance management and in education in the field of finance management. The survey considered the following AI tools: genetic algorithms (Sun *et al.*, 2008), automatic programming, fuzzy logic (Klement & Slany, 1993), expert systems (DeCarlo & Rizk, 2010; Sanchez *et al.*, 2016), neural networks (Jiang *et al.*, 2018; Kardan *et al.*, 2013; Kose & Arslan, 2016; Rau, Sen & Zhu, 2019), logical reasoning (Dai *et al.*, 2019; Zhou, 2019), intelligent software agents.

IPA has been suggested as a technique used to design business strategies (Martilla & James, 1977). It is based on the measurement of the significance of features/qualities (importance) and on their 'materialisation' in the target product (performance). The values obtained are entered into a diagram called action grid (Biletska *et al.*, 2010). Depending on which quadrant of the matrix a given factor is found, its significance for management may differ (Dawes & Patterson, 1987; Graf, Hemmasi & Nielsen, 1992):

1. Focus here (high importance, low performance);
2. Keep up the good work (high importance, high performance);
3. Low priority (low importance, low performance);
4. Possible overkill (low importance, high performance).

RESULTS AND DISCUSSION

The findings of the conducted survey show a low level of awareness in the field of utilisation of artificial intelligence (40% of the respondents' answers). The best known AI tool is automatic programming (44%). According to the surveyed respondents, the three main areas where AI is used are: customer service (63%), business process automation (60%), and payment and settlement services (60%). The respondents claim that the greatest advantages resulting from the application of AI: reduction or elimination of manual labour (69%), better use of resources (60%), and reduction of operating costs (60%). As for the threats underlying the application of AI, the respondents name most often: losing jobs (58%), loss, theft, interception, and misuse of data (56%), and taking control over vulnerable systems found in remote, poorly supervised locations (54%).

Among the areas where the use of AI is desirable and most preferred, the respondents have named: business process automation (52%), payment and settlement services (44%), and reporting (38%). The AI tools whose application is most preferred appear to be: automatic programming (48%), neural networks (27%), and logical reasoning (23%). An interesting thing to notice is that as many as

33% of the surveyed respondents have no preferences regarding AI tools. It needs to be stressed that according to the majority of respondents (52%), elements of knowledge concerning AI are not covered within the framework of postgraduate studies in the field of finance management, or the respondents have no knowledge of it (44%). Here, the preferences are clear: as much as 81% of the respondents have claimed they would like to see elements of knowledge about AI covered during classes taught as part of postgraduate studies in finance management.

According to the respondents, the highest-performing areas in the field of utilisation of AI are: business process automation (58%), payment and settlement services (40%), and reporting (27%). The most important areas where AI is used have been said to be: business process automation (69%), reporting (33%), and payment and settlement services (31%). The results of the IPA analysis are shown in Figure 1.

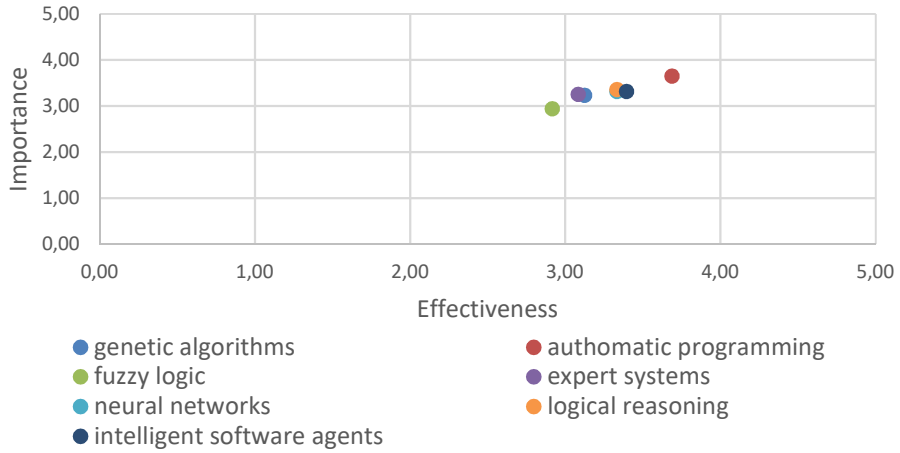

Figure 1. Results of Importance-Performance Analysis (IPA)
Source: own elaboration.

The obtained findings have identified a demand for the incorporation of knowledge in the field of AI in the process of education in the area of finance management. The awareness in the field of the use of AI is little. The classes taught as part of postgraduate studies in finance management do not offer elements of knowledge about AI tools used currently in finance management, and those working on their final projects within the framework of postgraduate studies in finance management, being the survey sample in this research project, claim to be willing to see such elements being incorporated into the curriculum.. The IPA analysis, conducted on the basis of the average assessment values given to particular AI tools, has shown that these tools belong to quadrant B, suggesting a continuation of the current course of action ("Keep up the good work") – high importance and high performance.

CONCLUSIONS

The survey results will be used to modify the content of the curricula adopted for postgraduate studies in the field of finance management, which need to include elements of knowledge about AI. The goal will be achieved by the introduction of a subject called "Artificial Intelligence in Finance Management", taught by two teachers: an expert in the field of AI and an expert in the field of finance management, and the adopted teaching method should focus on a case study analysis that would make it possible to present and discuss the tools in current use – using practical examples. Considering the dynamics of changes taking place in the domain of AI, the authors of this article call for an establishment of a bank of examples of application of AI in finance management, which will include formalised descriptions of cases where AI supports the processes applied in the area of finance. The bank in question could make use of features similar to those offered by ALEKS (Assessment and Learning in Knowledge Spaces) (Matayoshi *et al.*, 2019). It should be available to the public and updated on an ongoing basis with new solutions, and grant its users the right to use the featured solutions for teaching purposes.

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The contribution share of authors is equal and amounted to 50% for each of them.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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