Gemeente Enschede

Performance measurement by implementing Key Performance Indicators for the Gemeente Enschede

UNIVERSITY OF TWENTE.

A Bachelor Thesis about Performance Measurement

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Preface

Dear reader,

In front of you lies my thesis that concludes the study programme of Industrial Engineering and Management. During my research, I worked on this thesis on behalf of the Gemeente Enschede, especially at the HR-department. Another world as I was used to, but I gained a lot of experience of what happens at this organisation and I am very happy that I executed this research.

I did not do this research all by myself. First of all, I would like to thank Bas Slaa, my supervisor from the Gemeente Enschede, who has guided me throughout this thesis with this valuable feedback and information. After the summer of 2020, he gave me the opportunity to do my thesis at the HR-department and I thank him for that. Next to that, I thank all the stakeholders from the HR-department who took part in my research. We had relevant and interesting discussions that led to a proper solution. My research took place from home, due to the current situation. COVID-19 had a huge impact on me the last couple of months, but I managed to finish my research, even when I had to do it from a distance.

Furthermore, I thank my supervisor from the UT, Robert van Steenbergen, with his valuable feedback and input during our online meetings. Robert helped me continuously improving the quality of my thesis. He was ready to help me when my previous supervisor Leo van der Wegen was absent. Still, I thank Leo van der Wegen because he gave me advice and input during the first stage of my thesis. Last but not least, I would like to thank my parents. They have supported me very well during my research process.

Ismail Yagci

Enschede, March 2021

Summary

Within the HR-department of the Gemeente Enschede, new employees are recruited by means of the recruitment and selection process. Vacancies are created and they are filled. However, it is not clear how well vacancies are filled and how this process is performing. For a better understanding of how well vacancies are filled by the HR-department, the following main research question is formulated:

''How can the performance of the process of recruitment and selection be measured at the HR-department?''

To provide an answer on this question, a few steps are executed to achieve this. The first step is to provide an overview of the recruitment and selection process. The second step is to perform a literature search to KPIs and the approach of selecting KPIs. The third step consists of the selection of KPIs by the Gemeente Enschede and the last and fourth step is about the implementation of KPIs.

Recruitment and selection

The recruitment and selection process is divided in a few stages. The first stage is the preliminary stage vacancy. In this stage, a vacancy text is created. All the necessary information for a vacancy is set up. This information includes requirements for being able to do the job, terms of employment, a summary about the organisation and the department this vacancy is aimed at. The hiring manager decides whether the vacancy text is sufficient and thereafter the vacancy is published.

There are two types of recruitment the HR-department is using. These are internal and external recruitment. Internal recruitment is used to find new employees within TwentseKracht. External recruitment is used to find new employees either within TwentseKracht or outside TwentseKracht. TwentseKracht is the collection of and cooperation between 14 municipalities in the region of Twente. The HR-department is using a recruitment software system called Connexys, in which the progress of each vacancy is monitored. Personal data is stored of each. However, there are no clear indicators in Connexys that are measuring the process or a part of it.

Literature search

The next step was a literature search. Since there are no Key Performance Indicators (KPIs) used and measured, it was clear that these should be found. A KPI is a measuring instrument that measures and monitors the performance of an organisation. This search is performed based on the needs of the HR-department. KPIs are found in terms of Quality, Time and Costs. This is consistent with the general strategy of the Gemeente Enschede, which is to find qualitative employees, against minimum costs and time. Also, KPIs are found in the category of Other KPIs. The reason that this category is included is that the KPIs in this category are more specific related to the recruitment and selection process. In Table MS 1, these KPIs are shown.

Table MS 1 List of potential KPIs found from literature

KPIs selected based on literature and preferences	
Selection ratio	Lead time to hire
Pre-employment screening test	Lead time to ensure proper background checks
Competency profiling	Lead time to ensure productivity
Retention rate of new hires	Sourcing costs
On the job performance	Pre-screening costs
Managerial satisfaction	Administrative expenses
Applicant satisfaction	Background check costs
Lead time to source	Advertising and marketing expenses
Lead time to staff	Source effectiveness
Candidate type	% of open positions

The selection of KPIs has been done by using a decision-making method. Triantaphyllou et al., (1998) proposes a few methods. These methods are the Weighted Sum (WSM), Weighted Product Model (WPM) and the Analytical Hierarchy Process (AHP). The method chosen for this research is the WSM, because it has been the most used method according to Triantaphyllou et al., (1998) and because of its ease to use as well.

KPI selection

Selection criteria for KPIs are found in literature. Neely et al., (1997) has provided a long list of 22 criteria, which were shown to the stakeholders of the process to decide which criteria are important for the final selection of KPIs. A criterion is a principle by which something can be judged or decided. Four stakeholders were intended to involve in this research. The stakeholders are the hiring manager, a senior P&O advisor, a Matchpoint employee and the mobility manager. One stakeholder, the mobility manager was not able to give results. These selected criteria are given weights and used in the next phase when scores are given to the potential KPIs. A weight is included to add importance to a criterion. The weights are given based on numbers from 1 to 4. Each number has a meaning, namely 1 indicates that a criteria is wanted to have but will not have this time around and 4 means a criteria is a must have. This principle is the MoSCoW-rule. It stands for Must have (this criterion to include in decision-making process), Should have, Could have and Would have but will not have this time. A total of five criteria were selected and shown in Table MS 2.

Table MS 2 Criteria chosen by stakeholders with its weights

Criterion	**Weight**
1. *Performance measures should provide timely and accurate feedback*	3
2. *Performance measures should be based on quantities that can be influenced, or controlled, by the user alone or in co-operation with others*	4
3. *Performance measures should relate to specific goals (targets)*	3
4. *Performance measures should be clearly defined*	4
5. *Performance measures should use data which are automatically collected as part of a process whenever possible*	3

Via the WSM, KPIs are selected based on the chosen criteria. The Likert-scale is used to give scores to KPIs for each criteria and the final scores are discussed with the stakeholders. The Likert-scale is ranging from 1 to 5. 1 means completely disagree and 5 means completely agree. The stakeholders had to decide whether each KPI meet the requirements of the criteria and based on their preferences, they have given scores. At the end, five KPIs were chosen as final decision. The decision is made based on the average final results of the stakeholders. These are listed in Table MS 3. Two KPIs, the Sourcing costs and the Selection ratio, are scored higher, but not included in the final list. During of the discussions, stakeholders changed their mind and thought that is was qualitatively a good KPI, but they were not sure whether it was relevant. These two KPIs are put on ''spare list'' to investigate in the future whether it is relevant to measure.

Table MS 3 KPI selection by stakeholders from the HR-department.

Time	- *Lead time to hire* - *Lead time to source*
Cost	- *Advertising and Marketing expenses*
Quality	- *Retention rate of new hires*
Other KPIs	- *Source effectiveness*

Implementation

The selection of KPIs is not the final step of this research. The department needs to know how to benefit from the chosen KPIs. KPIs will implemented in a dashboard. Currently, three different systems are used to collect data for the KPIs. In Table MS 4, the options for KPI visualisation in dashboards are summarized.

Table MS 4 Options for implementation of KPIs

Option	Description	Practical
Option 1	KPI visualisation in each of the indicated system	Hireserve: - Lead time to source - Lead time to hire - Source effectiveness Cognos: - Advertising and Marketing expenses You Force: - Retention rate of new hires
Option 2	KPI visualisation in one of the existing systems	Data of KPIs will be collected in each system. After that, KPIs are visualised in Cognos, Hireserve or You Force
Option 3	KPI visualisation in Tableau or Power BI	Data of KPIs will be collected in each system. After that, KPIs are visualised in either Tableau or Power BI

Implementing the KPIs in a dashboard will provide insights in the performance of the current recruitment and selection process. By choosing one of the options described in Table MS 4, the implementation of the KPIs can be achieved. The HR-department will decide which options suits the best for them.

The conclusion of this research is that measuring the performance of the recruitment and selection process can be done by implementing the five KPIs listed in Table MS 3. The implementation of the five KPIs in a dashboard can be done by choosing one of the three options which are summarized in

Table MS 4. The recommendation is to choose for option 1 for now. The ideal option to choose is option 2. That is to visualise all KPIs in one system. The HR-department will investigate whether it is possible to realise option 2. One of the limitations in this research is that not four, but three stakeholders have provided the final results. One stakeholder, the mobility manager, was not able to give scores to the KPIs. That could have influenced the decision-making process. Another discussion point is that one KPI, the Sourcing costs, which scored on average higher, was not included in the final list. However, this KPI is put on a spare list to check if it is relevant to measure.

Considering future research, it is possible to expand the number of KPIs to measure. For example, each stage of the process should contain at least one KPI. The performance of this process could be measured even better, since each step in the process will be monitored.

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1. Introduction

In this chapter, the problem will be introduced and explained. In Section 1.1, the Gemeente Enschede will be introduced, since this is the place where this research is executed. In Section 1.2, more details about the research will be given, for instance what the core problem is and how this is found. In Section 1.3 the scope of this research will be discussed. Based on the problem statement in Section 1.2, a problem-solving approach will be formulated with research questions and their research goals in Section 1.4. The research questions are part of the main research question, for which an answer will be given in the final chapter of this thesis. Section 1.5 is about the deliverables of this research. Lastly, in Section 1.6, a summary is given about Chapter 1.

1.1 Gemeente Enschede

The Gemeente Enschede is a government-based public service which deals with all the rules and regulations in a municipality. The Gemeente Enschede is very broad and has to deal with a lot of cases within the city and the smaller villages that are part of the Gemeente Enschede, such as the village of Lonneker or Losser. There are a lot of departments, which are dealing with enrolment at the Gemeente Enschede, application of passports, ID-cards, driver licenses or parking permits. Also, registrations are done when you are going to move to another house, and a registration of a new-born baby or when someone has passed away. All the things mentioned here makes the Gemeente Enschede very important. In total, 1800 employees are working currently in the Gemeente Enschede at the several departments.

One of the departments is the Human Resource (HR) department. This department is responsible for recruiting new employees, communicating with them and retaining their position within the Gemeente Enschede. Furthermore, they create new vacancies when necessary and they put these vacancies on social media, such as LinkedIn.

The HR-department is working on three projects the last couple of months. These three projects are:

- **Employer Brand**, which is focused on improving the employer brand. It wants to improve this by creating more content on social media and tries to find an optimal social media strategy to do so.
- **Onboarding,** which is focused on improving the starting position of new employees at the Gemeente Enschede. Employees are learned to be familiar with administrative processes and technical facilities (such as learning to work with different programmes on the computer). Another aspect of onboarding is teambuilding. New employees should have a warm welcome when they are going to start and they have to function properly as well.
- **Recruitment and Selection,** which focuses on improving the process of recruitment and selection. The Gemeente Enschede takes a look at different recruitment channels, and applies different recruitment strategies.

In this research, the focus will lie to the last project, namely the **Recruitment and Selection** project. The reason for setting up this project is to tackle ageing in their staff, competing with other (public service) organisations to acquire new young talents that could help them forward. The HR-department is striving for improving their process and finding ways to reach as much new employees as possible. In the next section, the problem description will be discussed with regard of recruitment and selection.

1.2 Problem description

As mentioned, the problem that is chosen is within the recruitment and selection process. Currently, the HR-department is responsible for recruiting and selecting new employees. The HR-department does so by creating vacancies and when people respond, they are invited to talk about themselves and why they are suitable for the job. However, some problems occur regarding this process. There is no overview of the performance of the process. The performance measurement of a process is done by using KPIs. These KPIs are missing currently. We will explain the current availability of data and indicators more in detail in the next chapters.

Vacancy texts are created by the manager and sent to an advisor who checks the vacancy texts. When it is sufficient the text will be sent to the manager again and the vacancy is going to be registered. However, the duration of creating a vacancy changes because the hiring manager does not always complete this task on time. In an Excel sheet, the date of publication of a vacancy and closing date is filled. This is called the return list. In the next chapter, a detailed explanation of the return list will be given.

There is no consistent way of filling data about the start and end time of a vacancy. It is possible that this creates a delay in creating a vacancy and publishing it. It is not clear how often this occurs. When people respond to a vacancy, a selection is made of possible candidates. As mentioned, there is no track of how many candidates are selected for meetings. It is visible how many respondents there are, but the data is not monitored or saved. When vacancies have a low quality in terms of incomplete information, or are not attractive, it is possible that people will not respond on these vacancies on several social media channels the HR-department is using. The HR-department is dependent on these channels. There is no clear overview of the effectiveness of vacancies on social media channels. For example, how many candidates have applied to a vacancy that was visible on channel X? And how many candidates are selected for the application procedure that were originating from channel X? There is a general overview of the number of reactions per channel, but the HR-department does not know how well they are doing this per month. Although it is known that mistakes are made throughout the process, there is no measurement that can show how these mistakes affect it.

The HR-department is currently looking for ways to measure the performance of their process. That there is no consistent way of filling these data is not a core problem, since the HR-department is searching for methods how to do this efficiently. There is a reason behind this problem that does not have a cause of itself. The core problem formulated is missing the insight in the performance of the process. Based on discussions with the problem owner and findings, the following core problem has been formulated:

''There is no possibility to measure how well vacancies are filled within the recruitment and selection process.''

Since it is not possible to measure, it became clear that relevant KPIs are missing. There are some KPIs defined, for example the number of reactions per channel or number of respondents per vacancy but these are not monitored and sometimes not accurate as well. And this leads to the fact that there is currently no insight in the performance of the process.

During the thesis, research questions are needed to provide answers which will lead to a final solution for the core problem. In order to do so, a main research question will be formulated. The main research question is related to the core problem, that makes it easier to solve the problem. Based on this problem, the following main research question is formulated:

''How can the performance of the process of recruitment and selection be measured at the HR-department?''

1.3 Scope

In this section, the scope of this research will be discussed. As mentioned in the background paragraph about the Gemeente Enschede, three different projects are executed. The first two projects are not necessary for solving the problem, since only the third project is relevant. However, Employer brand might be good for the overall status for the Gemeente Enschede, but it is decided to leave this topic out of scope and focus on measuring the process of recruitment and selection of new employees within the Gemeente Enschede. In this process, external parties are also involved in the recruitment and selection process. However, tasks executed by these parties will not be taken into consideration regarding the search for a solution. Only the steps executed by the HR-department itself during the process will be analysed clearly. Also, the implementation of the solution will be out of scope. Instead, an advice will be given how to implement the solution.

1.4 Problem-solving approach and Research Design

In order to find a solution for this problem, a certain solution approach is defined. To do so, the Managerial Problem-Solving Method in the book of the Managerial Problem-Solving Method of Heerkens & van Winden (2017) will be used. It contains seven steps to be taken to reach the solution.

1. Defining the problem
2. Formulating the approach
3. Analysing the problem
4. Formulating (alternative) solutions
5. Choosing the solution
6. Implementing the solution
7. Evaluating the solution

After the core problem is defined, the problem-solving approach is drafted. All activities that are going to take place are outlined. The research questions and research design is formulated. The main research question formulated is:

''How can the performance of the process of recruitment and selection be measured at the HR-department?''

Based on this main research question, more knowledge questions will be formulated with the research design per question:

1. ***What does the current process of recruitment and selection look like?***

An overview of the current process will be given with detailed descriptions and explanations. Each step will be explained on the basis of semi-structured interviews and observations to identify stakeholders, employees and their way of working. This way of data-gathering is chosen since the employees know the most about the process. Processing the data will be done by summarizing and describing what is explained during the interviews and observations.

2. ***What are potential KPIs that might be useful to measure the process of recruitment and selection according to literature?***

Literature will be used to find KPIs that will help to measure a recruitment and selection process. At first, theory about recruitment and selection will be discussed. Then, definitions will be given about KPIs and performance measurement. A list of these potential KPIs will be provided with a detailed explanation. At the end, the method and approach of KPI selection will be discussed and chosen. This approach will be used as input for the next chapters. It is logical that data-gathering in this chapter will be done by qualitative descriptive research within the literature. Processing the data will be done by reviewing papers and summarizing them in this chapter.

3. ***What selection criteria should be taken into consideration when selecting suitable KPIs?***

KPIs can be chosen after giving them criteria. It should be clear how these criteria are selected and formulated. Again, a qualitative descriptive research will be done to find possible selection criteria. The reason for doing this is that literature provides sufficient broadness. Interviews with employees ensure the selection criteria will be along the wishes with the problem owner. The data is subsequently processed by describing the findings and used as input for the next research question. The answer on this question will be used as input for the next research question.

4. ***Which KPIs are suitable for the HR-department?***

Results retrieved from the previous chapter are discussed and based on that, KPIs will be chosen to implement for the process. Since the criteria will be chosen by the stakeholders, the KPIs will be chosen based on the criteria and the chosen multi criteria decision-making approach. The final results will be presented to make clear what the decision of the stakeholders are.

5. ***How can the KPIs be implemented within the recruitment and selection process?***

After the KPIs are chosen, an advice will be given how to implement the KPIs. Several ways of implementing KPIs from literature will be discussed. Based on the situation at the HR-department, one possibility will be advised. Data will be gathered by summarizing the articles relevant for this topic.

1.5 Deliverables

Regarding the deliverables, I will provide explanation per research question of what the deliverables will be.

Deliverables Question 1

1. ***What does the current process of recruitment and selection look like?***

The main goal of the deliverable is to provide insight in the current process of recruitment and selection. Therefore, a flowchart will be created to visualize the process and to understand how it works. Next to that, a detailed description of how the whole process is functioning will be given.

Deliverables Question 2

2. ***What are potential KPIs that might be useful to measure the process of recruitment and selection according to literature?***

The deliverable of this question is a list of potential KPIs that are identified that can measure the process.

Deliverables Question 3

3. ***What selection criteria should be taken into consideration when selecting suitable KPIs?***

The deliverable is a list of specifically suitable selection criteria for this process.

Deliverables Question 4

4. ***Which KPIs are suitable for the HR-department?***

The deliverables will be the results of the final scores of the KPIs presented in a table. Together with the results of the stakeholders, a final list of KPIs selected by the stakeholders will be included as well. This final list of KPIs will be used for the implementation phase.

Deliverables Question 5

5. ***How can the KPIs be implemented within the recruitment and selection process?***

The deliverable of this question will be an implementation advice for the problem owner. In the future, the HR-department will switch to a new system. One of the steps to implement KPIs will be to use a dashboard. A small literature search will be done to advise the HR-department how to design this dashboard with its rules. This advice will be explained elaborately.

The main deliverable is the insight into how to measure the performance of the recruitment and selection process. A list of KPIs with explanation is helpful to prioritize the goals the HR-department wants to achieve.

1.6 Summary Chapter 1

In the beginning of this chapter, a small introduction has been given about the Gemeente Enschede and the HR-department within it. After that, a problem description has been given, in which the core problem is formulated. The aim of this research is to investigate how the process of recruitment and selection can be measured. The research questions are determined based on the core problem in the research design. The research design explains and describes all the steps that are going to be taken. The scope has been determined as well, to focus on recruitment and selection. At the end, the deliverables are given to show what is expected in this thesis.

2. Current situation

In this chapter, the following research question will be answered:

''What does the current process of recruitment and selection look like?''.

The process will be described in detail. In Section 2.1, the first subprocess will be discussed and in Section 2.2 the second subprocess. To provide more insight how this process is represented, a flowchart is made and shown as a figure. In the last part of Chapter 2, in Section 2.3, the current situation with regards to the available data is explained. The information gathered is done mainly by setting up interviews with the involved stakeholders. This chapter starts with the first subprocess, the preliminary stage of vacancies.

2.1 Preliminary stage vacancy

The first sub process is to come up with requirements needed to finally publish a vacancy. When a new vacancy is going to be created, the hiring manager discusses with the finance department whether there is sufficient budget available to find a new employee. Each function has a different salary scale, and it should be known first if this is possible. Some options are taken into consideration. For instance, is it necessary to fill the vacancy, should the function be changed considering new tasks for the new employee or should the requirements for the function completely be changed?

If the decision is made to fill the vacancy, the requirements are going to be checked as mentioned. The next step is to check whether there is sufficient budget, this occurs most of the time, and the hiring manager receives the task to start writing the vacancy text. Sometimes, it occurs that there might not be sufficient budget available to create the vacancy. There is always the possibility to increase the budget or receive a buffer from other departments.

However, in this research it is assumed that vacancies are always created. The most functions already exist since an employee left and a new employee should fill the gap. In that case, the format of the vacancy text is available and the text can be adjusted if necessary. When new functions are created, a new function description should be composed and different requirements formulated with the corresponding employment conditions.

After the hiring manager has composed a text, he is going to send the text to a P&O advisor (Personnel and Organisation) by e-mail. This person is checking the text on mistakes, attractiveness and whether it contains the correct requirements to publish. These aspects are important, because it can influence how many people will respond on a vacancy and apply for it. When the advisor has checked the text, he is going to send the text back to the hiring manager by mail. The vacancy text will be sent to Matchpoint. Matchpoint functions as an intermediate station. All requests of creating a vacancy are submitted to the mailbox of Matchpoint. After that, it is possible to register the vacancy in Bullhorn Connexys. Connexys is a software recruitment system of the HR-department. In Connexys, all vacancies are managed and an overview can be shown. In Section 2.3, some details of Connexys will be discussed.

On average, the whole process of creating a vacancy takes 1 or 2 weeks. In the case of a brand-new function, it might be longer than 2 weeks. This sub-process ends with the registration in Connexys. A vacancy text consists of the following parts:

- ***Function description***
  The function description mainly indicates what the function is about.

- ***Function requirements***
  In this section, the requirements needed and expected from a candidates is expressed. These requirements differ for each function, but aspects as working and thinking level, experience in this area, how to cooperate with others and how to apply your experience in the organisation.
- ***Intended offer to the employee***
  In the paragraph intended offer, the organisation discusses what they can offer regarding height of the salary, employment conditions and the duration of the function.

- ***Small introduction of the organisation***
  This section makes clear at what department(s) the employee will work and is responsible of. With this said, the new employee should get an idea what is expected from him or her.

- ***Information to ask questions or place comments***
  The last part contains contact details of the corresponding organisation and contact person in case of asking questions or making comments about the vacancy.

At the end of the vacancy text, there is the possibility to apply for the vacancy. Information is included how to do this and a button is attached that registers the respondent in Connexys. This progress can be viewed by any authorized employee in Connexys. An example of a vacancy text is attached in *Appendix A Example of vacancy text.*

2.2 Matching Process

During the first sub-process, the hiring manager will monitor and check the vacancy that is going to be published. The first step in recruitment and selection process is the creation of a description of a vacancy. That is discussed in the previous paragraph. To understand how candidates are selected, a procedure will be followed to avoid confusion. The following rules are applied in this process.

At first, people working at the Gemeente Enschede who lost their job due to reorganisation, these people are called supernumeraries, will be first priority when recruiting candidates. The reason for this is that they have a so-called ''legal status''. When they have lost their job, the Gemeente Enschede as employer has to find and place this employee to a new department within two years. Since these people are familiar at the Gemeente Enschede and already know the way of working, they are able to apply. They have 2 days the time to do so. When there are respondents, they are going to be checked whether they are suitable for the job. If this is the case, they are selected and the vacancy is filled. When there are no suitable candidates between the supernumeraries, the HR-department will apply another way of recruiting. This is called internal recruitment. In the next subsection, a detailed explanation of internal recruitment is given.

2.2.1 Internal Recruitment

When no suitable candidate has been found from supernumeraries, the HR-department can advise to apply internal recruitment. At the end, the hiring manager has the final decision to do this or not. Internal recruitment is a method to actively recruit new employees by the HR-department themselves. They deal with making a vacancy text, registering the vacancy so each employee can see the progress, publish the vacancy and select a proper candidate. The procedure of internal recruitment is executed as follows.

When there are no suitable candidates from and no candidate applied at all from the group of supernumeraries, the vacancy will be sent to Matchpoint, with the request to publish the vacancy on TwentseKracht, the internal job market in Twente. TwentseKracht is a platform on to which 14 municipalities cooperate to find talents who are willing to work in the public sector. On this website, all available vacancies are shown to which people can apply.

When the vacancy is submitted to Matchpoint, the vacancy is registered in Connexys. An overview of the vacancies can be shown, as well as the channels that are going to be used, because they are linked to the software. When publishing a vacancy, the vacancy is visible on all channels at the same time. It gives an overview of how many respondents there are per vacancy, and each employee that has access to Connexys can monitor the progress.

The day of closing vacancies on channels is also visible and the employee who is responsible for monitoring the progress and closing the vacancy when the end date is reached, has to fill a list, which is called a return list. The return list is a list with all the information about the vacancy, such as opening date, closing date, which employee is responsible for the vacancy, personal information about the candidates and whether there are issues. The list is made to avoid confusion. It might be possible that a vacancy has been closed, but is still open in the system. With this list, the hiring manager can check whether the employee has not made mistakes.

In Connexys, the progress of a vacancy can be checked. Every authorized employee can see how many people did respond and whether each respondent has sent its required documents for the selection procedure. A list of the applying candidates is going to be made when the end date of the vacancy has been reached. The candidates on the list are checked by readability of the resumes and motivation letters. The size of the list of candidates will be reduced because some candidates do not meet the requirement of readable documents. After that the list is going to be sent to the hiring manager, accompanied by the mentioned return list. All the candidates with bad readability of their documents are removed from Connexys (Enschede, 2020). In this case, readability is about how well a respondent has made up the documents. If the motivation letter is not clear or it contains a lot of mistakes, the respondent will not be included in the selection procedure.

2.2.2 External Recruitment

In the previous section, internal recruitment has been explained. It is possible that by choosing internal recruitment, no respondents or suitable candidates are available. The second option is external recruitment. However, on exceptional occasions internal recruitment is combined with external recruitment. An update will be made of the vacancy list. The vacancy will be published again in Connexys and on the website *enschede.nl*. A mail will be sent to *redactie@enschede.nl* with the request to put the vacancy on LinkedIn. That is one of the social media channels to recruit new employees externally. The HR-department uses a lot of channels to recruit new employees. Besides LinkedIn, Instagram, Facebook and Twitter are used as well. The most people know these channels. Some other channels which are not familiar are Intranet Enschede and Platform Intern. As known, a button in Connexys makes it possible to publish the registered vacancy on all social media channels simultaneously (Enschede, 2020).

The general idea of external recruitment is to recruit new people outside the municipalities of Twente. This means that the vacancy is open for everyone. That is a major difference with internal recruitment, which focuses on finding new employees inside the range of municipalities of Twente. It is also possible to switch on to marketing agencies that are specialized in recruiting employees, because they are widespread known and are able to reach the suitable people very quickly. One of these agencies is called BRANDMANNEN, this is a job marketing agency, specialized in job marketing and employer branding. They are providing advice to the HR-department to make a vacancy more attractive and which channel(s) are applicable to find a new employee. With this advice, they can start the procedure and open the vacancy for everyone. The procedure of internal recruitment is somewhat the same as external recruitment, especially everyone can apply for a vacancy. However, within external recruitment, there are options not to follow the procedure as it is known, but external partners can take over the process of recruitment and selection. This will be discussed next.

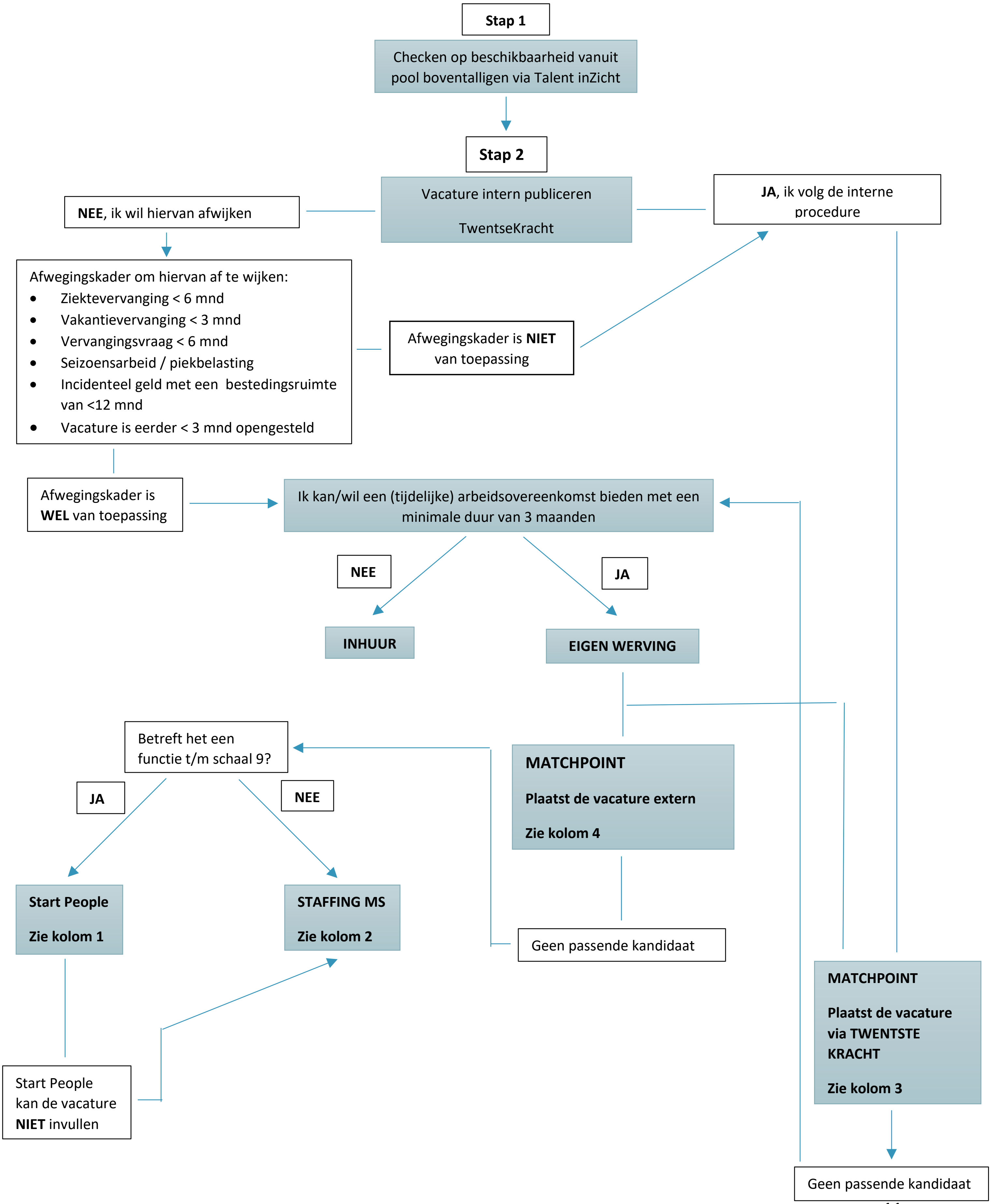
Two external partners have signed a contract with the HR-department to support filling the vacancies. These two are Start People and Staffing MS. Start People is an organisation that is experienced in hiring flex workers. Their website contains vacancies in every sector. To find a vacancy, a search engine can be used. Some requirements to fill are the city you want to work, academic level, sector, salary indication and working hours per week. Start People helps to fulfil vacancies since they have a wide network and can reach a lot of people. Based on the contract that the HR-department has signed with Start People, they will find employees with low to middle function (up to salary scale 9). They are also able to find employees for high functions (scale 10 or higher), but the HR-department has Staffing MS as partner for this range of functions. Even when Start People is able to find a candidate, the HR-department has the opportunity to choose for Staffing MS.

Staffing MS is an agency that is meant to find employees with a high function (salary scale 10 or higher). This agency is functioning as a market place, in other words they create job applications to which other agencies can respond. Sometimes, a freelancer is needed who needs to fulfil an assignment for the HR-department on a temporary basis. This freelancer can respond to the application of Staffing MS and will be sent immediately to the HR-department. Staffing MS has a big network and contacts other (smaller) agencies. Although, they are also willing to find employees for a function with salary scale lower than 10, but again, based on the contract, they are not used to find employees for low or middle functions. Both agencies do not find necessarily full-time workers, but also part-time. Sometimes a new employee will stay temporarily due to illness of the current employee and then it might be easier to hire a temporary employee that is found by an agency.

In Figure 2, a simplified flowchart is shown for the procedure and rules that the hiring manager should apply. The several steps indicate what should be done first. It is not possible to start with external recruitment. In every case, supernumeraries have priority above internal recruitment and external recruitment. Internal recruitment has priority above external recruitment. Sometimes, it is possible to recruit internally and externally simultaneously. This happens when it is expected that a vacancy is hard to fill.

In the columns below this flowchart, the rules of applying internal and external recruitment are listed as well as searching for employees who are likely to work parttime in four columns. The schedule and the columns are directly copied from internal documents from the Gemeente Enschede.

Figure 1 Flowchart of rules and procedures of recruitment and selection



Kolom 1

Start People

Afspraken:

- Vacatures t/m schaal 9
- ABU CAO is van toepassing
- Start People is werkgever van de inhuurkrachten
- Vacatures die Start People niet kan voorzien worden aangemeld bij Staffing MS

Kolom 2

Staffing MS

Afspraken:

- Vacatures vanaf schaal 10
- Vacatures die Start People niet kan voorzien t/m schaal 9
- Sourcing en contractbeheer van leveranciers en ZZP'ers
- CAO van Leveranciers van toepassing

Kolom 3

Afspraken behorende bij interne werving:

- Alle vacatures
- Vacature wordt gepubliceerd bij Twentse Kracht
- Alleen reacties van **interne arbeidsmarkt** worden beoordeeld
- Enschede is werkgever
- CAO gemeenten en EAA is van toepassing
- Detachering via collega gemeenten behoort tot de mogelijkheid

Kolom 4

Afspraken behorende bij externe werving:

- Alle vacatures
- Publicatie in eigen beheer op diverse websites en social media
- Kandidaten solliciteren rechtstreeks zonder tussenkomst of leveranciers
- Enschede is werkgever
- CAO gemeenten en EAA is van toepassing
- Detachering via collega gemeenten behoort tot de mogelijkheid

Figure 2 Reprinted tables of Agreements for internal and external recruitment from Enschede, 2020.

2.2.3 General procedure for candidate selection

When possible candidates apply for a vacancy, a selection is going to be made on first hand by readability of both the resumes and motivation letters. Based on this selection, a list will be made and given to the hiring manager who checks it and sends it to the selection committee. The selection committee consists of three persons on average. Sometimes, an advice committee is present that supports the selection committee by advising them about selecting proper candidates. This is mainly done for vacancies such as management positions or positions with a political background. They can advise them because the advice committee also has conversations with the candidates. The selection committee makes the final decision.

Each committee member is going to read the letters and resumés. They have two minutes on average to do so. After they read the documents, a discussion takes place about the selection. The discussion is necessary to inform the other members about their preferences. In this way, there is clear overview of what type of candidates are available. This is also based on the number of candidates that might be qualitatively suitable. Then, a round of small pitches is organised to reduce the number of candidates and after that, the job interviews are held in which candidates are asked more detailed questions about themselves and about their resumés.

Based on the documents the candidates have sent, questions are asked varying from personal questions to questions about their skills. A summary of the job interviews with candidates will be made and again, a discussion will be held among the selection committee members and thus sometimes with advice committee members. Before a candidate is selected, a separate meeting with candidates they want to select will be done to explain the employment conditions. The candidates are getting informed about what is expected from them but also what the possibilities are.

After all steps are taken, one candidate will be selected. When the candidate accepts the Terms and Agreements, which are discussed in the final meeting with the selected candidate, the hiring manager makes announcement the process has been finished and the vacancy can be closed. This will be registered in Matchpoint and later in Connexys.

2.2.4 Flowchart current Recruitment and Selection Process

In Figure 3 on the next page, a flowchart of the recruitment and selection process in general is given. There are two sub processes, the preliminary stage vacancy and the matching process, as mentioned earlier. The flowchart can be applied to the HR-department. Regarding the external recruitment, there are some side notes. It is known that for external recruitment, the vacancy is open for everyone. That means that no longer only people within TwentseKracht can apply for a vacancy.

However, it is possible that the HR-department wants some advice, for example, the job marketing agency BRANDMANNEN provides services for this considering the vacancy text and fitting search channels. In this case, the HR-department understands how a vacancy can be more attractive, especially when a vacancy is hard to fill. This is not included in the flowchart, but it can be part of external recruitment. Another option that is discussed for external recruitment is that an (search- and headhunting) agency is providing the candidate to the HR-department. In that case, not the hiring manager will start to create the vacancy, but the agency will. So the whole process of recruitment will be done by an agency and therefore it is not mentioned in the flowchart. In the flowchart, only the steps that the HR-department itself is doing is shown.

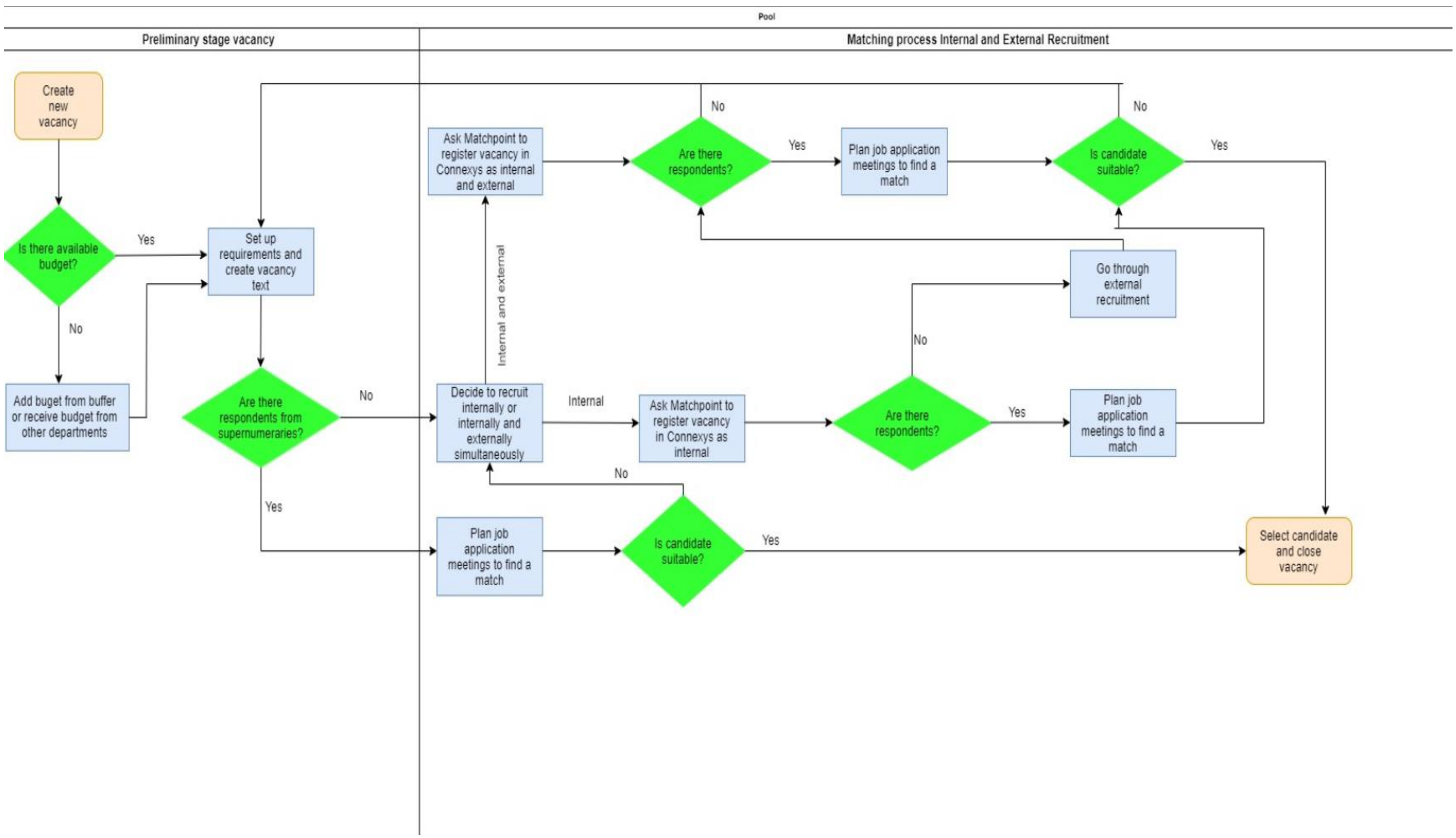


Figure 3 Flowchart current Recruitment and Selection Process

2.3 Data availability

In the recruitment and selection process, some data is available. However, this data is insufficient to determine how well this process is performing. As mentioned in the problem description in Section 1.2, a few KPIs are available but some of them were not measured and monitored at all in Connexys. In this section, an introduction will be given which will function as input for Chapter 3, in which theoretical KPIs for the recruitment and selection process will be found.

2.3.1 Vacancy management in Connexys

In Connexys, all the vacancies are going to be registered and published on social media channels. An overview of all vacancies created are shown (see Figure 4), so that each employee responsible for filling a vacancy can see the progress.

Vacatures 1 - 10 van (893)

	Vacaturenaam	Organisatieonderdeel	Vacaturenumm...	Datum va...	Sluitingsd...	Functie
	Secretaresse voor Gedeputeerde Staten	Provincie Overijssel		20-07-2020	02-08-2020	Secretaresse
	GGD Twente zoekt casemanagers Centrum Seksueel Geweld	GGD Twente		25-08-2020	09-09-2020	Medewerker
	Senior beleidsadviseur sociaal domein - aandachtsgebieden Werk & Inkomen	Gemeente Hengelo		29-10-2020	13-11-2020	Senior Beleidsadviseur
	(Business) Controller	Provincie Overijssel		24-07-2019		Adviseur Planning en Control
	(Senior) facilitair adviseur	Waterschap Vechtstromen		21-09-2020	05-10-2020	Medewerker Facilitaire Zaken
	(junior) Rioolmonteurs (M/V)	Noaberkracht Dinkelland Tubbergen		06-03-2018	01-04-2018	1e Medewerker Rioolinstallaties
	1e Beheerder	SWBMiddenTwente		11-06-2020	29-06-2020	Beheerder
	1e Beheerder	SWBMiddenTwente		01-09-2020	21-09-2020	Beheerder
	2 Projectleider(s)	Gemeente Borne		03-02-2020	16-02-2020	Projectleider
	2 Senior communicatieadviseurs (32-36 uur, voor een periode van 3 jaar)	Provincie Overijssel		28-05-2019		Communicatieadviseur

Pagina: eerste 1 2 3 laatste Aantal per pagina: 10

Figure 4 Example of overview of vacancies in Connexys

The name of each vacancy is given together with the organisation that is looking for a specific employee. In the fourth column the publishing date is given and in the column next to that the closing date is given. However, the way of working is not consistent. Sometimes, the vacancy is closed on time, and sometimes it is forgotten. The last column consists of the function that the vacancy represents. A note to mention is that vacancies are visible for all organisations. That is why a vacancy from another municipality is shown here. However, the focus only lies at the vacancies for the Gemeente Enschede in this research.

A list of candidates is added with personal data and when these candidates are enrolled. Due to confidentiality there is no figure provided. This is the return list that is already mentioned in the previous chapters.

Inschrijvingen op evenementen (0)

Status	Aantal			
Nieuw	0	0	0	0
Beoordeeld	0	0	0	0
Gesprek gepland	0	0	0	0
Gesprek gevoerd	0	0	0	0
Geselecteerd voor evenement	0	0	0	0
Geselecteerd voor evenement, niet aanwezig	0	0	0	0
Deelgenomen aan evenement, geen aanvullende gegevens ingevuld	0	0	0	0
Deelgenomen aan evenement	0	0	0	0

Figure 5 Example of current indicators

In **Fout! Verwijzingsbron niet gevonden.**, the current indicators are given. On top, the selection of candidates is shown. There are currently no values available, because this is an example page. Employees responsible for monitoring vacancies can see some actual values. This figure is included because it gives an insight of what is known already. First of all, the status is shown for each candidate. The second column, ''AANTAL'', gives this number of candidates. the third column with the green check mark, shows that the number of new candidates checked are known by the system or they have all data about this candidate that is required. The yellow flag says that attention must be paid.

Some candidates might not be known by the system or they have not all the information, so a check must be done. The red triangle in the last column mentions that action is required. There is misinformation and this problem must be solved immediately.

2.4 Conclusion Chapter 2

In this chapter, the current situation of the recruitment and selection process has been described. Based on flowcharts, more insights is given on how this process is executed step-by-step. The different approaches of recruiting new employees have been explained with the corresponding procedure. The general procedure for candidate selection is included. In Section 2.3, the available data in Connexys has been highlighted to show what is known already and what could be added to increase the knowledge about the overall performance.

3. Theoretical Framework on Recruitment and Selection and KPIs

In this chapter, the following question will be answered:

What are potential KPIs that might be useful to measure the process of recruitment and selection according to literature?

First, the importance of recruitment and selection and performance measurement is discussed in Section 3.1 and 3.2 by addressing the theoretical background of recruitment. Some definitions about performance measurement and key performance indicators will follow. In Section 3.3, possible KPIs that could be useful will be found and explained. At the end, in Section 3.4, the method and approach of how to select suitable KPIs are described.

3.1 Recruitment and selection

Recruitment and selection of new employees is very important to gain more success in an organisation. In organizations, recruitment and selection are ‘’two activities of the staffing function of HRM carried out to acquire the right quantity and quality of employees’’ (Al-Hawary, 2015, p. 87). Staffing procedures aim to bring into vacant positions people with the identified skills and knowledge (Minbaeva, 2004). The purpose of recruitment is an activity carried out by the organization to select and to place the best people in meeting the needs in the workplace, and developing and maintaining adequate quality (Dos Santos, Armanu, Setiawan, & Rofiq, 2020).

To clarify how well vacancies are filled in recruitment and selection, mistakes should not be made during the activities of the process. It could lead to new problems for the organization in the future. Why is that? Recruitment and selection are the earliest stage and the entrance for new employees (Dos Santos, Armanu, Setiawan, & Rofiq, 2020). To get the right people on vacant positions, which is the purpose of recruitment and selection, new staff are expected to be qualitative better.

In the past, no attention was paid on human resource activities. It was not seen as important, and this resulted that a lot of organisations in general did not place any premium on hiring people (Kanyemba, Gervase Iwu, & Allen-Ile, 2015). Human resource managers were unhappy about the quality of candidates and about the long recruitment cycle times.

As mentioned earlier, mistakes should not be made during the activities of the processes. Some of these problems are unclear job descriptions and unskilled personnel who conduct interviews and other meetings with possible candidates. The HR-department should be familiar with the vacancy and identify the best recruitment mechanism (in the case of the HR-department this will be internal or external recruitment) to attract and hire the best candidate in the job market (Kanyemba, Gervase Iwu, & Allen-Ile, 2015). With this in mind, a lot of (frequent) problems can be avoided.

Nevertheless, the success of an organisation to obtain high quality human resources (HR) is through the recruitment and selection process (Dos Santos et al., 2020). So people should be attracted in a timely manner, in sufficient numbers and with the right time.

Breaugh and Starke, (2000) have created a framework for organisations that are dealing with recruitment and selection. Objectives are defined which are important to focus on. Based on these objectives, the strategy can be defined based on five questions. These questions listed are essential in order to set up the recruitment process. Activities are set up to reach brand-new applicants. Another aspect that is important is to track the process variables during the activities that are set up.

After the process is finished, results should be compared to the defined objectives. This last step is absolutely needed to draw conclusions about the performance of the process. A schematic overview is shown below in Figure 6.

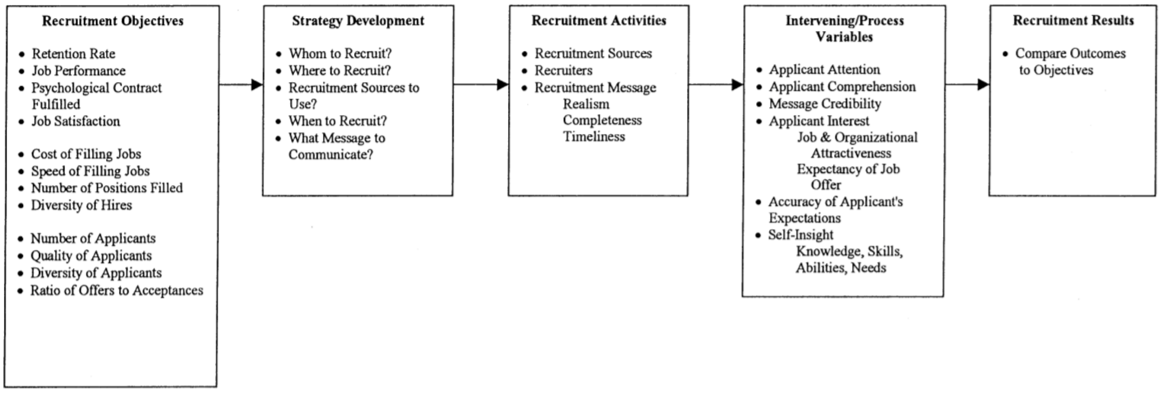


Figure 6 Reprinted framework of recruitment and selection from ''Research on employee recruitment: So many studies, so many remaining questions'' by Breaugh and Starke, 2000, Journal of Management, 26(3), p. 408 Copyright 2000 by Elsevier Science Inc.

3.2 Why Performance Measurement?

To understand whether this process is performing well, it should be known how it can be measured. Performance measurement is an important tool for sustainable management. When indicators are well-defined, it can potentially support the current identification of current and desired performance and provide us with information on the progress of individual performances (Milichovsky & Hornungova, 2013). In other words, it can help companies to organize and to achieve strategic goals in day-today activities. When measuring performance, the indicators are taken as performance indicators. They are helpful to focus critically on the current and future development of an organization. Performance is very crucial, especially in a competitive market the HR-department has been involved (Milichovsky & Hornungova, 2013).

Measurement is a very broad term and according to Milichovsky and Hornungova (2013), it can be divided according to the type of key indicators and results. The measurable indicators should be divided according to their essence. The type of indicators are summarized as follows:

- **Result indicators** are focused on achieving the objectives of indicators (Key Goal Indicators – KGI). They represent a measure of success and verification success. Indicate whether the goal has been achieved.

- **Critical success factors** (CSF) includes the elements, which are essential for businesses to achieve their goals. They are used to manage, control and trace of the actions, which are necessary to achieve results.

- **Performance indicators** (efficiency) are focused on performance measurement and its support (Key Performance Indicators – KPIs). They are used to quantify objectives to reflect the performance of a process or service. They are usually used for measuring the value, efficiency, quality, and customer satisfaction

- **Key Result Indicators** (KRIs) includes information about many activities which have done and if company goes to right direction. KRIs provide such information which are prepared mainly for top management. KRIs could help companies to manage own priorities in various fields – environmental, governmental or social.

In this research, the focus will lie on the performance measurement and KPIs. Boddy (2017) has given the following definition of performance measurement:

''Performance measurement refers to quantifying the efficiency and effectiveness of an action'' (Boddy, 2017, p. 672). In the next paragraph, possible KPIs of recruitment and selection are found and explained based on efficiency and effectiveness.

3.3 Possible KPIs for Recruitment and Selection

In this section, the KPIs that are found will be explained. These KPIs are derived from literature search. Breaugh and Starke (2000) have formulated a recruitment framework, as discussed in Chapter 3.1, and Priyadarshini (2018) supports this framework and uses some variables as KPIs. Breaugh and Starke (2000) have emphasized on recruitment source and pre-hire and post-hire KPIs. In the first block, these ''objectives'' are given and these objectives form the basis of the KPIs. Based on that theory, Priyadarshini (2018) has set up a list of KPIs for Speed (Time), Cost (Financial) and Quality.

Additionally, some KPIs are defined to measure Efficiency, from which Speed and Cost are derived, and Effectiveness, from which Quality is derived. In Figure 7, this principle is summarized in a scheme. This scheme is visualized to give a better understanding of the relations of the different aspects.

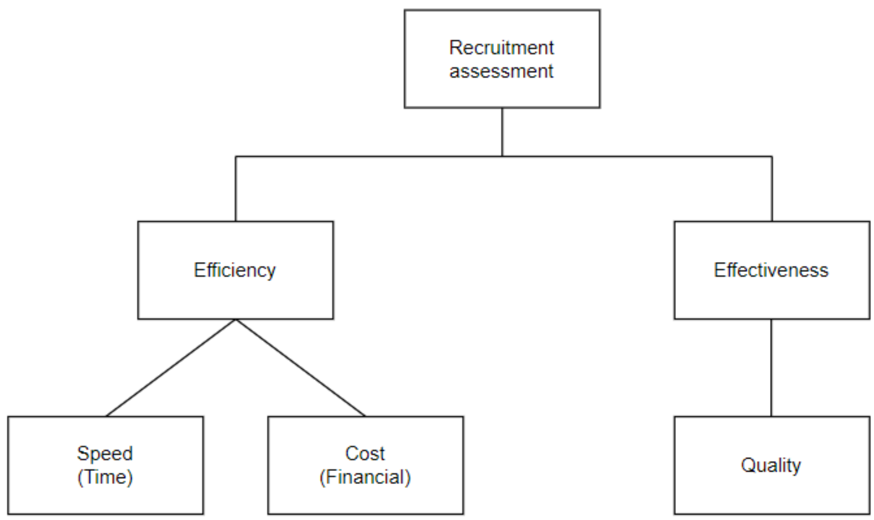


Figure 7 Recruitment assessment scheme based on the theory of Priyadarshini (2018)

The following KPIs are given by Priyadarshini (2018):

Cost (Financial)

- **Sourcing Costs**: *Total costs made to create content for all types of marketing*
- **Pre-screening costs**: *Costs made before selecting candidates for selection procedure*
- **Administrative expenses**: *Costs including salary, rent, insurance, utilities, equipment, executive wages and office supplies*
- **Background check costs**: *Costs made to check background of new hire regarding financial history, criminal background schools and degrees.*
- **Advertising and Marketing expenses**: *Costs made by creating advertisements and setting up campaigns*

Speed (Time)

- **Lead time to source:** *Time needed to complete find candidates (internal or external)*
- **Lead time to staff:** *Time needed to supervise new hire as basis independent employee*
- **Lead time to hire:** *Total time of recruitment and selection process (throughput time)*
- **Lead time to ensure proper background checks:** *Time needed to check background of candidate*
- **Lead time to ensure productivity:** *Time required for a new hire to fully contribute to the organization*

Quality

- **Pre-employment screening test:** *(Very bad, bad, neutral, good, very good) Screening test of candidates during the selection procedure*
- **Competency profiling:** *Assessment of competencies of new hire compared to the required competencies grading from 1-10*
- **Retention rate of new hires:** *Percentage of new hires that stay at organization within 1 year*
- **On the job performance:** *(Very bad, bad, neutral, good, very good) It is possible to compare the performance of a hire within a year*
- **Managerial satisfaction:** *Satisfaction of manager(s) rating from 1-10*
- **Applicant satisfaction:** *Satisfaction of applicant rating from 1-10*

3.3.1 Other KPIs

Based on the aspects mentioned in the previous section, more KPIs could be formulated. It is possible that these might be relevant to measure. The reason to add another category besides Time, Quality and Cost is that we wanted to give the HR-department the opportunity to choose KPIs that are specifically related to the current Recruitment and Selection process. A tool to recruit new employees and to reach the wanted audience, (social) media channels are used to send the message. Measuring the social media impact, Sharda, Delen, & Turban (2018) are mentioning the so-called descriptive analytics. These are simple statistics to identify activity characteristics and trends, for instance how many people are following a channel, the number of reviews and which channels are used most often or are effective.

Related to the theory of Priyadarshini (2018), efficiency and effectiveness are the main aspects to determine the performance of recruitment and selection. Based on this knowledge, source effectiveness is a possible KPI to measure. In other words, it is called the conversion ratio. By comparing the percentage of applications with the percentage of impressions of the positions, the different channels can be judged. So how many people have seen a vacancy on Channel X, compared with the number of people who applied for a vacancy from Channel X.

Another possibility is to determine the candidate type. With this, it is possible to say from which group the candidate is selected. You need to think of the group of supernumeraries, internal recruitment or external recruitment. Basically it creates an idea what group of people is more attracted and suitable. There is data available of what kind of candidates are chosen, but it is never tracked.

The next KPI specifically mentioned for the application procedure, is the selection ratio (Van Vulpen, sd). It compares the number of hired candidates to the total number of candidates in this procedure. It can be measured as follows:

$$Selection\ ratio = \frac{number\ of\ hired\ candidates}{total\ number\ of\ candidates\ selected\ for\ procedure}$$

The last one mentioned here is the percentage of open positions in an organisation or department. It keeps track of the progress of filling vacancies in general (Van Vulpen, sd). The formula of this KPI is as follows:

$$\%\ of\ open\ positions\ in\ a\ department = \frac{total\ number\ of\ open\ positions}{total\ number\ of\ positions\ in\ the\ department}$$

Table *1* shows the list of possible KPIs mentioned in this chapter and gives an indication what might be useful to implement.

Table 1 List of possible KPIs

KPIs selected based on literature and preferences	
Selection ratio	Lead time to hire
Pre-employment screening test	Lead time to ensure proper background checks
Competency profiling	Lead time to ensure productivity
Retention rate of new hires	Sourcing costs
On the job performance	Pre-screening costs
Managerial satisfaction	Administrative expenses
Applicant satisfaction	Background check costs
Lead time to source	Advertising and marketing expenses
Lead time to staff	Source effectiveness
Candidate type	% of open positions

3.4 Method to choose KPIs

In this section, the method and approach of choosing KPIs is discussed. To do this, a so-called Multi-Criteria Decision making method is used. MCDM is a branch of a general class of Operations Research (OR) models which deals with decision problems under the presence of a number of decision criteria.

MCDM plays a critical role in many real life problems. It is allowed to say that almost any local or federal government, industry or business activity involves, in one way or the other, the evaluation of a set of alternatives in terms of a set of decision criteria.

For each decision-making method, there are three steps to utilize the technique involving numerical analysis of alternatives:

1. *Determining the relevant criteria and alternatives*
2. *Attaching numerical measures to the relative importance of the criteria and to the impacts of the alternatives on these criteria*
3. *Processing the numerical values to determine a ranking of each alternative*

In the beginning of this article, Triantaphyllou et al., (1998) mention that the Weighted Sum Model (WSM) is the earliest and most widely used., especially when dealing with a single-dimensional problem, which means we are dealing with one unit of measure. The following expression, mentioned by Fishburn (1967), applies to the WSM when there are *M* alternatives and *N* criteria:

$$A^*_{WSM} = \max_i \sum_{j=1}^{N} q_{ij} w_j \,, \qquad for\ i = 1, 2, 3, \dots, M.$$

A^*_{WSM} is the WSM score of the best alternative, *N* is the number of decision criteria, q_{ij} is the actual value of the i-th alternative in terms of the j-th criterion, and w_j is the weight of importance of the j-th criterion. The assumption that governs this model is the additive utility assumption. That is, the total value of each alternative is equal to the sum of products as given in the formula. In single-dimensional cases, in which all units are the same, the WSM can be used without difficulty (Triantaphyllou et al., 1998). Difficulty with this method emerges when it is applied to multi-dimensional decision-making problems. Then, in combining different dimensional, and consequently different units, the additive utility assumption is violated and the sum of the products cannot be compared with the total value of each alternative.

A modification of the WSM, which is the Weighted Product Model (WPM) has been proposed later to overcome some of the weaknesses of the WSM. One of the weaknesses is that the WSM is difficult to use when the WSM is applied to multi-dimensional decision-making problems. The WPM is sometimes called dimensionless analysis because its structure eliminates any units of measure. That creates the advantage that WPM can be used in single-and multi-dimensional decision-making problems. The difference here between the WPM and the WSM is that there is a multiplication involved. Each alternative is compared with the others by multiplying a number of ratios, one for each criterion. Additionally, each ratio is raised to the power equivalent to the relative weight. The formula of the WPM is as follows:

$$R\left(\frac{A_K}{A_L}\right) = \prod_{j=1}^{N} (a_{Kj}/a_{Lj})^{w_j}$$

In this case is N the number of criteria, a_{Kj} is the actual value of the K-th alternative in terms of the j-th criterion and W_j is the weight of importance of the j-th criterion.

Another method is the Analytical Hierarchy Process (AHP). The formula of the AHP and the WSM are the same and that makes it simple. However, the AHP uses relative values for q_{ij} and w_j instead of actual ones, and thus it can be used for single- or multi-dimensional decision making problems. The AHP is based on decomposing complex MCDM problem into a system of hierarchies. It means that the importance of each criterion to the alternatives is compared to another criterion. So the emphasis is more on the comparison of the importance of criteria.

3.4.1 Chosen method and approach

Since the WSM is the most widely used and it also easy to use, this method is chosen as decision-making method. The reason that we have chosen a MCDM now is to make clear what we will do during the next steps. When a decision-making method is chosen, criteria should be determined. A criterion is a norm that someone of something has to meet. These criteria are chosen by the stakeholders to which they think are important for selecting suitable KPIs. The stakeholders of the HR-department for this research are the hiring manager, the senior P&O advisor, a Matchpoint employee and a mobility manager. The reason that these stakeholders are included in this research is that they have overall knowledge of the whole process and because they all have influential functions. For instance, the hiring manager is the overall supervisor of the process and maintains the quality of recruitment and selection.

The Matchpoint employee has the complete overview of all requested vacancies and communicates this with other employees. The Matchpoint employee is the link between all incoming vacancies requested from departments within the Gemeente, and the registration of the vacancy in Connexys. During a meeting, the stakeholders are asked which criteria they think is important and they will assign numerical weights to the criteria individually. A discussion will take place and each stakeholder will explain why he or she has awarded a certain weight to the criteria. The reason that a discussion is held is that the stakeholders will eventually decide as a group the final decision considering the chosen criteria with its weights. Questions will be asked to the stakeholders. The questions are as follows:

1. *What do you think as important criteria for KPI in general?*
2. *How many criteria are desirable to use?*
3. *Which criteria can be left out?*
4. *What value can be given to the criteria left?*

Basically, the goal here is to use a minimum number of criteria as necessary. When the first question is asked, no information is given about criteria, the stakeholders will give answers of what they think that are criteria. After the first question is answered, a list of 22 criteria is shown of what a ''good'' KPI should meet. In Chapter 4, this list of 22 criteria will be introduced and explained further. Each stakeholder will answer the questions individually. After the answers are given, discussions will follow about the answers and they will explain why they have given certain answers. At the end, the stakeholders will decide as a group what the final decision will be.

Some criteria might not be relevant for the stakeholders and the stakeholders more or less define of what they think is a good KPI by selecting a few criteria. It also helps to ease the decision-making process since the stakeholders only have to focus on a few criteria to determine what a good KPI is instead on taking 22 criteria into account. After that, scores are given to the KPIs based on each criterion. When all scores are given, final scores are determined and each KPI will be ranked based on this final score. Two questions will be asked during the meeting. The two questions are:

1. *How many KPIs are you willing to choose out of the 20 potential KPIs?*
2. *When chosen the number of KPIs, do you want to choose the number of KPIs from the general list of 20 KPIs, or do you want to choose the number of KPIs per category?*

With the second question, the stakeholders can decide which category is more wanted and more important. This is the approach in general. In the next chapters, more details are described with the corresponding results.

To put this theory in perspective, the Gemeente Enschede, and especially the HR-department, has its own strategy regarding improvement of the process. They want to find qualitatively proper candidates who can fill the vacancies optimally. So the quality of filling the vacancy is the most important aspect of the process. Next to that, the HR-department wants to achieve this by making as few costs as possible by using the most effective tools. At last, they want to do this with a short throughput time. By continuously improving this, the HR-department wants to make its performance measurable and visible. Considering this strategy, the theory discussed in the first part is in line with this and can contribute to providing insight in this process.

3.5 Conclusion Chapter 3

In this chapter, a theoretical background has been described to give an understanding what recruitment and selection in general is and what it is meant for. Then, some definitions are given of several measurement tools. After the definitions, KPIs are found and described with an elaboration of possible KPIs based on data that is known and on preferences of the HR-department. These KPI are listed in Table *1*. They consist of four different categories, namely Cost, Time, Quality and Other KPIs. We also presented the method and approach to determine which KPIs are suitable.

In the next chapter, criteria of a good KPI for the HR-department are retrieved from literature to assess the KPIs from the table. Based on the preferences from stakeholders from the HR-department, criteria will be chosen to select KPIs that are going to be implemented.

4. Selection Criteria for KPIs

In this chapter, the following research question will be answered:

What selection criteria should be taken into consideration when selecting suitable KPIs?

Section 4.1 is used to address the framework of criteria for KPIs. In the next section, in Section 4.2, an explanation will be given how the presented criteria from literature is shown to stakeholders. An interview with the stakeholders is held to confirm their preferences on the criteria. Lastly, in Section 4.3, a conclusion is given based on the findings.

4.1 KPI criteria

In the previous chapter, it is mentioned that performance measurement is seen as a means of quantifying the efficiency and effectiveness of an action. An assumption made on this is that it helps to capture performance data which can be used to inform decision making. This was done by addressing the costs (financial), speed (time) and quality aspects of recruitment and selection. Furthermore, some KPIs were added which might be relevant for this specific process. In order to know which KPIs are suitable for the HR-department, criteria can be formulated. The paper of Neely, Richards, Mills, Platts, & Bourne (1997), lists criteria to evaluate KPIs. The question is: what criteria are necessary and useful to include in the final decision of KPIs for the HR-department?

First of all, we show what type of criteria are discussed by Neely, Richards, Mills, Platts, & Bourne (1997). All these criteria could be relevant, however some of them might be too specific to use for the HR-department. The criteria are mentioned in Figure 8.

1. Performance measures should be derived from strategy
2. Performance measures should be simple to understand
3. Performance measures should provide timely and accurate feedback
4. Performance measures should be based on quantities that can be influenced, or controlled, by the user alone or in co-operation with others
5. Performance measures should reflect the "business process" – i.e. both the supplier and customer should be involved in the definition of the measure
6. Performance measures should relate to specific goals (targets)
7. Performance measures should be relevant
8. Performance measures should be part of a closed management loop
9. Performance measures should be clearly defined
10. Performance measures should have visual impact
11. Performance measures should focus on improvement
12. Performance measures should be consistent (in that they maintain their significance as time goes by)
13. Performance measures should provide fast feedback
14. Performance measures should have an explicit purpose
15. Performance measures should be based on an explicitly defined formula and source of data
16. Performance measures should employ ratios rather than absolute numbers
17. Performance measures should use data which are automatically collected as part of a process whenever possible
18. Performance measures should be reported in a simple, consistent format
19. Performance measures should be based on trends rather than snapshots
20. Performance measures should provide information
21. Performance measures should be precise – be exact about what is being measured
22. Performance measures should be objective – not based on opinion

Figure 8 List of criteria for KPIs reprinted from ''Designing performance measures: a structured approach,'' by A. Neely et al., 1997, International Journal of Operations & Production Management, 17(11), p. 1137. Copyright 1997 by MCB University Press

The list of criteria consists of 22 different aspects. However, it must be noted that evaluating KPIs with these criteria can be highly subjective. The stakeholders of the recruitment and selection process will decide which criteria from this list are needed to determine the final list of KPIs. This is going to be done by means of an interview.

4.2 Stakeholders results of choosing criteria

Two interviews with stakeholders were held. The first interview was about retrieving the results of the final list of criteria. The stakeholders were asked to give their preferences of what type of criteria they want to determine the KPIs. The second interview was the determination of the KPIs based on the chosen criteria. This part will be discussed in Chapter 5.

During this interview, four main questions were asked to them. In the beginning, the stakeholders were informed about the findings and tasks during the previous steps that were taken. After that the following questions were asked.

1. *What do you think as important criteria for KPIs in general?*
2. *How many criteria are desirable to use?*
3. *Which criteria can be left out?*
4. *What weight can be given to the criteria left?*

All criteria were listed in an Excel sheet from which the stakeholders were able to use and give values to them. Based on the first question, some answers that were given are that KPIs should be clear and it needs to have a goal for the general strategy for the Gemeente Enschede.

Mentioning the desired number of criteria, the stakeholders mentioned that at least 3 and a maximum of 5 criteria is desirable to use. When taking more criteria into account, the decision-making aspect will get more complicated according to the stakeholders. It was decided to include 5 criteria.

It should be known that the list of 22 criteria were not shown before asking the first two questions. From the third question, the list was shown as a table in the Excel sheet that was sent prior to the meeting. Each stakeholder had to decide which criteria were not taken into consideration. One method to give priority to criteria is to apply the MoSCoW Rules (Heerkens & van Winden, 2017). The MoSCoW rules consists of four types of rules: Must Have (M), Should Have (S), Could Have (C) and Want to Have but Will Not Have This Time Around (W). Each of these rules have been assigned a weight in the form of a value. The values of the weights are ranging between 1 and 4, meaning that Must Have is the most important one with weight 4 and Want to Have but Will Not Have This Time Around a weight of 1. Consequently, Should Have has a weight of 3 and Could Have has a weight of 2.

All criteria that were not chosen were given a weight of 0, which means that these criteria are dropped from the list. As mentioned, five criteria were chosen to use to determine which KPIs are qualitatively suitable for the HR-department.

The last question is to prioritize the five chosen criteria and award them a weight. During the discussion, it became clear that there were two criteria the most important, namely the second and the fourth. These criteria were assigned a weight of 4. The other three criteria were regarded as of equal importance, but not more important as the second and the fourth. So the remaining criteria were assigned a weight of 3. Table *2* summarizes the choice of the stakeholders.

Table 2 Criteria chosen by stakeholders with its weights

Criterion	**Weight**
6. Performance measures should provide timely and accurate feedback	3
7. Performance measures should be based on quantities that can be influenced, or controlled, by the user alone or in co-operation with others	4
8. Performance measures should relate to specific goals (targets)	3
9. Performance measures should be clearly defined	4
10. Performance measures should use data which are automatically collected as part of a process whenever possible	3

The chosen criteria and weights will be used as input for the next phase, namely scoring the KPIs. In the next chapter, the method for scoring the KPIs will be explained, together with the results of the stakeholders. Based on the results, the final KPIs are chosen which will help to answer the main research question stated in the first chapter of this research.

4.3 Conclusion Chapter 4

In this chapter, potential criteria for KPIs are found from literature. These are listed and discussed in Section 4.1. In Section 4.2, the results are given from the interview with the stakeholders. The five criteria that were chosen are given a weight and summarized in Table 2 with the final choice that will function as input for the next chapter.

Chapter 5 Final KPIs

In this chapter, the next research question will be answered:

Which KPIs are suitable for the HR-department?

The final KPIs will be chosen from the list of potential KPIs that were introduced in Chapter 3. First of all, in Section 5.1, a scale of scoring is given so that each KPI will receive a score. In Section 5.2, this scoring scale is applied by the stakeholders. The results of the stakeholders are discussed to show which KPIs are chosen. After that, an explanation is given why these KPIs are chosen in the discussion part in Section 5.3.

5.1 Scale for scoring

The only thing missing is what type of scoring scale should be given. For the ease of implementation and decision-making, there should be a difference of how well each alternative (KPI in this research) will score based on criteria. Therefore, the so-called Likert scale can be used. A typical Likert scale is a 5- or 7- point scale used by respondents to rate the degree to which they agree or disagree with a statement (Sullivan & Artino Jr, 2013). Sullivan & Artino Jr (2013) have shown a 5-point scale in their article as a way of scoring alternatives. Figure 9 Table with Likert scales from shows this scale.

TABLE	TYPICAL LIKERT SCALES			
1	2	3	4	5
Never	Rarely	Sometimes	Often	Always
Completely disagree	Disagree	Neutral	Agree	Completely agree

Figure 9 Table with Likert scales from (Sullivan & Artino Jr, 2013)

To show the differences between the stakeholders, a scoring scale from 1 to 5 is used. The stakeholders were informed about the way they are going to score the KPIs based on the criteria. In Excel, a table is made for each stakeholder so that they can give scores. In *Appendix C Scoring sheets per stakeholder* an overview of the scores per KPI is attached. The Excel sheets were sent to the stakeholders individually to think what their preferences are without being influenced by each other. Each time they score a KPI on a criteria, they have to think of the following statement: *''Does the KPI meet the given criterion or do you think that the KPI would meet the given criterion?''*. Based on this statement, the stakeholders will give the scores between 1 and 5. The meaning of 1 is *Completely disagree* and 5 is *Completely agree.* In the next section, the results of each stakeholder are discussed.

5.2 Final results

To understand how well a KPI scored per stakeholder, an average final score per KPI was created based on the results of the stakeholders. The reason that the average has been taken is to get an overall overview of how each KPI has scored by the stakeholders. Then, each stakeholder can see immediately which KPI is more popular and that makes it easier to make a quicker decision.

Table 3 Results per stakeholder with average final results

KPIs	Hiring manager	Matchpoint employee	Senior P&O advisor	Average
Retention rate of new hires	**61**	**61**	**67**	63.0
Source effectiveness	**61**	**61**	**68**	63.3
Candidate type	**54**	**54**	**57**	*55.0*
Lead time to source	**53**	**53**	**75**	60.3
Sourcing costs	**53**	**59**	**76**	62.7
Pre-employment screening test	**52**	**17**	**41**	*36.7*
Lead time to hire	**50**	**53**	**75**	59.3
% of open positions	**50**	**50**	**64**	*54.7*
Background check costs	**49**	**49**	**59**	*52.3*
Lead time to ensure proper background checks	**48**	**17**	**55**	*40.0*
Competency profiling	**48**	**17**	**38**	*34.3*
Pre-screening costs	**45**	**17**	**76**	*46.0*
Advertising and marketing expenses	**45**	**45**	**79**	56.3
Lead time to staff	**43**	**53**	**34**	*43.3*
Managerial satisfaction	**42**	**45**	**57**	*48.0*
Applicant satisfaction	**42**	**45**	**57**	*48.0*
Selection ratio	**41**	**41**	**52**	44.7
Administrative expenses	**38**	**38**	**45**	*40.3*
On the job performance	**38**	**17**	**54**	*36.3*
Lead time to ensure productivity	**32**	**32**	**37**	*33.7*

Table *3* is a summary of the final scores per stakeholder. One side note: the scale of the final scores are 17-85, not 0-100. When the highest scores per criterion are given, the final score will be: 3*5 + 4*5 + 3*5 + 4*5 + 3*5 = 85. The green cells show the top five highest scored KPI per stakeholders The blue ones are the KPIs chosen by the stakeholder. More details will be discussed later. The yellow cells are the KPIs that are put on a so-called ''spare list''. The spare list is a list on which the KPIs marked with yellow are listed. These KPIs are potential candidates to be chosen in the future together with the five KPIs.

The stakeholders decided to choose KPIs per category. They wanted at least one KPI per category. According to them, they are convinced that the measurement of the performance of the process will be clearer and it fulfils their needs based on the strategy they devised.

During the discussion between the stakeholders, it became clear that a maximum of 5 KPIs is desired as shown in Table *3*. According to them, it was not necessary to implement more KPIs, since the focus on what is really important can potentially get lost. They mentioned the less KPIs chosen, the better it is. .

The KPI from Quality is the **Retention rate of new hires**. This KPI scored the best among the other quality KPIs and is included in the final decision. The stakeholders mentioned that this KPI will provide insights in how well vacancies are filled. So the quality of choosing new hires is measured.

The KPIs from Time are **Lead time to source** and **Lead time to hire**. The lead time to source is an important one since it determines how long it is needed to find candidates. Based on this measurement, it can be decided whether the current method of searching candidates is effective and efficient. The lead time to hire is the throughput time of the whole recruitment and selection process. With this measurement, the strong or weak points in the process could be detected and improved if necessary.

The KPI from Cost is **Advertising and Marketing expenses**. The main costs made by the HR-department are marketing costs. However, this KPI was not scored the best in the category Cost on average. The discussion that arose is that whether sourcing costs is more reliable than the advertising and marketing expenses. The conclusion during the discussion is that the focus should lie first on advertising and marketing expenses rather than the complete *Sourcing costs*. Nonetheless, Sourcing costs was scored higher because this KPI measures all costs. However, the stakeholders mentioned that total costs for all types of marketing are not relevant at this moment, but only the advertising and marketing expenses, since these are the most significant costs. They thought that the quality of the Sourcing costs is very good, but their opinions changed when discussing about this KPI in detail and what the added value would be for now.

The last KPI is the **Source effectiveness** from the category Other KPIs. Since the HR-department is highly dependent on their (social media) channels of finding possible candidates, this KPI is chosen. This KPI was also scored as the best in general on average. As mentioned in the previous paragraph, we are now in a situation that we cannot meet each other physically, and everything will be online. That means that using the channels will become more and more important in the future. To understand how effective these channels are, this KPI is chosen in the final decision.

5.3.1 Discussion about final decision

During the discussion with the stakeholders, KPIs were chosen per category. We know that one KPI that was originally scoring higher, the *Sourcing costs*, was not chosen. The reason that it was not chosen is that the stakeholders were doubting about its relevance. It was scored high based on the set of criteria. When all KPIs were reviewed, the decision was to put this KPI on a spare list. However, the stakeholders mentioned that it can be useful to implement KPIs per stage of the recruitment and selection process. Another KPI, the *Selection ratio*, was scored lower but it was an interesting option. The stakeholders mentioned that it this KPI has not a high priority, but this KPI can be added when the measurement of the process will be more specific. For example, when it is possible to include KPIs in each stage in the process. The *Selection ratio* will be measured in the final stage of the process during the selection of applicants. The stakeholders indicated that experiments can be done to see if it is relevant to measure and whether it gives relevant results. The *Selection ratio* is also put on the spare list. The KPIs on the spare list are candidate to be implemented in the future.

Another discussion point is the intended number of stakeholders. It was meant to receive results from four stakeholders, however one of them was not able to hand in the results before the planned meeting. Therefore, the decision is based on the results of three stakeholders instead of four. It is possible that this could have an influence on the final results and the average final score retrieved from the stakeholders.

When we zoom into the final scores per stakeholders, we see that one stakeholder, the P&O advisor, has scored relatively higher compared to the other two stakeholders. The highest final score from the P&O advisor was 79 points for the *Advertising and Marketing expenses*, while the other two only scored 45 points. However, it is selected as one of the five KPIs. So the way of awarding scores could have an influence on the final decision-making, especially when higher scores are given.

A more general note of the final decision is that more than one KPI has been chosen. Normally, when applying a decision making method, alternatives are scored and ranked and the best one is chosen. In this situation, this was not the case. Since the stakeholders mentioned that they wanted 5 KPIs, it was immediately clear that not only the best scored KPI on average was chosen, but also other KPIs that scored well.

5.4 Conclusion Chapter 5

In this chapter, the results are discussed from the stakeholders. This is discussed in chapter 5.1. With the WSM and Likert scale, results could be obtained from the stakeholders. Based on these results, a meeting was planned to discuss the preferences. An average end score per KPI was created to which KPIs were the favourite. At the end, 5 KPIs were chosen and the decision is made per category. Therefore, the answer to the research question of this chapter *''Which KPIs are suitable for the HR-department?''* is: the retention rate of new hires, the lead time to hire, the lead time to source, advertising and marketing expenses and the source effectiveness.

Chapter 6 Implementation

In this chapter, the final research question is answered:

How can the KPIs be implemented within the recruitment and selection process?

In the first section, in Section 6.1, an introduction is given how to monitor and measure performance. This can be done by using a dashboard. Since the main research question in Chapter 1 states how to measure performance of the process, this element is indispensable. We consider how the KPIs can be visualised and what the rules of designing a dashboard are. Next to that, a small explanation is given about the performance measure record sheet. This sheet shows what to consider when measuring KPIs. It provides an overview for stakeholders to avoid miscommunication. This covers Section 6.2

After that, the functionalities of the software system will be discussed in Section 6.3. More details per software system are described in Subsection 6.3.1 to 6.3.3. Finally, when the information in is explained, options are given how to use the chosen KPIs in Chapter 5 in the new implemented software system. This will cover Subsection 6.3.4. A discussion will be provided in Section 6.4. The last section of this chapter is the conclusion section, Section 6.5.

6.1 Dashboard design and rules

In this section, the theory behind monitoring the performance is described. The question we aim to answer in this section is: is monitoring of the performance the only aspect of dashboards?

In today's business environment, the ability to make dashboard presentations is almost as indispensable as writing skills. Graphics are taken for granted, but people do not know what type of information graphics exist and how they are going to be used. Therefore, many dashboards fail to provide value because of design issues, not technology. Kerzner (2013, p. 248), has stated some facts related to dashboards:

- *Dashboards are communication tools.*
- *Dashboards provide the viewers with situational awareness of what the information means now and what it might mean in the future.*
- *Dashboards are not detailed reports.*
- *Some dashboards simply may not work.*
- *Some dashboards may be inappropriate for a particular application and should not be forced upon the stakeholders.*
- *More than one dashboard may be required to convey the necessary information. This should be done by providing the right data and without overwhelming people with information.*
- *It is important that the information displayed focus on the future. Otherwise, viewers will get bogged down analysing the past rather than thinking about what's ahead.*
- *With the growth of the use of KPIs, it is extremely important that the stakeholders and other viewers of the dashboards have a good understanding of what is being measured.*

Based on these facts, it is important to understand how a dashboard is going to be designed. The stakeholder(s) responsible should know of what they need to take care of.

Kerzner (2013, pp. 294-295) have also included some layout design tips about size and colour of dashboards. Some of these tips are the following:

- **Colour**
  - A lot of colours can be chosen, although it is not wise to choose a lot of different colours, since it can be tempting to highlight various areas of importance in a dashboard. It is better to use a few colours. Next to that, people who are colour blind may not be able to distinguish several colours. An option to test this is to print out a screenshot of the dashboard on a black-and-white printer and see whether you are able to distinguish what will now be shades of grey from each other.
- **Fonts and font size**
  - Using fonts and font sizes, it is like the use of colours. Mistakes can be made easily. It can make or break the entire look and feel that a user gets from looking at a dashboard. Therefore, do not mix a number of different font types, try to stick with one. One popular font is Arial for instance. Moreover, do not mix a number of different font sizes. Ideally you should use a font size of 12 or 14 points and apply boldface in headers. (The main header could be somewhat larger than the other headers). Attention should be paid to this size because a lot of middle-aged employees might work at an organisation or company. When using text or number, the font size can vary between 8 and 12 points. 10 points is used often as an average.
- **Size dashboard**
  - Most dashboards are designed to fit a single viewable area, which makes it easier to glance over the screen and check the KPIs immediately. When scrolling to the sides or up and down, it is not really a dashboard anymore. When adding components or other graphs and tables, it is wise to use components that can be expanded, collapsed or stacked so that the default views after login still fit on a single screen. Use many dashboards, because if there is simply too much information to show, it is possible that this does not fit on a single dashboard. Many dashboards technologies have buttons or hyperlinks that let us link related dashboards together to make navigation easy and intuitive for the users. Use parameters when showing data. Sometimes it is not necessary to show monthly data but only for a specific quarter of a year. Those time parameters, for example, help to filter the data the user does not want to see.
- **Placement of components**
  - Some tables or graphs are more important and more significant to mention than others. Place the components in order of importance. Viewers read dashboards from left to right and they start from the top. So the most important component could be placed on the left side. Even when viewers watch a dashboard for a few seconds, it is important that they are immediately attracted by what they see.

6.2 KPI design

It is important that every responsible employee at the HR-department understands how KPIs are working and that this can be communicated. In Chapter 4, the 22 criteria by Neely et al. (1997) were discussed. In the same article, Neely et al. (1997) provided a framework for KPIs to clarify the definition of the KPI and how it works. The so-called *performance measure record sheet*, which can be used to design and audit KPIs.

The aspects of this sheet helps the everyone within the HR-department understanding and avoids confusion. Neely et al. (1997) mentions that based on experience, the record sheet is valuable because it facilitates the design of performance measures and encourages the designers of such measures to consider the behavioural implications of the measures in particular settings. The performance measure record sheet has been used by over 200 managers from 50 different companies.

Table 4 Table of performance measure record sheet for Retention rate of new hires

Performance measure record sheet			
Title	Retention rate of new hires	**Who measures?**	HR-department (Matchpoint employee)
Purpose	Measure the percentage of hires that are still operating after a year	**Source of data**	You Force
Relates to	Quality	**Who owns the measure?**	HR-department (Application manager You Force)
Target	Will be determined by HR-department	**Who acts on the data?**	Hiring manager and Recruiter
Formula	$\frac{Number\ of\ hires\ after\ a\ year}{Total\ number\ of\ hires}$	**What do they do?**	Each employee will monitor the progress of measurement and they will communicate this with each other
Frequency of measurement	Register a hire after vacancy has been closed and register when hire is still working after a year	**Notes and comments**	Will be determined if necessary
Frequency of review	Will be determined by HR-department		

In Table 4, the performance measure record sheet has been filled in for the Retention rate of new hires. In

Appendix D Performance measure record sheet KPIs*,* an overview of the filled tables can be found of the other KPIs. The Frequency of review and Target has not been determined yet. It is decided that the management of the HR-department will determine this later when the implementation of the KPIs will actually take place.

6.2.1 Measuring KPIs in the recruitment and selection process

Each KPI is measured at a different moment. It depends what must be measured. Based on the flowchart in Figure 10, which is made and introduced in Chapter 2, an idea is given when data should be collected and when it is completed. Each KPI here is given a number.

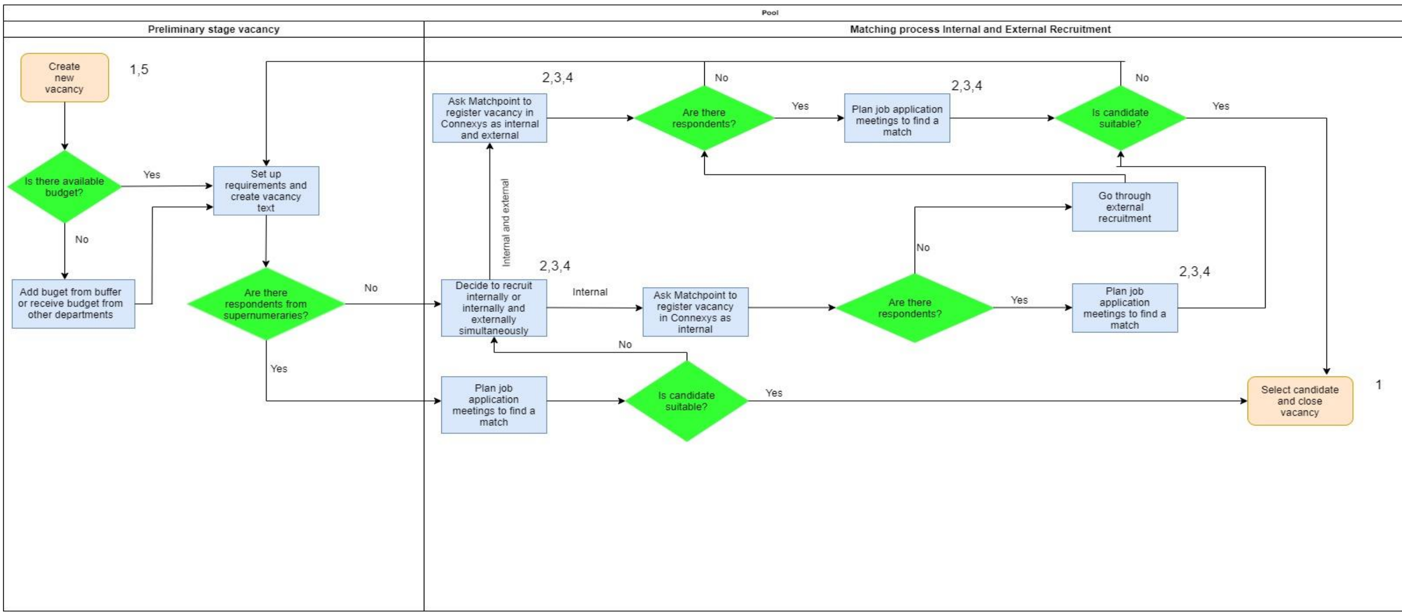


Figure 10 Flowchart of current Recruitment and Selection process with numbers

For instance, the lead time to hire (1) is a KPI that measures the throughput time of the whole process. When looking at the flowchart, the start of the measurement is from the pink box *''Create new vacancy''* and the end is at the pink box *''Select candidate and close vacancy.''*

The lead time to source (2) is the time when the vacancy is published online until the moment the vacancy is offline. In the flowchart, the start of the measurement is from the blue box *''Ask Matchpoint to register the vacancy in Connexys as internal and Ask Matchpoint to register the vacancy in Connexys as internal and external''* until the blue box *''Plan job application meetings to find a match.''* The same applies to the advertising and marketing expenses KPI (3). Although the decision is made early in the process, namely when requirements of the vacancy are set up, but the costs are made within the mentioned range.

Additionally, the source effectiveness (4) is also measured within the range of publishing the vacancy online and removing the vacancy. Since it is necessary to know how many people are attracted from a specific channel, it is wise to measure from the moment the vacancy is published.

The retention rate of new hires (5) is a bit different to measure. The starting moment is from the pink box ''Select candidate and close vacancy'' until the candidate is still working after one year. From that moment the candidate is added in the ratio as the employee who is still working or is not working there anymore.

6.3 KPI implementation

In this research, data availability has been researched within Connexys, the current software system. However, Connexys is going to be substituted by a new software system called Hireserve. In a month, the system will be completely integrated in the HR-department so that the employees can make optimal use of it. Considering the visualization of KPIs at the HR-department, a few systems, which are tracking data, are able to do this. In the next subsections, a description is given of these systems.

6.3.1 Hireserve Recruitment Software

Hireserve is a company which makes and sells the recruitment system Hireserve ATS (Applicant Tracking System). It is suitable for companies and organisations which deal with a recruitment process, such as the HR-department of the Gemeente Enschede. An ATS is a system that manages the administration and management of vacancies and applicants. This is the core of the system. Next to that, Hireserve has a lot of functionalities that are useful for implementing KPIs. The interesting part of Hireserve for this research is the possibility of creating dashboards, in which KPIs can be visualised. The system has its own module, called Hireserve Analytics. Hireserve has developed this module based on Qlik Sense. Qlik Sense is a platform focused on data analytics and data visualisation.

Within this module, more insights of the recruitment process become visible. Some built-in characteristics are the number of open vacancies, why people are rejected and lead times. Especially the last one is interesting since two of the five KPIs selected in section 5.3 are lead times. Within Hireserve, graphics and tables can be created and analysed. When necessary, it is possible to create brand-new visualisations. An example of graphics and tables is shown in Figure 11.

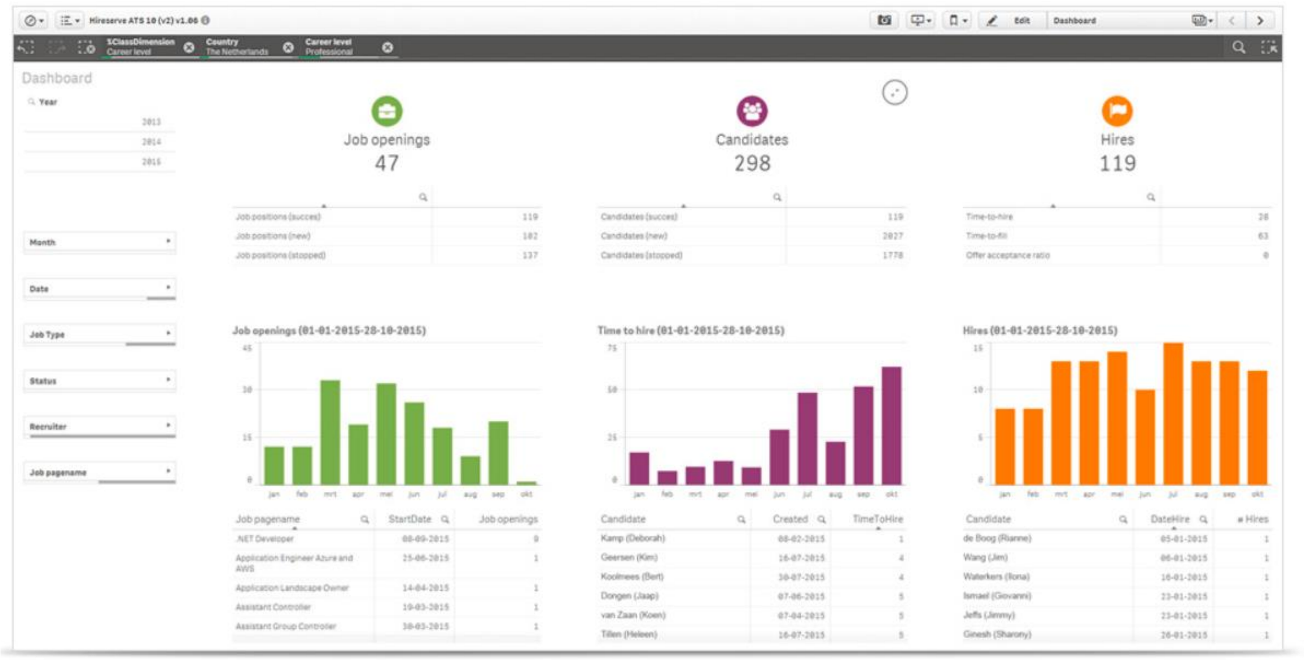


Figure 11 Example of overview of candidates and hires with TimeToHire

As you can see, the data is not real and the chosen TimeToHire is fictive. This figure only gives an idea of how the chosen KPIs are visualized when they are implemented. The lead time to hire and the lead time to source can be implemented in Hireserve.

Considering the remaining three KPIs, it is also possible to measure the source effectiveness. All corresponding (social) media channels are integrated within the system. That means that it is possible to retrieve data from several channels and evaluate them in HireServe. When the vacancy is published, it becomes visible on each channel. Hireserve is integrated with Google Analytics which tracks the behaviour of people who are visiting websites. This data can be used to see how often a vacancy on a specific channel is viewed. Additionally, each applicant will be asked regular questions about the vacancy itself. One question that will be added is:

''Which (social) media channel has attracted you to apply for the vacancy?''

With this question, the HR-department wants to understand from which channel their applicants come from. Links with LinkedIn, Facebook and Twitter are made easily. It is not necessary anymore to create advertisement texts on channels one at a time.

Currently, the HR-department is working on the implementation of Hireserve as the new recruitment system. This system will be fully operational from the beginning of April 2021 as expected. That means that the implementation is in progress and not completed yet. Therefore, there is no overview how the other two KPIs, namely the advertising and marketing expenses and the retention rate for new hires can be implemented. The Gemeente Enschede is using more systems. For example, all HR related information of employees can be found in YouForce. The Gemeente has another system related to finances, which is called DAF. In DAF, all expenses and revenues are collected. In the next two paragraphs, these two systems are highlighted in short, since these are already existing systems and used currently.

6.3.2 DAF

As mentioned in the previous paragraph, DAF is the billing application of the Gemeente Enschede. All costs and revenues are kept track by means of a code. That means that a specific type of cost made is labelled with a source code so that it recognisable for everyone. For the KPI Advertising and marketing expenses, it is wise to label this type of costs and collect when evaluating. In some ways, this is already done, but labelling these specific costs is necessary in order to avoid misconception with other types of costs.

The next step is to visualize the data from DAF. The Gemeente has a system for this called Cognos Analytics. It is possible to export data from DAF to Cognos so that data can be visualised in Cognos. Cognos Analytics is a web-based integrated business intelligence suite by IBM. It provides a toolset for reporting, analytics, score carding and monitoring of events and metrics. That makes it possible to measure and visualize the Advertising and marketing expenses KPI.

6.3.3 Visma | Raet (You Force)

The last KPI is the Quality KPI, namely the Retention rate of new hires. All HR related information of employees is collected in You Force, which is a part of Visma | Raet. This system is used mainly as a digital HR administration for employees and managers. Employees can view their labour contract and their salary with the needed information.

When checking You Force, the starting date of a new employee is registered. That means that is possible to check how many employees are still working after one year. The data is collected in You Force. Visma | Raet has also dashboard opportunities. In the module People Analytics Dashboards of Visma, data can be converted into visualisation by means of graphics and tables. The dashboard uses datasets of HR and Payroll modules in You Force. That makes it suitable to provide insights into this KPI.

6.3.4 Options

Based on the knowledge described in the previous paragraphs, an advice can be given how to use the KPIs in practical. Hireserve, Cognos and Visma | Raet are systems containing modules in which a dashboard can be built. In Hireserve, three of the five KPIs are evaluated. The other two systems are only evaluating one KPI each. The first option is that each KPI is measured and visualised separately in each system mentioned in Subsection 6.2.1, 6.2.2 and 6.2.3. This option is simple to implement because all systems are able to do this. The disadvantage is that instead of one dashboard with all KPIs, three separate dashboard are made.

Hireserve indicates that there is possibility to integrate data from other systems into Hireserve. Also Cognos Analytics has a lot of options to do this. Since Hireserve can be linked to Visma | Raet, it is an option to investigate whether the Retention rate of new hires data can be imported into Hireserve and whether a link from Cognos and Hireserve can be made to import data from DAF into Hireserve. Hireserve already measures three KPIs. This is option 2.

The last option is to investigate the use of a data visualisation tool, such as Tableau or Power BI. Tableau is a more data visualisation tool, while Power BI focuses more on predictive reporting. However, the HR-department should decide using Tableau or Power BI. There are two factors that show a difference between these two tools.

- *The amount of budget*
- *The number of functionalities to use in the dashboard*

Tableau is more expensive than Power BI, so when there is low budget, Power BI might be the right choice. If there is no need to use a lot of functionalities, then again Power BI is the better choice. Tableau has a wider variety and can connect to numerous data sources, while this is limited for Power BI (Langmann, n.d.). Creating a report in Power BI is relatively simple, while for Tableau it is time-consuming. In Table 5, a summary of the options is shown.

Table 5 Summary of implementation options KPIs

Option	Description	Practical
Option 1	KPI visualisation in each of the indicated system	Hireserve: - Lead time to source - Lead time to hire - Source effectiveness Cognos: - Advertising and Marketing expenses You Force: - Retention rate of new hires
Option 2	KPI visualisation in one of the existing systems	Data of KPIs will be collected in each system. After that, KPIs are visualised in Cognos, Hireserve or You Force
Option 3	KPI visualisation in Tableau or Power BI	Data of KPIs will be collected in each system. After that, KPIs are visualised in either Tableau or Power BI

6.4 Discussion

For all KPIs, we discussed the opportunities for implementing them. However, it is not straightforward to show all KPIs in one dashboard in one system. It is not clear how data from other systems can be imported in Hireserve. Four different systems are used and that means that three different dashboards are used. The newly implemented recruitment software system is not operational at the moment and will be fully used next month, after this research has been finished. Discussions with stakeholders who are concerned with the implementation of Hireserve are held. They mentioned the opportunities of the new system and also of the current used systems. It might be possible to integrate all data in one system in the future, but more research is needed for this.

6.5 Conclusion chapter 6

This chapter has described the implementation phase of this research. In Section 6.1, theory about designing rules of dashboards has been discussed. These rules indicate how to manage a dashboard, what does a dashboard say and how to make it more attractive. In Section 6.3, the possibilities of implementing the KPIs in the systems are explained. Currently, there is more than one system needed to retrieve data and to visualize it as well.

Different options regarding the visualisation are given. These options are to measure and visualize the KPIs separately in each of the described systems. Another option is to investigate in the future whether Hireserve can be linked with the other two systems, since Hireserve already evaluates three KPIs. The last option could be to use another program, namely Tableau or Power BI, due to their many possibilities of importing data and visualisations options. In Section 6.4, a small discussion section is added to stress out the side notes.

Chapter 7 Evaluation

This chapter is the final chapter of this research, which provides an answer to the main research question formulated in Chapter 1. This will cover Section 7.1. Thereafter, discussion about this research will be given and the last part of this chapter consists of recommendations for the Gemeente Enschede and proposals for further research.

7.1 Conclusion research

This research was conducted to provide an answer to the main research question. The HR-department was not able to understand how well the process of recruitment and selection was done. They wanted to find ways to measure their process, especially when filling vacancies. Therefore, the main research question was formulated:

''How can the performance of the process of recruitment and selection be measured at the HR-department?''

The main contribution for answering this question is the selection of the five KPIs by the stakeholders. The five KPIs vary from the categories Cost, Time, Quality and Other KPIs. The five KPIs are *Advertising and Marketing expenses*, *Lead time to hire*, *Lead time to source*, *Retention rate of new hires* and *Source effectiveness*. In Chapter 5, the results were discussed and in addition to that, the stakeholders mentioned that two KPIs, *Sourcing costs* and *Selection ratio,* are put on a spare list as KPIs that can be added to the list of five KPIs in the future.

Next to that, the completion of performance measurement is to implement the KPIs in a dashboard. In Chapter 6, a few systems that the HR-department is using are mentioned. The final decision of how to implement the KPIs in a dashboard is summarized in Section 6.3.4. Three options are shown in Table *5* Summary of implementation options KPIsand the HR-department will decide which option is the most efficient for them to use.

7.2 Discussion and further research

The stakeholders were asked to give scores to KPIs on several criteria. The given scores led to final scores from which the stakeholders have selected their preferred set of KPIs. However, it became clear that two KPIs were not selected in the final decision. One of them was the *Sourcing Costs.* The stakeholders mentioned that based on the KPI criteria they selected, the *Sourcing Costs* is a good KPI, but it was questionable whether it would provide relevant results regarding the costs they are making on a yearly basis.

One cause of this ''misfit'' is perhaps an incomplete set of criteria. One of the criteria was about whether a performance measure should be relevant. This criterion was not included in the decision-making process. The other KPI, the *Selection ratio* was not chosen as well. The HR-department decided to select five KPIs. This KPI did not make it in the top five according to the preferences of the stakeholders.

Another discussion point is the intended number of stakeholders. It was meant to receive results from four stakeholders, however one of them was not able to hand in the results before the planned meeting. Therefore, the decision is based on the results of three stakeholders instead of four. It is possible that this could have an influence on the final results and the average final score retrieved from the stakeholders.

While we discussed about the KPI selection and criteria, the scores awarded by the stakeholders to the twenty KPIs showed one big difference. One stakeholder, the senior P&O advisor, awarded relatively higher scores to the KPIs than the other two stakeholders. The hiring manager and the Matchpoint employee almost gave the same scores per KPI. It is plausible to say that the high scores of the senior P&O advisor could have an influence on the decision-making process, since the high scores influenced the average final result of the three stakeholders combined. For example, the senior P&O advisor has scored the *Advertising and Marketing Expenses* as best KPI, namely 79 points, while the hiring manager and the Matchpoint employee both scored 45 points. Based on the ranking of the two stakeholders, this KPI has been ranked thirteenth and tenth for respectively the hiring manager and the Matchpoint employee. Even this KPI has been scored relatively low by two of them, it is still selected in the list of final KPIs. A reason for this is that for one stakeholder, this KPI is not very interesting, while for the other it is of high priority.

Considering future research, more research is needed to check whether the two KPIs *Selection ratio* and *Sourcing costs* are relevant to measure. During the meeting with stakeholders, it was decided not to choose these KPIs, but that these are still interesting options. The stakeholders indicated to put these KPIs on a ‘’spare list’’, which means that the HR-department will investigate the relevance of the KPIs to implement in the future.

Lastly, further research may be done beyond the scope of this research. KPIs were found based on the strategy that the Gemeente Enschede has been incorporated and selected by using the Weighted Sum Model as decision-making method. We did not take a look at the process in detail. It is possible that the number of KPIs can be expanded in the future. Instead of following the strategy of the Gemeente Enschede, the HR-department could shed a light on its own process. More KPIs could be selected and implemented per stage in the recruitment and selection. For example, each stage in the process could contain at least one KPI. The performance of the process could then be measured even better.

7.3 Recommendations for the Gemeente Enschede

The main recommendation is to implement the five chosen KPIs from Chapter 5. In this way, the HR-department is able to measure the performance of the recruitment and selection process. The performance measure record sheet is used to define the KPIs and communicate these with the whole HR-department. Not everything in this sheet is filled in yet. It would be wise to review the record sheet for each KPI and discuss with those involved in the implementation and fill in the parts that are now marked as *‘’will be determined by the HR-department.’’*

Another recommendation is to investigate the implementations options discussed in Subsection 6.3.4. These options are described but more research is needed to check which one of these options is the most suitable one. However, a temporary decision should be taken. Therefore, the recommendation is to choose the first option. That means that the KPIs are measured and visualised separately in Hireserve, Cognos and You Force. The data is already collected in these systems, so it means that a functional dashboard needs to be built. The HR-department can use the design rules for dashboards described in Section 6.1. The next step could be to check whether option 2 is achievable. This option suggests to visualise all KPIs in one existing system. One of the systems should be chosen as a central place where all the visualisations are created. It is straightforward to say that this central place would be Hireserve, because three of the five KPIs can already be visualised here.

References

Al-Hawary, S. (2015, November). Human Resource Management Practices as a Success Factor of Knowledge Management Implementation at Health Care Sector in Jordan. *International Journal of Business and Social Science, 6*(11), 83-98. Retrieved from https://ijbssnet.com/journals/Vol_6_No_11_1_November_2015/10.pdf

Boddy. (2017). *Management: an introduction* (7th ed.). New York: Pearson Education Limited.

Breaugh, J., & Starke, M. (2000). Research on employee recruitment: So many studies, so many remaining questions. *Journal of Management, 26*(3), 405-434. doi:10.1177/014

Dos Santos, A., Armanu, Setiawan, M., & Rofiq, A. (2020). Effect of Recruitment, selection and culture of organizations on state personnel performance. *Management Science Letters, 10*, 1179-1186. doi:10.5267/j.msl.2019.11.042

Enschede, G. (2020). *Handleiding vacaturebeheer.* Enschede.

Heerkens, H., & van Winden, A. (2017). *Solving Managerial Problems Systematically* (1st ed.). Groningen/Houten, The Netherlands: Noordhoff Uitgevers bv.

Kanyemba, M., Gervase Iwu, C., & Allen-Ile, C. (2015). Impact of Recruitment and Selection on Organizational Productivity. *Corporate Ownership and Control, 12*(2), 177-185.

Kerzner, H. (2013). *Project Management: Metrics, KPIs and Dashboards: A Guide to Measuring and Monitoring Project Performance* (2nd ed.). New York, United States: John Wiley & Sons, Inc., Hoboken. Retrieved from http://library.wbi.ac.id/repository/216.pdf

Langmann, K. (n.d.). *Spreadsheeto*. Retrieved from https://spreadsheeto.com/power-bi-vs-tableau/

Milichovsky, F., & Hornungova, J. (2013, March 31). Methodology for the selection of financial indicators in the area of information and communication activities. *Business: Theory of Practice, 14*(2), 97-102. doi:10.3846/btp.2013.11

Minbaeva, D. (2004, March). HRM practices and MNC knowledge Transfer. *CKG Working Paper*(2), 1-43.

Neely, A., Richards, H., Mills, J., Platts, K., & Bourne, M. (1997). Designing performance measures: a structured approach. *International Journal of Operations & Production Management, 17*(11), 1131-1152. doi:10.1108%2F01443579710177888

Priyadarshini, R. (2018). Enhancing recruitment effectiveness in IT industry. *IOP Conference Series: Materials Science and Engineering*.

Sharda, R., Delen, D., & Turban, E. (2018). *Business Intelligence, Analytics, and Data Science* (4th ed.). United States: Pearson Education Limited.

Sullivan, G., & Artino Jr, A. (2013, December). Analyzing and Interpreting Data From Likert-Type Scales. *Journal of Graduate Medical Education*, 541-542. doi:http://dx.doi.org/10.4300/JGME-5-4-18

Triantaphyllou, E., Shu, B., Nieto Sanchez, S., & Ray, T. (1998, February). *Multi-Criteria Decision Making: An Operations Research Approach* (15th ed.). New York, NY, United States: John Wiley & Sons. Retrieved from https://www.researchgate.net/publication/284107964_Multi-criteria_decision_making_An_operations_research_approach

van Vulpen, A. (n.d.). *AIHR Analytics*. Retrieved from https://www.analyticsinhr.com/blog/recruiting-metrics/

Appendix

Appendix A Example of vacancy text

Beleidsadviseur Sociaal Domein

Aandachtsgebied: Jeugdwet

Voor 36 uur per week, vooralsnog tijdelijk voor de duur van 1 jaar

Beleid maken voor kwetsbare mensen in onze samenleving is één, handen en voeten geven aan dat beleid is een volgende stap in het proces. Voor die interessante uitdaging hebben we jou nodig. Wij zoeken voor het sociaal domein professionals die de verbinding leggen tussen strategie en uitvoering, die vormgeven aan het beleid rondom Wmo, jeugd en de Participatiewet. Ben jij een sociale en resultaatgerichte aanpakker die zich makkelijk tussen alle afdelingen van onze organisatie beweegt? Stel jezelf dan aan ons voor. We zijn benieuwd naar je visie op de functie!

De functie

Als beleidsadviseur voelt het voor jou heel natuurlijk om in een politiek-bestuurlijke organisatie te werken. Vol enthousiasme buig jij je over enkele dossiers die onder jouw 'eigenaarschap' vallen. Dit is in dit geval het aandachtsgebied jeugdwet, waaronder de relatie met medisch verwijzers zoals huisartsen, innovatie van intramurale jeugdhulp, leveren van bijdrage aan regionale samenwerking op dit terrein en verbinding naar de wijkteams en stadsdelen. Dagelijks werk je samen met je collega's aan adviezen over beleidsmatige ontwikkelingen, werk je keuzes uit tot concrete plannen en zorg je voor draagvlak in de organisatie en waar dat aan de orde is bij 14 Twentse gemeenten en ketenpartners. Daarbij beweeg je je tussen de verschillende niveaus: van strategisch tot uitvoerend niveau. Je haalt bij de contactpersonen uit het werkveld op waar zij knelpunten zien en onderzoekt vervolgens welke concrete oplossingen we binnen ons beleid daarvoor kunnen bieden. Dat doe je ook voor de landelijke ontwikkelingen rondom wet- en regelgeving. Hoe ga je die ontwikkelingen vertalen naar de uitvoering? Bijzonder aan deze functie is dat op onderdelen wordt samengewerkt met de Twentse gemeenten. Een echte verbindende rol dus, waarbij je niet bang bent om je verantwoordelijkheid te pakken en keuzes durft te maken!

Functie-eisen

Als beleidsadviseur binnen een gemeente weet je, dat je gaat werken in een politiek-bestuurlijke omgeving. Dat vraagt om een hoge mate van sensitiviteit, oftewel oog voor de verschillende belangen in de organisatie en de omgeving. Gevoel voor (regionale) samenwerking en onderlinge verhoudingen is specifiek bij dit aandachtsgebied van belang. Daarnaast ben je communicatief en redactioneel goed onderlegd, kun je goed organiseren en weet je hoe je onderhandelt voor het beste resultaat. Tot slot herken je jezelf in het volgende: analytisch, samenwerkend, proactief, eigen visie en doelgericht. Ook ben je niet bang om buiten systemen te denken en functie overstijgend te handelen.

Voor deze functie breng je de volgende kennis en ervaring mee:

- Academisch denk- en werkniveau.
- Relevante werkervaring in het sociaal domein, waarbij ervaring met projectmatig werken een pre is.
- Ruime ervaring als beleidsadviseur, bij voorkeur binnen een grote gemeente, waarbij kennis van beleidsadvisering en uitvoering gewenst is.
- Voldoende kennis en ervaring van het aandachtsgebied jeugd en daarbij verbindingen kunnen leggen met andere beleidsterreinen.
- Goede schriftelijke en mondelinge communicatievaardigheden
- Politiek-bestuurlijke sensitiviteit
- In staat om netwerken te leggen en onderhouden en goede onderhandelingsvaardigheden
- Belangrijke competenties zijn: analyseren, onafhankelijk, samenwerken, communiceren, initiatief nemen, omgevingssensitiviteit en visie.

Ons aanbod

Natuurlijk is dit een uitdagende functie, waarbij je ons meeneemt in jouw visie op het sociaal domein. Je krijgt de vrijheid en ondersteuning om samen met je collega's te werken aan maatschappelijke oplossingen voor inwoners uit Enschede en Twente. Als je kiest om te reageren op deze functie, dan wacht je een uitdagende baan waarbij je een actieve bijdrage levert aan een bruisende en inclusieve stad, en een goede samenwerking in de regio. Je kunt het volgende van ons verwachten:

- Een aantrekkelijk salaris tussen € 3.561,- en € 5.169,- bruto per maand op basis van een 36-urige werkweek (maximum schaal 11), passend bij de ervaring die je meebrengt.
- Een goede pensioenregeling.
- Prima arbeidsvoorwaarden, een 36-urige werkweek met flexibele werktijden, ruimte voor persoonlijke ontwikkeling en opleidingsmogelijkheden, en een individueel keuzebudget dat voor verschillende zaken inzetbaar is.
- Op deze functie zijn de Cao Gemeenten en Aanvullende Arbeidsvoorwaarden Enschede van toepassing.

Deze functie is vooralsnog tijdelijk voor de duur van 1 jaar vanwege ziekte-vervanging.

Organisatie

Het bruist van vernieuwing in Enschede. Centraal staan onderwerpen die het hart van het samenleven zelf raken. We werken aan een inclusieve samenleving waarin iedereen meetelt en mee kan doen binnen zijn of haar mogelijkheden. De grootste opgaven van de stad liggen in het aantrekken en vasthouden van talent, duurzaamheid en de participatie van inwoners zonder werk of met een zorgvraag. Enschede loopt vaak voorop bij ontwikkelingen in het sociaal domein. Bestuurlijke ambities, de ‘nieuwe taken’ van de gemeente en de transformatievraagstukken in het sociaal domein maken dat het takenpakket in de laatste jaren aanzienlijk is verzwaard.

Binnen dat takenpakket hebben we professionals nodig die met ons durven te vernieuwen. Die durven te innoveren binnen – en buiten – het sociaal domein. Dat vraagt wat van ons als organisatie, maar ook van de professionals die bij en met ons werken. Binnen de organisatie werken we volgens de volgende waarden: vertrouwen, verbinden, vrij zijn en voorbeeld geven. We zetten daarbij vol in op persoonlijke ontwikkeling.

Je komt te werken binnen het cluster Strategie & Beleid Sociaal Domein. Dit cluster is verantwoordelijk voor de uitvoering van taken rondom werk & inkomen, leren, asiel & integratie, jeugdhulp & veiligheid, gezondheid, sport & leefstijl, zorg & wonen, integrale zorg, wijkontwikkeling & welzijn. Innovatievraagstukken lopen als een rode draad door deze thema’s heen. Dat vraagt van jou als beleidsadviseur dat je over grenzen heen kunt kijken en een actieve, vernieuwende bijdrage levert aan vraagstukken buiten je eigen domein. Oordeelvrij luisteren, open staan en ontwikkelkracht zijn bij uitstek karaktereigenschappen die daarbij passen.

Reageren of vragen

Ben jij de beleidsadviseur die Enschede tijdelijk komt versterken? Dan horen we graag van je. Je kunt je sollicitatie voor 13 november richten aan Gemeente Enschede t.a.v. **Person X**[1]. Maak daarvoor gebruik van de onderstaande ‘solliciteer’ knop en vul je gegevens in het sollicitatieformulier in. Stuur je brief inclusief je CV als bijlage mee. Wij hebben vrijdag 20 november gereserveerd voor sollicitatiegesprekken voor deze functie. De gesprekken vinden in het stadskantoor in Enschede plaats, waarbij het eerste gesprek mogelijk digitaal zal zijn.

Heb je vragen over de vacature? Neem dan contact op met **Person X**[1], plaatsvervangend teamleider beleid Jeugd & Wmo, **Phone X**[1]

Bekijk ook ons coalitieakkoord voor een goed beeld van onze ambities voor de stad!

Organisatie:	Gemeente Enschede		
Vakgebieden:	Advies/beleid/bestuurlijk, Welzijn/gezondheidszorg		
Plaats:	Enschede	**Salaris:**	max. € 5.169 bpm
Opleiding:	WO	**Plaatsingsdatum:**	z.s.m.
Uren:	36	**Sluitingsdatum:**	13 november 2020

[1] Personal data of contact person has been left out due to confidentiality

Appendix B Recruitment and Selection Process

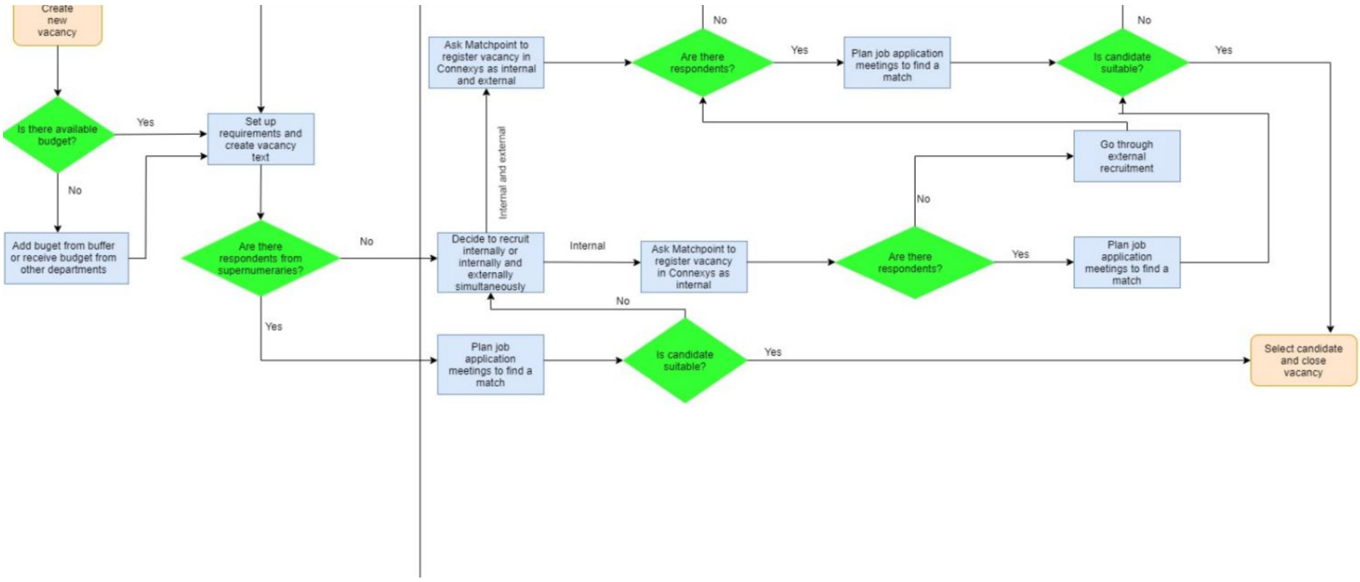


Figure A 1 Flowchart of Recruitment and Selection process

Appendix C Scoring sheets per stakeholder

Stakeholder 1

Criterion	Weight	*Lead time to source*	*Lead time to staff*	*Lead time to hire*	*Lead time to ensure proper background checks*	*Lead time to ensure productivity*
Timely and accurate feedback	3	4	3	4	1	1
Quantities to influence	4	3	2	3	3	3
Specific goals	3	3	3	3	4	2
Clearly defined	4	2	2	2	3	2
Automatic data collection	3	4	3	3	3	1
Total score		**53**	**43**	**50**	**48**	**32**

Figure A 2 Stakeholder 1 KPI scores

Criterion	Weight	*Sourcing costs*	*Pre-screening costs*	*ministrative expens*	*Background check costs*	*Advertising and marketing expenses*
Timely and accurate feedback	3	2	2	2	2	2
Quantities to influence	4	4	3	3	4	3
Specific goals	3	3	3	2	4	3
Clearly defined	4	4	3	2	3	3
Automatic data collection	3	2	2	2	1	2
Total score		**53**	**45**	**38**	**49**	**45**

Figure A 3 Stakeholder 1 KPI scores

Criterion	Weight	*Pre-employment screening test*	*Competency profiling*	*Retention rate of new hires*	*On the job performance*	*Managerial satisfaction*
Timely and accurate feedback	3	3	3	4	2	2
Quantities to influence	4	4	4	4	3	4
Specific goals	3	3	3	4	3	3
Clearly defined	4	3	2	3	2	2
Automatic data collection	3	2	2	3	1	1
Total score		**52**	**48**	**61**	**38**	**42**

Figure A 4 Stakeholder 1 KPI scores

Criterion	Weight	*Applicant satisfaction*	*Selection ratio*	*% of open postions*	*Candidate type*	*Source effectiveness*
Timely and accurate feedback	3	2	1	3	4	4
Quantities to influence	4	4	2	2	3	4
Specific goals	3	3	3	4	3	3
Clearly defined	4	2	3	3	3	3
Automatic data collection	3	1	3	3	3	4
Total score		**42**	**41**	**50**	**54**	**61**

Figure A 5 Stakeholder 1 KPI scores

Stakeholder 2

Criterion	Weight	Lead time to source	Lead time to staff	Lead time to hire	Lead time to ensure proper background checks	Lead time to ensure productivity
Timely and accurate feedback	3	4	4	4	1	1
Quantities to influence	4	3	3	3	1	3
Specific goals	3	4	4	3	1	2
Clearly defined	4	2	2	2	1	2
Automatic data collection	3	3	3	4	1	1
Total score		**53**	**53**	**53**	**17**	**32**

Figure A 6 Stakeholder 2 KPI scores

Criterion	Weight	Sourcing costs	Pre-screening costs	Administrative expenses	Background check costs	Advertising and marketing expenses
Timely and accurate feedback	3	4	1	2	2	2
Quantities to influence	4	4	1	3	4	3
Specific goals	3	3	1	2	4	3
Clearly defined	4	4	1	2	3	3
Automatic data collection	3	2	1	2	1	2
Total score		**59**	**17**	**38**	**49**	**45**

Figure A 7 Stakeholder 2 KPI scores

Criterion	Weight	Pre-employment screening test	Competency profiling	Retention rate of new hires	On the job performance	Managerial satisfaction
Timely and accurate feedback	3	1	1	4	1	3
Quantities to influence	4	1	1	4	1	4
Specific goals	3	1	1	4	1	3
Clearly defined	4	1	1	3	1	2
Automatic data collection	3	1	1	3	1	1
Total score		**17**	**17**	**61**	**17**	**45**

Figure A 8 Stakeholder 2 KPI scores

Criterion	Weight	Applicant satisfaction	Selection ratio	% of open postions	Candidate type	Source effectiveness
Timely and accurate feedback	3	3	1	3	4	4
Quantities to influence	4	4	2	2	3	4
Specific goals	3	3	3	4	3	3
Clearly defined	4	2	3	3	3	3
Automatic data collection	3	1	3	3	3	4
Total score		**45**	**41**	**50**	**54**	**61**

Figure A 9 Stakeholder 2 KPI scores

Stakeholder 3

Criterion	Weight	*Lead time to source*	*Lead time to staff*	*Lead time to hire*	*Lead time to ensure proper background checks*	*Lead time to ensure productivity*
Timely and accurate feedback	3	4	2	4	3	2
Quantities to influence	4	5	2	5	4	2
Specific goals	3	5	3	5	4	3
Clearly defined	4	4	2	4	3	2
Automatic data collection	3	4	1	4	2	2
Total score		**75**	**34**	**75**	**55**	**37**

Figure A 10 Stakeholder 3 KPI scores

Criterion	Weight	*Sourcing costs*	*Pre-screening costs*	*Administrative expenses*	*Background check costs*	*Advertising and marketing expenses*
Timely and accurate feedback	3	4	4	2	3	4
Quantities to influence	4	5	5	3	4	5
Specific goals	3	5	5	3	4	5
Clearly defined	4	5	5	3	4	5
Automatic data collection	3	3	3	2	2	4
Total score		**76**	**76**	**45**	**59**	**79**

Figure A 11 Stakeholder 3 KPI scores

Criterion	Weight	*Pre-employment screening test*	*Competency profiling*	*Retention rate of new hires*	*On the job performance*	*Managerial satisfaction*
Timely and accurate feedback	3	2	2	4	3	4
Quantities to influence	4	2	2	2	2	3
Specific goals	3	3	2	4	4	4
Clearly defined	4	3	3	5	4	3
Automatic data collection	3	2	2	5	3	3
Total score		**41**	**38**	**67**	**54**	**57**

Figure A 12 Stakeholder 3 KPI scores

Criterion	Weight	*Applicant satisfaction*	*Selection ratio*	*% of open postions*	*Candidate type*	*Source effectiveness*
Timely and accurate feedback	3	4	4	4	4	4
Quantities to influence	4	3	2	3	3	4
Specific goals	3	4	4	4	4	4
Clearly defined	4	3	2	4	3	4
Automatic data collection	3	3	4	4	3	4
Total score		**57**	**52**	**64**	**57**	**68**

Figure A 13 Stakeholder 3 KPI scores

Appendix D Performance measure record sheet KPIs

Table A 1 Performance measure record sheet for Retention rate of new hires

Performance measure record sheet			
Title	Retention rate of new hires	**Who measures?**	HR-department (Matchpoint employee)
Purpose	Measure the percentage of hires that are still operating after a year	**Source of data**	You Force
Relates to	Quality	**Who owns the measure?**	HR-department (Application manager You Force)
Target	Will be determined by HR-department	**Who acts on the data?**	Hiring manager and Recruiter
Formula	$\frac{Number\ of\ hires\ after\ a\ year}{Total\ number\ of\ hires}$	**What do they do?**	Each employee will monitor the progress of measurement and they will communicate this with each other
Frequency of measurement	Register a hire after vacancy has been closed and register when hire is still working after a year	**Notes and comments**	Will be determined if necessary
Frequency of review	Will be determined by HR-department		

Table A 2 Performance measure record sheet for Lead time to source

Performance measure record sheet			
Title	Lead time to source	**Who measures?**	HR-department (Matchpoint employee)
Purpose	Measures the time between the vacancy is published and is put offline	**Source of data**	Hireserve
Relates to	Time	**Who owns the measure?**	HR-department (Matchpoint employee)
Target	Will be determined by HR-department	**Who acts on the data?**	HR-department (Matchpoint employee) and Hiring manager
Formula	End date of online published vacancy – Starting date online published vacancy	**What do they do?**	Each employee will monitor the progress of measurement and they will communicate this with each other
Frequency of measurement	Data will be collected each time a vacancy is published online and put offline	**Notes and comments**	Will be determined if necessary
Frequency of review	Will be determined by HR-department		

Table A 3 Performance measure record sheet for Lead time to hire

Performance measure record sheet			
Title	Lead time to hire	**Who measures?**	HR-department (Matchpoint employee)
Purpose	Measures the throughput time of the whole recruitment and selection process	**Source of data**	Hireserve
Relates to	Time	**Who owns the measure?**	HR-department (Matchpoint employee)
Target	Will be determined by HR-department	**Who acts on the data?**	HR-department (Matchpoint employee) and Hiring manager
Formula	End date of process (candidate is selected) – Starting date (Vacancy is created)	**What do they do?**	Each employee will monitor the progress of measurement and they will communicate this with each other
Frequency of measurement	Data will be collected each time a vacancy is created and a candidate is selected	**Notes and comments**	Will be determined if necessary
Frequency of review	Will be determined by HR-department		

Table A 4 Performance measure record sheet for Advertising and Marketing expenses

Performance measure record sheet			
Title	Advertising and Marketing Expenses	**Who measures?**	HR-department (Matchpoint employee)
Purpose	Determines all costs considering marketing to recruit new applicants	**Source of data**	DAF
Relates to	Cost	**Who owns the measure?**	Finance- department (application manager DAF)
Target	Will be determined by HR-department	**Who acts on the data?**	Recruiter and Hiring manager
Formula	Advertisement cost per vacancy + Marketing cost per vacancy	**What do they do?**	Each employee will monitor the progress of measurement and they will communicate this with each other
Frequency of measurement	Data will be collected after costs are made and stored	**Notes and comments**	Will be determined if necessary
Frequency of review	Will be determined by HR-department		

Table A 5 Performance measure record sheet for Source effectiveness

Performance measure record sheet			
Title	Source effectiveness	**Who measures?**	HR-department (Matchpoint employee)
Purpose	Measure the efficiency of the recruitment channels	**Source of data**	Hireserve
Relates to	Other KPIs	**Who owns the measure?**	HR-department (Matchpoint employee)
Target	Will be determined by HR-department	**Who acts on the data?**	Recruiter
Formula	$\frac{Number\ of\ applicants\ of\ Source\ X}{Total\ number\ of\ applicants}$	**What do they do?**	Each employee will monitor the progress of measurement and they will communicate this with each other
Frequency of measurement	When closing the vacancy, each applicant will be registered from which channel he or she applied from	**Notes and comments**	Will be determined if necessary
Frequency of review	Will be determined by HR-department		