ISCTE ◈ Business School
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E-SELECTION EFFECTIVENESS:
AN ANALYSIS TO EDP

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- Spine -

Resumo

Numa era caracterizada pela tecnologia, competitividade e dinamismo constante, as empresas têm vindo a sofrer alterações profundas nas funções inerentes ao negócio, sendo os departamentos de recursos humanos considerados, de há um tempo para cá, uma das áreas mais significativas dentro das organizações.

Também os procedimentos utilizados têm sofrido alterações com o intuito de se adaptarem melhor à realidade dos dias de hoje. Assim, cada vez mais os gestores procuram automatizar processos e fazer-se valer da utilidade das novas tecnologias.

O caso da seleção online representa precisamente um dos processos que pode ser automatizado parcialmente, criando valor para as empresas quer em termos de tempo, quer em termos dos custos associados.

O objetivo deste estudo prende-se com a análise da eficácia do processo de seleção online, mais concretamente com os obstáculos que afetam hoje em dia o processo utilizado pela EDP.

Os resultados obtidos mostram que os principais obstáculos à e-seleção, no caso da EDP, são: a administração não supervisionada; o ambiente de realização dos testes escolhido pelo candidato; as questões tecnológicas associadas à utilização deste tipo de instrumentos; o impacto em membros de subgrupos já identificados e a experiência do candidato na realização dos testes, que se pode tornar pouco positiva.

Abstract

In an Era characterized by technology, competitiveness and constant dynamism, companies have been suffering profound changes on business functions, with the HR departments being considered, for some time now, one of the most significant areas within the companies.

Also, the procedures used have been suffering some changes to better adapt to today's reality. Thus, more than ever, managers seek to automate processes and make use of the new technologies' usefulness.

The case of online selection represents precisely one of the processes that can be automated partially, creating value for companies both in terms of time and costs associated.

The aim of this study is to analyze the online selection effectiveness, more specifically in what regards to the obstacles affecting the process used by EDP currently.

The results obtained show that the main obstacles to e-selection in the case of EDP are: the unproctored administration; the testing environment chosen by the applicant; the technological issues associated with the utilization of this type of instruments; the impact on sub-group members already identified and the candidates' experience towards the test, that may become less positive.

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Glossary

AC – Assessment Centre

H2R – Hire to Retire

HRM – Human Resource Management

IT – Information Technologies

R&S – Recruitment and Selection

RQ – Research Questions

SP – Selection Process

UIT – Unproctored Internet Testing

Introduction

"*Although the potential for technology use is vast, researchers and practitioners know surprisingly little about the array of technologies being used in organizations or the extent which these technologies are being used to recruit, screen and select employees*"

(Chapman & Webster, 2003: 11).

The observation by Chapman and Webster (2003) captures one of the biggest concerns of todays' companies: the exponential expansion of technology. With the increase of technology in recent years, companies feel the necessity to use a number of strategies to improve their operations in favour of being more efficient, effective and innovative. Therefore, more than ever managers are using information technologies (IT) to seek for new procedures/techniques that may reduce costs and time (Marler & Parry, 2016), the problem is to follow-up this expansion and ensure that there is no loss of effectiveness in the processes.

Focusing in the case of Human Resource Management (HRM), we have recently seen an increased interest in IT usage. From the recruitment and selection (R&S), to the motivation and retention of talents, we can find many differences in terms of systems and deployment in the HRM practices in comparison with past years. In fact Stone et al. (2015: 25) defends that "*now organizations compete on the basis of the skills and talent of their workers*" and "*technology has transformed the way HR processes are currently managed*".

By saying so, this project consists on a study focused on the online selection of candidates and the main challenges and issues related with it and, inevitably, affecting its effectiveness. In other words, the purpose of this investigation is to identify the major problems of staffing online, understand why they are affecting the process and how can HR managers mitigate these issues to have a more robust and accepted selection process (SP) by all parties.

In what regards to the structure of this study, it will be divided in six focal parts.

The first chapter (Chapter I) will contain a theoretical framework, where it is possible to find literature review about the SP, the methods used to select candidates and, most

important, a deep explanation around the e-selection concept and the advantages and barriers associated to it.

Chapter II presents the research questions that are intended to be responded with this study, taking into consideration the main question and the sub-questions associated to it.

The third chapter (Chapter III) is dedicated to the methodology namely the approach, data collection and treatment, sample and procedure used. The execution of this investigation encompasses both qualitative and quantitative methodologies since it is considered to be the most adequate and complete approach for the operationalization of this study.

In Chapter IV the company under analysis will be presented – EDP – explaining briefly its industry and performance in the previous year. It will also be explained the selection process within the group.

Chapter V will collect all the information regarding the treatment, analysis and interpretation of the data obtained, including a comparative framework between the qualitative and the quantitative data.

Finally, in Chapter VI it will be made the results discussion and main conclusions. This section will also contain the limitations of the study and suggestions for future research.

Chapter I – Theoretical Framework

Given the increased valuation of human capital, it is easy to understand why HR professionals are becoming so essential within the company: "a*s talent becomes a primary source of competitive advantage in our rapid-cycle global economy, organizations are redefining the role that the chief human resource officer plays in leading the people dimension of business strategy*" (The Call for a More Strategic HR, 2015: 1).

HR managers are now seen as strategic partners of the CEO, having a crucial role in the creation and implementation of policies and practices more aligned with the strategic direction of the company (Marler & Parry, 2016), starting with the talent R&S, where the candidates are chosen to fit a position based on their skills, knowledge and qualifications.

2.1 Selection Concept and Objectives

Selection can be defined as the process of assessing and choosing among the recruited candidates the one that best fits the needs and requirements of the vacancy, taking into account the needs of both the company and the candidate, and using fair and equitable assessment activities (Ferreira, 2015; Rego et al., 2015).

Referring to Rego et al. (2015), as candidates have different qualities and functions do not require the same requirements from vacancy to vacancy, selection requires an adjustment between the person and the function. To assure this, recruiters should follow a well-defined SP, in order to: (1) confirm the knowledge and skills identified in the recruitment process; (2) define the criteria that allows for the identification of the best candidates for the job; (3) find the best methods to produce relevant information and make a grounded judgment.

2.2 Selection Process

The SP consists of a number of clearly defined phases where candidates are evaluated progressively the aim is that the number of candidates moving from phase to phase will progressively decrease, keeping only the applicants who seem more suitable for the vacant place (Ferreira, 2015; Sekiou et al., 2009).

Traditionally, companies used to hire people based on references or by using very simple and informal SP. Nowadays, in order to increase efficiency and to ensure consistency and compliance, it is recommended to follow many more steps which, of course, means taking more time to reach a decision.

According to the literature, there is no single SP that can be considered standard, since the design and management of the selection process depends largely on the company's needs and characteristics (Sekiou et al., 2009). Nevertheless Rego et al. (2015) warns of the importance of investing in well-structured and designed SP to avoid the selection of the wrong candidate (which most of the times represents much higher costs than the development and management of the SP).

2.3   Selection Assessment Methodologies

In what concerns to the methods used to select the candidates, there are multiple options to measure the degree of adjustment between the candidate and the job vacancy, such as: *Curricula Vitae* (CV) and application form, references, interviews and psychological tests. To better understand these concepts and the advantages and disadvantages associated with them, there is a deeper explanation below.

2.3.1. Application form/ Curricula Vitae (CV)

One of the most used methods by public and private companies to make a first candidate screening is the employment application form and CV that help screening out the applicants that do not meet the basic requirements for the position (*e.g*., minimum experience, languages, specific backgrounds) (Screening and Evaluating Candidates, 2016).

Generally, CV's contain a short-written description of a person's education, qualifications, previous jobs, and sometimes personal interests. Often the CV comes with a motivation letter where the candidate explains in a personalized way why he/she is the best person to fill the job vacancy (Ferreira, 2015).

Because nowadays technology has radically changed and most of the staffing processes occur through the internet, companies have now the opportunity to create specific online

forms with the fields they what to be completed, which totally facilitates the screening phase (Crawshaw et al., 2014).

As stated by Ferreira (2015), some of the advantages of this assessment methodology are: (1) helping companies to quickly screen the candidate profiles that may be of interest; (2) ensuring the principle of equal treatment; (3) it might be useful in following the selection process, namely the interview.

On the other hand, there are also some cons, specifically: (1) it may be confusing, not detailed enough or lack important information; (2) the candidate may lie or hide information to better fit to the job position; (3) it is considered a low predictive power method (Crawshaw et al., 2014).

2.3.2. References
Despite being a nonconsensual methodology, reference checking appears as one of the most used methods worldwide, being extremely used in Portugal. Basically, this method is used to recover more information about the candidate by using structured or non-structured statements from people who have experience of the candidate in a work environment (Ferreira, 2015).

Due to the fact that we are talking about a personal appreciation, references are considered a highly subjective and low predictive method. However, referring to Hunt (2007), the validity of reference checking can be significantly improved by structuring some questions before the meeting.

2.3.3. Interviews
Like the employment application form and the CV, also the interviews are also one of the most common assessment methods. This assessment method is characterized by having two participants (the interviewer and the candidate), both familiar with the job, where the interviewer tries to detect personality traits, social behaviors, mental abilities, interests and motivations, among other factors related to the adjustment to the company and job function (Sekiou et al., 2009).

Interviews may have a lot of differences between them, namely in structure, duration, number of people involved and place. Still, in Portugal the most common practice in

selection interviews is to have a semi-structured script, with duration between 30 to 60 min, occurring in-person - mainly in the hiring company installations. Yet, as reported by Ferreira (2015) it is still not very common to have telephone interviews due to the loss of nonverbal behaviors and the risk of having fake candidates answering the questions.

In a general way, we can say that interviews carry some advantages like: (1) allows a more in-depth data collection and comprehensive understanding of the applicant; (2) the interviewer can probe for explanations to get more detailed responses whenever necessary; (3) there are no physical barriers, which facilitates the communication; (4) yields some returns in comparison with other methods (Sekiou et al., 2009)

However, in agreement with Crawshaw et al., (2014) the main disadvantages are: (1) there is a risk to cause bias; (2) it is a time-consuming process that involves high costs for the company; (3) the predictive validity and reliability associated with this method continue not to be significant, in fact Ferreira (2015) states that some studies showed that interviews, when used in an isolated way, can only predict less than 1% of the future performance.

2.3.4. Psychotechnical tests

Regarding psychological tests, they can be divided into personality tests - that consist of written, visual, or verbal evaluations administered to assess the applicant's behavior towards certain situations and environments; and cognitive or ability tests - used to assess the candidate's general intelligence, attributes and skills (Ferreira, 2015).

In comparison with the other methods, this assessment technique proves to have many advantages, specifically: (1) it is almost impossible for the candidates to lie in these tests due to their complexity; therefore the information is more reliable; (2) it is an easy and fast way to obtain the information; (3) it allows a concrete comparison between all candidates; (4) there is a high level of scientific consistency this being one of the most effective types of assessment to predict job performance (Sekiou et al., 2009)

On the other hand, as drawbacks, it is important to highlight the following aspects: (1) many psychometric tests must be administered by psychologists, which might be very costly; (2) may cause anxiety in the applicants, prejudicing their performance; (3)

cannot measure candidate's human qualities; (4) there are some ethical issues related with the usage of these tests by companies (Newell, 2005; Sekiou et al., 2009).

2.3.5. Assessment centers

According to the literature assessment centres (AC) are one of the most sophisticated ways used to select applicants (Ferreira, 2015). Considered by many as a selection method, Crawshaw et al. (2014) defend that AC are in fact an approach to selection that encompasses a series of selection methods applied over one or more days and designed to assess candidates more than once, replicating the major components of the function to be filled.

Generally, this approach appears to be most associated with the selection of executive boards (Ferreira, 2015).

The main advantages of this approach, according to Crawshaw et al. (2014) and Sekiou et al. (2009) are: (1) uses simulations that reflect the reality of the tasks inherent to function used in different contexts; (2) the candidate has a clear perspective of the job; (3) allows for grater objectivity in the comparison of candidates.

Regarding the disadvantages, AC fails on: (1) the costs and time associated with the organization and administration of the assessment instruments; (2) the fact that these events require experts in administering and reporting the assessments; (3) the fact that the predictive validity associated is around 0.39, which does not favor this method (Crawshaw et al., 2014; Newell, 2005; Sekiou et al., 2009).

2.4 Assessment Methodologies Evaluation

Choosing between the various assessment methods and ensuring that these methods can correctly evaluate what it is intended to be appraised, is a critical component when drawing up the selection process, or else all the investment in the R&S process will be a waste of time and money for the company (Ferreira, 2015).

Therefore, to ensure an effective SP there are three main ways to assess the quality of the methodologies intended to be used, namely: validity, reliability and utility.

Below there is a deeper explanation of each of these principles.

2.4.1. Validity

Starting with validity, in the R&S field, validity can be defined as the tool used to evaluate if a determinate assessment method provides or not useful information about the applicant's performance once he/she is hired for a specific function. When an assessment can not accurately measure these aspects, relevant to predict future on-job performance, it has no value for the organization (Pulakos, 2005).

According to the same author, a test with high validity is expected to be highly linked to the test focus, giving the recruiter more trustworthy results about the applicant's competences and behaviors for that specific job vacancy. On the other hand, in a test with low validity, the competences and behaviors extracted will probably not correspond to the truth.

The thing is, because candidate qualities, behaviors and performance outcomes represent very intangible concepts that can only be measured in an indirect way, it is crucial to guarantee that assessments are truly measuring relevant things to predict job success (Hunt, 2007).

2.4.2. Reliability

In accordance with Murphy (2008) when we talk about test scoring, there is always some instability associated with the human factor, as it is possible to have two different scores in similar tests taken by the same individual. Still, this variation depends on the type of characteristics being measured. When we talk about more stable characteristics, which is the case of SP, it is likely to have less variation between results.

For this reason, test administrators develop several models to estimate the reliability of the assessment methods and to have a clear idea of the consistency associated with them.

Reliability refers to the coherence and consistency of an applied method in candidate SP and is generally presented in the form of a correlation coefficient (Newell, 2005).

Therefore, as explained by Sekiou et al. (2009), reliability exists if we use the same instrument twice with the same group of candidates at two different times and we get

similar results. Conversely, if the results obtained at different times are not coherent and stable, it cannot be said that there is reliability in the process.

2.4.3. Utility

Regarding utility, this concept can be defined as the coefficient that translates the difference between the costs and the quality of the decisions made at the time of the selection. That is, when the costs of the selection instruments surpass the quality of the decisions taken, it is concluded that there is no sense in using those methods. On the other hand, a selection model that shows that the quality of the decisions may be superior to the costs associated with the SP, translates into something extremely useful (Sekiou et al., 2009).

Thus, it may be inferred that any selection instrument must be profitable to justify its usage in the SP.

2.5   E-Selection

Now focusing on the scope of this project, which is to identify the major benefits and challenges impacting on online staffing effectiveness, it is important to start by defining online selection.

"*In an increasingly competitive global market for talent, organizations must find new ways of getting the right people in the right positions while simultaneously managing growing candidate pools*" (Johnson & Guetal, 2013: 4). Because of these changes in HR selection, companies had to create ways to adjust their practices to the new business environment and that's how e-selection emerged.

E-selection can be defined as the various forms of technology used to assess the degree to which the candidates fit with the job requirements based on their knowledge, skills and abilities Stone et al. (2015) and presents many advantages but also some limitations.

Below there is a deeper explanation of these aspects, giving special emphasis to the factors affecting e-selection effectiveness and acceptance. In only this way will it be possible to propose some suggestions for improvement to online selection.

2.5.1. Advantages

Starting with by the pros, as reported by Stone, Deadrick, Lukaszewski and Johnson (2013: 23) and Chapman and Webster (2003:11) there are some important advantages in e-selection over traditional systems specifically: (1) to provide organizations with large candidate pools; (2) to simplify the job analysis process; (3) to accelerate the development and assessment of selection procedures; (4) to reduce administrative burdens by automatically screening applications; (5) to allow organizations to interview applicants using web-based or video conference methods; (6) to facilitate storage and use of applicants' information; (7) to provide potential to reduce adverse impact for protected groups if well managed

These improvements have the potential to save labor and decrease costs (Johnson & Guetal, 2013) and at the same time enhance efficiency, promote the hiring of qualified employees and manage the flow of new members into the organization (Stone et al., 2013).

However, in spite of the aforementioned, there are also many limitations associated to with online selection. Because of the focus on efficiency and cost reduction, sometimes companies lose a bit of their attention on the core objective and face some issues that may compromise the selection process. Those challenges and issues are explained below.

2.5.2. Challenges and issues of online staffing systems

As the primary objective of assessment is to obtain accurate information about applicants, it is crucial to have in mind that the conditions under which the candidate is assessed have direct impact on its final results, i.e. "*variations and problems with administrative and environmental conditions may create unwanted effects on candidate performance, perceptions and participation in the assessment process*" (Reynolds & Weiner, 2009: 135). Therefore, to avoid fallacious results and preserve the integrity of staffing systems, recruiters should know clearly the potential measurement concerns that may draw them to bad talent decisions and form careful planning and execution of the SP.

Below there is a detailed explanation of each of the constraints highlighted by Reynolds and Weiner (2009) that are all related and impact upon each other.

2.5.2.1. Proctored versus unproctored administration

Starting with test administration, determining where and how the assessment will be administered is one of the employers' main concerns in the selection process, mainly because of the tremendous logistical and financial effort that this type of events entail for companies.

Conventionally, selection tests used to be administered at the employing company - or in a space chosen by the company – by the supervisor in charge of test supervision, responsible for identity confirmation, instructions providence and test monitoring (to prevent cheating, copying and loss of test materials) (Reynolds & Weiner, 2009).

With easy access to the internet, the use of unproctored internet testing (UIT) has become more feasible, allowing greater flexibility to test takers and bringing lots of advantages for the employers as well. On one hand, for the applicants, it offers greater pliability, allowing them to take the assessment when and wherever they want; with the conditions, they understand to be more favorable for them. On the other hand, for the enterprises, this type of assessment brings two types of advantage: one is enhancing consistency of delivery - because, when an assessment is done with recourse to the internet, the administrative conditions in terms of time, instructions and scoring are all automated and equal across locations, which increases the test validity; the other is improving efficiency of delivery. Since UIT do not require supervisors, materials or physical space, it turns out to be a much cheaper and faster solution, when compared to proctored assessments. (Reynolds & Weiner, 2009).

Nevertheless, the usage of these tests may also introduce a number of issues related not only to software and hardware but also to aspects related to the employee's attitudes towards this type of administration (Tippins et al., 2006). The most pointed restrictions to UIT across literature are: the security of test content; the impossibility to confirm examinee identification (the answers might be given by other person); cheating problems, loss of test materials and misunderstandings.

Hereupon, the question is: taking into account all the benefits and constraints of UIT, should recruiters opt for proctored or unproctored administration?

The answer is not unanimous, since "*to the date there has been little research on the effects of UIT on the quality, effectiveness and security of assessment programs, and even less professional agreement with regard to acceptable and ethical practice in this area.*" (Reynolds & Weiner, 2009: 136). Still, some theories have been studied over the years, presenting very interesting but not always convergent results.

Starting with a study made by Tippins et al. (2006), it is incontestable that the usage of UIT will grow exponentially from now on; however, the six panelists do not agree on the effectiveness of UIT. Over their study, the authors came to a panel of consensus on UIT, where we can highlight the following conclusions as the more significant for this study: (1) the nature of the test (cognitive or non-cognitive) plays a major role in the decision to use UIT, mainly because of the candidate's identification and unknown assistance; (2) in high stakes situations, UIT is not acceptable by itself, there is a need to use also proctored tests as well; (3) in high stakes testing it is more likely to witness cheating behaviors; (4) the identity of the test taker is impossible to know since there are many ways to work around this situation; (5) and in the absence of hard evidence, the effects of UIT will continue to appear inconsistent.

On one hand, UIT may subserve the application process to all the users with internet access, encouraging them to finish the selection process when they perceive high UIT scores. On the other hand, it may be limited, in terms of results effectiveness, to those who are extremely familiar to computer and internet usage.

In line with the conclusions of the prior investigation, also Beaty, Nye, Borneman, Kantrowitz, Drasgow and Grauer (2011) made an investigation, this time focused on the comparability of validity for proctored and unproctored assessments, coming to the conclusion that validities for non-cognitive assessments, in entry level positions, are usually similar across proctored and unproctored administration. According to the authors, because validity magnitude is not influenced by the way of administration and response distortion has non-significant effect on validity; it is possible to guarantee equivalent reliability for UIT non-cognitive tests and face-to-face tests.

Moreover, a study made by Wasko, Chawla and Scott, in 2007, based on 10.648 supervisory-level job applicants, compared the scores of three types of tests (situational judgement; personality tests and background experiences) made using three different

types of administrative environments (proctored; unproctored at home and unproctored in a public setting). The outcomes raised are very interesting. In the case of situational judgement, results showed that test scores tend to be significantly higher in the unproctored administration at home, rather than in the other two conditions.

On the contrary, in the case of personality tests and background experiences, the results raised from the unproctored public setting applicants presented lower scores in comparison to the results in the other two situations. By saying this, the main conclusion elicited by the authors is that higher levels of performance tend to be associated with home setting environments, due to the significantly fewer distractions (Wasko, Chawla & Scott, 2007).

Also, referring to a research made by O'Connell (2017) individuals responding to UIT take the assessment more seriously and tend to perform slightly better since they are freer from distractions.

Contrary, Reynolds and Weiner (2009) defend that the higher the level of control – in terms of location, access, authentication and supervision – the greater the experience for the candidate, the results yielded by the assessment and the integrity of the program.

2.5.2.2. Test environment issues

One of the basic selection principles is to maintain the environment conditions as favorable as possible for the applicants and as similar as possible between them (across each assessment center). For this reason, factors such as noise, equipment and ergonomic conditions must be taken into consideration in order to avoid distractions, performance disturbances and bad perceptions towards the selection program (Reynolds & Weiner, 2009).

Taking into account previous studies it is possible to find a relationship between the climate conditions and candidates' score in the tests. For instance, Reynolds and Weiner (2009) refer to a study that suggests that the candidates' environment perceptions have a direct relation to their assessment scores. Thus, it is argued that, at best, candidates who score well tend to classify the environment as more favorable in comparison with the ones who score lower; and, at worst, the blame of those applicants with bad results is

related to bad environment conditions when they're compared with the ones who reported no problems.

Whichever the hypothesis, the proposition inherent is that a good testing environment is crucial to the applicants' success on the assessment.

Making the bridge from the traditional testing to online assessments, the main concern for the recruiter is related to the fact that, in online assessments, candidates are free to take the tests wherever they want, being impossible control the climate conditions and assure equal conditions between them. Because of this scores might be skewed and contain less validity (Sekiou et al., 2009)

2.5.2.3.   Technology issues

Distinct to all the other issues affecting both online and traditional SP, technology is a challenge emerging only within online selection.

According to Reynolds and Weiner (2009), like the physical environment, also the computer systems provided to the applicants to complete the assessment might vary in terms of quality and standards, creating variations between applicants and, consequentially, affecting the quality of the results yielded by the assessment.

Beyond this, it is important to mention that UIT can be taken "*in literally thousands of different local systems that are operating under widely different configurations*" (Reynolds & Weiner, 2009: 139) carrying three main technology delivery issues that may compromise the assessment results:

Firstly, there is computer hardware that may impact the way candidates see and answer the assessment due, for instance, to an incomplete display of the test or to old equipment that does not allow the applicant to respond faster. Secondly there is local operating software that has a direct impact on the manner in which the candidate accesses the test. For example, if the applicant is using obsolete or incompatible operating software, that does not allow him/her to take the test, he/she will be automatically at a disadvantage when compared to the other candidates. Finally, there is internet connectivity that might influence the candidates' performance, if it is not working under acceptable conditions, leading to: loss of candidates' responses, loss of testing time, candidates' frustration/bad reactions towards the assessment process, and results distortion.

To conclude, Reynolds and Weiner (2009) suggest that, taking into account technology propensity for problems, it is advisable to operate and maintain computer systems by professionals and under supervised conditions. Beyond this, it is also defended that it is prudent to develop some guidelines to avoid technological problems like the ones described above. These guidelines/procedures can be distributed or sent directly to the applicant with the objective of making sure the local hardware and operating software are adequate to the assessment.

2.5.2.4. Unqualified applicants

Another important issue of online selection – unqualified candidates – tends to arise from an aspect that can be seen both as an advantage or a disadvantage: the enlargement/expansion of the applicant pool.

Referring to Chapman and Webster (2003), when asked about the benefits of technologies in R&S, people answer the possibility to reach a wider range of applicants from various geographical areas (also called expanding applicant pool). Curiously, this aspect is frequently mentioned as a disadvantage as well, mainly because of the increasing number of under qualified and out-of-country applicants that emerge from technology usage.

With this in mind, it is important to understand why this happens, to work around this tendency and avoid time and money waste with unsuitable candidates. Thinking a little bit about the R&S process unfolding, it is easy to understand that the applicant pool expansion is a problem arising directly from the recruitment phase. This happens mainly because, if recruitment is made online as well, the number of applications received for the exactly same number of job vacancies, tends to be much higher than in traditional recruitment which, of course, compromises the screening quality of candidates (Reynolds & Weiner, 2009).

However, there are other factors that may lead also to unsuitable candidates not directly related with online recruitment but certainly catalyzed by technology usage. For example, selecting the wrong communication channel to announce a job opening (Melanthiou, Pavlou, & Constantinou, 2015) or publishing job offers using unappropriated or not detailed enough communication Forbes (2015), may also result in excessive and/or unrelated applications.

To conclude, it is essential to have in mind that "*casting a broader net in recruitment creates the potential for the assessment to become a problem when less well targeted candidate pools result in lower passing rates*" (Reynolds & Weiner, 2009: 142). Therefore, ensuring that applicants meet the basic qualifications before passing them to the selection phase is a crucial step to avoid compromising the entire R&S process with non-qualified applicants.

2.5.2.5. Adverse impact

As described before the term *adverse impact* refers to the degree to which a SP has a disproportionally negative impact on members of various subgroups based on race, sex, ethnicity and socio-economic condition, among others (Stone et al., 2013).

Whenever the procedures or tools used during the SP have an adverse impact on subgroup members, it is considered that there is unfairness and discrimination towards these people. In fact, in most countries this issue is treated with legal and ethical guidelines, whereby the companies are required to conduct analyzes to determine whether their selection systems are fair or not. Notwithstanding, for the majority of the enterprises, these analyses seem to be worthless and time consuming – especially for larger ones. However, they are part of the ethical duties of the company and are nowadays simplified by online selection systems (which generate useful information to carry out these analyzes in a simpler way) (Stone et al., 2013).

Reynolds and Weiner (2009) mention the substantial differences found in home access to the internet among subgroup members which can definitely influence candidate performance due to their lack of familiarization with technologies.

However, it is not only the internet access that dictates candidates' differences in online assessment access. There are other factors related to the computer usage that might also affect some applicants, as for example computer anxiety. Consistently, Stone et al. (2013) defend that e-selection systems require not only computer access, but also computer-related skills (something that subgroup members are less likely to have when compared to the majority of the applicants).

This being a very important and delicate topic, Stone et al. (2013) allude to a series of studies conducted over time showing that: (1) younger individuals tend to perform

better on web-based tests when compared to older applicants (something that is not verified in paper based tests); (2) older candidates are usually less confident and less accustomed to web-based tests; (3) computer understanding and experience with computer usage are two factors contributing positively to high performance on web testing; and (4) when we are talking about quantitative tests, women tend to score lower in online tests rather than in paper versions.

Summing up, according to the literature, the "blind" use of e-selection systems has tendency to result in an adverse impact mostly for elderly applicants, women and minority racial subgroups. Because of this, inadvertently, e-selection systems might affect the employment opportunities of subgroup members and limit the workforce multiplicity (Stone et al., 2013).

To mitigate this issue, Reynolds and Weiner (2009) consider helpful the introduction of assessment orientation and alternative testing facilities for those people with more difficulties dealing with technology or having no home access. Also, Stone et al. (2013: 66) suggest the possibility of giving candidates the opportunity to choose between paper test or web-based testing, based on the findings showing that "*giving applicants a choice of testing modes leads to positive changes in their scores on personality measures*" and influences applicant satisfaction with testing procedures.

2.5.2.6. Data security

With online recruitment methods, as well as with the traditional ones, there is lots of confidential information and personal data being shared between the candidate and the recruiting company. This information might include a candidate's personal information, assessment results, financial data, and other private content that may be subject to improper treatment (Stone et al., 2013).

According to Reynolds and Weiner (2009) security has always been an significant concern for companies in assessment administration, despite the technology employed. However, with technology increasing, the importance given to data security has heightened due to the easy access and distribution of confidential content in automated databases.

This gives rise to the question of whose responsibility it is to keep this data private and secure. Reynolds and Weiner (2009) consider that the online tools providers and organizations are responsible for this aspect by creating systems and functions able to protect data.

Hence if data security fails, there might be several consequences affecting all parties. Organizations and online tools providers might damage their reputation for not being able to guarantee data security, whilst candidates might "*face risks associated with undesired solicitation, abuse of financial information, and even identity theft that could result from improper treatment of their personal data*" (Reynolds & Weiner, 2009: 163).

Conforming to Stone et al. (2013), generally individuals are more likely to perceive systems as unfair or invasive of privacy when they notice inaccurate data or when private information is disclosed to third parties without their consent. Therefore, the same authors proposed some suggestions to improve this issue, namely: (1) enable applicants to check data accuracy of online systems; (2) and only release private data to others with the permission of the individuals evolved.

2.5.2.7. Applicant's experience and perception of the assessment process

Finally, it is important to consider a candidate's experience and perceptions in the recruitment process, not only because of the candidate's performance, but also because it may compromise the company's image and brand (Reynolds & Weiner, 2009).

By saying this, Reynolds and Weiner (2009) refer to some evidence related to the fact that the applicant's perception about the assessment somehow related to their performance which might bring a series of unwanted consequences, when candidate perceptions tend to be negative.

"*Perceived fairness of selection procedures has important implications for organizations, including the applicant's intention to accept job offers and likelihood of recommending the organization to others*" (Sanderson, Viswesvaran, & Pace, 2011: 2).

Also in this topic, some studies about acceptance by the applicant have been conducted over time, drawing Stone et al. (2013) to the following conclusions: (1) when the SP is done by using online tools, candidates are affected by website/platform characteristics,

adhering more to the recruiting process when the tools are friendly, easy to use and efficient; (2) it is believed that system flexibility and selection cognitive demand weigh on candidate acceptance; (3) applicant's perceived fairness of the application system is closely linked both with the privacy invasion perception and the attraction to the organization which means that, when applicants perceive the selection process as unfair, they have more tendency to feel their privacy is being invaded and/or they might decrease their intentions to continue with the selection process; (4) another thing that influences applicants' intentions to continue in the selection process or the perceived fairness is the computer experience the candidate is having. The more positive the experience, the higher the levels of perceived fairness and the bigger the job intentions; (5) when we talk about influencing/impressing a candidate with the organization's website layout, it is much easier to do it with inexperienced job candidates, rather than with the ones that already have some work experience, as it would be expected; (6) finally, there are substantial differences in the perception and acceptance of the assessment process based on candidate's age, sex and ethnicity.

Hereupon, it is recommended that these considerations are taken into account and manipulated (in a positive way) to ensure better reactions from candidates.

2.6   E-Selection effectiveness

Concerning the effectiveness of e-selection, Stone et al. (2013) defend that organizations are using more and more e-selection systems not only because of the decreased costs but also because it is believed that e-selection is more effective than traditional selection.

Giving the purpose of this study, it can be said that there are two specific ways to measure SP effectiveness. One is upstream, by predicting as well as possible future performance (predictive validity); the other is downstream, by periodically analyzing the performance of the hired individual (performance appraisal).

2.6.1. Predictive validity

Predictive validity, as with all types of validity, can be defined as a way to evaluate the degree of precision of a particular selection method, this form of validity being

disclosed when the results obtained by a group of candidates are compared with the results obtained in subsequent SP (Sekiou et al., 2009).

In general terms, according to Hunt (2007) what happens is a collection of assessment data from candidates during the SP that ends up being compared with their on-job performance after they are hired. Since the information is collected during the SP in real conditions and with actual candidates, the results extracted are much more accurate than other types of validation. Later on, as already mentioned, this information will be used as a basis for comparing and improving other SPs.

Despite the utility of this indicator, it may require months or years before enough people have been hired to provide the data needed to compute meaningful predictive validation statistics, which makes predictive validity studies unfeasible for companies who want short time outcomes (Hunt, 2007).

2.6.2. Performance appraisal

Performance appraisal can be described as the activity of formulating a global and objective opinion about the performance of a particular employee. This process focuses mainly on the performance regarding specific tasks and responsibilities and takes into consideration the previously established criteria and rules (Sekiou et al., 2009).

The main objective of this indicator is not only to compare the performance of employees that occupy identical jobs but also to adapt and improve HR practices that enhance employees' future performance among them, the R&S process.

The performance appraisal process works as follows, steps one and four being the ones were the needs for R&S may be included and worked out later.
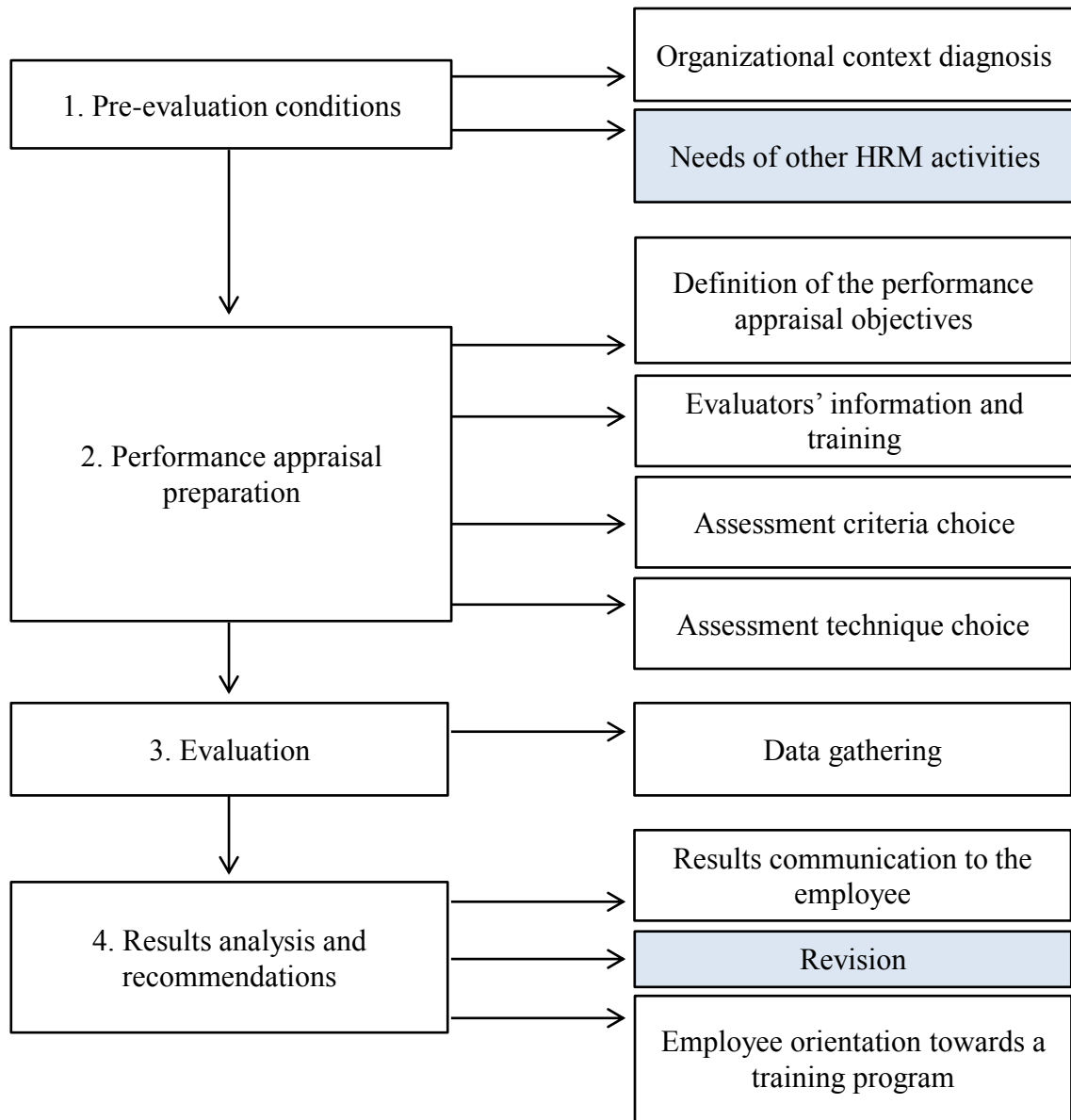
Figure 1 - Performance Appraisal Process

Source: Sekiou et al. (2009: 370)

Chapter II – Problem Conceptualization and Investigation Questions

After elaborating the literature review and getting an idea of the state of the art of online selection, it was possible to identify three investigation questions that will be helpful answering to the main research question (RQ): "*How to enhance the e-selection process effectiveness?*"

In relation to the factors affecting the e-selection process withdrawing its effectiveness, it were identified two important questions, one concerning the opinion of R&S professionals and the other taking into account candidates' opinion.

These questions are intended to make a comparison between the issues identified in the literature review and the reality lived by people evolved in the SP, being them: "*Are the barriers to online SP pointed out in literature the same as EDP face in its e-selection system?*" and "*Do applicants face or have the perception of these issues during their assessment programs?*"

Finally, after analyzing these aspects and properly identifying the barriers to online selection it is crucial to extract some opinions about possible strategies that can be used to increase SP effectiveness, being the third RQ: "*What strategies can be used to circumvent/suppress each of the issues affecting online selection?*"

Chapter III – Methodology

According to Anderson (2009) most of the HR investigators who embark on inquiries are not sensitized to the importance of theory and data relationship. Nevertheless, the author defends this point importance on an investigation given that a well-structured perspective on this relationship will buttress important decisions about what data to gather, where to look for this data and how to analyze it in the end.

In this chapter, it will be presented the methodology selected for the study, considering the dissertation's approach and investigation questions. Beyond this, it will also be described the sample, as well as the procedure used for data collection and treatment.

4.1 Study Approach

"*Research design is about turning [the] research ideas into a project. It involves deciding on the overall research strategy (how [we] propose to try to answer [the] RQ) and the details of how [we] will implement [the] strategy*" (Anderson, 2009: 45).

Reto and Nunes (1999) propose five main methods that can be used to configure the investigation problems, being the most proper to my study the case study, also called clinical method.

Case study can be defined as an empirical investigation that studies contemporary complex phenomena within a real context, particularly when the boundaries between the context and the phenomenon are not clear (Yin, 2009). This type of method is typically used to obtain qualitative information, but it can be used also in the quantification of variables, being favored when: (1) the investigator has little or no control on the events; (2) the variables of interest cannot be manipulated; (3) when the type of investigation questions to be answered enter in the domain of "what", "how" and/or "why" (Barañano, 2004; Reto & Nunes, 1999).

It is usual to distinguish case studies that focus in only one unit of analysis, from the ones that focus on several units, being these units individuals, groups or organizations. Therefore, the choice between these two possibilities depends on the objectives of the study and the degree of generalization intended to be achieved (Reto & Nunes, 1999),

being one of the criticisms pointed out to this method, precisely, the impossibility to generalize on the basis of only one case.

To get around this issue, and because this study will only include data collection in a single company, it will be used more than a single instrument applied to different targets.

4.2   Data Collection

Concerning data gathering, Neuman (2000) defends that both qualitative and quantitative researchers seek for reliable methods giving superior information to support the study. To do so, it is important to understand which type of information is necessary to answer to the investigation questions, being possible to recourse either to qualitative or quantitative data.

Qualitative data emphasizes mainly the quality of the processes and its intervenients, being expressed entirely using words or language. On the other side, quantitative data refers to data that can be measured in numerical terms (Denzin & Lincon, 2000; Anderson, 2009).

Given the nature this study and the investigation questions associated to it, it was used both qualitative and quantitative data, in the form of semi-structured interviews and questionnaires, respectively. Below there is a table with the data collection instrument and the RQ intended to be answered.

Instrument	RQ
Semi-structured Interview	*"Are the barriers to online SP pointed out in literature the same as EDP face in its e-selection system?"* *"What strategies can be used to circumvent/suppress each of the issues affecting online selection?"*
Questionnaire	*"Do applicants face or have the perception of these issues during their assessment programs?"*

Table 1 – Data collection instrument and RQ intended to be answered by the study respondents

According to Velde, Jansen and Anderson (2004), semi-structured interviews are mostly used to collect qualitative information, especially when the researcher pretends to respond to explorative research questions. With this instrument is common to have a list of questions with the topics under analysis being possible to include new topics that become relevant during interview, change the questions' order or even suppress themes no longer relevant (Bryman, 2004).

"*As result, qualitative interviewing tend to be flexible, responding to the direction in which [the researcher] take the interview and perhaps adjusting the emphases in the research as a result of significant issues that emerge in the course of the interview*" (Bryman, 2004: 320).

In this study, it were created two scripts[1]: one containing only questions related with the R&S department and EDP's SP in general terms – responded by one person; and the other comprising all the questions about e-selection - answered by two R&S professionals. This is because the answers to the first interview would be all equal across R&S direction and were only used to characterize EDP in Chapter IV.

All the interviews were conducted in person at EDP's facilities during the same week.

In relation to the core interview, it compiled a series of questions related with the advantages and disadvantages of e-selection and the possible strategies that can be used to overcome the issues affecting this type of selection.

With regard to the questionnaires, it represents the most suitable method to collect information across large groups of people in a short time. Plus, this instrument has two great benefits: it is relatively low cost in comparison with interview, for instance; and it is simple to treat data afterwards because it does not require categorization (Velde et al., 2004).

In this case, questionnaires were critical due to the intention of collecting as much opinions as possible about e-selection experience across EDP employees.

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[1] The interview scripts can be find in Appendix II – Sections A and B

To do so, it was applied a Likert scale[2] of 7 points (1 = Strongly disagree to 7 = Strongly agree) divided in three main parts: a first on with an introduction to the questionnaire scope, respondent profile and main instructions; a second with e-selection related questions; and the last one with the respondent characterization.

These questionnaires we constructed using an online platform called "*Qualtrics*" and distributed via corporate e-mail together with the study framework. The respondents had the questionnaires available for response during three weeks.

4.3 Sample

A sample can be defined as a segment of members of the population of interest selected to get information about the whole. This process is crucial since it is impossible, is most of the cases, to analyse the entire population (Bryman, 2004; Krippendorff, 1990).

In the case of this reading the approach used to collect interviews was convenience sampling that relies on data collection from members conveniently available to the researcher (Bryman, 2004). This sampling method is typically chosen when it is difficult to arrange other sampling system and it is considered the least rigorous in comparison with the others (Krippendorff, 1990), however giving the specificity of this topic, it was the only way to select pertinent respondents.

Given this, the interviews considered the responses of three professionals of EDP – from the R&S department – with different hierarchical levels, years of experience and ages, which enhances qualitative data validity (Velde et al., 2004).

Respondent	A	B	C
Function	Sup. Technician	Sup. Technician	Sub-Director
Work Experience at EDP	1 year	1 year	33 years
Gender	Female	Female	Female
Age	23	25	60
Educational Qualifications	Bachelor	Master	Bachelor

Table 2 - Characterization of interview respondents

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[2] The questionnaire framework can be consulted in Appendix II – Section C.

In what concerns to the questionnaires, it was considered all the population at EDP that fitted in the requirements established for this study, specifically: (1) have participated in the online SP; (2) have had, at least, one feedback meeting since the admission day.

By saying this, the questionnaire was sent to 289 employees, from six companies of EDP Group, enabling the collection of 73 valid responses.

About the participants' characterization[3], the results showed that the ages are comprised between 18 and 34 years old (M = 26.4; SD = 3.3), with a percentage of 63.0% males and 37.0% females. Regarding the educational qualifications, 32.9% of the respondents have the high school level, 21.9% are bachelors and 42.5% are masters, being their backgrounds distributed as follows: 24.7% are from technical areas, 27.4% are engineers, 34.2% are formed in management and economy and the remaining 13.7% in social sciences.

Finally, it was perceived that their work experience at EDP varied from 1 to 16 months (M = 10.2; SD = 4.8) and their distribution over the different EDP companies is: 11.0% from EDP Comercial, 31.5% from EDP Distribuição, 11.0% from EDP Produção, 13.7% from EDP SA., 11.0% from EDP Soluções Comerciais and 21.9% from EDP Valor.

4.4 Data Analysis

Regarding data analysis, the first step to obtain a reliable interpretation of the information is to conduct a content analysis. Content analysis can be defined as "*an approach to the analysis of documents and texts of predetermined categories and in a systematic and replicable manner*" (Bryman, 2004: 183).

This technique is one of the most common ways used to treat information in social sciences and can be applied both to qualitative and quantitative data, which is the case of this study.

To do so, Bardin (2009) defends three main steps that should be followed: (1) Pre analysis – which corresponds to the elaboration of a plan of analysis where the initial ideas are systematized and successive operations are planned; (2) Material exploration –

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[3] The SPSS outputs regarding respondents' characterization can be find in Appendix III – Section B

consisting in an extended analysis of the pertinent information evolving, most of the times, operations of recoding, categorization, items' grouping, among others; (3) Results treatment and interpretation – involving statistical operations that highlight the most relevant data.

In the case of the interviews, it was made a full transcription of the recordings collected, followed by a categorization[4] of the information to find relevant excerpts for each of the items under analysis.

In what regards to the questionnaires, it was used SPSS program to treat data. During this process, there was the need: (1) recodify some of the items under analysis due to their negative connotation, making an inversion of the scores obtained; (2) group some of the responses gathered - regarding respondents' characterization – into smaller groups due to the disparity of the answers.

Afterwards, it was conducted a descriptive analysis, a principal component analysis and a differential analysis.

4.5 Procedure

With regard to the procedures, firstly, and to avoid future problems with the collected information, it was made a requirement for data collection and treatment to the Human Resources Director of EDP Valor[5]. This requirement was accepted and sent to the other EDP companies evolved in the study.

After these two e-mails[6] were sent, one requesting for R&S professionals collaboration for an interview and other containing the questionnaires to be fulfilled by the employees. Both of them were directed to the corporate e-mail with an explanation of the study scope and, in the case of the questionnaires, warning to the fact that the responses were non-mandatory.

Regarding the main interview, from the people contacted to answer to it, only two from the three people were available to participate, being the third participant only enabled to respond to questions related with the department and its way of working.

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[4] The categorization process can be find in Appendix III – Section A
[5] Please find the requirement for data collection and use in Appendix I – Section A
[6] The e-mails with the request for collaboration can be find in Appendix I – Section B and C

In what confers to the questionnaires, the adhesion was around 25.3%, being the only obstacle the fact that some of the potential respondents were on vacation during the period of application of the inquiries. Nevertheless, to monetize time, while the employees were answering to the questionnaires, the interviews were made to the R&S professionals.

After collecting all the information needed, it was conducted a content analysis.

Chapter IV – EDP Case Study

5.1   Company Framework

Founded in 1975, with the merge of 13 national companies, EDP - ENERGIAS DE PORTUGAL, SA. is a vertically integrated utility whose business is mainly engaged with the production, distribution and commercialization of electricity, but also with the distribution of natural gas and production of wind energy (EDP Annual Report, 2016).

Today, after more than 40 years, EDP leader in the Portuguese energy sector maintains a relevant presence in the world energy marketplace and counts with approximately 12.000 employees distributed over 14 geographies (EDP Annual Report, 2016).

EDP's vision is "*a global energy providing company, leader in creating value, innovation and sustainability*" (EDP, 2016: 19) and its values are:

- Initiative – showed through the behavior and attitude of the employees;
- Trust – towards shareholders, customers, suppliers and other stakeholders;
- Excellence – in the way EDP performs and do things;
- Sustainability – with the objective of improving continuously the quality of life for present and future generations;
- Innovation – with the aim of creating value within the different areas of operation

Regarding the financial performance indicators of this company, in keeping with EDP Annual Report (2016), the results in 2016 were the following: Net income: 1.200M€ (which represents a decrease of 3.77% in comparison with 2015); Liquid Operating Investment: 1.964M€ (+10% than in 2015); Debt: 15.900M€ (representing a decrease of 8.62% comparing to the 17.400M€ in debt in 2015).

5.2   Selection Process

The R&S of candidates at EDP is responsibility of the department "*Hire to Retire*" (H2R), placed at EDP Valor - the company that provides services for the whole Group EDP.

Thus, whenever one of the companies in the group needs to hire someone, the Human Resources Department of that company has the support of that department, being the process triggered as follows:

R&S

1. New Vacancy
2. Recruitment
3. Pre-selection
4. Online Tests
5. Skills evaluation interview
6. Final interview with EDP juri

EDP Role

Identification of the need and contact with H2R department

Start-up meeting with the business unit to define the desired profile, requirements and competencies.
The vacancy announcement is then made on EDP's site; LinkedIn and Reference Schools

Curricular Screening

Presentation of the selected CVs to the business unit hiring.
Selection of 15 candidates per vacancy to move to the next phase

It is sent a report with the test and interview results. All the candidates passing on phase 5 are interviewed in the final phase

Report with the final decision and candidates sorted by preference

Figure 2 - R&S process at EDP Group

Source: Elaborated by the author using EDP's Intranet

Still, there are two main processes occuring in EDP, one for candidates with the minimum obrigatory schooling (12th grade) - which mainly serves for the R&S of electricians and non-senior staff; and other used to R&S people with academic qualifications at higher education level that generaly integrate EDP's boards.

Chapter V – Findings and Data Analysis

After collecting all the information from both the R&S professionals and the employees hired using online selection, this chapter compiles the results obtained with the objective of understanding if the opinions are similar or not between the two groups of respondents.

6.1 Qualitative Data

In global terms, the utilization of online selection instruments is considered advantageous by R&S professionals, being perceived by respondent C as faster and less costly for the company. [*"The online tests are much more expensive than paper tests. But, if we are to consider the time and resources of the company that we do not have to spend, they become a better option, being faster and economical"* (C: Q3.9)].

Regarding the effectiveness associated this type of instruments it is believed that the outcomes to the SP are generally positive, as we can see by interviewee C statement: [*"I*n *an empirical way, I would say that most hiring's are successful. I would say at least 90%"* (C: Q3.12)]. Even so, it is difficult to have this notion because generally the SP is analyzed as a whole

Beyond this, both interviewees agree on the utilization of online instruments [*"in a measured way, i.e. there must be a mix between online and traditional. (…) The full use of online does not make any sense to me because it would be the complete dehumanization of a process that should be human because it deals with people. On the other hand, on the phases that our interference or interaction is not necessary, I agree that the automation helps a lot"* (C: Q3.13)].

Below are presented the results regarding each of the obstacles identified previously in the theoretical framework.

Proctored versus unproctored administration

In what refers to tests administration, in the case of EDP, this topic raises many different opinions, since there are perceived advantages but also some significant cons.

Concerning for example the cheating theme, it is perceived by both interviewees as the biggest disadvantage on online selection ["*turning the SP less reliable*" (B: Q3.9)]. Nevertheless, it was defended by respondent C that, given the extension in terms of phases and process difficulty, ["*if the candidate reaches the last stages and ends up being chosen by the panel, it is because he/she was somehow adequate to the function*" (B: Q3.9)]. Plus, there is a strategy used to work around this issue that relies on the consistency between responses. ["*The tests have an internal coherence that is evaluated as well so, when there is doubt about a particular candidate, the candidate may have to respond again to the tests but this time, in person*" (C: Q3.9)].

Another issue pointed to UIT is allied with the fact that there is no monitoring and, more than clarifying any doubts that may arise, the problem is especially related with the instructions reading. According to the respondents, ["*most of the times there are candidates that do not even read the instructions (...) leading to a percentage of exclusions of approximately 30%*" (C: Q3.5)] especially in the numerical reasoning test that requires the use of a calculator. Also for this problem the H2R has tried to find a strategy, requesting to the service provider to alert candidates about the importance of the instructions, when the telephonic call is made.

Still about this topic, R&S professionals were asked about the pressure that this type of tests may or may not create on respondents. Both answered that it depended on people but the general impression was that UIT creates less pressure on candidates since they were not being supervised. Nevertheless, this due to non-supervision of the tests ["*these tend to have a shorter response time to avoid cheating*" (B: Q3.2)] which once again may cause some stress and pressure on some candidates.

It was also mentioned by interviewee C that ["*presently there is the possibility of creating a more cordial and sympathetic environment, which is not possible to create with online tests*" (C: Q3.2)] and ["*some candidates feel this need to have a framework and concern regarding the questions and understanding of the test*" (C: Q3.5)].

The positive part of UIT is related with the fact that ["*formerly, candidates had to go to the selector more than once, the first time to do the tests and, if they moved to the next phase, another to do the interview (...) what happens now is that the candidates have a deadline to complete the assessment and they can choose where and when they want to*

respond" (C: Q3.1)]. Furthermore, nowadays test results are immediate and ["*there is a substantial reduction of the process duration since it is no longer need to have company's resources sorting test results one by one*" (C: Q3.1)].

Test environment and technology issues

With regard to testing environment, the interviewees agree that the environment chosen to respond to the tests has influence on the results: ["*the concentration levels are not the same between different environments*" (B: Q3.7)]. In fact, precisely because they have this perception ["*an alert is made in the initial recommendations indicating that the test should be answered in a quiet, uninterrupted environment and preferably with the mobile devices turned off*" (C: Q3.7)], informing also about the short response time associated to this assessment method.

Regarding technology issues, R&S professionals did not have a very strong opinion on the subject. It was just said that this topic was somehow related with the environment chosen by the candidate and, also in this matter, there was a warning in the initial instructions: ["*be sure that the internet connection is stable and that the battery of the device used is properly charged*" (B: Q3.7)].

Unqualified applicants

About the theme of having have less qualified candidates in comparison with the ones who used to appear in more traditional processes, the answer given by the two interviewees was peremptory: ["*it has nothing to do with the type of process used*" (C: Q3.11)].

Also, it was not perceived by the respondents any influence in the quality of selected candidates due to pool enlargement or difficulties in CV's screening. Still, one of the respondents mentioned that ["*the easy access to the vacancy via internet increases the chances of people applying. However, in the end, the number of candidates who move to the online testing phase turns out to be the same*" (C: Q3.3)].

This opinion may arise from the fact that EDP has already adopted online recruiting for a long time in comparison with online selection and has already created strategies to circumvent this obstacle, as we can see by C's affirmation ["*At the present time, it is unthinkable to receive CV's in paper. In fact, whenever we receive any printed CV, we*

respond to the applicant with an email stating that he/she should complete the application form located in our website (...) through the online form we can make filters, export to excel and analyze the applications much faster" (C: Q3.4)].

Adverse impact

In relation with adverse impact, the opinions are not entirely congruent. One of the respondents believes that ["*the people who might suffer from this difficulty would be the technical boards (electricians and mechanical locksmiths) but they do the tests in person and with another service provider. Moreover, older people could also feel this difficulty, but at this moment it is not our target*" (B: Q3.6)]. On the other hand, the other person interviewed mentioned that ["*in what refers to subgroups and for example to the socio-economic conditions, there is nobody today that do not have access to technologies. It is very unlikely that such a case will appear. We never had that problem*" (C: Q3.6)].

Still, both respondents agreed that test results may depend on the familiarization with technologies.

Data security

The data security topic was not deeply explored since the interviewees had no clear idea of the implications of this issue. Even so, both stated that this theme was not new and ["*the only information sharing that exists happens within the EDP Group and with the service provider - that has a contract signed with us that guarantees the security and confidentiality of the information shared)*" (B: Q3.8)].

Applicant's experience and perception of the assessment process

Regarding testing experience, according to interviewee C, ["*to date, there is no way to perceive feedback from candidates (...) in fact this is a process that EDP wants to develop internally but that has not done yet due to lack of time and human resources in our team*" (C: Q3.12)].

However, one of the most mentioned subjects during the interviews was related with test instructions and the need to make them as simple and intuitive as possible which somehow contributes to a positive perception of the assessment process.

Also, the fact that the applicant ["*does not have to drive to the service provider's facilities more than one time can also be well perceived because there is no time wasting, especially if the person is already working*" (B: Q3.14)].

6.2   Quantitative Data

Regarding quantitative data, as already mentioned previously, there was the need of recode some of the information gathered due to the negative construction of the sentences. Therefore, all the graphics presented below are already recoded meaning that the scores are already adjusted to the Likert scale initially defined. Also, there was the need to group some of the segments regarding respondents' characterization namely, the age – that was grouped into two groups having into consideration the average ($M =$ 26.36, $SD = 3.33$; Group 1 – "Less or equal to 26 years old" and Group 2 – "Greater or equal to 27 years old"); the background – compressed into four groups (Group 1 – "Technical area"; Group 2 – "Engineering"; Group 3 – "Economic and business sciences" and Group 4 – "Social sciences"); and the work experience at EDP – grouped into two groups (Group 1 – "Less than 1 year" and Group 2 – "1 year or more").

At first sight, these were the descriptive results in relation to each of the items questioned:

Items	M	SD	Answers Frequency (%)						
			SD (1)	D (2)	SD (3)	NAD (4)	SA (5)	A (6)	SA (7)
1	3.96	1.60	6.85	17.81	8.22	28.77	20.55	13.70	4.11
2	4.81	1.53	2.74	9.59	8.22	8.22	35.62	26.03	9.59
3	5.59	1.53	1.37	8.22	1.37	6.85	12.33	41.10	28.77
4	3.86	1.68	6.85	21.92	12.33	19.18	20.55	15.07	4.11
5	5.03	1.71	2.74	8.22	12.33	4.11	30.14	17.81	24.66
6	4.59	1.68	6.85	6.85	9.59	20.55	19.18	27.40	9.59
7	3.55	1.72	12.33	21.92	15.07	21.92	9.59	16.44	2.74
8	5.45	1.38	2.74	4.11	1.37	9.59	17.81	47.95	16.44
9	3.40	1.93	17.81	26.03	10.96	19.18	1.37	19.18	5.48
10	4.68	1.61	4.11	9.59	8.22	15.07	28.77	23.29	10.96
11	4.99	1.75	4.11	9.59	8.22	8.22	21.92	27.40	20.55
12	4.82	1.29	1.37	4.11	8.22	24.66	26.03	30.14	5.48
13	3.93	1.73	12.33	12.33	8.22	30.14	16.44	15.07	5.48
14	5.38	1.23	0.00	2.74	4.11	16.44	23.29	35.62	17.81

Notes: *M* = Mean; *SD* = Standard deviation; *SD (1)* = Strongly disagree; *D (2)* = Disagree; *SA (3)* = Somewhat disagree; *NAD (4)* = Neither agree or disagree; *SA (5)* = Somewhat agree; *A (6)* = Agree; *SA (7)* = Strongly agree; *Item 1* - Favors candidates' results; *Item 2* – Creates less pressure because there is no control/supervision; *Item 3* - Allows pool enlargement, reaching more people; *Item 4* - Makes screening more difficult due to excessive applications; *Item 5* - Can be harmful because if there are doubts they can not be clarified; *Item 6* - May harm the candidate if the environment chosen for the tests is not the most appropriate; *Item 7* - Does not guarantee the confidentiality of the personal data shared between the candidate and the company; *Item 8* - It is less expensive than traditional selection methods; *Item 9* – It promotes the selection of unqualified candidates; *Item 10* - Can negatively influence assessment results if the candidate is not familiar with technologies; *Item 11* - It is not reliable because it does not guarantee that it is the candidate who is answering the tests; *Item 12* - It may be influenced by candidate's previous experiences with this type processes; *Item 13* - It is more effective than traditional selection methods; *Item 14* - Turns the recruitment and selection process faster

Table 3 - Descriptive statistics and frequency of answer for each item

As it can be perceived, in general terms the respondents tend to agree with all the affirmations from the questionnaire having some doubts about their agreement with the topics of "*favoring unqualified applicants*" and the "*guarantee of confidentiality of shared personal data*". All the other themes have a degree of agreement associated.

To better understand the opinions regarding each issue, it was conducted a principal component analysis with Varimax rotation, using the Kaiser-Mayer-Olkin indicator (KMO = 0.69) and Bartlett's sphericity test ($\chi^2_{(36)}$ = 98.81, p < 0.001). As KMO indicator is close to 0.70, we can consider sample adequacy was verified, indicating no identity problems in the data and showing that the correlations between the various items under analysis were sufficient and adequate (Marôco, 2014).

The items' selection followed the following criteria: item-factor correlation value equal to or greater than 0.40 (convergent validity), difference between correlations greater than 0.20 (discriminant validity) and each factor having at least three associated items.

The percentage of explained variance for the two components obtained was 43.8% which is considered acceptable given the premise of this test that values between 40% and 60% can be considered satisfactory (Pasquali, 1999).

The first component extracted explains 24.94% of the results' variance, being composed of four items related to the disadvantages of e-selection (items 9, 11, 7 and 12). The second component is composed of five items (13, 8, 3, 1 and 14) that evaluate the advantages of e-selection and explain 18.80% of total variance.

As can be seen Table 4, in its initial version, the questionnaire used to contain 14 questions. However, because it was found that there were factors saturating in more than one factor (questions 2, 4, 5, 6 and 10), after the extraction of those factors it were only maintained nine questions. After this, the items were rearranged, staying items 1, 2, 3 and 4 associated with the e-selection advantages and items 5, 6, 7, 8, and 9 related to the disadvantages of e-selection.

Below is presented the components' matrix.

Items	F1	F2
1D = Promotes the selection of unqualified candidates	0.767	
2D - It is not reliable because it does not guarantee that it is the candidate who is answering the tests	0.716	
3D - Does not guarantee the confidentiality of the personal data shared between the candidate and the company	0.624	
4D = It may be influenced by candidate's previous experiences with this type processes	0.544	
5A - It is more effective than traditional selection methods		0.622
6A - It is less expensive than traditional selection methods		0.599
7A - Allows pool enlargement, reaching more people		0.517
8A - Favors candidates' results		0.505
9A - Turns the recruitment and selection process faster		0.503
Eigenvalue	2.29	1.64
% Explained Variance	24.94	18.80
Cronbach Alfa	0.67	0.65
Notes: F1 = Disadvantages; F2 = Advantages		

Table 4 - Rotated component matrix

Thus, with regard to the quantitative analysis, it can be said that respondents consider non-qualified applicants, cheating, confidentiality and testing experiences the most critical issues to online selection. On the other hand, for example the topic related with pool enlargement is not considered a disadvantage to the applicants.

Now each component will be related to the aspects inherent to the characterization of the respondents in order to perceive associations between the respondents' characteristics and the perceived advantages and disadvantages of online selection.

Dimensions	Male (n = 46)		Female (n = 27)			
	M	*SD*	*M*	*SD*	*t-test*	*Sig.*
Disadvantages	4.02	1.17	4.47	1.16	-1,488	0.117
Advantages	5.07	0.75	4.49	0.87	3.004	0.004*
Note: *M* = Mean; *SD* = Standard deviation; * *p* < 0.05						

Table 5 - Differential analysis based on gender

Starting by the gender, we can see in Table 5 that the results obtained through the t-student test for independent samples reveal significant differences. This differences are only significate on e-selection advantages [$t_{(71)}$ = 3.004, p < 0.05], being men who present superior mean scores. This suggests they are the ones who mostly agree that e-selection is an advantage for EDP R&S process.

Dimensions	Technical area (n = 18)		Engineering (n = 20)		Economic & business sciences (n = 25)		Social sciences (n = 10)			
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*Sig.*
Disadvantages	3.79	1.15	4.36	1.26	4.53	1.06	2.70	1.18	2.186	0.097*
Advantages	5.24	0.69	5.03	0.86	4.66	0.77	4.36	0.96	3.517	0.020**
Note: *M* = Mean; *SD* = Standard deviation; * *p* < 0.10; ** *p* < 0.05										

Table 6 - Differential analysis based on background

The results obtained through the ANOVA tests (Table 6) reveal that there are significant differences depending on the respondents' background, regarding both e-selection advantages [$F_{(3, 72)}$ = 3.517, p <0.005] and disadvantages [$F_{(3, 72)}$ = 2.186, p < 0.10].

Regarding disadvantages, it can be said that people from social sciences are the least negative about online selection, disagreeing more with the drawbacks presented in the questionnaire (*M* = 2.70; *SD* = 1.18), whereas the most reluctant to online selection are people from economic and business sciences (*M* = 4.53; *SD* = 1.06), followed by engineers (*M* = 4.36; *SD* =1.26) and technicians (*M* = 3.79; *SD* = 1.15).

On the other hand, conferring to the advantages, technicians are the ones who agree the most with the advantages presented (*M* = 5.24; *SD* = 0.69), followed by engineers (*M* = 5.03; *SD* = 0.86), economists and managers (*M* = 4.66; *SD* = 0.77) and, in the end, people form social sciences (*M* = 4.36; *SD* = 0.96).

Dimensions	EDP Comercial (n = 8)		EDP Distribuição (n = 23)		EDP Produção (n = 8)		EDP SA (n = 10)		EDP Soluções Comerciais (n = 8)		EDP Valor (n = 16)		F	Sig.
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*		
Disadvant.	4.44	1.37	3.94	1.26	4.25	1.20	4.18	0.96	4.63	1.15	4.19	1.20	0.487	0.785
Advantages	5.18	0.80	5.15	0.79	5.08	0.91	4.68	0.71	4.20	0.99	4.64	0.73	2.366	0.049*

Note: *M* = Mean; *SD* = Standard deviation; *$p < 0.05$

Table 7 - Differential analysis based company from EDP Group

Regarding the company from the EDP Group, the results obtained through the ANOVA test reveal significant differences on e-selection advantages [$F_{(5, 67)} = 2.366$, $p < 0.05$], being respondents from EDP Comercial, the ones who present superior mean scores. (*M* = 5.18; *SD* = 0.80). This suggests they are the ones who mostly agree that e-selection is an advantage for EDP R&S process (Table 7).

Contrary, EDP Valor is the least positive company regarding advantages perception (*M* = 4.64; *SD* = 0.73).

Dimensions	Less than 1 year (n = 42)		1 year or more (n = 31)			
	M	*SD*	*M*	*SD*	*t-test*	*Sig.*
Disadvantages	3.97	1.15	4.88	0.84	-1.865	0.066*
Advantages	4.48	1.18	4.84	0.87	0.210	0.834

Note: *M* = Mean; *SD* = Standard deviation; * $p < 0.10$

Table 8 - Differential analysis based on experience at EDP Group

Finally, the results obtained through the t-student test for independent samples (Table 8) reveal significant differences between groups with different work experiences in what confers to online SP disadvantages [$t_{(71)} = -1.865$, $p < 0.05$]. For the respondents working for 1 year or more (*M* = 4.48; *SD* = 1.18) the opinion regarding e-selection disadvantages is not as favorable as for the most recent workers (*M* = 3.97; *SD* = 1.14).

6.3 Comparative Board

To have a clear idea of the relevant challenges affecting online selection, it was developed a comparative board – Table 10 - that compiles the conclusions drawn from each group of respondents in relation to the topics covered.

By saying this, in this board, it was created a column with all the obstacles to e-selection identified in the literature and, for each column of respondents; it was made a classification of the items as "Relevant" or "Not relevant". Relevancy is attributed from the moment that respondents hesitate regarding the response to item, being some of them more relevant than others.

Still, the issues considered relevant by the two groups of respondents are the most critical to online selection, deserving the attention of human resources professionals, while the ones having just one group considering them relevant are not urgent.

Challenges identified in Literature Review	R&S professionals	Questionnaire respondents
Proctored versus unproctored administration	Relevant	Relevant
Test environment issues	Relevant	Relevant
Technology issues	Relevant	Relevant
Unqualified applicants	Not Relevant	Relevant
Adverse impact	Relevant	Relevant
Data security	Not Relevant	Relevant
Applicant's experience and perception of the assessment process	Relevant	Relevant

Table 9 - Comparative board regarding issues relevance

Chapter VI – Results Discussion and Conclusions

With the purpose of concluding this study, it is now time to respond to each RQ taking into account all the all the information gathered in relation to the topic of e-selection. Thus, the first RQ to be presented and discussed below are ones that came out of the main question, being the principal RQ answered in the last place.

In relation to the first RQ – "*Are the barriers to online selection process pointed out in literature the same as EDP face in its e-selection system?*" – the answer is: more or less.

In general terms, we can see an agreement between the issues identified in literature review – identified by Reynolds & Weiner (2009) - and the reality perceived by companies. However, there are some topics that do not even pass in the minds of R&S professionals as being an obstacle to e-selection, namely the rise of unqualified candidates and the data security issues. This can be good – meaning that these themes do not occur in EDP's SP – or may be dangerous if they are actually affecting the effectiveness of the process and not being perceived.

Still, there is a great deal of congruence since the obstacles presented in the literature as being the most critical to online selection are also those most emphasized by EDP professionals.

Passing to the second RQ – "*Do applicants face or have the perception of these issues during their assessment programs? –* it is possible to affirm that respondents are completely aligned with the issues identified in literature.

According to the data gathered, it was noticed some level of agreement with all items from the questionnaire, meaning that somehow the applicants have the perception of each of these glitches from their personal experience. Though, for example issues like pool enlargement or favoring candidates' results, are perceived by applicants as an advantage to the SP which does not translate the reality described in the literature and recognized R&S professionals

After comparing the opinions between the respondents and the existing literature to date, the third RQ – "*What strategies can be used to circumvent/suppress each of the issues affecting online selection?*" – arises to find out some solutions.

Some of strategies proposed by the interviewees were: (1) to create clear, succinct and appealing initial recommendations preferably separated from the test instructions, to make the candidate read them. This recommendations should contain a warning for the most relevant issues such as the short response time, the implication of the chosen environment (recommending a quiet, uninterrupted environment and preferably with the mobile devices turned off) and the technological problems that may arise during the test (advising the candidate to be sure that the internet connection is stable and the battery of the device used is properly charged); (2) to create a follow-up program that allows R&S professionals to receive feedback both from applicants (regarding their experience with the online test) and from their hierarchy (to better understand, after six months or one year, if the SP is being effective or not).

Still, there were some topics mentioned by the inquiries respondents as a disadvantage that we not discussed deeply with the R&S professionals as for example confidentiality and cheating topics.

Last but not least, it comes the main RQ of this investigation – "*How to enhance the e-selection process effectiveness?*" – can be answered compiling the answers to the previous questions.

Basically, according to the theoretical framework, there are two main ways of enhancing SP efficiency; one is by continuously meliorate the process, obtaining higher levels of predictive validity; the other happens after people are already hired, by evaluating if the choice was correctly done or not, using performance appraisal.

Thus, in addition to the implementation of the above-mentioned strategies, there is a need to constantly evaluate the SP considering the feedback from the participants in EDP's R&S. These strategies can be compared with the future performance of people hired in order to evaluate process improvements.

Answered all questions, it is now time to talk about the limitations of this investigation and proposals for future research.

Firstly, it should be mentioned the fact that this study uses only one company for data collection, being the results highly limited to EDP's reality. Therefore, any

generalization to other company may be risky due to the differences in the SP, number of online phases and way of getting to the results.

Secondly, the samples used in the investigation were both small. Due to the limitations in terms of time from the R&S professionals and the unavoidable distance from the online questionnaire, it was only possible to interview three R&S specialists and obtain 73 valid questionnaires. For future researches this numbers should be more significate.

Thirdly, as the SP under study has only one online phase, and the reports sent by the service provider compile both the online test performance and interview results, the R&S professionals' opinion is not exempt. This is, the skills' interview results might affect the opinion of these professionals.

Finally, it is also important to consider the study of a series of specific strategies to circumvent each of the obstacles raised in literature. This study focused mostly in the identification of the most relevant challenges according to the various intervenients, and less on the range of strategies that can be applied.

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Appendixes

Appendix I – Requirements

Section A - Permission for Data Collection and Use

Exmo. [Dirigido ao Diretor de Recursos Humanos]

Eu, Mariana Ferreira da Costa Alexandre, mestranda do Msc. In Management, lecionado pela ISCTE Business School, solicito autorização para a recolha de dados na EDP no âmbito da minha dissertação que visa avaliar a perceção dos colaboradores e dos profissionais de RH da EDP acerca do processo de seleção online de candidatos. Os dados serão recolhidos nos seguintes moldes:

Instrumento	Recolha de dados	Participantes	Empresas do Grupo EDP abrangidas
Questionários	Via e-mail corporativo EDP	± 200 colaboradores*	EDP Comercial; EDP Distribuição; EDP Produção; EDP Soluções Comerciais; EDP SA, EDP Valor
Entrevistas	Presencial com gravação de voz	2 colaboradores da direção H2R	EDP Valor

Os participantes selecionados para o estudo têm data de admissão posterior a Julho de 2016, pelo que participaram no processo de R&S da Jason Associates. Todos os participantes serão informados do âmbito do estudo e da não obrigatoriedade de participação no mesmo.

Solicito ainda que seja autorizada a utilização da designação da empresa quer ao longo do documento escrito, quer na apresentação e defesa do mesmo.

Caso seja necessário, disponibilizo-me a facultar uma cópia dos resultados do estudo no que remete à EDP, bem como uma cópia do presente documento.

Compreendo a informação acima descrita e autorizo a recolha de dados na EDP, de acordo com as condições aqui apresentadas.

Data:_____

O Diretor de Recursos Humanos da EDP Valor:_____

A Mestranda:_____

Section B – Request for Collaboration: Interview

Assunto: Colaboração em Dissertação de Mestrado

Boa tarde,

O meu nome é Mariana Alexandre e, para além de colaboradora da EDP Valor, sou aluna do 2º ano do Master In Management lecionado pela ISCTE Business School. Encontro-me neste momento a desenvolver a minha dissertação que visa avaliar as vantagens e desvantagens do processo de selecção online de candidatos, no sentido de apurar a sua eficácia.

Neste âmbito, seria muito importante poder contar com a sua colaboração para uma entrevista presencial com a duração de cerca de 30 minutos, a realizar durante esta semana.

Aguardo a sua resposta sobre o interesse e disponibilidade nesta colaboração.

Antecipadamente grata,
Mariana Alexandre
mfcae@iscte-iul.pt

Section C – Request for Collaboration: Questionnaire

Assunto: Colaboração em Dissertação de Mestrado

Boa tarde,

O meu nome é Mariana Alexandre e, para além de colaboradora da EDP Valor, sou aluna do 2º ano do Master In Management lecionado pela ISCTE Business School. Encontro-me neste momento a desenvolver a minha dissertação que visa avaliar as vantagens e desvantagens do processo de selecção online de candidatos, no sentido de apurar a sua eficácia.

Neste âmbito, seria muito importante poder contar com a sua participação no questionário abaixo, sendo que todas as respostas são anónimas e os dados serão tratados de forma totalmente confidencial.

Responda aqui ao questionário:

https://iscteiul.co1.qualtrics.com/jfe/form/SV_6YA7b4AF6022AVD

Antecipadamente grata,
Mariana Alexandre

Nota: A recolha de dados foi devidamente autorizada pelo responsável da DRH da sua empresa.

Appendix II – Data Collection

Section A - Interview Script 1 | H2R Department & SP

Caraterização do entrevistado:

Função e Antiguidade na função:

Sexo:

Idade:

Habilitações literárias:

1) <u>**Questões acerca do Departamento de H2R**</u>

Q1: No Grupo EDP PT, todos os processos de Recrutamento e Seleção passam pelo departamento H2R? Existe alguma exceção/circunstância em que isso não aconteça?

Q2: Por quantas pessoas é constituída a equipa de R&S?

Q3: Por favor explique de forma breve como são distribuídas as tarefas e responsabilidades dentro do departamento?

2) <u>**Questões acerca do Processo de Seleção**</u>

Q4: Por favor caracterize brevemente o processo de R&S utilizado pela EDP e a forma como este processo é despoletado para o Grupo EDP.

Q5: Em que situações são utilizados métodos de seleção online de candidatos?

Q6: Há quanto tempo é que a EDP utiliza este tipo de métodos nos seus processos?

Q7: Estes métodos nunca são utilizados na totalidade do processo de seleção, correto? Isto é, há sempre um cruzamento entre métodos online e métodos tradicionais?

Q8: De que forma é que chegam os resultados destes testes à EDP?

<div align="center">

Muito obrigada pela sua colaboração!

</div>

Section B - Interview Script 1 | E-Selection

Caraterização do entrevistado:

Função e Antiguidade na função:

Sexo:

Idade:

Habilitações literárias:

1) <u>Questões acerca da Seleção Online</u>

Q1: Na sua opinião, a utilização de métodos de seleção online favorece os resultados dos candidatos face ao métodos tradicionais (tendo em conta por exemplo os resultados dos relatórios que lhe chegam)? Porque é que acha que isto acontece?

Q2: Considera que a utilização destes métodos cria menos pressão no candidato? Porquê?

Q3: Comparando a seleção online, com a seleção mais tradicional, diria que no caso da e-seleção existe um maior alargamento da pool de candidatos? Diria que isto se traduz numa vantagem ou numa desvantagem?

Q4: Sente que com este processo há uma dificuldade acrescida na triagem de candidatos devido ao excesso de candidaturas? Se sim, que estratégias utilizam para contornar este obstáculo?

Q5: Considera que na utilização de métodos à distancia, o candidato poderá sair prejudicado porque, caso existam dúvidas, estas não podem ser esclarecidas?

Q6: Acredita que os resultados dependem largamente do à vontade dos candidatos em relação aos meios tecnológicos utilizados para a realização dos testes?

Q7: Relativamente ao ambiente escolhido pelo candidato para a realização da avaliação, considera que uma má escolha do local de realização da prova poderá influenciar os resultados da mesma? De que forma?

Q8: Considera que a utilização de métodos de seleção online de candidatos pode vir a comprometer a confidencialidade dos dados pessoais partilhados entre o candidato e a empresa? Porquê?

Q9: A utilização de métodos online, não garante que seja o candidato a realizar as provas. Acha que isto pode tornar o processo de seleção mais frágil?

Q10: Considera que a utilização de provas online torna o processo de recrutamento e seleção mais rápido e económico para a empresa?

Q11: É frequente sentir que, desde que começaram a ser utilizados métodos online, os candidatos que surgem em fases posteriores do processo, não são os mais qualificados para a função?

Q12: E no final do processo? Considera que os candidatos admitidos tendem demonstrar-se adequados para a função que integraram? Acha que esta "adequabilidade" acontece mais agora ou com o anterior processo de seleção?

Q13: Da sua experiencia, e de uma forma geral qual das duas considera mais eficaz? A seleção tradicional ou a seleção online?

Q14: E quais as principais vantagens e desvantagens que vê nesta nova forma de seleção de candidatos?

Muito obrigada pela sua colaboração!

Section C - Questionnaire Framework

Este questionário destina-se a **fins meramente académicos** e insere-se no âmbito de uma dissertação de mestrado em Gestão. Sumariamente, pretende-se conhecer a opinião dos colaboradores do Grupo EDP acerca do processo de **seleção** em que participaram.

As respostas são anónimas e os dados serão tratados de forma totalmente confidencial. O seu preenchimento demora cerca de **10 minutos.** Por favor, responda a **todas** as questões, pois só assim estará a contribuir para o sucesso desta investigação.

Obrigada pela colaboração!

Mariana Alexandre

ISCTE ◈ Business School
Instituto Universitário de Lisboa

Este questionário destina-se apenas a colaboradores cujo processo de seleção tenha incluído a aplicação de testes online e que já tenham tido pelo menos uma reunião de feedback relativa ao seu desempenho, desde a data da sua admissão.

Por favor, assinale o seu grau de concordância com cada uma das afirmações, utilizando a seguinte escala de 7 pontos.

1	2	3	4	5	6	7
Discordo totalmente	Discordo	Discordo parcialmente	Não concordo Nem discordo	Concordo parcialmente	Concordo	Concordo totalmente

A utilização de métodos de seleção online…							
1. Favorece os resultados dos candidatos.	1	2	3	4	5	6	7
2. Cria menos pressão porque não existe controlo/supervisão.	1	2	3	4	5	6	7
3. Permite alargar a pool de candidatos, alcançando mais pessoas.	1	2	3	4	5	6	7
4. Dificulta a triagem devido ao excesso de candidaturas.	1	2	3	4	5	6	7
5. Pode ser prejudicial, porque caso existam dúvidas, as mesmas não podem ser esclarecidas.	1	2	3	4	5	6	7
6. Pode prejudicar o candidato caso o ambiente escolhido, para a realização das provas, não seja o mais adequado.	1	2	3	4	5	6	7
7. Não garante a confidencialidade dos dados pessoais partilhados entre o candidato e a empresa.	1	2	3	4	5	6	7
8. É menos dispendiosa que os métodos de seleção tradicionais.	1	2	3	4	5	6	7

9. Favorece a contratação de candidatos não qualificados para a função.	1	2	3	4	5	6	7
10. Pode influenciar negativamente os resultados da avaliação, caso o candidato não esteja familiarizado com as novas tecnologias.	1	2	3	4	5	6	7
11. Não é fidedigna, porque não garante que seja o candidato a realizar as provas.	1	2	3	4	5	6	7
12. Pode ser influenciada pelas experiências anteriores do candidato com este tipo processos.	1	2	3	4	5	6	7
13. É mais eficaz que os métodos de seleção tradicionais.	1	2	3	4	5	6	7
14. Torna o processo de recrutamento e seleção mais rápido.	1	2	3	4	5	6	7

As questões que se seguem destinam-se à caracterização da amostra e em nada o(a) vão identificar ou comprometer.

Idade: _____ anos

Género: ❏ Masculino　　　❏ Feminino

Habilitações literárias: ❏ Ensino secundário　　　❏ Licenciatura　　　❏ Mestrado
❏ Doutoramento　　❏ Outra. Qual? _____

Área de formação: _____

Empresa do Grupo EDP:　　　❏ EDP Comercial　　　❏ EDP Distribuição
❏ EDP Produção　　❏ EDP SA　　❏ EDP Soluções Comerciais　　　❏ EDP Valor

Antiguidade na instituição: _____ meses

Resultado da última avaliação feita pela sua chefia EDP em reuniões de feedback:
❏ Insuficiente　　❏ Regular　　❏ Bom　　❏ Muito Bom　　❏ Excelente

Muito obrigada pela sua colaboração!

Appendix III – Data Analysis

Section A – Categorization Process

Categories	Sub-categories	Respondent	Question Associated
1. H2R Department	1.1 R&S responsibility	A	Q1.1
	1.2 Team	A	Q1.2
	1.3 Tasks and responsibilities	A	Q1.3
2. SP at EDP	2.1 Procedure	A	Q2.1
	2.2 Online selection methods (OSM)	A	Q2.2
	2.3 How long using OSM	A	Q2.3
	2.4 Methods crossing	A	Q2.4
	2.5 Test Results	A	Q2.5
3. E-Selection	3.1. Favor results	B	Q3.1
		C	
	3.2. Pressure	B	Q3.2
		C	
	3.3. Pool enlargement	B	Q3.3
		C	
	3.4. Screening	B	Q3.4
		C	
	3.5. Clarification of doubts	B	Q3.5
		C	
	3.6. Technology familiarization	B	Q3.6
		C	
	3.7. Testing environment	B	Q3.7
		C	
	3.8. Confidentiality	B	Q3.8
		C	
	3.9. UIT Cheating	B	Q3.9
		C	
	3.10. Quickness and Economic	B	Q3.10
		C	
	3.11. Non-qualified Applicants	B	Q3.11
		C	
	3.12. Suitability	B	Q3.12
		C	
	3.13. Effectiveness	B	Q3.13
		C	
	3.14. Advantages and Obstacles	B	Q3.14
		C	

Section B – SPSS Outputs

Respondents' Characterization

Género

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Masculino	46	63,0	63,0	63,0
	Feminino	27	37,0	37,0	100,0
	Total	73	100,0	100,0	

Faixa etária

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Menor ou igual a 26 anos	37	50,7	50,7	50,7
	Maior ou igual a 27 anos	36	49,3	49,3	100,0
	Total	73	100,0	100,0	

Habilitações literárias

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ensino secundário	24	32,9	32,9	32,9
	Licenciatura	16	21,9	21,9	54,8
	Mestrado	33	45,2	45,2	100,0
	Total	73	100,0	100,0	

Formação

		Percent	Valid Percent	Cumulative Percent
Valid	Área técnica	24,7	24,7	24,7
	Engenharias	27,4	27,4	52,1
	Ciências económicas e empresariais	34,2	34,2	86,3
	Ciências sociais	13,7	13,7	100,0
	Total	100,0	100,0	

Empresa do Grupo EDP

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	EDP Comercial	8	11,0	11,0	11,0
	EDP Distribuição	23	31,5	31,5	42,5
	EDP Produção	8	11,0	11,0	53,4
	EDP SA	10	13,7	13,7	67,1
	EDP Soluções Comerciais	8	11,0	11,0	78,1
	EDP Valor	16	21,9	21,9	100,0
	Total	73	100,0	100,0	

Antiguidade

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Inferior a 1 ano	42	57,5	57,5	57,5
	1 ano ou mais	31	42,5	42,5	100,0
	Total	73	100,0	100,0	

Descriptive Analysis

V1 - Favorece os resultados dos candidatos

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Discordo Totalmente	5	6,8	6,8	6,8
	Discordo	13	17,8	17,8	24,7
	Discordo parcialmente	6	8,2	8,2	32,9
	Nem concordo nem discordo	21	28,8	28,8	61,6
	Concordo parcialmente	15	20,5	20,5	82,2
	Concordo	10	13,7	13,7	95,9
	Concordo totalmente	3	4,1	4,1	100,0
	Total	73	100,0	100,0	

V2 - Cria menos pressão porque não existe controlo/supervisão.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Discordo Totalmente	2	2,7	2,7	2,7
	Discordo	7	9,6	9,6	12,3
	Discordo parcialmente	6	8,2	8,2	20,5
	Nem concordo nem discordo	6	8,2	8,2	28,8
	Concordo parcialmente	26	35,6	35,6	64,4
	Concordo	19	26,0	26,0	90,4
	Concordo totalmente	7	9,6	9,6	100,0
	Total	73	100,0	100,0	

V3 - Permite alargar a pool de candidatos, alcançando mais pessoas.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Discordo Totalmente	1	1,4	1,4	1,4
	Discordo	6	8,2	8,2	9,6
	Discordo parcialmente	1	1,4	1,4	11,0
	Nem concordo nem discordo	5	6,8	6,8	17,8
	Concordo parcialmente	9	12,3	12,3	30,1
	Concordo	30	41,1	41,1	71,2
	Concordo totalmente	21	28,8	28,8	100,0
	Total	73	100,0	100,0	

D4 - Dificulta a triagem devido ao excesso de candidaturas.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Discordo Totalmente	5	6,8	6,8	6,8
	Discordo	16	21,9	21,9	28,8
	Discordo parcialmente	9	12,3	12,3	41,1
	Nem concordo nem discordo	14	19,2	19,2	60,3
	Concordo parcialmente	15	20,5	20,5	80,8
	Concordo	11	15,1	15,1	95,9
	Concordo totalmente	3	4,1	4,1	100,0
	Total	73	100,0	100,0	

D5 - Pode ser prejudicial, porque caso existam dúvidas, as mesmas não podem ser esclarecidas.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Discordo Totalmente	2	2,7	2,7	2,7
	Discordo	6	8,2	8,2	11,0
	Discordo parcialmente	9	12,3	12,3	23,3
	Nem concordo nem discordo	3	4,1	4,1	27,4
	Concordo parcialmente	22	30,1	30,1	57,5
	Concordo	13	17,8	17,8	75,3
	Concordo totalmente	18	24,7	24,7	100,0
	Total	73	100,0	100,0	

D6 - Pode prejudicar o candidato caso o ambiente escolhido, para a realização das provas, não seja o mais adequado.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Discordo Totalmente	5	6,8	6,8	6,8
	Discordo	5	6,8	6,8	13,7
	Discordo parcialmente	7	9,6	9,6	23,3
	Nem concordo nem discordo	15	20,5	20,5	43,8
	Concordo parcialmente	14	19,2	19,2	63,0
	Concordo	20	27,4	27,4	90,4
	Concordo totalmente	7	9,6	9,6	100,0
	Total	73	100,0	100,0	

D7 - Não garante a confidencialidade dos dados pessoais partilhados entre o candidato e a empresa.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Discordo Totalmente	9	12,3	12,3	12,3
	Discordo	16	21,9	21,9	34,2
	Discordo parcialmente	11	15,1	15,1	49,3
	Nem concordo nem discordo	16	21,9	21,9	71,2
	Concordo parcialmente	7	9,6	9,6	80,8
	Concordo	12	16,4	16,4	97,3
	Concordo totalmente	2	2,7	2,7	100,0
	Total	73	100,0	100,0	

V8 - É menos dispendiosa que os métodos de seleção tradicionais.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Discordo Totalmente	2	2,7	2,7	2,7
	Discordo	3	4,1	4,1	6,8
	Discordo parcialmente	1	1,4	1,4	8,2
	Nem concordo nem discordo	7	9,6	9,6	17,8
	Concordo parcialmente	13	17,8	17,8	35,6
	Concordo	35	47,9	47,9	83,6
	Concordo totalmente	12	16,4	16,4	100,0
	Total	73	100,0	100,0	

D9 - Favorece a contratação de candidatos não qualificados para a função.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Discordo Totalmente	13	17,8	17,8	17,8
	Discordo	19	26,0	26,0	43,8
	Discordo parcialmente	8	11,0	11,0	54,8
	Nem concordo nem discordo	14	19,2	19,2	74,0
	Concordo parcialmente	1	1,4	1,4	75,3
	Concordo	14	19,2	19,2	94,5
	Concordo totalmente	4	5,5	5,5	100,0
	Total	73	100,0	100,0	

D10 - Pode influenciar negativamente os resultados da avaliação, caso o candidato não esteja familiarizado com as novas tecnologias.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Discordo Totalmente	3	4,1	4,1	4,1
	Discordo	7	9,6	9,6	13,7
	Discordo parcialmente	6	8,2	8,2	21,9
	Nem concordo nem discordo	11	15,1	15,1	37,0
	Concordo parcialmente	21	28,8	28,8	65,8
	Concordo	17	23,3	23,3	89,0
	Concordo totalmente	8	11,0	11,0	100,0
	Total	73	100,0	100,0	

D11 - Não é fidedigna, porque não garante que seja o candidato a realizar as provas.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Discordo Totalmente	3	4,1	4,1	4,1
	Discordo	7	9,6	9,6	13,7
	Discordo parcialmente	6	8,2	8,2	21,9
	Nem concordo nem discordo	6	8,2	8,2	30,1
	Concordo parcialmente	16	21,9	21,9	52,1
	Concordo	20	27,4	27,4	79,5
	Concordo totalmente	15	20,5	20,5	100,0
	Total	73	100,0	100,0	

D12 - Pode ser influenciada pelas experiências anteriores do candidato com este tipo processos.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Discordo Totalmente	1	1,4	1,4	1,4
	Discordo	3	4,1	4,1	5,5
	Discordo parcialmente	6	8,2	8,2	13,7
	Nem concordo nem discordo	18	24,7	24,7	38,4
	Concordo parcialmente	19	26,0	26,0	64,4
	Concordo	22	30,1	30,1	94,5
	Concordo totalmente	4	5,5	5,5	100,0
	Total	73	100,0	100,0	

V13 - É mais eficaz que os métodos de seleção tradicionais.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Discordo Totalmente	9	12,3	12,3	12,3
	Discordo	9	12,3	12,3	24,7
	Discordo parcialmente	6	8,2	8,2	32,9
	Nem concordo nem discordo	22	30,1	30,1	63,0
	Concordo parcialmente	12	16,4	16,4	79,5
	Concordo	11	15,1	15,1	94,5
	Concordo totalmente	4	5,5	5,5	100,0
	Total	73	100,0	100,0	

V14 - Torna o processo de recrutamento e seleção mais rápido.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Discordo	2	2,7	2,7	2,7
	Discordo parcialmente	3	4,1	4,1	6,8
	Nem concordo nem discordo	12	16,4	16,4	23,3
	Concordo parcialmente	17	23,3	23,3	46,6
	Concordo	26	35,6	35,6	82,2
	Concordo totalmente	13	17,8	17,8	100,0
	Total	73	100,0	100,0	

Principal Components Analysis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,692
Bartlett's Test of Sphericity	Approx. Chi-Square	98,811
	df	36
	Sig.	,000

Communalities

	Initial	Extraction
V1 - Favorece os resultados dos candidatos	1,000	,412
V3 - Permite alargar a pool de candidatos, alcançando mais pessoas.	1,000	,304
D7 - Não garante a confidencialidade dos dados pessoais partilhados entre o candidato e a empresa.	1,000	,452
V8 - É menos dispendiosa que os métodos de seleção tradicionais.	1,000	,376
D9 - Favorece a contratação de candidatos não qualificados para a função.	1,000	,658
D12 - Pode ser influenciada pelas experiências anteriores do candidato com este tipo processos.	1,000	,297
V13 - É mais eficaz que os métodos de seleção tradicionais.	1,000	,524
V14 - Torna o processo de recrutamento e seleção mais rápido.	1,000	,365
D11 - Não é fidedigna, porque não garante que seja o candidato a realizar as provas.	1,000	,549

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,296	25,513	25,513	2,296	25,513	25,513	2,245	24,949	24,949
2	1,641	18,237	43,750	1,641	18,237	43,750	1,692	18,802	43,750
3	1,169	12,990	56,741						
4	,911	10,128	66,868						
5	,873	9,698	76,566						
6	,678	7,537	84,103						
7	,602	6,684	90,787						
8	,503	5,589	96,376						
9	,326	3,624	100,000						

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component 1	Component 2
D9 - Favorece a contratação de candidatos não qualificados para a função.	,767	
D11 - Não é fidedigna, porque não garante que seja o candidato a realizar as provas.	,716	
D7 - Não garante a confidencialidade dos dados pessoais partilhados entre o candidato e a empresa.	,624	
D12 - Pode ser influenciada pelas experiências anteriores do candidato com este tipo processos.	,544	
V13 - É mais eficaz que os métodos de seleção tradicionais.		,622
V8 - É menos dispendiosa que os métodos de seleção tradicionais.		,599
V3 - Permite alargar a pool de candidatos, alcançando mais pessoas.		,517
V1 - Favorece os resultados dos candidatos		,505
V14 - Torna o processo de recrutamento e seleção mais rápido.		,503

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization. [a]

a. Rotation converged in 3 iterations.

Advantages:

Case Processing Summary

		N	%
Cases	Valid	73	100,0
	Excluded[a]	0	,0
	Total	73	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,653	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
V13 - É mais eficaz que os métodos de seleção tradicionais.	20,38	11,934	,237	,402
V8 - É menos dispendiosa que os métodos de seleção tradicionais.	18,86	13,148	,267	,381
V3 - Permite alargar a pool de candidatos, alcançando mais pessoas.	18,73	12,424	,278	,369
V1 - Favorece os resultados dos candidatos	20,36	12,816	,206	,423
V14 - Torna o processo de recrutamento e seleção mais rápido.	18,93	14,231	,215	,416

Disadvantages:

Case Processing Summary

		N	%
Cases	Valid	73	100,0
	Excluded[a]	0	,0
	Total	73	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,672	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
D9 - Favorece a contratação de candidatos não qualificados para a função.	13,36	11,649	,533	,506
D11 - Não é fidedigna, porque não garante que seja o candidato a realizar as provas.	11,77	13,903	,414	,598
D7 - Não garante a confidencialidade dos dados pessoais partilhados entre o candidato e a empresa.	13,21	13,638	,453	,569
D12 - Pode ser influenciada pelas experiências anteriores do candidato com este tipo processos.	11,93	17,009	,346	,639

Differential Analysis

Gender:

Group Statistics

	Género	N	Mean	Std. Deviation	Std. Error Mean
Desvantagens	Masculino	46	4,0217	1,17121	,17269
	Feminino	27	4,4722	1,16918	,22501
Vantagens	Masculino	46	5,0783	,75127	,11077
	Feminino	27	4,4963	,87595	,16858

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Desvantagens	Equal variances assumed	,082	,775	-1,588	71	,117	-,45048	,28377	-1,01630	,11533
	Equal variances not assumed			-1,588	54,686	,118	-,45048	,28364	-1,01898	,11801
Vantagens	Equal variances assumed	,386	,536	3,004	71	,004	,58196	,19375	,19563	,96830
	Equal variances not assumed			2,885	48,116	,006	,58196	,20171	,17642	,98751

Age:

Group Statistics

	Faixa etária	N	Mean	Std. Deviation	Std. Error Mean
Desvantagens	Menor ou igual a 26 anos	37	4,2568	1,09527	,18006
	Maior ou igual a 27 anos	36	4,1181	1,27823	,21304
Vantagens	Menor ou igual a 26 anos	37	4,8973	,99065	,16286
	Maior ou igual a 27 anos	36	4,8278	,66959	,11160

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Desvantagens	Equal variances assumed	,120	,730	,498	71	,620	,13870	,27835	-,41631	,69371
	Equal variances not assumed			,497	68,755	,621	,13870	,27894	-,41780	,69521
Vantagens	Equal variances assumed	5,363	,023	,350	71	,727	,06952	,19845	-,32619	,46522
	Equal variances not assumed			,352	63,373	,726	,06952	,19743	-,32496	,46400

Educational Qualifications:

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	Upper Bound	Minimum	Maximum
Desvantagens	Ensino secundário	24	3,9688	1,10412	,22538	3,5025	4,4350	1,75	6,00
	Licenciatura	16	4,2188	1,27435	,31859	3,5397	4,8978	1,75	6,00
	Mestrado	33	4,3333	1,20492	,20975	3,9061	4,7606	2,00	7,00
	Total	73	4,1884	1,18276	,13843	3,9124	4,4643	1,75	7,00
Vantagens	Ensino secundário	24	5,0750	,71460	,14587	4,7733	5,3767	3,60	6,20
	Licenciatura	16	4,6125	1,11348	,27837	4,0192	5,2058	2,20	6,20
	Mestrado	33	4,8303	,76342	,13289	4,5596	5,1010	3,60	6,60
	Total	73	4,8630	,84253	,09861	4,6664	5,0596	2,20	6,60

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Desvantagens	Between Groups	1,866	2	,933	,661	,520
	Within Groups	98,857	70	1,412		
	Total	100,723	72			
Vantagens	Between Groups	2,118	2	1,059	1,513	,227
	Within Groups	48,992	70	,700		
	Total	51,110	72			

Background:

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	Upper Bound	Minimum	Maximum
Desvantagens	Área técnica	18	3,7917	1,14805	,27060	3,2208	4,3626	1,75	6,00
	Engenharias	20	4,3625	1,26302	,28242	3,7714	4,9536	2,00	7,00
	Ciências económicas e empresariais	25	4,5300	1,05653	,21131	4,0939	4,9661	2,50	6,00
	Ciências sociais	10	3,7000	1,17733	,37231	2,8578	4,5422	1,75	5,25
	Total	73	4,1884	1,18276	,13843	3,9124	4,4643	1,75	7,00
Vantagens	Área técnica	18	5,2444	,68790	,16214	4,9024	5,5865	4,00	6,20
	Engenharias	20	5,0300	,84921	,18989	4,6326	5,4274	3,60	6,60
	Ciências económicas e empresariais	25	4,6560	,77141	,15428	4,3376	4,9744	2,20	6,20
	Ciências sociais	10	4,3600	,96056	,30375	3,6729	5,0471	3,40	6,20
	Total	73	4,8630	,84253	,09861	4,6664	5,0596	2,20	6,60

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Desvantagens	Between Groups	8,742	3	2,914	2,186	,097
	Within Groups	91,981	69	1,333		
	Total	100,723	72			
Vantagens	Between Groups	6,778	3	2,259	3,517	,020
	Within Groups	44,332	69	,642		
	Total	51,110	72			

Company from EDP Group:

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	Upper Bound	Minimum	Maximum
Desvantagens	EDP Comercial	8	4,4375	1,37419	,48585	3,2887	5,5863	2,50	7,00
	EDP Distribuição	23	3,9348	1,25729	,26216	3,3911	4,4785	1,75	6,00
	EDP Produção	8	4,2500	1,19523	,42258	3,2508	5,2492	2,75	6,00
	EDP SA	10	4,1750	,95779	,30288	3,4898	4,8602	2,50	5,50
	EDP Soluções Comerciais	8	4,6250	1,14953	,40642	3,6640	5,5860	2,75	6,00
	EDP Valor	16	4,1875	1,20243	,30061	3,5468	4,8282	1,75	6,00
	Total	73	4,1884	1,18276	,13843	3,9124	4,4643	1,75	7,00
Vantagens	EDP Comercial	8	5,1750	,79597	,28142	4,5096	5,8404	3,80	6,20
	EDP Distribuição	23	5,1478	,79136	,16501	4,8056	5,4900	3,60	6,60
	EDP Produção	8	5,0750	,90672	,32057	4,3170	5,8330	3,60	6,20
	EDP SA	10	4,6800	,71305	,22549	4,1699	5,1901	3,60	5,80
	EDP Soluções Comerciais	8	4,2000	,99139	,35051	3,3712	5,0288	2,20	5,20
	EDP Valor	16	4,6375	,73110	,18277	4,2479	5,0271	3,40	6,20
	Total	73	4,8630	,84253	,09861	4,6664	5,0596	2,20	6,60

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Desvantagens	Between Groups	3,533	5	,707	,487	,785
	Within Groups	97,190	67	1,451		
	Total	100,723	72			
Vantagens	Between Groups	7,669	5	1,534	2,366	,049
	Within Groups	43,441	67	,648		
	Total	51,110	72			

Performance Appraisal:

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	Upper Bound	Minimum	Maximum
Desvantagens	Regular	6	3,7500	1,36015	,55528	2,3226	5,1774	1,75	6,00
	Bom	32	4,3516	1,09408	,19341	3,9571	4,7460	2,00	6,00
	Muito Bom	27	4,1204	1,29602	,24942	3,6077	4,6331	1,75	7,00
	Excelente	8	4,0938	1,10144	,38942	3,1729	5,0146	2,75	5,50
	Total	73	4,1884	1,18276	,13843	3,9124	4,4643	1,75	7,00
Vantagens	Regular	6	4,7667	,95009	,38787	3,7696	5,7637	3,40	5,80
	Bom	32	4,7688	,75024	,13263	4,4983	5,0392	3,40	6,60
	Muito Bom	27	4,9037	,93046	,17907	4,5356	5,2718	2,20	6,20
	Excelente	8	5,1750	,88439	,31268	4,4356	5,9144	3,60	6,40
	Total	73	4,8630	,84253	,09861	4,6664	5,0596	2,20	6,60

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Desvantagens	Between Groups	2,202	3	,734	,514	,674
	Within Groups	98,521	69	1,428		
	Total	100,723	72			
Vantagens	Between Groups	1,163	3	,388	,536	,659
	Within Groups	49,947	69	,724		
	Total	51,110	72			

Work experience at EDP:

Group Statistics

	Antiguidade	N	Mean	Std. Deviation	Std. Error Mean
Desvantagens	Inferior a 1 ano	42	3,9702	1,14923	,17733
	1 ano ou mais	31	4,4839	1,18134	,21217
Vantagens	Inferior a 1 ano	42	4,8810	,83585	,12898
	1 ano ou mais	31	4,8387	,86475	,15531

Independent Samples Test

		Levene's Test for Equality of Variances F	Sig.	t-test for Equality of Means t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
Desvantagens	Equal variances assumed	,102	,751	-1,865	71	,066	-,51363	,27536	-1,06269	,03542
	Equal variances not assumed			-1,857	63,779	,068	-,51363	,27652	-1,06609	,03882
Vantagens	Equal variances assumed	,664	,418	,210	71	,834	,04224	,20084	-,35822	,44270
	Equal variances not assumed			,209	63,535	,835	,04224	,20188	-,36112	,44561