Local Civil Servants’ Stated Preferences When Collaborating

Work Package 3 – Deliverable 3.2
Research report

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EXECUTIVE SUMMARY

Work Package 3 (WP3) aims at examining individual drivers for collaboration through analysing civil servants’ willingness to collaborate with the private sector in a policy delivery setting. Many collaborations between government and the private sector are generally organised through a contracting relationship. Over the last decades, the doctrine of the neo-classical contracting theory has dominated (Keulemans and Van de Walle, 2017). As a consequence, procurement decisions in the European Union have mainly been driven by the price criterion and the less costly option has typically been favoured over the others. Nevertheless, we have lately noticed a slow desire from public institutions to integrate non-price criteria such as environmental and social criteria, along with the ICT dimension into tenders (Uyarra et al. 2014; Loosemore, 2016; Keulemans Van de Walle, 2017). This study seeks to quantitatively determine the extent to which local civil servants consider economic, environmental, social and ICT dimensions when they collaborate with a company, as limited attention has been paid to this issue. The research also aims at determining how much these criteria are worth to local civil servants. Data collection has been conducted in five European countries with different public administrative traditions (Belgium, Estonia, Germany, Norway and Spain). The WP3 study focuses on the waste collection sector, and more particularly on the collection of bulky waste items, at the municipal level, and employs data from a discrete choice experiment conducted with local civil servants working in the environmental department of the municipality. The results indicate that local civil servants do not solely consider the economic criterion when collaborating with a company.
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Chapter 1: Introduction – Objective and focus of the study

The main objective of the TROPICO project is to comparatively analyse how public administrations are transformed to increase collaboration in different policy settings advancing the participation of public, private and societal actors. Furthermore, the TROPICO project draws special attention to the role of ICT. The present research falls within Work Package 3 of the TROPICO project that aims at examining individual drivers for collaboration through analysing local civil servants’ willingness to collaborate with the private sector in a policy delivery setting. In this research, the behaviour of local civil servants towards the private sector is examined in the context of waste collection (policy delivery). Different criteria, including an ICT (information and communication technology) dimension, are examined through a discrete choice experiment.

When governments want or need to collaborate, they have to make a choice between different potential collaboration partners. Collaborations often take the form of some type of procurement to a private party. Previous research examining contracting out between the public and private sector in service delivery has mainly focused on two dimensions. In the first dimension, attention has been paid to the drivers of the decision taken by the public sector on whether to contract out a public service (Bel and Fageda, 2007; Lamothe et al., 2008; Hefetz and Warner, 2011; Gradus et al., 2014). In the case of the second dimension, a substantial amount of studies has evaluated the overall performance of the different forms of service delivery (Bel and Costas, 2006; Dijkgraaf and Gradus, 2007; Sorensen, 2007; Dijkgraaf and Gradus, 2013). However, limited attention has been paid to local civil servants’ choice to enter into a contract with a specific enterprise.

In government procurement, the economic criteria have generally been favoured over other factors by public institutions (Keulemans and Van de Walle, 2017). Nevertheless, Keulemans and Van de Walle (2017) state that “while support for the principles of neo-classical contracting theory has been extensive among public authorities in the EU, public bodies saw a desire for choosing suppliers not only based on price, but also on other criteria” (p. 329). Therefore, non-price criteria, such as environmental and social characteristics and the ICT dimension, have slowly been integrated into tenders (Uyarra et al. 2014; Loosemore, 2016; Keulemans Van de Walle, 2017). However, as price has for many years been at the centre of procurement decisions, one can enquire the extent to which
local civil servants consider environmental, social and the ICT dimensions when collaborating with a company as well as the relative importance of those criteria to local civil servants.

This study therefore seeks to investigate two related research questions: (1) to what extent do local civil servants consider economic, environmental and social criteria and the ICT dimension when collaborating? and (2) how much are these criteria worth to local civil servants? To answer these two research questions, the study conducts a discrete choice experiment, which is based on random utility theory, and derive local civil servants’ willingness to pay from the results. Discrete choice experiments have rarely been used in the field of public administration and can be defined as “a quantitative technique for eliciting individual preferences [that] allows researchers to uncover how individuals value selected attributes of a programme, product or service by asking them to state their choice over different hypothetical alternatives” (Mangham et al., 2008, p. 152). The data is examined by conducting a conditional logit and a marginal willingness to pay analysis.

The study focuses on one type of procurement decision in the waste collection sector, and more particularly on bulky waste items collection¹ at the municipal level in Belgium, Estonia, Germany, Norway and Spain. This particular sector has mainly been chosen to facilitate cross-country comparison as this service is provided in every municipality of every country. Respondents were selected accordingly, and are the head of the environmental department of the municipality or the environmental advisor of the municipality.

This report is divided into five sections. Firstly, the growing importance of environmental and social criteria and the ICT dimension in public procurement is underlined. Secondly, the theoretical foundation, random utility theory, is elaborated. Thirdly, the design of the discrete choice experiment is developed (refer to D3.1 for a comprehensive discussion on the design) and fourthly, the statistical analysis is described. Finally, the empirical results are presented.

¹ Bulky waste is a particular type of waste which is too big to be put in normal bins such as old televisions, washing machines or coaches. These items can be placed on the pavement to be picked up by waste collection companies or brought to container parks.
Chapter 2: Literature review

This section reviews recent literature about the integration of environmental and social criteria and the ICT dimension into tender documents.

2.1 Dominance of the price criterion

Over the last decades, the doctrine of the neo-classical contracting theory has been promoted forward by the European Union (Keulemans and Van de Walle, 2017). As a consequence, contracting out decisions in the European Union have mainly been driven by the price criterion and the less costly option has typically been favoured over the others. In addition, decision makers believe that awarding a contract, on the basis of other criteria than merely the price, would “open the door for abuse, and threaten fair access to procurement tenders and integrity of the process” (Keulemans and Van de Walle, 2017, p. 328). However, always picking the cheapest option has sometimes hurt the quality of the service delivered to citizens. Lately, we have noticed a slow desire from public institutions to integrate non-price criteria such as environmental and social criteria and the ICT dimension into tenders (Uyarra et al. 2014; Loosemore, 2016; Keulemans Van de Walle, 2017).

In the past few years, we have seen the development of sustainable procurement (SP) which “is consistent with the principles of sustainable development, such as ensuring a strong, healthy and just society, living with environmental limits, and promoting good governance” (Walker and Brammer, 2007, p. 2; Grandia, 2016). Sustainable procurement embraces therefore environmental and social criteria. The first criterion involves characteristics such as increasing the environmental friendliness of products or the recycling rate of products. The second encompasses different objectives such as fostering the employment of disabled workers, of long-term unemployed or of disadvantaged groups (McCrudden, 2004; Walker and Brammer, 2007). It can hire local employees, improving local economy and assisting local businesses (Keulemans and Van de Walle, 2017). In their report on social value in the UK, Temple and Wigglesworth (2014) indicate that 66 percent of housing associations and local authorities include social values in their tenders, while 23 percent of the respondents claim that they are currently considering doing it. Renda et al. (2012) show in their study on green procurement that 60 percent of EU central government, 67 percent of EU regional government, 67 percent of local government and 49 percent of independent regulator state, that an environmental component has
been included in the procurement policy of their organisation. This clearly illustrates the growing importance of environmental and social criteria for public procurement.

A relatively large body of the literature examines how public procurement can foster private sector innovation (Uyarra et al. 2014). Although this has been discussed for quite some years, the European Union and the OECD have recently demonstrated a strong interest in developing it further in their procurement policies. Uyarra et al. (2014) state that “the public sector can overcome market failures by enlarging the market for certain goods and services, thus ensuring sufficient critical mass to encourage R&D [research and development] investment” (p. 631). Rothwell and Zegveld (1981) find that including an innovation criterion into public tenders is more efficient than research and development subsidies. Moreover, Geroski (1990) indicates that, under some specific requirements, innovation can be boosted by procurement. Similarly, Aschhoff and Sofka (2009) find that, together with the provision of a knowledge infrastructure in universities, public procurement was positively related to the success of innovation.

Although environmental and social criteria as well as the ICT dimension appear to be increasingly valued, barriers to their implementation in procurement policies appear to be quite significant. Walker and Brammer (2007) point out that the main barrier to sustainable procurement remains the cost. In their research, Walker and Brammer (2007) underline that “numerous respondents highlighted that the prohibitive costs of SP, the lack of sufficiently large budgets to accommodate SP and other financially-oriented issues” were the major barriers to sustainable procurement (p. 13). Respondents also mention a lack of awareness as sustainable procurement is a rather new principle which is not easy to measure. Indeed, the impact of economic criteria is relatively easy to identify and quantify compared to the incidence of environmental and social criteria. Respondents also indicate other barriers such as the fear of change and budgetary pressures (Walker and Brammer, 2007). Furthermore, Renda et al. (2012) indicate that including environmental criteria into contracts remains relatively difficult. Regarding innovation, Uyarra et al. (2014) state that the main barriers stopping governments to integrate innovation in public procurement are “a lack of interaction with procuring organisations, the use of rigid as opposed to outcome-based specifications, low competences of procurers and a poor management of risk” (p. 640).
Chapter 3: Theoretical foundation – Random utility theory

In light of the relatively recent importance given to environmental and social criteria and the ICT dimension in public procurement and considering the hurdles mentioned in chapter 2, this study analyses the extent to which local civil servants consider these different criteria when collaborating with a company. More specifically, this study aims at examining local civil servants’ stated preferences for the different criteria through random utility theory. Hall et al. (2004) state that “RUT [random utility theory] allows one to elicit preferences for complex multidimensional goods, from which models of preferences can be estimated” (p. 1027).

3.1 Random utility theory

In A law of comparative judgement, Thurstone (1927), a psychometrician, introduced the concept of random utility. Thurstone argues that utilities are not fixed and can fluctuate according to time. Thurstone (1927) therefore considers that decisions makers choose the alternative that yields the highest utility at a precise moment and that individuals’ utility varies from one moment to the next. In the field of probabilistic theory, Luce (1959) underlines the importance of the choice axiom and explains it as follows:

“suppose that $T$ is the set of entrees on a certain menu, $S$ is some proper subset of $T$ that includes roast beef, and $R$ is the single element set of roast beef. The heart of the axiom is the assumption that when for whatever reason, the restaurant has only entrees $S$ the probability of selecting roast beef is the same as the conditional probability of selecting it from $S$ when the whole menu is available” (p. 7-8).

Marshak builds up the link between Thurstone’s random utility models and the model developed by Luce in the field of probabilistic theory (Mcfadden, 1986). Marshak’s theoretical development was then further expanded by several economists including Manski (1977) who further examined the distributional structure of random utility models, and McFadden (1974) who aimed at demonstrating that the conditional logit was coherent with random utility theory. In his research, McFadden connected the logit model with choice behaviour and was capable of building a regression model that “relates choices to the characteristics of the alternatives available to decision makers” (Hauber et al., 2016, p. 304). This innovation has been depicted by McFadden as conditional logit. This latter can be
defined as relating “the probability of choice among two or more alternatives to the characteristics of the attribute levels defining those alternatives” (Hauber et al., 2016, p. 304).

Random utility theory has therefore been developed based on neoclassical economic theory and probabilistic choice theory. The neoclassical thought assumes that individuals are entirely rational and utility maximizers. In neoclassical economic theory, individuals’ wants and preferences are assumed to be given – wants and preferences are determined exogenously – and fixed – “the basic nature of the good themselves is not allowed to vary within the confines of the models” (McKenzie, 2010, p. 8). Contrary, probabilistic theory pinpoints that one cannot fully identify individuals’ true utility function (Kjaer, 2005). Indeed, the researcher lacks “information regarding the characteristics of the alternatives and/or the characteristics of the individual” (Kjaer, 2005, p. 31). Therefore, random utility theory assumes that the indirect utility function can be decomposed into two utility functions; one that comprises all the characteristics that are known by researchers and the other one which represents the characteristics influencing decision makers in their choice but that are not observed by researchers (Kjaer, 2005).

More specifically, random utility theory indicates that latent preferences, also called latent utilities, are associated with all choices under scrutiny and exist for all individuals (Louviere et al., 2010). Moreover, latent preferences are composed of an observed and a random component. The observed component comprises the factors clarifying variation in individuals’ choices (covariates) and in the choice of alternatives (attributes) that one can observe. The random component is composed of all the variables which influence individuals’ choice that could not be determined (Louviere et al., 2010). Manski (1975) suggests that this randomness can arise from four different sources: unobserved attributes, unobserved taste variations, measurement errors and imperfect information and instrumental or proxy variables. It is worth noting that random utility models do not predict which alternative decision makers will opt for (Cascetta, 2008). Instead, the model predicts the probability that the alternative with the greatest utility for decision makers will be chosen over the other possible alternatives (Cascetta, 2008). Therefore, this study aims at predicting the probability that the company that yields the greatest utility for local civil servants will be selected over the other available companies.
Consistent with neoclassical economic theory, random utility theory considers individuals to be rational and utility-maximizer as it is assumed that individuals will opt for the alternative which yields the highest level utility for them (Kjaer, 2005). Furthermore, based on compensatory decision-making theory, random utility theory assumes that individuals’ choice for a specific alternative is not driven by a dominant preference (lexicographic preferences) (Kjaer, 2005). Rather, random utility theory assumes individuals to trade off which means that “the alternative chosen is superior to the other alternatives in the sum of weighted utilities of all the attributes considered, and leads to maximization of utilities” (Shiloh et al., 2001, p. 701; Kjaer, 2005).

As environmental and social criteria, along with the ICT dimension have recently gained some importance in the evaluation of tender documents, we suppose that local civil servants will trade off by considering all the attributes available in an alternative. Moreover, we expect local civil servants to look beyond the price criterion when they collaborate with a company due to the growing importance of the other criteria. In order to examine local civil servants’ stated preferences, this study employs a discrete choice experiment which is consistent with random utility theory. This method allows one to identify local civil servants’ preferences when collaborating.
Chapter 4: Design of the discrete choice experiment

To examine the extent to which local civil servants consider economic, environmental and social criteria and the ICT dimension when they collaborate with a company, the study employs a discrete choice experiment (DCE). A DCE is a stated preferences method that is used when individuals’ preferences for a particular product or service are not directly observable (Baji et al., 2012). The discrete choice experiment (DCE) has been developed based on random utility theory (Louviere et al., 2008). In a DCE, individuals’ preferences are derived from a survey where respondents are required, given a hypothetical scenario, to state their preferences over two or more options, described by attributes and levels (one choice set). The purpose of a DCE is to give respondents the same hypothetical scenario while changing the options offered. By repeating the choice sets, a DCE intends to elicit individuals’ preferences and allows the researcher to identify the relative importance of attributes to individuals when they decide to opt for a certain product or service. The following section outlines how the discrete choice experiment was designed.

4.1 Attributes and levels selection

In this study, local civil servants are asked, based on a hypothetical scenario, to select, out of two companies, the company that will become the new bulky waste items collector of their municipality. The hypothetical scenario presented to the local civil servants, specifies that the municipality for which the local civil servants are working for has decided to change the company/the bulky waste items collector, and that they have to select the new one. The two companies among which the local civil servants have to choose are described by four attributes, one for each criterion. These four attributes are the following ones: (1) the cost per ton of bulky waste items collected, (2) the average age of the fleet of vehicles, (3) whether the company offers a digital tool to their clients or not and (4) the company involvement in fostering the professional integration of vulnerable groups. The attributes and their respective levels were selected by, first conducting an in-depth analysis of the economic, environmental and social characteristics and the ICT dimension of waste collection companies. Second, a relatively long list of attributes was derived from this in-depth analysis, and six semi-structured interviews were conducted with waste collection experts in Belgium from diverse backgrounds. The experts interviews were from waste collections agencies, a bulky waste items collection enterprise, inter-municipal associations and a municipality.
Table 1 presents the four attributes and their respective levels. The involvement of the company in a training scheme for long-term unemployed is a proxy for how much the local civil servants consider the social criterion. The company that offers an app for smart-phones for service users (this app has a calendar, informs on pick-up days and offers a contact tool, ...) is a proxy for how much local civil servants consider the ICT dimension. The average age of the fleet is a proxy for how much the respondents consider the environmental dimension. We consider that local civil servants value more the environmental criteria if they chose a new fleet of vehicles (0 years) over a fleet of vehicles of an average age of 6 years old. The attributes and their respective levels correspond to the reality of the market. Except for the cost per ton of bulky waste items collected that has continuous levels, the other attributes all have categorical levels. We decided to limit the levels to two or three in order not to burden our respondents. The WHO (2012) argues that “one concern is that, if too many attributes and levels are included, individuals will not consider all the information, but adopt simple decision-making strategies (such as always choosing the option with the highest pay). If this is the case, estimated trade-offs will not be valid” (p. 15). Moreover, Bridges et al. (2011) recommend to limit the attributes’ levels to three or four. It is worth mentioning that the price attribute has not solely been included in the analysis to examine how local civil servants consider it, but also to enable us to calculate the willingness to pay for the other attributes. The price levels were chosen following the interviews we conducted with Belgian waste collection experts who mentioned these specific prices. The price difference was also chosen to be in line with the market and was bounded to 20 euros to not influence the respondents towards the cheapest option with a bigger price difference. During the pilot interviews, the researchers also asked the respondents whether the price range was realistic enough. This price range did not appear to be problematic to the respondents. In addition, the attributes and their respective levels are the same for every country except for the price attribute. Indeed, price levels are quite different in Estonia, where the standard of living is lower than in the other participating countries. Norway is not part of the Eurozone and therefore uses another currency. As a consequence, the price range was adapted to 80 euros and 90 euros in Estonia and was set to 2400 NOK (~250 euros) and 2600 NOK (~270 euros) in Norway.²

² Currency rates from September 2018 are used for the conversion from NOK to euro.
**Table 1. Attributes and their respective levels**

<table>
<thead>
<tr>
<th></th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Company involvement in the professional integration of vulnerable groups</strong></td>
<td>The company is not currently involved in a training scheme for long-term unemployed.</td>
<td>The company is currently involved in a training scheme for long-term unemployed.</td>
<td></td>
</tr>
<tr>
<td><strong>The average age of the fleet of vehicles</strong></td>
<td>The average age of the fleet of vehicles is 0 years (an entire new fleet will be put into circulation).</td>
<td>The average age of the fleet of vehicles is 3 years.</td>
<td>The average age of the fleet of vehicles is 6 years</td>
</tr>
<tr>
<td><strong>Digital services</strong></td>
<td>The company does not offer an app for smart-phones for service users.</td>
<td>The company offers an app for smart-phones for service users (this app has a calendar, informs on pick-up days and offers a contact tool,...).</td>
<td></td>
</tr>
<tr>
<td><strong>Cost per ton of bulky waste items collected</strong></td>
<td>The cost per ton is of 250 EUR</td>
<td>The cost per ton is of 270 EUR</td>
<td></td>
</tr>
</tbody>
</table>

3 The cost has been adapted in Estonia to 80 euros and 90 euros, as the standard of living is lower than in the other participating countries. The cost was adapted to 2400 NOK (~ 250 euros) and 2600 NOK (~ 270 euros) in Norway, as Norway do not use the euro as their currency. Currency rates from September 2018 are used for the conversion from NOK to euro.
4.2 Fractional factorial design

As we have one attribute with three levels and three attributes with two levels, the number of possible hypothetical scenarios to be presented to the respondents is $3^1 \times 2^3$ which is equal to 24 while the number of possible choice sets is 276. This is a relatively large number to show to the respondents. Biesma et al. (2007) point out that “evidence suggests that individuals can answer meaningfully to not more than 16 comparisons before they become tired or bored” (p.378). In order to reduce the number of choice sets to be presented to the respondents to a manageable number, we conducted a fractional factorial design. A fractional factorial design “is a sample from the full factorial selected such that all effects of interest can be estimated (at a minimum, the main effects, but also as many higher-order interaction effects as possible)” (Lancsar and Louviere, 2008, p. 667). As we do not expect any interaction between the attributes, we have solely included the main effects in the design. The fractional factorial design was generated using the rotation design method that “uses the orthogonal main-effect array as the first alternative in each choice set” (Aizaki, 2012, p. 4).

The rotation design method was performed in the statistical software R.

As local civil servants are forced to choose a company to contract out with, we have decided not to include an opt-out option. Local civil servants are therefore forced to choose between one of the two companies presented to them. In addition, we decided not to label the choice alternatives and to keep the choice alternatives as generic as possible, e.g. company 1 and company 2 instead of giving names to the companies. The aim is to not influence local civil servants towards a particular brand. The discrete choice experiment is therefore composed of 12 choice sets. Because of possible survey fatigue, the 12 choice sets have been divided into two blocks of 6 choice sets each to be shown to the respondents. Local civil servants were randomly attributed to one of the two blocks containing each 6 choice sets.
Chapter 5: Statistical analysis

In order to examine the discrete choice data, the study performs first a conditional logit and second measures the local civil servants’ marginal willingness to pay for the different attribute levels.

5.1 Conditional (fixed effects) logit

Hauber et al. (2016) state that data from forced-choice discrete choice experiments composed of two alternatives are best examined by employing a limited dependent-variable model as the choice made by a respondent in a given choice set is either 0, for the alternative that has not been chosen, or 1, for the alternative that has been chosen. As a consequence, this study employs a conditional (fixed effects) logit to analyse the present data as this model is a type of limited dependent-variable model.

Hauber et al. (2016) point out that “conditional logit relates the probability of choice among two or more alternatives to the characteristics of the attribute levels defining those alternatives” (p.304). McFadden (1974) was the first to introduce the conditional logit model and to apply it to discrete choice data. Moreover, McFadden (1974) demonstrates that the model of conditional logit is consistent with random utility theory that lays the foundations of discrete choice experiments.

Random utility theory assumes that the utility connected to an alternative is a function of observed characteristics, defined by the attribute levels, and unobserved characteristics. Random utility theory states that individuals chose the alternative that maximizes their utility. Louviere, et al. (2008) formulates the basic axiom of RUT as follows:

\[ U_{in} = V_{in} + \varepsilon_{in} \]  

“where \( U_{in} \) is the latent, unobservable utility that individual \( n \) associates with choice alternative \( i \), \( V_{in} \) is the systematic, explainable component of utility that individual \( n \) associates with alternative \( i \) and \( \varepsilon_{in} \) is the random component associated with individual \( n \) and option \( i \)” (p.62).

The conditional logit assumes that the random error term is independently and identically distributed and the conditional logit takes the following form:

\[ \Pr \{ \text{choice} = i \} = \frac{e^{V(\beta, X_i)}}{\sum_j e^{V(\beta, X_j)}} \]  

“where \( V(\beta, X_i) \) is the observed portion of the function for alternative \( i \) and is one alternative among a set of \( j \) alternatives. Simply stated, the probability of choosing alternative \( i \) is a function of both the
attribute levels of alternative \(i\) and the attribute levels of all other profiles presented in a choice task” (Hauber et al., 2016, p. 304). It is worth mentioning that when respondents face a two alternatives forced choice set, \(j\) is equal to 2 as there are only two alternatives in every choice set. Furthermore, Hauber et al. (2016) point out that “the probability of choosing one profile from the set of two alternatives is 1 minus the probability of choosing the other profile in that choice task” (p. 304).

Contrary to most regression models, conditional logits do not allow the interpretation of an adjusted \(R^2\) squared (Hauber et al. 2016). Instead, the log-likelihood, which “is an indicator of the relative explanatory power of a model”, is used to calculate a goodness of fit measure called the McFadden’s pseudo \(R^2\) (Hauber et al. 2016, p. 307). The McFadden’s pseudo \(R^2\) is calculated as follows:

\[
\text{McFadden’s pseudo } R^2 = 1 - \frac{\text{Log Likelihood of Model}}{\text{Log likelihood without predictors}} \tag{3}
\]

The McFadden’s pseudo \(R^2\) can take a value between 0 and can never attain a value of 1. Hauber et al. (2016) state that “although McFadden’s pseudo \(R^2\) provides a measure of relative (rather than absolute model fit, a measure from 0.2 to 0.4 can be considered as good model fit” (p. 307). However, this measure can solely be used when one compares McFadden’s pseudo \(R^2\) from models which have the same explanatory variables (Hauber et al., 2016).

5.2 Marginal willingness to pay (MWTP)

The willingness to pay can be defined in economics as the maximum amount of money an individual is inclined to pay for a good or a service. Gafni (1998) states that willingness to pay is a measure that is widely used in the field of economics to analyse how much a good or a service is valued by individuals. As until recently the cost criterion has been the only criterion on which local civil servants were basing themselves to award a contract, one can wonder how much money local civil servants are willing to pay for environmental and social criteria and the ICT dimension. Furthermore, this study aims at examining the relative importance of all the criteria. However, it is impossible to directly compare the regression coefficients as “attribute impacts and the positions of each attribute level on the underlying utility scale are confounded (i.e. distances between utilities associated with attribute levels need not be the same for each attribute)” (Lancsar and Louviere, 2008, p. 672). Therefore, this study uses a common and comparable metric by measuring local civil servants’ marginal willingness to pay for the attribute levels (Lancsar et al., 2007). Measuring local civil servants’ marginal willingness
to pay allows one to assess the relative attribute effects and is calculated according to the following formula:

\[
MWTP = \frac{-\text{the value (mean coefficient) of the attribute level}}{\text{The value (mean coefficient) of price}}
\] (4)
Chapter 6: Analysis of the results

This section presents the findings and examines the data we collected among the Belgian, Estonian, German, Norwegian and Spanish local civil servants. The first section describes the response rates across the five countries. The second section explains the validity check of the results. The third section describes the local civil servants’ socio-demographics. It also displays how bulky waste items are collected at the municipal level and the local civil servants’ attitudes and experiences towards procurement across the five countries. The fourth section analyses, through a conditional logit and a marginal willingness to pay, the data. As requested in the EC review report from TROPICO’s first reporting period, the last section examines the incentive to collaborate through local civil servants’ willingness to pay. Here, local civil servants’ incentive to collaborate is examined through the local civil servants’ gender, knowledge and skills/education.

6.1 Response rates

Figure 1 displays the number of individuals (N) and the response rates across the five countries. We collected the responses by creating personal links in Qualtrics and by sending them via a mail merge from the email addresses of either the local University or the researcher. To increase the response rates in Estonia and Norway, the researchers in these two countries personally called the local civil servants.
Figure 1. Response rates in the five countries

Table 2 shows the number of individuals, the number of events (the number of choice sets) and the number of observations. It should be reminded here that local civil servants were presented six choice sets displaying each two companies. Therefore, the number of events (or the number of choices made by the local civil servants) is the number of individuals times 6 and the number of observations is the number of events times 2 as two companies were shown to the local civil servants. This means that by increasing the number of choice sets presented to the respondents, we also increase the number of observations. This also implies that we do not need as many respondents as in traditional surveys to make inferential statistics as every respondent generates twelve observations.
Table 2. Number of observations, events and individuals

<table>
<thead>
<tr>
<th></th>
<th>Belgium</th>
<th>Estonia</th>
<th>Germany</th>
<th>Norway</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of individuals</strong></td>
<td>168</td>
<td>47</td>
<td>125</td>
<td>118</td>
<td>54</td>
</tr>
<tr>
<td><strong>Number of events</strong></td>
<td>1008</td>
<td>282</td>
<td>750</td>
<td>708</td>
<td>324</td>
</tr>
<tr>
<td><strong>Number of observations</strong></td>
<td>2016</td>
<td>564</td>
<td>1500</td>
<td>1416</td>
<td>648</td>
</tr>
</tbody>
</table>

6.2 Validity checks

In order to check for the validity of the results, we decided to check for the time the respondents took to answer the survey-experiment. We suspect that the answers, given by respondents who took less than the estimated minimum time to answer the survey-experiment, may not be reliable. These respondents may indeed not have taken the necessary time to answer the choice sets. The estimated time to answer the survey-experiment was between 4 and 12 minutes. Therefore, we controlled all respondents who answered the survey experiment in less than four minutes across the five countries. Out of the answers we received for the discrete choice experiment, 2.34 percent of the respondents took less than 4 minutes to respond to the survey-experiment. We, then, examined the answers given by these respondents by checking whether they did not consistently select the first or second alternative throughout the choice sets. Out of these respondents, only one response coming from the Belgian data appeared questionable as the respondent selected the second alternative in all the choice sets. Therefore, it was decided to delete this respondent from the Belgian data. The other responses did not appear to be problematic.
6.3 Data description

This section describes the local civil servants’ socio-demographics. It also displays how bulky waste items are collected at the municipal level and the local civil servants’ attitudes and experiences towards procurement. The average age of the local civil servants is 45 years old in Belgium, 46 years old in Estonia and in Spain, 52 years old in Norway and 54 years old in Germany. Regarding the local civil servants’ tenure, the average tenure of local civil servants is 13 years in Spain, 15 years in Estonia, 17 years in Belgium, 21 years in Norway and 26 years in Germany. Table 3 indicates that most of the local civil servants across the five countries have either a bachelor degree (or equivalent) or a master degree (or equivalent).

Table 3. Education levels in Belgium, Estonia, Germany, Norway and Spain

<table>
<thead>
<tr>
<th></th>
<th>Belgium</th>
<th>Estonia</th>
<th>Germany</th>
<th>Norway</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary</strong></td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Lower secondary</strong></td>
<td>0.61%</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Upper secondary</strong></td>
<td>6.06%</td>
<td>4.26%</td>
<td>/</td>
<td>1.69%</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Post-secondary</strong></td>
<td>0.61%</td>
<td>4.26%</td>
<td>/</td>
<td>5.93%</td>
<td>/</td>
</tr>
<tr>
<td><strong>Post-secondary</strong></td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td><strong>Short-cycle</strong></td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>11.02%</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Bachelor or</strong></td>
<td>38.79%</td>
<td>36.17%</td>
<td>40.21%</td>
<td>34.75%</td>
<td>16%</td>
</tr>
<tr>
<td><strong>Master or</strong></td>
<td>51.52%</td>
<td>55.32%</td>
<td>59.79%</td>
<td>46.61%</td>
<td>64%</td>
</tr>
<tr>
<td><strong>Doctoral or</strong></td>
<td>2.42%</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>4%</td>
</tr>
</tbody>
</table>
As figure 2 and 3 indicate the data we collected on gender during our experiments in Belgium, Germany and Spain are similar to the real population\(^4\). Except from Belgium where the respondents are relatively evenly spread between men and women (52.1 percent of females vs. 47.9 percent of males), in the four other countries the majority of the respondents are males, 67.4 percent in Estonia, 80.5 percent in Germany, 76.1 percent in Norway and 64 percent in Spain.

\textit{Figure 2. Gender comparison between respondents and real population (males)}

\(^4\) Information on the real population was not available for Estonia and Norway.
Concerning bulky waste items collection, in Belgium, Germany and Spain, a public service collecting bulky waste items at the residents’ home seems quite widespread. In the study, 64.81 percent of Spanish local civil servants, 84.43 percent of Belgian local civil servants and 86.40 percent of German local civil servants declare that a public service collecting bulky waste items at the residents’ home exist in their municipalities. However, only 3.39 percent of Norwegian local civil servants and 27.66 percent of Estonian local civil servants declare that a public service collecting bulky waste items at the residents’ home exist in their municipality. Regarding local civil servants’ satisfaction with the way bulky waste items are collected, on a scale from 0 to 10, where 0 means not at all satisfied and 10 means satisfied to a large extent, the average score is 6.79 in Estonia, 6.98 in Spain, 7.09 in Norway, 7.64 in Germany and 7.95 in Belgium.

In regards to procurement, local civil servants from the five countries appear to be relatively dissatisfied with the procurement rules currently in place. On a scale from 0 to 10, the average score is 4.34 in Spain, 5.57 in Germany, 5.74 in Estonia, 6.32 in Norway and 6.45 in Belgium.

In the study, we also asked respondents to state, on a scale from 0 to 10, where 0 means not at all and 10 means to a large extent, how important it was for them to integrate economic, environmental and social criteria and the ICT dimension into tender documents. Regarding the cost criterion (price), displayed in figure 4., local civil servants across the five countries appear to favour it as the average score is 6.49 in Spain, 7.83 in Belgium, 8.09 in Norway, 8.11 in Germany and 8.5 in Estonia.

Figure 3. Gender comparison between respondents and real population (females)
Figure 4. Criteria importance for local civil servants: cost criterion

Figure 5 presents the social criterion that has an average score of 5.82 in Estonia, 5.92 in Norway, 6.10 in Germany, 7.04 in Belgium and 7.54 in Spain. This criterion seems to be relatively appreciated by the Belgian and Spanish local civil servants.

Figure 5. Criteria importance for local civil servants: social criterion

Figure 6 displays the environmental criterion that appears to be quite valued by the Belgian and Spanish respondents. The average score is 6.87 in Norway, 6.88 in Germany, 7.28 in Estonia, 7.44 in Belgium and 8.13 in Spain.
Concerning the last criterion (the ICT dimension), displayed in figure 7 the average score is, 6.42 in Germany, 6.66 in Belgium, 6.79 in Norway, 7.57 in Estonia and 7.69 in Spain.

Figure 8 displays the experience local civil servants have with writing tender documents. In Belgium, 56.1 percent of the local civil servants have never or rarely written tender documents. In Estonia, 57.44 percent of the local civil servants have sometimes or often written tender documents. In Germany, 54.21 percent of the local civil servants have never or rarely written tender documents. In Norway,
50.42 percent of the local civil servants have sometimes or often written tender documents. In Spain, 53.85 percent of the local civil servants have sometimes or often written tender documents.

**Figure 8. Experience with tender writing**

Figure 9 displays the experience local civil servants have with evaluating offers. In Belgium, 54.66 percent of the local civil servants have sometimes or often evaluated offers. In Estonia, 80.85 percent of the local civil servants have sometimes or often evaluated offers. In Germany, 58.12 percent of the local civil servants have sometimes or often evaluated offers. In Norway, 85.47 percent of the local civil servants have sometimes or often evaluated offers. In Spain, 55.77 percent of the local civil servants have sometimes or often evaluated offers.
6.4 Discrete choice experiment - Statistical analysis and interpretation of the results

This section presents the results from the conditional logit and local civil servants’ marginal willingness to pay for the four attribute levels in Belgium, Estonia, Germany, Norway and Spain. We consider local civil servants’ marginal willingness to pay for the criteria as local civil servants’ incentives to collaborate. Table 4, shows the results of the conditional logit and displays the odds ratios for every country. An odds ratio below 1 means that local civil servants are less likely to choose this option while an odds ratio above 1 means that local civil servants are more likely to choose this option compared to the reference category.
<table>
<thead>
<tr>
<th></th>
<th>Belgium</th>
<th>Estonia</th>
<th>Germany</th>
<th>Norway</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost criterion</td>
<td>0.961***</td>
<td>0.890***</td>
<td>0.936***</td>
<td>0.994***</td>
<td>0.962***</td>
</tr>
<tr>
<td>Environmental criterion (3years)⁶</td>
<td>2.312***</td>
<td>1.847**</td>
<td>2.516***</td>
<td>3.070***</td>
<td>2.861***</td>
</tr>
<tr>
<td>Environmental criterion (0yrs)⁷</td>
<td>3.153***</td>
<td>1.503</td>
<td>3.280***</td>
<td>4.868***</td>
<td>4.111***</td>
</tr>
<tr>
<td>ICT dimension⁸</td>
<td>2.684***</td>
<td>2.868***</td>
<td>3.325***</td>
<td>2.908***</td>
<td>2.550***</td>
</tr>
<tr>
<td>Social criterion⁹</td>
<td>3.559***</td>
<td>0.974</td>
<td>2.146***</td>
<td>2.231***</td>
<td>3.773***</td>
</tr>
<tr>
<td>ASC</td>
<td>1.140</td>
<td>0.992</td>
<td>0.934</td>
<td>1.123</td>
<td>0.879</td>
</tr>
<tr>
<td>Number of observations</td>
<td>2004</td>
<td>564</td>
<td>1500</td>
<td>1416</td>
<td>648</td>
</tr>
<tr>
<td>Number of individuals</td>
<td>167</td>
<td>47</td>
<td>125</td>
<td>118</td>
<td>54</td>
</tr>
<tr>
<td>LR Chi² (6)</td>
<td>543.10</td>
<td>109.11</td>
<td>437.95</td>
<td>408.72</td>
<td>185.22</td>
</tr>
<tr>
<td>Prob &gt; Chi²</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>McFadden pseudo R²</td>
<td>0.391</td>
<td>0.279</td>
<td>0.421</td>
<td>0.416</td>
<td>0.412</td>
</tr>
</tbody>
</table>

*** p < 0.001, ** p < 0.01, * p < 0.05

⁵ The outcome of the country specific regressions cannot be compared to one another.
⁶ Reference category=the average age of the fleet of vehicles is 6 years.
⁷ Reference category=the average age of the fleet of vehicles is 6 years.
⁸ Reference category=the for-profit enterprise does not offer an app for smart-phones to the users of the service.
⁹ Reference category=the for-profit enterprise is not currently involved in a training scheme for long-term unemployed.
First of all, the cost criterion (price) appears to be very much at the centre of procurement decisions as the results indicate that the local civil servants from all five countries prefer to pay less for a product offered by a company. These results are statistically significant. However, the results show that local civil servants do not only look at the price in their procurement decisions but also give some importance to the other criteria.

Second, except in Estonia, the local civil servants from Belgium, Germany, Norway and Spain appear to favour more environmentally friendly companies. Compared to a company that will put into circulation a fleet of vehicles with an average age of 6 years old, Norwegian, Spanish, German and Belgian local civil servants are respectively 4.868, 4.111, 3.280 and 3.153 more likely to choose a company that will put a new fleet of vehicles into circulation. These results are statistically significant.

Third, the results also show that local civil servants from the five countries are interested in the ICT dimension when they collaborate. They are respectively 3.325 (Germany), 2.908 (Norway), 2.868 (Estonia), 2.684 (Belgium) and 2.55 (Spain) times more likely to choose a company which offers an app for smartphones for its service users compared to a company which does not propose this service. These results are statistically significant.

Finally, the results indicate that the Belgian, German, Norwegian and Spanish local civil servants appear to favour companies that are currently involved in a training scheme for long-term unemployed. The odds ratios show that Spanish, Belgian, Norwegian and German local civil servants are respectively 3.773, 3.559, 2.231 and 2.146 times more likely to choose a company involved in the professional integration of vulnerable groups compared to a company that is not involved. These results are statistically significant.

Figure 10 - 14 display the results for the respondents’ willingness to pay for the environmental and the social criteria and the ICT dimension in the five countries. We measure respondents’ incentive to collaborate through the local civil servants’ marginal willingness to pay for the different criteria. The marginal willingness to pay expresses how much money a local civil servant is ready to pay for one attribute level. Looking at the marginal willingness to pay allows the researcher to compare the relative importance of every attribute level to the respondents in every country. However, the local civil servants’ marginal willingness for the levels of the attributes are not directly comparable across the four countries.
Figure 10 indicates that, in Belgium, the most valuable attribute is the social criterion as local civil servants are willing to pay 32.07 euros more for a company that is currently involved in a training scheme for long term unemployed. Belgian local civil servants also appear to significantly value the environmental criterion. The Belgian local civil servants are willing to pay 29.01 euros more for a company that aims at putting into circulation a new fleet of vehicles compared to a company that will put an average fleet of vehicles of 6 years old into circulation. Regarding the ICT dimension, the Belgian local civil servants are willing to pay 24.94 euros more for a company that offers an app to its users compared to a company that does not.

**Figure 10. Willingness to pay estimates and 95% confidence intervals (Belgium)**

In Estonia, figure 11 shows that providing a digital service is the most important attribute level for the Estonian civil servants. Indeed, the Estonian local civil servants are willing to pay 9.07 euros more for a company that offers an app to its users. Although they do not value the environmental criterion as much as the ICT dimension, Estonian local civil servants are willing to pay 5.28 euros for a company that aims at putting into circulation an average fleet of vehicles of 3 years old compared to a company that will put an average fleet of vehicles of 6 years old into circulation.
Figure 11. Willingness to pay estimates and 95% confidence intervals (Estonia)

Figure 12 displays that German local civil servants appear to consider the environmental criterion as equivalently important as the ICT dimension. German local civil servants are willing to pay 18.14 euros more for a company that offers an app to its users. Compared to a company that aims at putting an average fleet of vehicles of 6 years old into circulation, German local civil servants are willing to pay 17.94 euros more for a company that will put into circulation a new fleet of vehicles. Regarding the social criterion, German local civil servants are willing to pay 11.53 euros more for a company that is currently involved in a training scheme for long term unemployed.
Figure 12. Willingness to pay estimates and 95% confidence intervals (Germany)

Figure 13 shows the local civil servants’ willingness to pay for the levels of the attributes. The most important attribute is the environmental criterion. Compared to a company that aims at putting an average fleet of vehicles of 6 years old into circulation, Norwegian local civil servants are willing to pay 281.86 NOK (~ 29 euros) more for a company that will put into circulation a new fleet of vehicles. The second most important attribute level is the ICT dimension. Norwegian local civil servants are willing to pay 199.77 NOK (~ 21 euros) more for a company that offers an app to its users. The least preferred criterion in Norway is the social criterion as Norwegian local civil servants are willing to pay 142.90 NOK (~ 15 euros) more for a company involved in the professional integration of vulnerable groups.
In Spain, figure 14 indicates that the most preferred criterion of Spanish local civil servants is the environmental criterion. Compared to a company that aims at putting an average fleet of vehicles of 6 years old into circulation, Spanish local civil servants are willing to pay 36.94 euros more for a company that will put into circulation a new fleet of vehicles. The second most important attribute level is the social criterion. Spanish local civil servants are willing to pay 34.69 euros more for a company involved in the professional integration of vulnerable groups. The least preferred criterion is the ICT dimension for which Spanish local civil servants are willing to pay 24.45 euros more for a company that offers an app to its users.
6.5 Discrete choice experiment – gender, knowledge and skills/education

This section examines the willingness to pay of local civil servants for the company criteria by gender, knowledge and skills/education. We consider local civil servants’ marginal willingness to pay for the different criteria as their incentive to collaborate. For this purpose, we have merged data from the Belgian, German and Spanish samples to ensure the sample is big enough to disaggregate the data. We cannot merge data from the Estonian and Norwegian samples as the price attribute is different for these two countries. For this analysis, the number of individuals is 346, the number of events (the number of choices made by the individuals) is 2076 and the number of observations (the number of individuals times twelve as there are six choice sets each presenting two companies to the respondents) is 4152. In the last section, we examine Estonian and Norwegian local civil servants’ willingness to pay for the company criteria by gender, knowledge and skills/education.

6.5.1 Gender

Figure 14 compares male and female local civil servants’ marginal willingness to pay for the different criteria. Male and female local civil servants do not differ much in their willingness to pay for the ICT dimension. Female and male local civil servants are respectively willing to pay 21.77 euros and 21.94 euros more for a company that proposes a digital tool to its users. However, female and male local civil servants appear to differ in regards to their willingness to pay for the other criteria as female
local civil servants appear to be willing to pay more than male local civil servants for all the other criteria. For the environmental criterion, female local civil servants are willing to pay 10.07 euros more than male local civil servants for a company that aims at putting into circulation a new fleet of vehicles. Compared to male local civil servants, female local civil servants are willing to pay 11.57 euros more for a company that is currently involved in a training scheme for long term unemployed. This indicates that female local civil servants value more the environmental and social criteria when collaborating.

**Figure 15. Local civil servants’ marginal willingness to pay by gender**

6.5.2. Knowledge

In this report local civil servants’ knowledge has been operationalized by local civil servants’ tenure and experiences in writing tender documents and in evaluating offers. We assume that more experienced local civil servants have more information, and therefore knowledge, on procurement practices. Figure 16 compares the willingness to pay of local civil servants who have different years of experience in the public sector (the cut-off points we have chosen correspond to the quartiles). We consider that local civil servants with more years of experience have more knowledge about procurement practices. Local civil servants, in the second tenure category (>=10 and <19), are the ones willing to pay the most for all the criteria while local civil servants, in the fourth category (>=28 and <=48), are the ones willing to pay the least for all the criteria.
Figure 16. Local civil servants’ marginal willingness to pay by knowledge (tenure)

Figure 17 compares the marginal willingness to pay of local civil servants who never, rarely, sometimes and often write tender documents. Apart from the environmental criterion (3 years old), local civil servants who rarely write tender documents are willing to pay more for all the criteria compared to local civil servants who often, sometimes and never write tender documents. Local civil servants who rarely write tender documents are the ones willing to pay the most (27.18 euros more) for a company that proposes a digital tool to its users while local civil servants who often write tender documents are willing to pay the least (17.59 euros more). For the environmental criterion, local civil servants who rarely write tender documents are willing to pay 5.45 euros more than local civil servants who often write tender documents for a company that aims at putting into circulation a new fleet of vehicles. Local civil servants who rarely write tender documents are the ones willing to pay the most (23.65 euros more) for a company that is currently involved in a training scheme for long term unemployed while local civil servants who sometimes write tender documents are willing to pay the least (21.34 euros more).
Figure 17. Local civil servants’ marginal willingness to pay by knowledge (writing tender documents)

Figure 18 compares the marginal willingness to pay of local civil servants who never, rarely, sometimes and often evaluate offers. Local civil servants who rarely evaluate offers are the ones willing to pay the most (29.2 euros more) for a company that proposes a digital tool to its users while local civil servants who never evaluate offers are willing to pay the least (18.85 euros more). For the environmental criterion, local civil servants who never evaluate offers are willing to pay 3.67 euros more than local civil servants who rarely evaluate offers for a company that aims at putting into circulation a new fleet of vehicles. Local civil servants who often evaluate offers are the ones willing to pay the most (26.41 euros more) for a company that is currently involved in a training scheme for long term unemployed while local civil servants who sometimes evaluate offers are willing to pay the least (21.06 euros more).
6.5.3. Skills/education

In this report local civil servants’ skills/education have been operationalized by their education level. Two education levels are examined as 92 percent of the local civil servants from the subset either have a bachelor degree (or equivalent) or a master degree (or equivalent). Figure 19. therefore compares the marginal willingness to pay between local civil servants with a bachelor degree (or equivalent) and local civil servants with a master degree (or equivalent). The local civil servants with a bachelor degree are willing to pay more for all the criteria. Local civil servants with a bachelor degree are willing to pay 7.21 euros more than local civil servants with a master degree for a company that proposes a digital tool to its users. For the environmental criterion, local civil servants with a bachelor degree are willing to pay 7.3 euros more than local civil servants with a master degree for a company that aims at putting into circulation a new fleet of vehicles. Local civil servants with a bachelor degree and local civil servants with a master degree do not differ much in their willingness to pay for the social criterion. Local civil servants with a bachelor degree and local civil servants with a master degree are respectively willing to pay 22.32 euros and 21.34 euros more for a company that is currently involved in a training scheme for long term unemployed.
6.5.4. Estonia and Norway

This section briefly examines the Estonian and Norwegian local civil servants' willingness to pay by gender, knowledge (tenure) and skills (education level). This section does not disaggregate the data by local civil servants' experiences with writing tender documents and evaluating offers as the number of observations is not large enough. In Estonia, female local civil servants appear to be willing to pay 3.69 euros more than male local civil servants for a company that proposes a digital tool to its users. In regards to skills/education, Estonian local civil servants with a master degree (or equivalent) are willing to pay 4.10 euros more than Estonian local civil servants with a bachelor degree (or equivalent) for a company that proposes a digital tool to its users. Concerning knowledge, we examine the marginal willingness to pay of local civil servants who have between 0 (the minimum value) and 13 years of experience in the public sector with local civil servants who have between 14 and 48 years (the maximum value) of experience in the public sector. We have chosen a cut-off point of 13 years of experience in the public sector as this value represents the median. The Estonian local civil servants who have between 0 and 13 years of experience in the public sector are willing to pay 6.68 euros more than Estonian local civil servants who have between 14 and 48 years of experience in the public sector for a company that proposes a digital tool to its clients.
In Norway, female local civil servants are willing to pay more for all the criteria than male local civil servants. In regards to the local civil servants’ skills/education, the Norwegian local civil servants with a master degree (or equivalent) are willing to pay more than Norwegian local civil servants with a bachelor degree (or equivalent) for all the criteria except from the environmental criterion (3 years old vehicles). Concerning the local civil servants’ knowledge, we examined the marginal willingness to pay between the civil servants who have 0 (the minimum value) and 22 years of experience in the public sector with local civil servants who have between 23 years and 44 years (the maximum value) of experience in the public sector. We have chosen a cut-off point of 22 years of experience in the public sector as this value represents the median. Local civil servants who have 0 and 22 years of experience in the public sector are willing to pay more for the environmental (new fleet) and the ICT dimension while the local civil servants who have between 23 and 44 years of experience in the public sector are willing to pay more for the social and the ICT dimension (3 years old).
Chapter 7: Conclusion and next steps

This report (D3.2) first presented a short literature review on the growing importance of including environmental and social criteria and the ICT dimension into tender documents. Second, the report described the theoretical foundation of the WP3 study; the random utility theory. Third, it described the design of the discrete choice experiment. Fourth, it explained the model that were used to conduct the analysis. Finally, the report presented the results for the five countries; Belgium Estonia, Germany, Norway and Spain.

We have recently noticed the growing importance given to environmental and social criteria, as well as the ICT dimension into tender documents (Uyarra et al. 2014; Loosemore, 2016; Keulemans Van de Walle, 2017). However, limited attention has been paid to local civil servants’ attitudes regarding environmental and social criteria and the ICT dimension when collaborating. As a consequence, this report (D3.2) has, by conducting a discrete choice experiment in the field of bulky waste items collection, examined two related research questions: (1) To what extent do local civil servants consider economic, environmental and social criteria and the ICT dimension when collaborating? and (2) How much are these criteria worth to local civil servants?

The results suggest that local civil servants in Belgium, Estonia, Germany, Norway and Spain consider other criteria than solely the price criterion when collaborating. In Belgium, the most important criterion is the social criterion as Belgian local civil servants are willing to pay 32.07 euros more for a company involved in the professional integration of vulnerable groups. In Estonia, the marginal willingness to pay implies that the most preferred criterion by local civil servants is the ICT dimension criterion for which they are willing to pay 9.07 euros more. German local civil servants appear to value the environmental criterion as equally important as the ICT dimension. German local civil servants are willing to pay 18.14 euros more for a company that offers an app to its users. Compared to a company that aims at putting an average fleet of vehicles of 6 years old into circulation, German local civil servants are willing to pay 17.94 euros more for a company that will put into circulation a new fleet of vehicles. In Norway, the most valuable criterion appears to be the environmental criterion as local civil servants are willing to pay 281.86 NOK (~ 29 euros) more for a company that will put into circulation a new fleet of vehicles. The most important criterion for Spanish local civil servants is the environmental criterion. They are willing to pay 36.94 euros more for a company that will put into
circulation a new fleet of vehicles. In addition, in light of the results outlined in the previous section, one can conclude that local civil servants’ skills/education, knowledge and gender play a role regarding local civil servants’ way of collaborating.

In a next stage WP3 will use these findings to concentrate on types of partnerships (“delivery modes” in the literature) to make connection to the design of subsequent work packages. More in particular, this will lead to a literature review on partnership type choice (cf. TROPICO obj. 1, WP7), and an analysis of individual drivers (including gender) of preferring innovative (esp. digital) aspects of service provision (TROPICO obj. 2). In this way, connections to WP6 (on practices of internal collaboration for service delivery) and WP7 (on practices of external collaboration for service delivery) will be strengthened. WP3 will also expand the initial narrow focus on one type of service in the DCE to a more elaborate focus on a range of services, including electronic services. Particular attention will be paid to partnerships and delivery modes (policy design and policy delivery, cf. the third objective of TROPICO) relating to the procurement of ICT.

The data collected in WP3 will further be used to develop two academic articles that will be delivered in month 28 (September 2019) of the project by the researchers in WP3 (Deliverable D3.4). In the meantime, working papers containing data from WP3 will be presented at conferences and workshops to disseminate the findings to the academic community. The findings might be of interest for the academic community as the method used in this research has rarely been used in the field of public administration. Moreover, the study results will not only be disseminated to the academic community, through conferences and workshops, as the research report might be shared with the local civil servants who decided to participate in the survey-experiment in Belgium, Estonia, Germany, Norway and Spain. The findings of the research might have an influence on how they will perceive their collaboration with the private sector. The results of the study will also be publicly available on the TROPICO website.10

10 http://tropico-project.eu/
References


