Using Machine Learning Software in the Human Resource Recruiting Process for Candidates from Dubai Police Academy

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Using Machine Learning Software in the Human Resource Recruiting Process for Candidates from Dubai Police Academy

By

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A Capstone Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Science in Professional Studies: Data Analytics

Department of Graduate Programs & Research

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Abstract

Since Machine learning software explored the first recruitment software and found that utilizing technology improves their efficiency at work, speed, and makes the process easier, the use of machine learning for recruitment has become one of the major themes in human resources. In a few years, hiring top talents may lean entirely on the ability of the recruiters to automate their workflows intelligently. Over time, the function of human resource management has indeed evolved in organizations, as technology has been marveled for its greater efficiency in almost every sector. The use of Machine learning for recruiting in organizations has not only saved recruiters’ time but has also enhanced the quality of hiring, as top talents are often in high demand. Furthermore, using machine learning has improved the functionalities of human resource management and made the process of recruiting of new staff and candidates easier. This paper aims to bring to light the importance of using AI in the recruitment process for the Dubai Police Academy and to develop and test a prototype of the system for the functionalities it is meant to perform. This paper has three objectives, which include assessing the need for Machine learning in the organization’s recruitment processes, assessing the levels of adopting this technology, and, finally, investigating the number of complaints during such crucial exercises in the organization. It also uses a survey research design and triangulates both qualitative and quantitative methods for improving the validity and credibility of the study outcomes.

Keywords: Machine learning, optimized recruitment process, Decision making, Data modeling, employee predictive performance.
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Chapter I: Introduction

1.1 Background of the study

As it is saturated with continuously rising levels or amounts of information and robust, affordable scientific technologies, machine learning is expanding into many diverse sectors—thus having the potential to influence all spheres of human life. In terms of businesses, Machine learning has the potential to enhance almost all spheres of human life, leave alone business operations and functions. Rodney (2019) reports that Machine learning can be employed anywhere provided that the job that needs to be done demands analysis-backed behaviors or intelligence that are directly linked to sectors of high search telecommunication and financial services. While human resource (HR) departments generally seem to be lagging behind in adopting Machine learning in comparison to other organizational functions, such as sales and marketing or service operations, this part of the business function (HR) can greatly leverage on the value-added outcomes of Machine learning. As they focus on data, HR departments provide enormous opportunities for Machine learning software. Certainly, sets of data involving past and present potential job candidates, as well as the present organizational taskforce, present a fertile environment for Machine learning programs to produce insights that are powered by analytics across numerous HR-based processes or procedures.

The primary value of employing Machine learning to augment HR processes or procedures is that it amplifies the experience of candidates or employees in addition to human intelligence. Achieving this translates to many advantages, which includes the improvement of enterprises’ productivity and reduction of operation costs, and it is linked to greater levels of staff satisfaction. However, this does not mean that implementing it in the operations of HR
departments is not necessarily devoid of challenges. Since using Machine learning means that a vast variety of information has to be properly managed and stored, appropriate leadership and transparency is the key when considering this type of software for any given function. Moreover, concerns about the additional talents that will be needed for maintaining and operating Machine learning applications often arise, and, with the rising preference for solutions, such as Software-as-a-Service (SaaS) by HR departments, less availability of datasets in these domains may also prevent it from being widely implemented. Furthermore, on one hand, many managers in HR departments often focus on the dilemmas that arise when establishing automated scalability that Machine learning and other modern software provide and introducing human-centric management. On the other hand, the key should not always be to allow Machine learning programs to direct the actions of HR staff but rather allow the decision makers do their part by sharing the results of the software’s analysis. Indeed, finding the perfect match for these concerns is often difficult; however, Machine learning provides HR departments with enormous advantages so that they should not run across any problems in applying it. The present paper sets out to determine the value of implementing Machine learning in the HR recruiting process for candidates—focusing on the Dubai Police Academy.

1.1.1 The concept of Machine Learning

Machine learning refers to the technology that is used to perform a task that requires some level of intelligence to accomplish. Machine learning is different from other ordinary software because of its three core components: high-speed computation, a huge amount of quality data, and advanced algorithms. Core Machine learning technologies provide better accuracy and stability to everyday processes by using an algorithm that connects quality data
with fast computation services. Machine learning technologies offer significant opportunities for improving HR functions, such as self-service transactions, recruiting and talent acquisition, payroll, reporting, access policies, and procedures.

1.2 Problem statement

Generally, recruitment processes are presently carried by HR, who spends a lot of time scanning through online resources, resumes, and other related sources in hopes of hiring the best or most suitable candidates for their vacant job positions. O’Donovan (2019) asserts that the inherent limitations of human abilities often pose challenges in recruitment exercises, among which include keeping up with the necessary procedures of accessing, screening, and analyzing resumes, contacting applicants, sending feedback to both successful and unsuccessful candidates, and conducting face-to-face interviews with the various candidates. Among others, the common human limitations that tend to inhibit the effectiveness and efficiency of recruitment exercises include time constraints, biases, and preconceptions (McRobert et al., 2018). According to Baron et al. (2018), these limitations not only influence the hiring of the most appropriate talents into vacant positions of enterprises but can also lead to the loss of considerable monetary value.

While most of the existing literature examines human limitations and how they affect the ability of an organization to acquire the talents that they need during recruitment processes, alternative solutions, such as the adoption of modern technologies to augment these limitations, have brought about skepticism. However, most empirical studies report that the methods that are employed in assessing technology–based talent acquisition processes are still lacking and those that exist are still behind the present practices. Hence, there is no need to discount the skepticisms surrounding their application in recruitment initiatives (Chapman, 2003; Searle,
2006). However, the same issues or concerns have persisted for a long time, as Fisher (2013), Stone et al. (2015), and Bondarouk (2016) point out that new technologies, such as Machine learning in HR recruiting processes, are somehow doubtful as to whether they provide opportunities or challenges for recruiters. Therefore, a more in-depth study should be undertaken to assess the phenomenon and make the most appropriate conclusions based on the dilemmas that were encountered in making decisions on whether to adopt or disregard modern technological devices and applications in aiding HR recruitment processes. With these strong assertions, this paper seeks to assess the value of implementing Machine learning in HR recruiting processes for candidates—with a clear focus on the Dubai Police Academy.

For a long time, the Dubai Police Academy has been assigning candidates using traditional methods of employment. The conventional method of calling candidates for interviews in panels takes a lot of time and requires more resources to complete. This is because system uses people with different skillsets to determine the suitability of the candidates for the police academy. The institution hires all graduates from the police academy and distributes them randomly without any specific ranking in department based on the vacancies, which could affect the productivity and efficiency of each department. They will try to place each graduate in the right position that matches better with their skills in order to improve the efficiency of each department. However, with the advent of new technology, this can be changed to help save time and money that is used in the recruitment process. Using Machine learning brings many advantages and efficiencies, as it makes use of the existing data about the candidates, considers the job requirements, and selects the best candidate. This requires data analytics, and it is better with Machine learning systems because the results are almost immediate—unlike when people
physically analyze the profiles of potential candidates and make decisions. Although machines may not be able to read some aspects, such as attitudes of the candidates, for determining their suitability, they will help in making a quick judgment. However, they help in eliminating any possibilities of bias in the recruitment process because the candidates will be analyzed and selected based purely on their suitability and skills for fitting into the police academy. Machine learning can be designed to perform duties for longer durations without getting exhausted, bored, or unfocused. Thus, it will help solve the problem of bias and help save time and resources in recruiting candidates into the Dubai Police Academy. It will also help reduce the workload that is normally experienced when recruiting candidates and make the process easy and straightforward.

1.3 Objectives of the study

- To examine the need for Machine learning in improving recruitment and selection processes for HR in the Dubai Police Academy.
- To assess the levels of adoption of Machine learning in recruitment and selection processes in the Dubai Police Academy.
- To investigate the number of complaints that were received over unfair or biased distributions of police candidates to their respective stations in the Dubai Police in the past six months.

1.4 The value of the study

We are living in an era in which Machine learning capabilities are reaching new heights and have a major impact on how we operate our businesses. HR executives have faith that merging Machine learning into their administrative functions will benefit and improve the overall employee experience. This will provide more time and money, more accurate information, and a greater capacity for managing people decisively. Finding the right information
quicker, cheaper, and more securely helps build momentum in each step—beginning with the recruitment process. From there, Machine learning can be effectively woven into an employee’s onboarding program. This topic is important and will benefit the Dubai Police—especially the HR department—in choosing and distributing candidates from the Dubai Police Academy to the most suitable department for each candidate based on their specialty and experience.

Benefits:

- Machine learning systems that will help in the decision-making process, which is based on analyzing data on each candidate.
- Improving the quality of recruitment on a large scale.
- Reducing the workload associated with the recruitment and distribution of candidates.

At the end of the project, a prototype of a software that applies machine learning to resumes to auto-screen candidates and help Dubai Police better allocate each candidate to suitable departments will be produced.

1.5. Limitation of the study

Like any other investigative phenomenon, this study also encountered various limitations. The various characteristics that may have contributed to the shortcoming of the present study include limited access to information that was regarded to be confidential by the organization of this investigation which thereby determining respondent’s reactions to some critical questions that was very vital for the development of the study. Furthermore, since the application of Machine learning for recruitment is still on the rise or is currently emerging, only a few studies addressed the current subject in a general way—thus restricting the paper to cover a limited scope.
Chapter II: Literature Review

2.1 Introduction

This paper seeks to establish the value of Machine learning in augmenting the HR recruitment process. In this chapter, previous studies that were undertaken to assess a similar phenomenon will be reviewed. This section will cover HR management and the recruitment process and the concept of Machine learning and its application in the recruitment process. Furthermore, pieces of evidence about the adoption of Machine learning in the recruitment exercises in the Dubai Police Academy will also be examined.

2.2 HR management

Many ideas have been presented for defining the concept of HR management. In this study, a more elaborate definition given by Michael (2019) of HR management, which points out how groups or organizations acquire and develop a talented workforce to assist an enterprise to meet its objectives and purposes, will be considered. The various practices that are undertaken by HR departments in any given organization include staffing, managing staff, selecting, hiring, and recruiting employees. Most of these activities have a specific focus on satisfying and maintaining new staff members. Michael (2019) asserts that management and retention of the workforce are often debated as having a special importance in the manufacturing enterprises, which greatly depend on innovation in production. These production processes not only improve their performances but also give them a competitive advantage over their industry rivals. The roles that HR departments play in an enterprise has drastically changed over the past few years and are not only meant for managing the internal labor costs of firms anymore. Presently, HR is seen as a strategic asset to enterprises in which the primary assets are the workforce—the engines of progress in those entities.
2.1.1 Recruitment

Recruitment is known as the practice of evaluating and determining the most appropriate candidate for a vacant job position from a pool of applicants. Growing pieces of evidence point to the role of recruitment (Stoilkovska, 2015). HR specialists identify the most appropriate candidate from the pool of candidates established during recruitment processes, which is called selection. Effective recruitment and selection processes enable companies to acquire competent personnel. If wrong candidates are selected from the pool of applicants, an enterprise the consequences of loss of economic resources while struggling to maintain unproductive staff.

2.2. Application of Machine learning in HR recruitment processes

Acikgoz (2019) reports that traditional recruitment exercises do not have predefined models or specific methods since, in most cases, the process is often theorized and described whenever the need arises. According to Acikgoz (2019), views on the traditional recruitment processes can only be presented in two ways: from the job seekers’ perspectives and the organizations’ points of view. Currently, these practices are witnessing a paradigm shift in which most HR departments are gradually adopting Machine learning to determine and select the most appropriate candidate from a pool of applicants. Khandelwal (2018) reported that augmenting HR practices using Machine learning software or programs was one of the most remarkable trends in the year 2018 among recruitment personnel. Machine learning is often particularly employed in HR initiatives that demand the extraction of particular information or gathering specific knowledge by screening or reviewing texts. In HR departments, Machine learning can be particularly employed in onboarding programs, HR management, and, most importantly, determining the most appropriate candidate during recruitment.
Numerous candidates often submit their applications for the same job; thus, the exercise of screening through their resumes and ranking them based on their qualifications often overwhelm HR specialists who are tasked with the responsibility of recruitment. Applicant ranking systems created by Machine learning software are powered by the program’s algorithms, which are trained the scoring function on candidate’s documents presented for job application exercises by human recruiters (Faliagka et al., 2012). Machine learning -powered chatbots are often used as recruitment assistants, which not only to reduce their workloads but also increase the speed of conducting the exercise. These chatbots allow for direct engagement with candidates either through dialogue boxes or text messages. Most importantly, Machine learning -based ranking systems are designed with an interesting feature for collecting candidates’ personality traits, which are very vital in recruitment exercises. While these traits are often observed during interviews, preliminary information is gathered by Machine learning software in enterprises—augmenting their HR functions with Machine learning software or through web searches, such as linguistic analyses of candidates’ LinkedIn pages or blogs. Other than assessing the personal information of candidates, such as personality traits, emotions, and moods, Machine learning -powered video interviews are also instrumental in evaluating and interpreting applicants’ body language, voice tones, and facial expressions. HireVue (2018) asserts that such information is then compared to the most talented HR in the organization to help suggest the most appropriate applicant for the vacant position.
2.3 Contextualizing the adoption of Machine learning in the Dubai Police

According to Alborno and Gaad (2012), Machine learning is widely used in Dubai for recruiting young adults and disabled people in the country. The recruitment process system is more effective and secure compared to any other form of recruitment. Alnaqbi (2011) stated that an Machine learning system is used for personalizing employees’ experience based on the HR department. The manager will be in opposition to monitor and analyze an employee experienced based on a particular role in the organization. Forstenlechner et al. (2012), stated that various HR functions are utilizing Machine learning more effectively. For instance, selecting employees, interviews, and posting of the worker have been active while applying the following plan.

According to Kanchanachitra et al. (2011), the cost of the recruitment that most organizations incur will be effectively reduced through Machine learning systems. The results of this study indicated that most organizations would reduce their costs by 60% when using the new system of recruitment (Kemp, 2011). According to Renwick, Redman, and Maguire (2013), data distribution systems for the company’s recruitment data will be useful since Machine learning uses modern and updated materials for analyzing and identifying new employees. HR departments will have an easier task for selecting the most suitable people for a given position. According to Rutledge et al. (2011), the system will also automate recruitment and produce advanced data analytics on a given subject. The rate of recruitment automation that is used in the market will be useful for a particular research structure in place. The use of Machine learning systems will enable the department office to be updated on a specific position and the right employee that is suitable for the job. BLOOVO is unique e-recruitment tool that employs Machine learning algorithms in the hiring process and provide innovative solutions for hiring in a way that the requirements of both job seekers and employers are met. The company operates
within the Gulf region, and its aim is to remove the hurdles of job mismatch by means of intuitive, algorithm-focused tools. The company employs techniques for creating an environment in which the right people are recommended for the right job based on their profiles. The dashboard that was designed by the company keeps records of the individuals’ information searching for jobs, which assists in optimizing the job search. The company operates from Dubai Internet City and is currently covering the whole MENA region. It offers job seekers with career advice through online counseling with the help of partner consultant firms (Zawya, 2016).

The government of the UAE has made Machine learning an important component of its future strategic planning, and it has been repeatedly conveyed by various government officials in different forums. A separate ministry has been tasked with looking into the long-term application of Machine learning in different sectors of the economy. Some sectors of the government have already applied Machine learning, such as hiring in different government agencies, and there are areas where the use of this technology will be implemented in the near future. These areas include Come Technologies, who partnered with the Dubai Police to develop Machine learning - based forensics resolutions (Business, 2018).

Elsaadani, Purdy, and Hakutangwi (2018) carried out a study that showed that Machine learning can also boost employment, match individuals’ capabilities, and present workers with new techniques for maximizing their intelligence levels. As has been the case with younger populations, the Middle East also needs a lot of jobs to be created. On one hand, Machine learning can help the free workers from doing repeated routine tasks. On the other hand, it can also play an important role in enhancing the output of workers. If Machine learning is applied in the right manner, it can enhance job creation, development, and help businesses with better profit margins. The government officials require to re-think on the form of information and skills to be
transfer to next generations as the separation of jobs with human beings and machines is continuously changing.

2.4 Pros and cons of augmenting HR functions using Machine Learning software

The greatest benefit provided by this kind of application is probably its ability to determine the perfect candidate for any job position during recruitment processes. The software can efficiently undertake a preliminary assessment of candidates’ official documents, such as curriculum vitae, to crosscheck their qualifications against those of effective workers that have similar job titles. For instance, a chatbot can be programmed to ask critical and basic questions at the initial stages of recruitment in any given organization, while professionals within the organization deal with a more detailed screening of the applicants. This speeds up the process of recruitment and saves much time—particularly when several candidates apply for a similar job. However, this is not always the case for every company, and, in some cases, applicants’ inherent creativity and flexibility may be of greater importance than their qualifications or past experiences—a phenomenon that Machine learning is not able to gauge or figure out. However, Rodney et al. (2019) reported that Machine learning is very instrumental in doing away with human bias because it only focuses on relevant elements of the qualifications (experiences and skills) and documents during the early phases of recruitment processes. By eliminating this type of bias, Machine learning promotes an inclusive workplace. Since people are intrinsically biased, any institution or organization—regardless of the sector or domain—should implement Machine learning programs as an instrument for eliminating bias and, thus, promoting their effectiveness and efficiency. This is also in agreement with Rodney et al. (2019), who found out those
enterprises that applied Machine learning-augmented programs improved their effectiveness and efficiency in making a competitive advantage of the recruitment process by around 16%. Aside from shifting and screening through resumes, Machine learning also enhanced their efficiency by lowering a greater portion of the time that would have been employed in screening applicants’ resumes.

Other than enhancing the effectiveness and efficiency during the early stages of recruitment, all also helps in automating HR administrative processes and reducing the level of redundancy. Pre-screening of interview schedules, for instance, can be assigned to Machine learning to lower the time of conducting such activities. Moreover, other activities, such as providing the most appropriate equipment and allocating venues, can also be taken over by Machine learning—thus relating the staff. A study conducted by Maniu (2009) concluded that HR department administrators delighted their respective roles with efficiency and effective level 19% when compared to similar departments that did not implement any form of Machine learning programs. Smart chatbots can also be programmed to provide companies’ staff members with instant access to organizational data—thus reducing their workloads and improving their morale within the company. Doubts on procedures and policy that arise from an organizational taskforce also be reduced or completely done away with through simple queries accompanied by instant answers programmed in Machine learning software. The same can be applied to the processing and submission of leave documents. By reducing the level of low-value tasks, HR personnel can exert much of their efforts in developing and strengthening their relationships and bonds at the workplace—thus facilitating staff engagement.
Dickson (2010) asserts that the objective of any given recruitment system is to save organizational expenditures to ease the talent acquisition process through modernization. These systems speed up the recruitment process on various activities, such as evaluating and sorting applicants’ CVs, matching them to vacant job positions, and comparing them with the qualifications of the organization’s talented workforce. Along with these, applying Machine learning in recruitment exercises allows organizations to reach several applicants within the shortest amount of time possible. Moreover, this type of application skims over applicants’ posts on webpages—thus helping determine the attitudes, values, and personality traits of candidates. Either way, successful and unsuccessful applicants for a vacant job position are often engaged in their skills or qualifications through feedback from Machine learning, which, thus, enable them to improve or develop these attributes further. Moreover, Machine learning helps relieve the workloads of the recruiters, such as taking over the activities of sending applicants some information about the current status of their applications, scheduling interview sessions with them, and reducing repetitive functions in these recruitment processes. However, while most studies suggest that Machine learning software has a positive impact on recruitment processes, data analysis, management, and maintaining privacy pose the greatest challenges. Furthermore, unconscious discrimination against candidates can also be a limiting factor in applying Machine learning to recruiting since the software only focuses on the data that it was previously trained to act upon.
31. Introduction

In this chapter, the methods that were used for gathering, presenting, and analyzing data that influenced the findings of this study will be presented. This section incorporates the tools that were employed to collect information, the design of the study, procedures for data collection, and analysis. Moreover, the various sources of data that were employed to collect responses to the questions and the deliverables of this study will be explored.

3.2 The study design, data collection procedures, tools analysis, and presentation

Mixed research tools—particularly qualitative and quantitative methods—were employed in this study to collectively explain the outcomes of this study (Bryman, 2006). Furthermore, a combination of techniques and information, which is generally called triangulation, was adopted to confirm the views that arise after undertaking the study to improve the reliability and the credibility, as observed by Olsen (2004). These methods have also been used in different studies because of its ability to increase confidentiality on the findings, as they combine the best of different research methods, which thereby reduce biases that are linked to single studies (Webb et al., 1966). The use of this technique was inspired by the general consensus among researchers (regardless of if there is no other way to get more detailed and authenticated outcomes apart from using triangulation, Scandura & Williams, 2000). Rational arguments that arose from applying mixed research methods in this study offer more representative inferences for justifying the impact of Machine learning on recruitment processes by the police. Storey et al. (2002) carried out research that studied the effects of supple working agreements on innovation utilizing a mixed-methods approach. Similarly, Truss (2001) used
triangulation to manage the constraint of dependability on quantitative techniques and, therefore, was not able to highlight the corporate comprehensions that were in contrary to public data of the company.

Both primary and secondary data were also gathered through the use of survey literature review research methods to help establish critical information engineered to respond to the directions set by the study goals. Secondary data was particularly gathered from sources, such as websites and published articles, about the use of Machine learning in recruitment. These sources contained critical information on case studies in which Machine learning has been successfully implemented for recruiting new staff and how it has helped improve the whole process. The sources also indicated the things that should be considered and what should be left out when recruiting using Machine learning and the limits that should not be ignored. This will be critical for the Dubai Police Academy in understanding the best ways for recruiting candidates. On a similar note, a survey helped collect the views of respondents on the current research phenomenon, while the literature review was used to further examine how emerging technology (Machine learning) can be applied or how it can be used to lower or completely mitigate time-consuming activities and improve and ease the tasks that are performed by the HR departments in general. The data was then represented in tables and graphs to make the data more relatable and enhance the understanding of the findings.

Since using Machine learning for recruitment is still on the rise, the researcher developed a prototype to help identify the potentials applicability of how Machine learning can be used in the recruitment process for the Dubai Police Academy (refer to the sample user interface of the software in Appendix III). The program uses an HTML dashboard and Java—all of which are coded with a visual audio program for storing recruitment databases. The software
can conduct sentiment analyses of job descriptions to pinpoint biased languages and automatically screen the candidates and their respective resumes. However, a psychometric exam will be needed to determine if the candidates’ abilities fit into the job requirements, and one of the most important requirements is the grade because it weighs heavily in the scoring system. Then, the analytical lab will retrieve the latest qualifications improved by the candidates. By performing this process, the system will be able to give more accurate results to determine the best candidate for the position. However, the candidates’ qualifications will be clearly reflected in the scoring system.

The methods employed in gathering, presenting and analyzing data that influenced the findings of the study are presented. The section incorporates the tools employed in collecting the information, the study design, procedures of data collection and analysis. Moreover, the various sources of data employed in finding responses to the study questions as well as the study deliverables have been explored.

The research will use CRISP DM to examine and explore the data. Emphasis will be placed mainly on correlation and explanatory analyses to determine the main indicators that create strong connections between Machine learning and recruitment by HR departments.
**Business understanding**

Before collecting data on an organization to determine how the recruitment process would be done, the research embarked on understanding the business effectively. This is done through setting of objectives, creating a plan for the recruitment process, and determining a success criterion.
Understanding the data

Having understood the whole business fully, the second stage entailed understanding the type of data to be collected. This helped determine the right tools to be used in collecting the data and knowing how the tools would be applied in bringing the best results possible. The data was described at this stage and a report produced, while exploring the data came next including the findings. Once that was done, the next step was verifying the quality of the data and listing out the results of the verification for data quality.

Preparing the data

Here, the data was selected based on the determined parameters. The rationale to include or exclude some data is also determined in this case. Once that was done and the included data determined, the data was cleaned and a report on the same produced. The data needed was constructed, and then integrated to produce information that will merged to create a single report for the research.

Modeling

Here, the technique of modeling was determined and assumptions for modeling the data were determined as well. A test design was created to test the data and know the validity. The model in this case was created in this stage; the model is assessed, with a summary of the research results given.

Evaluation

Once the results were obtained, they were then evaluated, with aspects such as the generality and accuracy of the model are determined. The models approved are also determined for the research purposes. The process review was summarized and the activities are highlighted
to determine what would have been missed and the ones repeated. The next aspects to be done included the list of possible actions and the decisions are described on how to proceed with the rationale determined.

**Deployment**

The last stage was the deployment of the research plan to get the intended results. This was being done through determining the best strategy to use. Maintenance and monitoring plan for the research was done. The project is reviewed, determining what went wrong and what was done well as well as the things that need to be improved.

**Modeling part**

The research methods entailed application of support vector machine classification algorithm. The algorithm was important towards helping in classification of the best possible candidates in a recruitment process and classifying the candidates using certain criteria for classification. This in Machine learning, is critical in organizations because the algorithm provides the needed directions used in the whole process.

The support vector machine (SVM) classification algorithm is a supervised machine learning algorithm applied in both regression and classification challenges. Nevertheless, it is mainly applied in classification aspects. In the algorithm, the plotting is done for each item as a point in an n-dimensional space (whereby n is the number of features available) with the value of every feature being the coordinate’s value. After that, the classification was done through finding the hyper-plane, to differentiate the two available classes. This was applied in this project through the use of Java programming language, which is the most applicable in this project considering the research objectives and goals. This was done as shown below:
The algorithm was accustomed to the process of segregating the two classes with a hyper-plane. To identify the hyperplane, a total of three hyperplanes were identified. The hyperplane fitting the whole process was the one that could manage to segregate the two classes in a better way.

In the SVM classification, it was easier to have a linear hyper-plane between the two identified classes. The SVM kernel was applicable, but it was used as it takes low dimensional input space and transformed it to a higher dimensional space and converted it from a problem that could not be separated to a separable problem.
Based on the new innovative system we will create at Dubai Police, to recruit through the mechanism of Machine learning. The SVM based model approach took place to match candidates to their potential job positions listed on the Machine learning system. Given the results when tested, the accuracy of this model proved to be 90% effective.

**Prescriptive analytics**

This method is used to help in the decision making based on highly analyzed facts. This method is highly effective if the organization knows what questions to ask and also knows how to react to the answers. The accuracy of the generated decision is only as good as the quality of data and the algorithmic models developed. Our model takes the requirements of any department and puts it in a psychometric exam questions, and align the answers with the candidate’s data. This will result into an accurate allocation of candidates to the proper department. This analytic tool will help us in reducing the number of complains received by the police academy graduates.

### Support Vector Machine (SVM) Result

<table>
<thead>
<tr>
<th>Student name</th>
<th>GPA</th>
<th>Psychometric exam</th>
<th>Result</th>
<th>Support Vector Machine (SVM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ahmad Ali</td>
<td>Excellent</td>
<td>90</td>
<td>Department X</td>
<td>Department X</td>
</tr>
<tr>
<td>Abdulla Ali</td>
<td>Good</td>
<td>84</td>
<td>Department Y</td>
<td>Department Y</td>
</tr>
<tr>
<td>Ibrahim Abdulla</td>
<td>Very good</td>
<td>93</td>
<td>Department X</td>
<td>Department X</td>
</tr>
<tr>
<td>Salem Rashid</td>
<td>Excellent</td>
<td>88</td>
<td>Department Z</td>
<td>Department Z</td>
</tr>
<tr>
<td>Khalid Ismail</td>
<td>Good</td>
<td>78</td>
<td>Department T</td>
<td>Department T</td>
</tr>
<tr>
<td>Mohammad Salem</td>
<td>Excellent</td>
<td>89</td>
<td>Department I</td>
<td><strong>Department X</strong></td>
</tr>
</tbody>
</table>
due to improper placement. On top of that, it will increase the effectiveness of coupling the police academy graduates to the correct departments.

3.4 Deliverables

The results that are expected in this research will be a detailed explanation of how Machine learning can be applied in recruiting. At the same time, the research will explain information on how Machine learning can be properly integrated to complement HR departments in recruiting workers. This project will be implemented in various phases, and they will take different amounts of time based on the activities that will be undertaken at each level. This new system is going to be beneficial for students in the long run, as it will help them understand the processes that are involved with Machine learning and how it is being employed to recruit individuals in the Dubai Police Academy. Also, by studying Machine learning in detail, the current research will help students understand the skills that are required and be better prepared for the future job market. In the end, a project prototype will be developed, which will match the project descriptions and can be used for recruiting. Testing will be done to help determine whether the new system meets the requirements of a typical recruitment system and also determine if it can be used to analyze data to help determine the suitability of candidates.
Chapter IV: Data Analysis, Discussion, and Presentation

4.1 Introduction
The purpose of this study is to determine the value of Machine learning in the recruitment process for positions in the Dubai Police. In this section, a summary of the data that was gathered throughout the investigative process will be analyzed through a variety of data analysis methods. Presentation of the findings will be done using descriptive statistics techniques, while, at the same time, proper conclusions will be drawn based on the outcomes of the study and with respect to the needs, importance, and the various challenges underlining recruitment exercises in the Dubai Police.

4.2 Respondents’ personal details
Here, the personal details of the respondents, such as gender and age of the employees in the Dubai Police, will be analyzed, and the findings will be presented in the following sections.

What is your gender?

Figure 4.2.1 Respondents’ genders
As shown in the figure below (Figure 4.2.1), most of the responses were received from male employees, which constituted 74.29% of the overall respondents, while females made up 25.71% of the overall respondents. These results indicate that most job positions in the Dubai Police are occupied by males and may also point at the tendency of males to occupy key positions or ranks in the organization.
The findings in the figure above (Figure 4.2.2) show that the participants’ ages ranged from 18 to 20, 21 to 25, 25 to 30 and older than 30. Participants with ages between 25–30 made up the highest percentage of these demographics, which was followed by those who were older than 30. This was closely followed by those whose ages were between 21–25 and, finally, 18–20 years old. This means that a greater percentage of the employees in the Dubai Police are still young.
4.2.3 The number of years of service in the Dubai Police force.

How many years have you served the Dubai Police?

Table 4.2.3 shows the number of years that the respondents had worked for the Dubai Police around the time this study was conducted. Seventeen employees worked for three years or less, 11 participants had been staffed for three to five years, and three respondents had been

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–3 years</td>
<td>48.57%</td>
</tr>
<tr>
<td>3–5 years</td>
<td>31.43%</td>
</tr>
<tr>
<td>6–8 years</td>
<td>8.57%</td>
</tr>
<tr>
<td>More than 8</td>
<td>11.43%</td>
</tr>
</tbody>
</table>

Table 4.2.3: Number of years served by the respondents as employees of the Dubai Police

By the time the present study was conducted, it’s clear that 48.57% of the respondents had worked for the Dubai police force for less than or equal to three years, 31.43% had worked for the organization for 3-5 years, 8.57% had worked for 6-8 years while 11.43% had worked for the company for years exceeding eight (8) in number. This has been graphically represented in the following bar graph.
Figure 4.2.3: Number of years served by the respondents as employees of the Dubai Police

4.3: Dubai Police needs Machine learning to improve the recruiting and selection processes

Does the Dubai Police need Machine learning to help improve the process of recruitment and selection?

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totally agree</td>
<td>54.29%</td>
</tr>
<tr>
<td>Agree</td>
<td>31.43%</td>
</tr>
<tr>
<td>Neutral</td>
<td>8.57%</td>
</tr>
<tr>
<td>Disagree</td>
<td>2.86%</td>
</tr>
<tr>
<td>Totally disagree</td>
<td>2.86%</td>
</tr>
<tr>
<td>Answered</td>
<td>35</td>
</tr>
<tr>
<td>Skipped</td>
<td>0</td>
</tr>
</tbody>
</table>

How many years have you served the Dubai Police?
The first objective set out to assess the need for Machine learning in enhancing HR processes in the Dubai Police. To meet this objective, respondents were asked to provide their views on this phenomenon. A total of 19 of the overall respondents completely agreed with the need for Machine learning -augmented HR processes, 11 agreed, three provided reasons suggesting that they both agreed at the same time disagreed, and only one participant disagreed with the idea (Table 4.3).

The following bar chart is a graphical representation of these findings. In figure (Figure 4.3) it is evident that a greater percentage of the respondents saw the need for augmenting recruitment and selection processes in the Dubai police human resource department. 54.29% of the participants totally agreed, 31.43% agreed, 8.5% were neutral, 2.8% disagreed with the idea while the remaining 2.86% completely disagreed with the concept.

Figure 4.3: The need for adopting Machine learning -powered systems in recruitment and selection process of the Dubai Police.
4.4 Application of AI in recruitment and selection processes for the Dubai Police

While the HR department of the Dubai Police encounter a great need for adopting Machine learning software, respondents’ feedback in Figure 4.4 below shows that the program has only been utilized by a few people in recruitment processes, while a good number of them have never accessed it. 8.57% of HR personnel often use Machine learning software for recruitment exercises, 25.71% had at once employed the software on a similar action, while the remaining respondents (65.71%) never interacted with this kind system in the recruitment process.

![Graph showing AI use in recruitment](image)

4.5 Complaints of unfair or biased distribution of police candidates to their respective stations in the past six months.

In the recent past, complaints about unfair or biased distribution of police candidates to their respective stations have been fairly low. From the figure below (Figure 4.5), it can be observed that the greatest percentage of the complaints ranged between zero and three (67.75%), followed by the range of six to eight complaints (17.14%). The next ranges, between four and five, more than ten, and nine to ten, corresponded to 8.57%, 5.71%, and 2.86% of the complaints, respectively.
4.5 The level of complaints on bias or unfair distribution of police candidates.

Figure 4.5: The level of complaints on bias or unfair distribution of police candidates.

4.6 Possibility of bias and unfair dealings when the traditional system of recruitment and selection is employed

Respondents’ views were also sought to determine the inherent bias or unfair dealings in the recruitment and selection process in the Dubai Police force. As reported in figure 4.6 below, a great number (45.71%) of the respondents agreed to the existence of the phenomenon, 11.43% completely agreed, 34.29% were not sure, while 2.86% and 5.71% of the respondents disagreed and entirely disagreed, respectively.
Figure 4.6: Possibility of bias or unfair practices in police distribution processes when the traditional system is used.

4.7. The fear that HR might lose their jobs to Machine Learning

While the high demand for great recruiters in HR still remains intact, there is growing fear of losing HR personnel jobs to Machine learning. In the figure below where the number of positive feedbacks exceeded those of negative feedbacks on this phenomenon confirms this concern. Among the respondents, those who thought that Machine learning might replace HR officers in future were 71.43% of the overall respondents, while those who did not see the idea in a similar way were only 28.57%.
Chapter V: Summary, Conclusion, and Recommendations

5.1 Preamble

This section seeks to reflect on the findings of the present study and refresh the reader on their understanding and present a summary of the whole investigative phenomenon. Furthermore, this chapter presents recommendations from these findings that will not only contribute to further understanding of the vulnerability of the recruitment practices of the HR of the Dubai Police to human weakness but also suggests that Machine learning software needs to be used more to reduce these concerns.

5.2 Summary and Discussion

Also known as machine intelligence, Machine learning has so far succeeded in transforming almost all of the sectors that affect human life, and HR departments are no exception. Indeed, Machine learning has so far reached certain levels or degrees that it even threatens the jobs of human beings who brought it into existence since, to some extent, different enterprises may not require much human intervention and will invest in training specific technological machines to manage complex tasks. From the simplest form of jobs to the most complex ones, the pervasive presence of this kind of technology has changed the situation for HR management.

This paper set out to investigate the value of the application of Machine learning on the recruitment process—with a clear focus on the Dubai Police Academy. The study was directed by three objectives: to examine the need for Machine learning to improve recruitment and selection processes, to assess the levels of adoption of Machine learning in recruitment and selection processes, and to investigate the number of complaints that were received over the
unfair or biased distribution of police candidates to their respective stations in the past six months.

This sample size comprised of the HR employees of the Dubai Police Academy. In meeting these objectives, the researcher employed mixed methods of research, as they incorporated both quantitative and qualitative approaches—thus enabling the researcher to exploit the strengths of each of the approaches, which, in turn, makes up for their weaknesses. The concurrent triangulation method particularly allowed for the interpretation of the results while according to equal priorities to both types of research.

5.3 Conclusion and recommendations

HR management is all about linking enterprises with the present prospective taskforce on a personal level. The latest enhancements in Machine learning are quickly becoming main stream. This has led to considerable transformations of operations and how humans interact with new technologies across the globe. Indeed, the connection between machines and HR are being redefined in job environments, as employees are optimistic and excited about the adoption of Machine learning -based systems. This study found out that Machine learning not only improves job applicants’ experience but also enhances the experience of recruiters by reducing their workloads, automating low-value assignments, and speeding up HR processes.

This study provided insights on the value of Machine learning in the recruitment and selection processes of the HR department of the Dubai Police Academy. The findings show that integrating these practices with Machine learning -based programs will make the work environment of the organization better than it is today because most of the practices will be completed within the quickest amount of time possible, reduce the risk of bias and unfair
dealings, and help in decision-making processes. This study recommends that the Dubai Police Academy should partner with their HR department to utilize Machine learning at their work if they are to meet the expectations of their employees, who have witnessed a considerable change. The organization should also encourage investments in research and development on the key areas that they want Machine learning to support, as well as those that will create trust by addressing accountability, security, the potential misuse of offices, and lowering bias in recruitment processes. Finally, since all technology-based innovations are grounded in scientific methods, this study also recommends adhering to high standards of scientific excellence to enable the organization to gradually transition from the traditional systems of recruitment and selection to Machine learning.

5.4 Intelligent recruitment software

The researcher truly believes that Machine learning should be created in a manner that helps build equality and fairer dealings. This research emphasized the ways that this kind of technology can be employed to enhance people’s ways of life by centering their rights at the heart of each operation. For this reason, the researcher developed and implemented a java in the form of a prototype to help with the recruitment and selection process (refer to the sample user interface of the software in Appendix III). The software will use Machine learning to help find the best talent for vacant positions in the organization and help the departments make decisions on how recruitment practices will be carried out. Candidates’ selection criteria will be based on a psychometric exam and overall grade. The software has a great potential for scalability since it can also be employed in other departments when more enhancements are made.
5.4 Suggestions for future studies

Over the years, our society, economy and culture have gone through transformational processes as a consequence of technological advancement. Every day, these new technologies influence the operation of different enterprises, regardless of their sectors or geographical locations. Obviously, most management areas have felt the pressure of technological or ecological impacts, and HR management has not been left out. One of the most important functions of the HR, the recruitment and selection process, whose purpose is acquiring intellectual capital for the organization, has been universally agreed upon as being an area that requires the use of Machine learning. However, since the phenomenon of Machine learning-based recruitment initiatives is still emerging, subsequent studies should focus their efforts on further exploring this phenomenon to help establish an in-depth understanding.

Appendix III: Sample user interface of the recruitment Java software
Reference List


