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A case study on improving invoice processing at Vexve Oy

Tuomas Lietepohja

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Abstract:

The thesis was commissioned by Vexve Oy to improve their purchase and travel invoice handling processes. The solution used by the company to import purchase invoices, Basware's Cloudscan 2.0, was going to enter end of life status in June 2024, so a choice needed to be made between Basware's Cloudscan 3.0 and SmartPDF software. With travel invoices, the study focused on the implementation of a service through the company's credit card partner Eurocard that would save receipts automatically to the company's travel expense management software, Visma M2, without needing to keep paper receipts. The qualitative study was conducted by using two surveys: one for the finance department employees on purchase invoices and one on travel invoices for all company credit card holders. The results for the purchase invoice survey were that the people who handled purchase invoices most often had noticed errors in the importing of invoices and were in favor of increasing automation in the process. The conclusion for this part of the study was therefore that the company should move to the SmartPDF software due to its ability to automatically import invoices. For the travel invoice survey, the respondents thought the service saved them time by not having to keep paper receipts but had some criticism about the lack of instruction from Eurocard and the small number of vendors who supported fully digital receipts. The conclusion was that the smart receipt service did improve the process for travelers.

Keywords:

Vexve Oy, invoice processing, purchase invoices, travel invoices

Contents

1 INTRODUCTION

1.1 Background

There are many tools available to improve and streamline the process of invoice handling. However, a company must carefully consider which tools to implement and how to manage the implementation of the tools from a project management perspective: are there suitable tools available from service providers already used by the company, and do competitive alternatives exist?

Vexve Oy, the company that commissioned this case study, needs to make these processes more efficient, and the best way to accomplish this is to figure out which modern tools to implement as part of these processes. The two invoice types that have been chosen by the company's finance department for this study are purchase and travel invoices, since measures have been identified that can currently be taken to improve these aspects of the invoice handling process.

1.1.1 Vexve Oy

Vexve Oy is a Finnish supplier of district heating solutions such as valves and hydraulic control systems that was founded in 1960 and distributes its products in over 30 countries (Vexve Oy, n.d.). The company is also part of a concern called Vexve Armatury Group (Vexve Oy, n.d.), although the other companies and subsidiaries are not relevant to this thesis, since they have their own finance departments with their own invoice handling processes. As a private company, Vexve Oy's financial data is not publicly available, but according to the company's own reporting, its turnover in 2022 was approximately 55 million EUR.

1.2 Problem statement

Since purchase invoices need to be somehow imported into the invoicing system and travel invoice processing involves manual labor with receipts, the main problem this thesis sets out to tackle is improving the processes of purchase and travel invoice handling, and the kinds of modern tools to use for this purpose. The means used must also be cost-effective for the

company to implement considering the volume of invoices and cost of the tools and services. More detail on this will follow in Sections 1.5 and 1.6.

1.3 Aim and research questions

The aim of the thesis is to find out which tools and implementations would suit the company's needs for process improvements, and to report whether the chosen tools result in notable improvements in handling purchase and travel invoices.

The main research questions of the thesis are *What tool should be selected for purchase invoice processing* and *Will the chosen services improve travel invoice processing?*

1.4 Demarcation

This thesis only reports on the results pertaining to the company the case study covers: the implementation of similar tools in other companies might have different results when it comes to efficiency and suitability of the tools used. Likewise, the results reported in this thesis only pertain to the tools and implementations chosen by this company and do not cover any others, although the information could be used by other companies looking to improve their invoice processes.

1.5 Purchase invoices

Currently, Vexve Oy receives purchase invoices from most Finnish suppliers as e-invoices, using the Finnish IT company Basware as a service provider. This requires no user input to import them into the invoice processing system (Basware InvoiceReady). For paper and e-mail invoices, Basware's Cloudscan 2.0 is used as a tool to automatically fill in information fields when importing them. However, this tool is reaching its end-of-life status and will be shut down by Basware by June 2024.

1.5.1 Current issues

The main issue with handling purchase invoices is the outdated Cloudscan tool, which hinders the importing of paper and e-mail invoices into the invoicing system: it is slow to process scanned invoices and prone to making mistakes due to its outdated algorithm. There is a need to upgrade to a more modern tool to improve this process.

For the upgrade, there are two possibilities: either switching to the newer 3.0 version of Cloudscan that is supported by Basware or moving over to a different piece of software called SmartPDF.

1.6 Travel invoices

Travel invoices are filed by employees who take business trips paid for by the company, as well as other expenses such as compensation for trips using employees' own vehicles. Vexve Oy uses the M2 system developed by Visma to both help employees create these invoices and the finance department employees to keep track of the expenses.

Vexve is also partnered with Eurocard, who issue company credit cards to employees who need them. Eurocard also automatically provides users with a list of the expenses paid with the card, helping them to fill in the travel invoices.

1.6.1 Current issues

Despite Eurocard providing a list of all the charges to the employees with company credit cards, the need to gather receipts for all charges and upload them to the M2 system creates extra work that could be avoided with a solution to automatically upload the receipts to M2 along with the charges.

1.7 Structure

This thesis consists of six chapters, the first of which is an introduction explaining the background, need, problem statement and aim. The next two chapters focus on theory and the method used to come up with the results presented in the fourth chapter, with the last two chapters discussing the results and concluding based on this information.

2 THEORY

The literature, theory and previous studies for purchase invoice and travel invoice processing are separate from each other, so in this section, they will be detailed in separate sections.

2.1 Purchase invoice processing

2.1.1 Literature and previous studies

As far the basics on invoice processing are concerned, Mary S. Schaeffer's book *Accounts Payable: A Guide to Running an Efficient Department* does a good job of summarizing how the process works and what needs to be considered when processing invoices. The book was published in 2004, but the basic concepts remain relevant. *European E-Invoicing Guide for SMEs*, an article published by the European Business Lab, is a good guide into different aspects of electronic invoice processing. For the methodology section, Emma Bell and Alan Bryman's book *Business Research Methods* provides a basic guide on the methods required to gather and analyze the data for this thesis.

Several theses have been written on purchase invoice processing: Juuso Neuvonen's master's thesis for the Lappeenranta University of Technology is an example of one that directly addresses many of the points relevant to this thesis.

2.1.2 Information matching

The basic way invoice processing is done is by employing a technique known as the three-way match: "When the invoice is presented for payment, most companies match it against a purchase order and a receiving document, and if all three match, the invoice is paid on or after its due date" (Schaffer 2004 p. 3). Nowadays, this information can be read automatically by using invoice scanning software to reduce the probability of human error.

One way to make sure invoices are imported accurately is by using purchase orders where the details corresponding to the order are recorded (Schaffer 2004 p. 5). Thus, all the information relating to the invoices can be double-checked when importing them into the processing system.

2.1.3 E-invoices

E-invoicing, or electronic invoicing, is defined as "the electronic delivery of invoices, primarily over the Internet, to the accounts payable department" (Schaffer 2004 p. 191). In Vexve Oy's case, e-invoices are defined based on the Finnish law for electronic invoicing, which states that e-invoices are electronically sent documents that can be processed automatically (Laki hankintayksiköiden ja elinkeinonharjoittajien sähköisestä laskutuksesta 241/2019 § 2). Thus, the definition for the terms "e-invoicing" and "e-invoices", for the purposes of this study, excludes invoices sent via e-mail, as they are not received automatically.

Most of Vexve Oy's invoices are received as e-invoices using Basware as a service provider, and they are entered automatically into InvoiceReady without any input from the invoice handlers or anyone else outside the finance department. This is known as a semi-automated invoicing process using sender-based web invoices (Ciciriello & Hayworth 2009 p. 12). The only procedure needed after this is matching the information on the invoice to the possible purchase order in the ERP system to check if the prices and quantities of the items are correct and whether they have been received. The main issue with this type of invoice processing is that only suppliers based in Finland who use a similar e-invoicing services can send e-invoices. For all other suppliers, other means of receiving invoices are necessary.

2.1.4 Other types of invoices

Suppliers without e-invoicing services and suppliers outside of Finland may send invoices via e-mail. In these cases, the information on the invoices must either be imported manually or by utilizing a semi-automated invoicing process using PDF invoices (Ciciriello & Hayworth 2009 p. 9) through an invoice scanning system like Basware Cloudscan 2.0, which is currently used by Vexve Oy.

This is also the case with the relatively few paper invoices still received by the company; the Finnish law on electronic invoicing defines the right to receive all invoices in digital form (Laki hankintayksiköiden ja elinkeinonharjoittajien sähköisestä laskutuksesta 241/2019 § 4). Despite this, the company continues to handle paper invoices, which also must be imported

through the semi-automated process. The issues with this process are the possibility for human error as well as the OCR (Optical Character Recognition) algorithm detecting the data incorrectly, which is an issue

with the outdated CloudScan 2.0 software. Neuvonen (2015) also recognizes this problem, stating that while OCR had sped up invoice processing, additional work needed to be done to fix resulting errors (p. 59-60). This can therefore be seen to be a problem that needs to be addressed, and the invoice scanning tool must have an improved OCR algorithm that can reduce the amount of work needed to import the information after the initial OCR passthrough.

2.1.5 Cost of implementation

Basware charges a processing fee for each invoice read for both the Cloudscan 3.0 and SmartPDF applications, so these must be taken into consideration when choosing between the tools. The other implementation cost is the project work that would go into implementing the SmartPDF system if it is chosen.

2.2 Travel invoices

2.2.1 Literature and previous studies

There are some theses which tackle the concept of travel invoice processing and the systems involved, such as Odet Castillo Peñaloza's bachelor's thesis for the Haaga-Helia University of Applied Sciences, which, while written about a German company's processes, still offers insight into the processes themselves as well as the ways in which improving them could be beneficial to a company. Vuokko Tolonen's bachelor's thesis for the Oulu University of Applied Sciences also looks at improving travel expense processes from a similar angle to this thesis.

There are also aspects of Finnish law that are relevant to the issues studied in this thesis: both tax and accounting law govern relevant aspects of travel invoice processing.

2.2.2 Legal

According to Finnish tax law, travel invoices need to be filed for an employer to be able to compensate an employee for travel expenses (Tax Administration, 2023) in order to keep track of company spending. While an employer can compensate an employee for using their own vehicle for temporary trips (Tax Administration, 2023), it is not relevant to the scope of this study because no receipts are needed or stored for kilometer compensation. Finnish tax law defines business travel as travel to a location that is outside of the scope of an employee's normal commute (Tax Administration, 2023), and for the purposes of this study, only expenses during business trips where a travel invoice has been filed are considered.

Travel invoices with expenses other than kilometer or per diem (a predetermined amount of money paid daily to cover essential costs) allowance must have receipts attached to them, and according to Finnish accounting law, the receipts must be stored for six years after the end of the fiscal period (Kirjanpitolaki 30.12.1997/1336 § 2:2). Both the importing and storage of these receipts are handled at Vexve Oy by the M2 system, which holds an electronic archive.

2.2.3 Travel invoice processing at Vexve Oy

Travel invoice processing is handled by the traveler drafting a travel invoice, filling in the required information and attaching the necessary receipts. After this, the invoice is sent to the handler for inspection, at which point all the receipts, postings and distance information is checked. If all of this is satisfactory, the invoice is sent for final approval to the traveler's supervisor.

Most of the company's frequent travelers, mainly salespeople who travel to meet customers as well as some service personnel who make repair trips, have company credit cards issued through Eurocard. This helps the process by automatically sending information about each charge directly to M2. However, the user must still remember to keep the receipts for the charges and import them to M2.

Tolonen (2015) describes in their thesis a mobile app to simplify the process, allowing users to upload pictures of the receipts through their phones (p. 29). This kind of app is already in use at Vexve Oy, but Eurocard offers a more sophisticated service called smart receipts in which the receipts are either sent automatically to M2 if the vendor supports the service. In case the vendor does not support fully digital receipts, the user can take a picture of the paper

receipt with their phone and send it to M2. While Tolonen's thesis astutely focused on the benefits of introducing a mobile app to the travel invoice process, the more developed smart receipt service would assumedly have more benefits for the users. Castillo Peñaloza also used in their thesis an example of a similar app as part of SAP Concur Expense, although it could only be used to photograph receipts instead of having the function to automatically receive them (Castillo Peñaloza 2023 p. 29). We can therefore see from these two these that progress in the field of travel invoice processing has allowed for more capable tools to reduce the amount of manual labor.

2.2.4 Cost of implementation

The cost of implementing the smart receipt service, outlined on Eurocard's website, is 35 EUR per card per year plus VAT (SEB Kort AB, 2023) without any additional transaction fees from processed receipts. Therefore, the cost of implementation is quite low and can be considered cost effective.

3 METHODOLOGY

The purpose of this thesis is to help the company make decisions on purchase and travel invoice processing solutions based on data from employees and therefore, this study will use the qualitative method to handle data that has been collected using interviews and surveys. The main reason for this is, as Bell and Bryman put it, qualitative research is more focused on both "seeing through the eyes of the people being studied" i.e., "the social world must be interpreted from the perspective of the people being studied, rather than as though those subjects were incapable of their own reflections on the social world" (Bell & Bryman 2011 p. 402).

In this study's case, this meant gathering the perspectives of the respondents on the systems and services that were currently in place and the ones that were either being considered or freshly implemented. This "empathetic stance of seeking to see through the eyes of one's research participants" (Bell & Bryman 2011 p. 403) allowed the participants to present their own opinions on the subject rather than relying on numbers. One concern was also the possible dearth of data for doing a reliable quantitative analysis, especially from people relevant to the topics of the study, while for a qualitative analysis there was enough data from the most relevant people.

3.1 Ethical considerations

Four main concerns for ethical considerations are outlined by Bell and Bryman, originally from a book by Rick Crandall and Ed Diener called *Ethics in Social and Behavioral Research* published in 1978: harm to participants, a lack of informed consent, invasion of privacy and deception (Bell & Bryman 2011 p. 128). Bell and Bryman quote Crandall and Diener in describing the different ways harm to participants is defined: "physical harm; harm to participants' development or self-esteem; stress; harm to career prospects or future employment; and 'inducing subjects to perform reprehensible acts'" (Bell & Bryman 2011 p. 128) are given as examples. Out of these, the most relevant to this study were a possible harm to career prospects, since some of the information handled in the surveys could be company-related confidential information, and they could also potentially contain information the respondents would not want connected to themselves.

The main ethical issue of the study was invasion of privacy, especially relevant because Vexve Oy is not a publicly traded company, so there were limitations on what data could be used and published in the study. As Bell and Bryman state, "the research participant does not abrogate the right to privacy entirely by providing informed consent" (Bell & Bryman p. 136), so there was a need to keep all responses to the surveys anonymous.

3.2 Purchase invoice processing

3.2.1 Respondents

The process used to select the respondents is called purposive sampling: the respondents were not selected randomly but were instead chosen because of their relevance to the subject of purchase invoice processing (Bell & Bryman 2011 p. 442). The data was collected by using a web-based survey, and the respondents for the survey were selected from the finance department, as they have the most experience with handling purchase invoices and the issues that can arise from using outdated and/or unsuitable tools.

3.2.2 Survey

The survey was administered in a semi-structured format, with pre-determined questions that allowed the participants a degree of freedom for their answers (Bell & Bryman 2011 p. 467). The questions were open, meaning the interviewees were not limited to a certain set of answers (Bell & Bryman 2011 p. 248), with the exception the first question on the frequency of dealing with purchase invoices. The questions (the survey is available as Appendix 1) were about the interviewees' previous experiences with matching purchase invoices and potential issues that have arisen from either human error or, for example, an algorithm misinterpreting text.

3.2.3 Processing

Bell and Bryman define the process that followed the collection of the survey answers, coding, as "reviewing transcripts and/or field notes and giving labels (names) to component parts that seem to be of potential theoretical significance and/or that appear to be particularly salient within the social worlds of those being studied" (Bell & Bryman 2011 p. 578), and

this was accomplished by looking for themes and key words that describe the respondents' attitudes towards the subject and the different future options being discussed.

3.2.4 Validity and reliability

The most relevant question regarding reliability was the number of people who responded to the survey, since several perspectives were necessary to have enough data. Another question was external reliability, or "the degree to which a study can be replicated" (Bell & Bryman 2011 p. 395) since the findings were related to one company as discussed in section 1.4. The results could also be argued to be biased, since they are from members of the finance department. Bell and Bryman's opinion on this is that "often, qualitative researchers are clear that their samples are convenience [sic] or opportunistic ones, and, on other occasions, the reader suspects that this is the case" (Bell & Bryman 2011 p. 489). However, the results were obtained from the people most familiar with the processes, so even if it could be argued that the samples were convenient, for the purposes of having the most relevant results, the potential bias does not especially matter.

3.3 Travel invoices

3.3.1 Responses

The respondents for the survey were chosen by using the purposive sampling method like the one described in Section 3.2.1., but this time the samples were chosen by sending an invitation to the survey via e-mail to all employees who had Eurocard credit cards. This was the best the way to reach all potential respondents as well as the best way to reach employees living outside of Finland. The survey was sent out after the smart receipt service had been in use for a few weeks to allow for the accumulation of data.

3.3.2 Survey

Much like the process outlined in Section 3.2.2., the survey was semi-structured and the questions in the survey focused on gathering data on the smart receipt service and whether it has helped employees file travel invoices. The survey was anonymous except for a few identifying pieces of information, such as age, country of residence, and how often the recipient files travel invoices. The questions were mostly open like in Section 3.2.2., since Bell and Bryman argue that online surveys result in more detailed replies to open questions (Bell & Bryman 2011 p. 668). However, unlike in Section 3.2.2., where all the questions were open, some of the questions, such as the ones about age (where age groups were used instead of a free answer both to help obfuscate the respondent's identity and to help group the subject) and country of residence (where a drop-down list of countries was used) were closed, with a limited set of answers. The survey questions are available as Appendix 2.

3.3.3 Processing

The coding process worked otherwise like in Section 3.2.3, but due to heterogeneity in the answers compared to the interviews in that part of the study, additional coding was required to group the respondents into additional categories, namely age and country of residence. The survey responses themselves were analyzed by keywords and themes.

3.3.4 Validity and reliability

The first concern when it came to the validity of the data was the number of respondents the survey gets, since the potential for non-responses is something that Bell and Bryman bring up as a drawback for online surveys (Bell & Bryman 2011 p. 668). It could also have been possible that respondents had not used the smart receipt service yet, but that could itself have been used as data. There was also the possibility of a bias towards people living in Finland since they are the majority of the company's employees.

4 RESULTS

4.1 Purchase invoice processing

The Google Forms survey link was sent to the finance department, with the maximum number of respondents being seven, of which three responded for a response rate of 42.9%. However, these three respondents stated that they work with purchase invoices daily, meaning that the sample represents the employees with the most experience with the topic. The survey data is available as Appendix 2.

4.1.1 Respondents' comments on the invoice importing process

Of the three recipients, only one answered in Question 2 that the process of importing purchase invoices does not need an upgrade or improvement. The other recipients brought up the need for a more efficient system than the one Vexve Oy was currently using and the errors that the Cloudscan tool made while importing invoices.

For Question 3, which was specifically about errors in invoice processing, all respondents brought up errors that have been made while transferring the invoices into InvoiceReady. Two of the respondents brought up errors related to the wrong currency being read off an invoice, presumably by the Cloudscan software.

4.1.2 Respondents' general comments and suggestions on invoice processing

All respondents had suggestions on how to improve invoice processing in Question 4, with one of them wanting an invoice processing system that would work inside the company's ERP, which would improve usability, but is outside of the scope of solutions proposed in this thesis. One respondent wanted a more advanced system to import invoices, which is exactly the kind of opinion sought after by this thesis from the people responsible for purchase invoice processing. The third respondent wanted more automation for the invoice handling process, which is also within the scope of this thesis to a certain extent. Overall, the responses for Questions 3 and 4 suggest that the company should investigate a more sophisticated solution for invoice processing.

4.2 Travel invoices

After the service had been in use for a few weeks, the Google Forms survey on the usage of the smart receipt service was sent in both Finnish and English to Eurocard-holding employees of Vexve Oy, a total of 46 recipients. 15 responses were received for the Finnish survey, none for the English version. This means a response rate of 32.6%. Three of the recipients were on parental leave at the time, which explains three of the non-responses. The data for this survey is available as Appendix 4.

4.2.1 Respondents by age, country of residence and travel invoice filing frequency

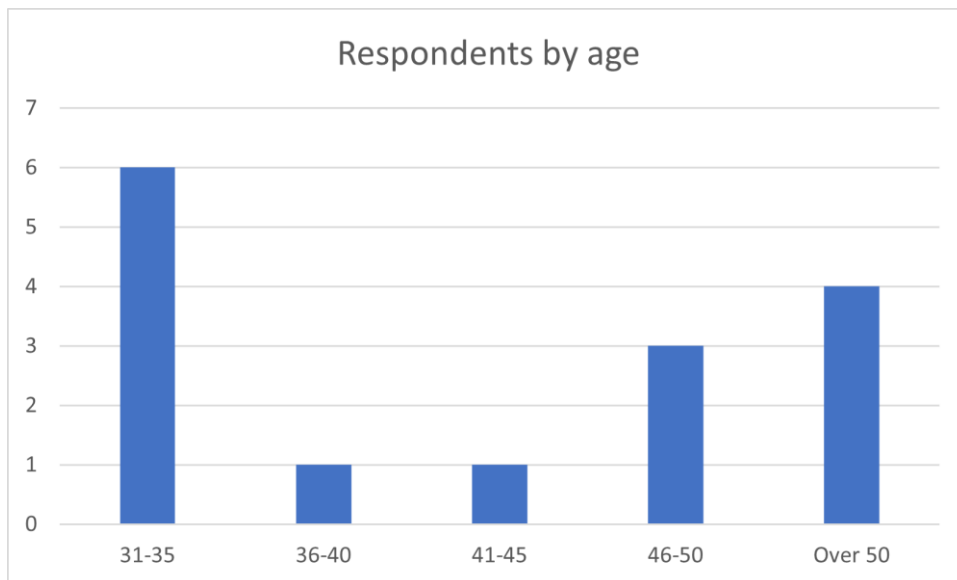The first three questions in the survey were related to the backgrounds of the respondents.

Figure 1. Respondents for the smart receipt survey by age.

The lack of respondents under 30 as seen in Figure 1, although an option in the survey, is explained by the demographics of Vexve Oy's company credit card holders, which also explains the number of people over 50.
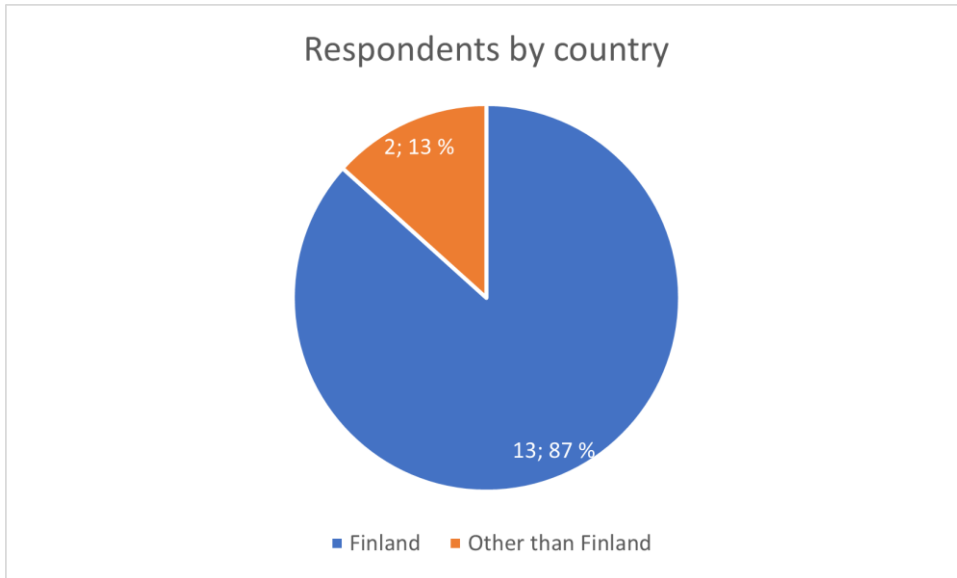
Figure 2. Respondents for the smart receipt survey by country.

The amounts of respondents residing in Finland and elsewhere shown in Figure 2 can be assumed to correspond with the number of the company's employees who live abroad and speak Finnish, since no responses were received for the English survey.
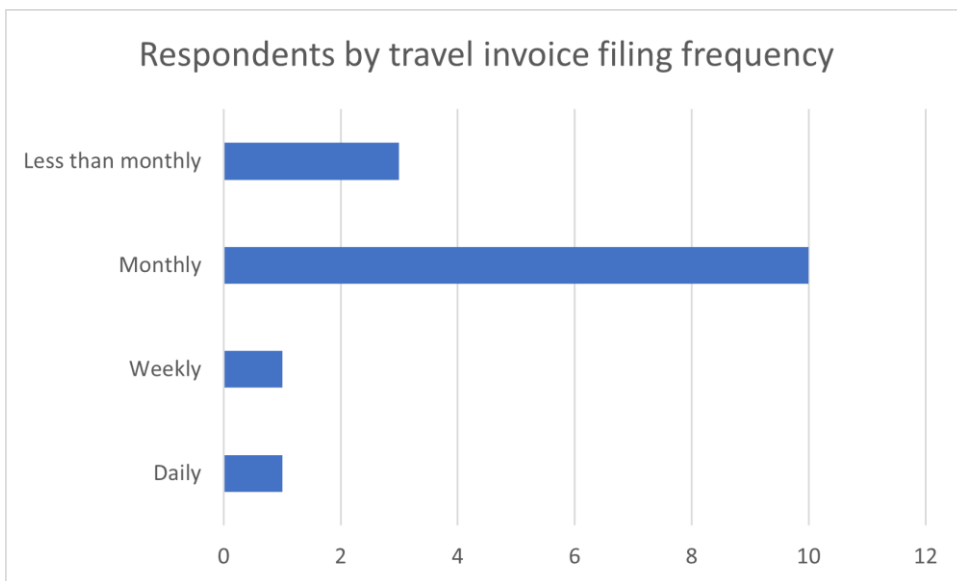

Figure 3. Respondents for the smart receipt survey by travel invoice filing frequency.

Figure 3 shows that, as expected, the respondents travel frequently and therefore most file travel claims at least once a month. This is explained by these employees being chosen as Eurocard holders because the credit card service saves time when they file travel invoices.

4.2.2 Respondents' usage of the Eurocard app and awareness of the smart receipt service

Out of all 15 respondents, only one had not installed the Eurocard app on their phone, and only two were not aware of the smart receipt service. One other respondent had answered "No" to the questions regarding these two topics but based on their response to Question 3 of the survey, it was assumed that they at least had the Eurocard app installed even though they lacked awareness of the smart receipt service.

4.2.3 Respondents' usage of the smart receipt service
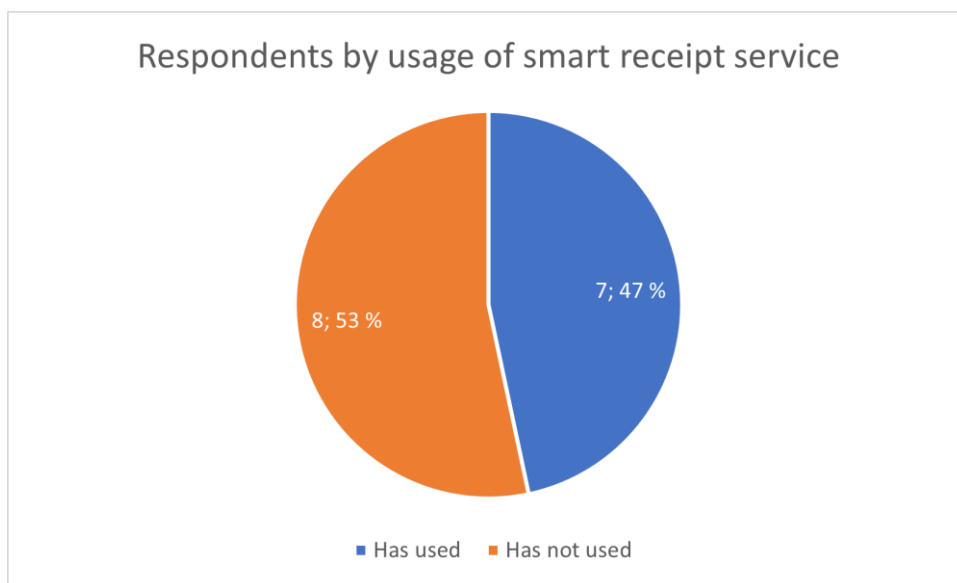

Figure 4. Number of respondents who have used the smart receipt service.

As can be seen from Figure 4, almost exactly half of the respondents have already used the service, suggesting that adoption of the service was already high at this point.
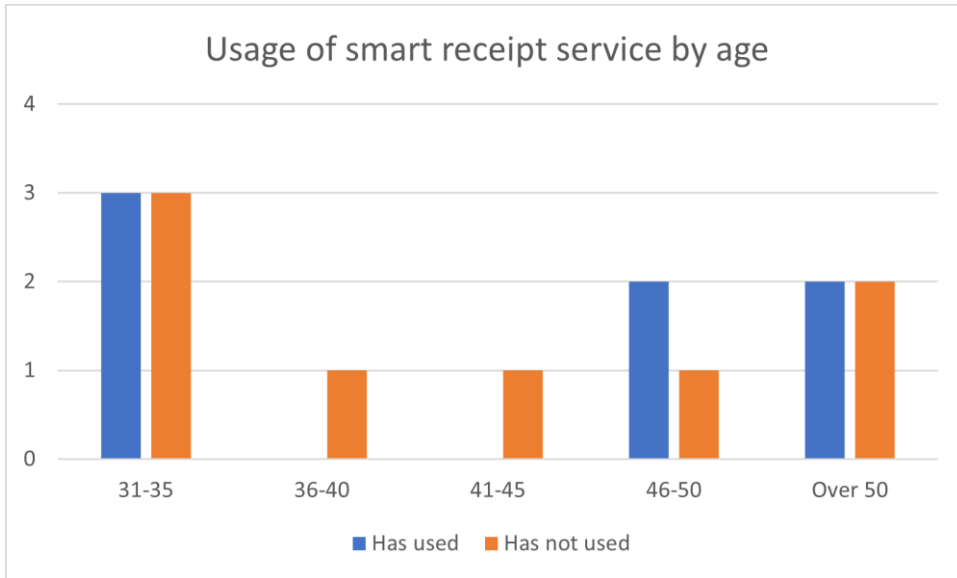
Figure 5. Usage of smart receipt service by age.

Figure 5 shows that smart receipt usage was high at both ends of the age spectrum, although this is explained by the number of respondents in those age groups.
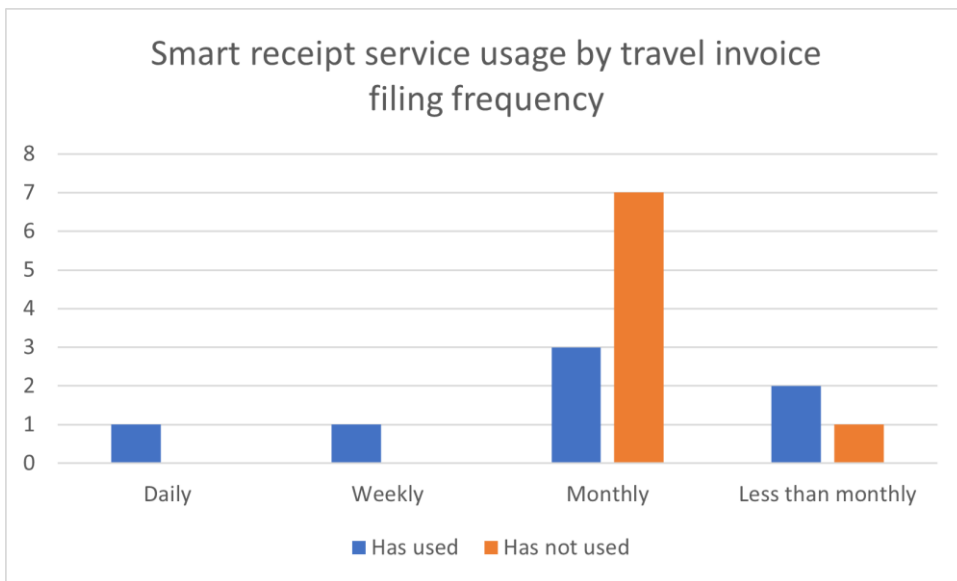

Figure 6. Usage of smart receipt service by travel invoice filing frequency.

The large amount of non-usage among monthly travelers shown in Figure 6 can be explained by the proportionately large number of respondents who answered "Monthly". We can also see that even the extreme outliers by travel invoice frequency had adopted the service.

4.2.4 Respondents' attitudes towards the smart receipt service

Two questions in the survey were specifically about attitudes towards both the smart receipt service and travel invoices in general. The responses for Question 7 were coded into four categories: Has not used service, Ambivalent/no comments, Positive and Negative, while the responses for Question 8 were coded into three categories: Ambivalent/no comments, Positive and Negative.
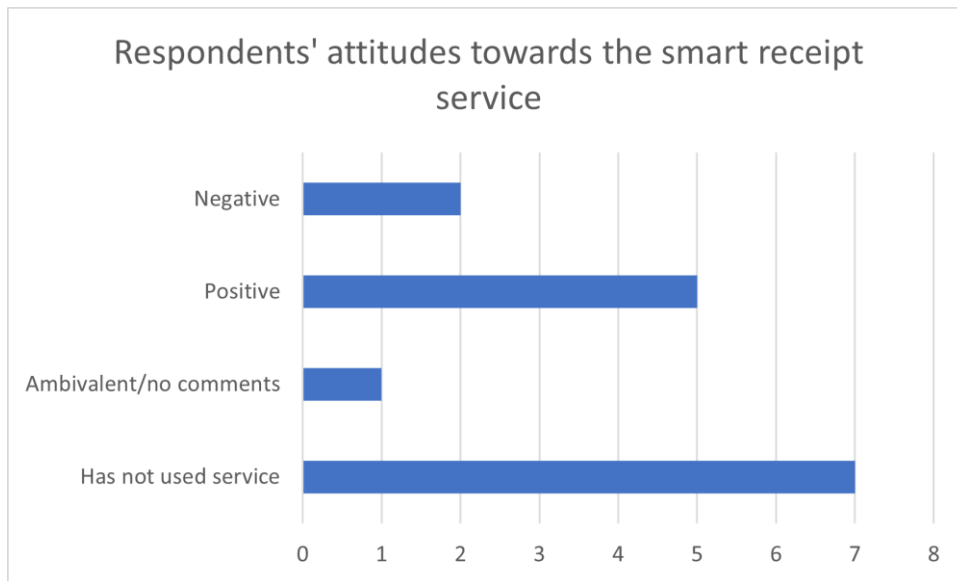
Figure 7. Respondents' attitudes towards the smart receipt service.

As Figure 7 shows, the attitudes of the respondents who had used the service were mostly positive, with a couple of negative comments due to the respondents in question having trouble with the app. The answers that were coded as "has not used service" were ones where the user explicitly mentioned not having used the service.

Figure 8. Respondents' comments and suggestions on travel invoices.

The number of ambivalent answers seen in Figure 8 could be seen as indicative of the respondents being either content with the service, not having used it yet, or not having come up with any suggestions to improve it.

5 DISCUSSION

5.1 Discussion of results

5.1.1 Purchase invoice processing

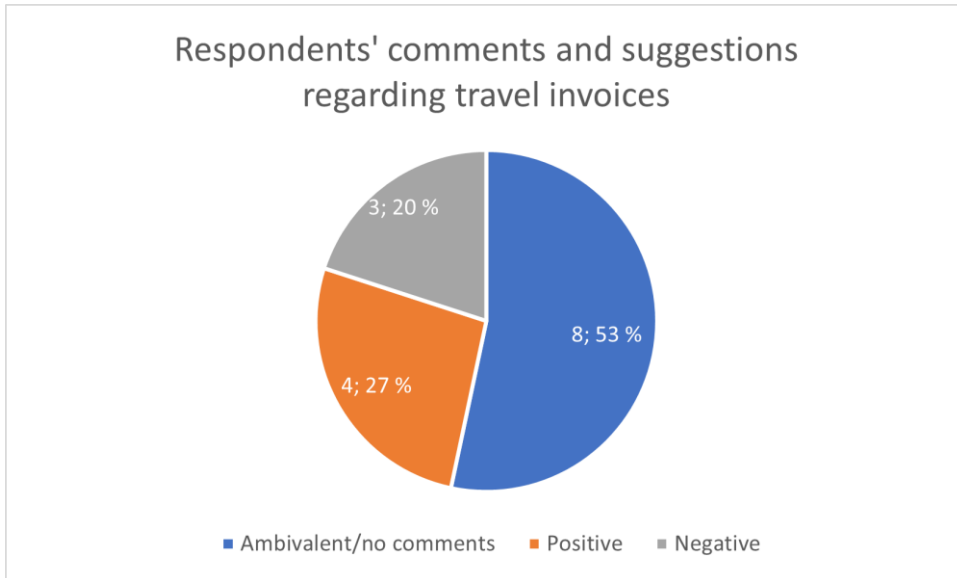The responses received for the survey indicated a need to modernize the invoice handling process. Certain themes were repeatedly brought up by the respondents, and they need to be addressed to improve the company's process.

Errors in the importing of invoices

In his thesis, Neuvonen brings up the possibility of "errors or incorrect data extraction" with OCR applications (Neuvonen 2015 p. 16), and thus it should be considered a major factor when it comes to improving the process of invoice handling.
Two of the three respondents did bring up errors in the importing of purchase invoices, for example, the wrong currency or sum being read when the invoice is brought to InvoiceReady.

Neuvonen also states "information in wrong invoice fields causing that [sic] some of the data may have falsely been transferred to the accounting system" (Neuvonen 2015 p. 16) as a specific problem with OCR software. In some cases, the cause has been human error, but other times, as Neuvonen discovered in their thesis, the culprit has been the Cloudscan software used to automatically import PDF invoices.

Since one of the reasons for implementing an automatic invoice importing system is to reduce rekeying errors (Schaffer 2004 p. 21), the system is clearly not functioning the way it should if the people handling the invoices notice so many errors that need to be manually. Neuvonen also found out in their thesis especially automatically importing converting invoices to an electronic format had the potential for notable timesaving (Neuvonen 2015 p. 92).

It should also be pointed out that the respondents were the ones who work with purchase invoices daily, which suggests that this is a frequent occurrence. One respondent also pointed out the possibility of this happening more often than most users notice, since they often were the one to fix the errors before the invoices were processed. These errors happening consistently would also point towards the Cloudscan software not being able to learn like it is

supposed to. To make the process more efficient, a new piece of software with the ability to prevent these kinds of errors in the invoicing process would be necessary.

Automation

The respondents also wanted more automation in the invoice handling process to reduce the amount of manual work. As part of his thesis, Neuvonen highlighted invoice matching as one area where automation could save on manual labor (Neuvonen 2015 p. 43), and with the solutions considered for the importing process, it is possible to at least decrease the amount of manual input required for that part of the invoice handling process.

5.1.2 Travel invoices

The number of responses received for the survey and the comments received for the open questions suggest that the process of filing travel invoices is something on which frequent travelers seem to have opinions. This is supported by Tolonen's statement in their thesis that improving the process of filing travel invoices would especially benefit the most frequent travelers (Tolonen 2015 p. 28). With Vexve Oy's current system, there is still plenty of manual labor involved with filing the claims, and automatizing the receipt-keeping part of the process would help travelers both keep track of their expense claims and reduce the amount of time spent on filing travel invoices. Precedent for this can be seen in Tolonen's thesis, where they conclude that moving to an entirely digital travel invoice process would be ideal, and using a mobile app to store receipts is one way to move towards this (Tolonen 2015 p. 32).

Adoption

The first requirement for using the smart receipt service is having the Eurocard app installed on the employee's phone (all the surveyed employees have company phones), and according to the survey data, only two persons did not have the app installed on their phone, and since one of them described having used the smart receipt service in the open questions, the response to the question about the app can be dismissed, meaning that only one person did not have the app installed.

The results regarding app installation mean the lack of one obstacle that could have prevented the adoption of the smart receipt service. The survey was conducted after the smart receipt service had been in use for under a month, and one response to Question 8 even suggested that it be redone once there is more data. Nevertheless, the survey results, even though they were gathered after a relatively short period, show that travelers had already started using the service: almost half of the respondents mentioned having used the service, even if some of them were unclear on what the service entails (a point that will be discussed in the next section).

Awareness

The survey results leave unclear the question of whether the respondents are truly aware of what the smart receipt system is and what can be done with it. An informational e-mail was sent out to Eurocard holders after the service had been activated, and almost every respondent said they had heard of the service, so it could be assumed that the respondents have at least basic awareness of the service. In addition, around half of the respondents answered that they had used the service. However, even if the basic awareness is there, the survey results also show that more awareness needs to be raised on the specifics of the service. One answer for Question 8 asked for more training on how to use the service, which is a fair point considering how short the gap between activating the service and sending out the survey was. There was not enough time to brief employees beyond sending them a simple e-mail.

The respondents also seemed to be unaware of what constitutes usage of the service: one ambivalent and one positive response to Question 7 both questioned whether taking pictures of receipts with their phone cameras was considered using it. This suggests that the respondents were not informed well enough of the possibility to both use the camera to take a picture of a receipt and to receive the receipts automatically.

Practical use

Around half of the respondents answered that they had used the smart receipt service, but only one of them in their answer to Question 7 inferred that they had been able to receive a receipt automatically through the Eurocard app, and several of the respondents were unaware of the possibility. One reason for this is that Eurocard does not provide reference material that shows the app being used to automatically receive a receipt: only taking a photo of the receipt is shown in a short video. In addition, there is no easy to access list of all the vendors that offer automatic receipts. Better communication from Eurocard would help with adoption of the service.

Despite these shortcomings, the respondents who had used the smart receipt service had mostly positive comments as well as some that were either ambivalent about the service or had no comments at all. The comments that were coded as negative mostly contained suggestions on how to improve either the service or its awareness. All these comments about the practical use of the service suggest that, despite the short timeframe in which the data was

collected, the employees who use the service are mostly happy with its execution, with most complaints being made about the lack of instruction rather than the service itself. One drawback to the service, which was not explicitly brought up by the respondents, is the relatively small number of vendors who support fully digital receipts.

5.2 Discussion of methods

The selected method for data gathering, two semi-structured surveys, worked well in gathering what was needed for this study. The response rates of 42.9% for the purchase invoice survey and 32.6% for the travel invoice survey mean the respondents were active and there was no shortage of data to analyze.

For the purchase invoice part of the thesis, the survey method worked well, but interviews could have been considered a valid alternative. Due to time constraints, a survey was conducted instead, and the responses were still informative. The questions were also suitably crafted to get the necessary data from the respondents, and they answered the questions in a way that allowed for discussing the implications.

For the travel invoice part, a survey was the only realistic method considering the number of potential respondents. The questions were again successful at getting data out of the respondents, and the answers gave grounds for discussion. Overall, the method for both parts of the study turned out to be well chosen to facilitate analysis.

The main question regarding the study's reliability was the number of respondents for both surveys, especially for the purchase invoice part, since the sample size was much smaller than for the travel invoice survey. However, percentage wise both surveys got a decent amount of participation, and it could be argued that for the purchase invoice survey, the respondents were the most important people involved in the process. Since most of the respondents for the travel invoice survey were residents of Finland and no responses were received for the English version of the survey, there could be a potential bias in the results, especially considering the availability of digital receipts outside of Finland.

6 CONCLUSIONS

This study had two aims: to figure out on behalf of Vexve Oy which solution would be the best for improving the purchase invoicing process and whether implementing smart receipts would improve the travel invoice handling process. After the two surveys were conducted, there was enough data to draw conclusions on these two topics.

6.1 Purchase invoices

The choice for the new invoice importing system was between an updated version of the currently used system Cloudscan and a new kind of software called SmartPDF, promising more advanced features when importing invoices and an algorithm with better learning capabilities. A survey was sent out to Vexve Oy's finance department inquiring about their experiences in working with purchase invoices and whether they think changes should be made to the process, with the goal of determining which solution should be implemented.

The survey results for this thesis were that the respondents were almost unanimous in wanting more automation in the invoice handling process and based on their responses, importing invoices via Cloudscan is an outdated method. Even if the current version was replaced with a newer, more advanced Cloudscan, the potential benefits from moving over to a system with less input required from the users and with more long-term support from Basware would in favor of moving to the SmartPDF platform.

6.2 Travel invoices

The purpose of the study regarding travel invoices was to find out if enabling travelers to either automatically receive receipts or to take pictures of them would make the process more convenient. Vexve Oy's company credit card provider Eurocard provided a service that allowed cardholders access to those features, and the decision was made to implement it.

After implementation, the cardholders were first informed of the smart receipt service and a few weeks later, a survey was conducted to determine whether the new features were being used and if the users found them beneficial. Based on the survey results, around half of the respondents had already used the service, and most of the users had positive feedback focused on the time benefit and convenience of not having to keep paper receipts for purchases. On the other hand, the drawbacks were the lackluster instructions from Eurocard, the small number of vendors offering fully digital receipts, and the difficulty of finding out if a vendor does offer automatic receipts.

Overall, the smart receipt service can be considered beneficial for travelers based on the feedback received during the study. While there were some issues with the service, some of these can be considered teething problems that arise when implementing a new feature, especially considering the service was only in operation for a few weeks before the survey was conducted. It can be concluded that implementing smart receipts is beneficial for moving towards a fully digital travel invoice handling process.

6.3 Limitations of the study

As discussed in Section 1.4., the study was only conducted in one company, and results can potentially vary if the solutions are implemented in another company. The study was also conducted under strict time constraints, and the results may have been different or more varied if there had been the time and means to do a quantitative analysis as well as a qualitative one on the chosen solutions.

One limitation regarding the travel invoice part of the study was that most of the respondents lived in Finland, so there was less data on how the service works in other countries. For the purchase invoice processing study, no data was available on how the two possible future

solutions (Cloudscan 3.0 and SmartPDF) would perform in practice, and so the study was based on purely qualitative data from the people who work with purchase invoices.

6.4 Suggestions for further studies

Since this study was qualitative, one suggestion for a quantitative study would be to test and benchmark different solutions for handling purchase invoices compared to an older piece of software, manual handling or even against each other. This would require a lot of time, planning and effort, but it could be another step in researching how to reduce manual effort and the time spent on handling invoices. Another suggestion would be to combine this with a qualitative study to find out if the implemented solutions reduced the invoice handling workload.

For travel invoices, there has not been a lot of research done in the past, especially in a Finnish context, and with the smart receipt service being fairly new, there are unexplored possibilities. A similar study could be conducted at a larger company with more international employees to see if the results change with the introduction of more variables, since this study was mostly focused on Finnish employees. Another possibility would be to investigate other possibilities related to travel invoices, such as benchmarking different travel expense management software, to further smooth out the handling process.

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Appendices

APPENDIX 1. PURCHASE INVOICE PROCESSING SURVEY

Questions

Miten usein olet tekemisissä ostolaskujen kanssa? -Päivittäin -Viikoittain -Kuukausittain - Harvemmin

Koetko, että ostolaskujen lukuprosessiin tulisi tehdä päivitys tai muutos?

Miten usein olet huomannut virheitä ostolaskujen tuonnissa InvoiceReadyyn? Minkälaisia?

Onko sinulla muita kommentteja tai ehdotuksia ostolaskujen käsittelyn suhteen?

APPENDIX 2. SMART RECEIPTS SURVEY
Finnish version

Questions

Ikä: -18-25 -26-30 -31-35 -36-40 -41-45 -46-50 -Yli 50

Asuinmaa: -Suomi -Muu kuin Suomi

Kuinka usein täytät matkalaskuja? -Päivittäin -Viikoittain -Kuukausittain -Harvemmin

Oletko ladannut puhelimeesi Eurocard-sovelluksen? -Kyllä -En

Oletko tietoinen uudesta älykuittipalvelusta? -Kyllä -En

Oletko käyttänyt älykuittipalvelua? -Kyllä -En

Jos olet käyttänyt älykuittipalvelua, koetko sen olleen hyödyllinen matkalaskujen täyttämisessä ja millä tavalla? Mitä voisi vielä parantaa?

Muita kommentteja tai ehdotuksia älykuittipalveluun tai matkalaskuihin liittyen?

English version

Questions

Age: -18-25 -26-30 -31-35 -36-40 -41-45 -46-50 -Over 50

Country of residence: -Finland -Other

How often do you file travel invoices? -Daily -Weekly -Monthly -Less than monthly

Have you downloaded the Eurocard app? -Yes -No

Are you aware of the new smart receipts service? -Yes -No

Have you used it? -Yes -No

Have you felt like the smart receipts service has helped you file travel invoices?

Any other comments or suggestions regarding travel invoices?

Thank you for answering this survey. Your input is valuable in improving our company's processes.