



ERASMUS +



UNIVERSITY OF WARSAW

EMREX

Final Evaluation Report

Tomasz Zając

2017-12-10

EMREX project is co-funded by the Erasmus+ Programme of the European Union under the grant 388499-EPP-1-2014-2-FI-EPPKA3-PI-POLICY. The University of Warsaw is also co-financed by the Polish Ministry of Science and Higher Education from the funds allocated in the years 2016-2017 for science, granted to international co-financed project.



Table of Contents

1. Introduction	4
2. Methodology.....	5
2.1. Analysis of EMREX logs (by Janina Mincer-Daszekiewicz and Anna Olczak).....	5
2.2. EMREX user experience survey (short survey).....	6
Survey tool	6
Sample.....	6
2.3. Qualitative study	7
2.4. Administrative data analysis	8
Data sources.....	10
2.5. Exchange student survey (long survey).....	12
Dissemination.....	12
Number of respondents.....	13
Sample composition.....	13
Questionnaire.....	15
Measuring the impact of EMREX	15
Evaluation of recognition facilitating tools	16
Changes in methodology.....	16
3. Results	17
3.1. Analysis of EMREX logs (by Janina Mincer-Daszekiewicz and Anna Olczak).....	17
3.2. EMREX user experience survey (short survey).....	19
3.3. Qualitative study	22
Background	22
Organisation of student mobility	24
Experience with EMREX or other similar solutions.....	26
The evaluation of EMREX.....	27
Impact on administrative workflow and workload.....	31
Impact on student behaviour.....	32
Feature requests / ideal system.....	33
Summary	38
3.4. Administrative data	39
Denmark.....	39
Finland.....	41

Italy.....	42
Norway.....	42
Sweden.....	44
Summary.....	45
3.5. Exchange student survey (long survey).....	45
Recognition process.....	45
Evaluation of the recognition process.....	47
Perception of EMREX.....	49
The impact of electronic systems on student behaviour and opinion.....	50
Summary.....	52
4. Conclusions.....	53
5. Appendix A — short survey.....	55
5.1. Survey Tool for the EMREX field trial (by Łukasz Karniewski).....	55
5.2. Short survey – invitation, questionnaire and imported variables.....	56
Invitation.....	56
Questionnaire.....	56
Imported variables.....	57
6. Appendix B — qualitative study.....	58
6.1. Interview request.....	58
6.2. Interview scenario.....	58
Introduction.....	58
Recognition process.....	59
Opinions on the electronic systems for achievement recognition.....	59
Evaluation of EMREX.....	60
Implementation of EMREX.....	60
Student behaviour.....	60
Ideal system for recognition.....	61
7. Appendix C — the list of variables in the administrative data.....	62
8. Appendix D – long survey.....	63
8.1. Questionnaire for mobile students.....	63
8.2. Cover letter to HEIs.....	69
8.3. Invitation for students.....	69

1. Introduction

EMREX is a proven solution for electronic transfer of student records between higher education institutions in Europe. Its objective is to increase availability, quality and reliability of information about student records of achievement and thus to make the administration of student mobility easier.

The aim of the field trial was to test the tool and its impact on student mobility in five countries: Denmark, Finland, Italy, Norway and Sweden. Poland was not part of the field trial but implemented the solution and joined the EMREX network. Some data coming from Polish users are also analysed in the report. The evaluation of the trial consists of five studies:

1. An analysis of logs coming from National Contact Points (NCPs) and Student Mobility Plug-ins (SMPs) which provided information on the **usage** of EMREX.
2. A survey for EMREX users (aka **short survey**) which aim was to evaluate the tool used for transfer of academic records.
3. A **qualitative study** – in-depth interviews with administrative personnel during which respondents discussed such topics as: their perception of the electronic system for achievement recognition, the realised and potential impact of the system on the process of academic achievements recognition, administrative workflow and workload, as well as on students' behaviour. Moreover, the interview covered the evaluation of EMREX's implementation, communication by the consortium and some technical issues.
4. An analysis of **administrative data** on student mobility which assessed if EMREX implementation affected students' participation in exchange programmes.
5. A survey for exchange students (aka **long survey**) which was focused on the respondents' opinion on the recognition process in general. The main goal of the survey was to track changes in students' assessment of the recognition process after the implementation of EMREX.

This report summarises the results of all five studies¹ and provides a comprehensive evaluation of the EMREX field trial. It is structured as follows. The next section explains the methodology of each of the five studies. Following is the description of the results. Section on the studies focusing on the tool i.e. the analysis of logs, the user experience study and qualitative study of universities' administration staff comes first. Then the analysis of administrative records is presented. The survey for exchange students is presented at the end.

¹ This is the final evaluation report but it is not the only report based on these data. Mid-term reports based on partial data were published in the course of the field trial.

2. Methodology

This section presents the research methodology of EMREX evaluation. It is divided into five subsections, each describing one of the studies. They discuss data collection, samples or populations, research techniques, and analytical approaches.

2.1. Analysis of EMREX logs (by Janina Mincer-Daszekiewicz and Anna Olczak)

Both the National Contact Point (NCP) and the Student Mobility Plug-in (SMP) in each of the countries log the activity of users. The structure of the NCP logs was standardised (but still varied a little between the countries due to legal requirements), format of the SMP logs was more open (data had to be anonymised before being delivered for statistical purposes). The following information was collected:

In the NCP logs:

- 1) ID of the session.
- 2) Date and time of the session (when the application got the request from SMP, before logging in).
- 3) Duration of the session (number of minutes spent in NCP).
- 4) SMP which contacted NCP.
- 5) Country of NCP.
- 6) HEI from which data were fetched to NCP.
- 7) Number of courses imported from HEI to NCP.
- 8) Number of ECTS imported from HEI to NCP.
- 9) Number of courses exported from NCP to SMP.
- 10) Number of ECTS exported from NCP to SMP.
- 11) Was the export successful?

In the SMP logs:

- 1) Id of the session
- 2) Date and time of the session.
- 3) Duration of the session.
- 4) NCP from which data were imported.
- 5) Was the export successful?

The collected data were cleaned of any records of test runs of the system, any visible duplicates (students exporting results a couple of times in a row, during the same session etc.). After that the datasets contained records on 462 NCP sessions and 374 SMP sessions. Then the data were used to count of the number of students importing their data with EMREX.

2.2. EMREX user experience survey (short survey)

Survey tool

The data were collected with 'Ankieter', a web survey software developed and hosted by the University of Warsaw. The process of tool selection is summarised in Appendix 5.1. The same web application was used in the case of the study of exchange students' opinion on the recognition process. The survey has been built into the EMREX tool. Every exchange student who used EMREX to transfer academic records was asked to take part in the survey after he or she finished the transfer. If the student agreed to participate in the research, he or she was transferred to the survey's webpage.

The link used in the invitation to the survey was generated individually for each user and carried basic information on the performed transfer of records. The transferred data included the IDs of the host and home institutions, the countries of the institutions, time spent on the tool's webpage, and the number of ECTS credits as well as the number of grades transferred.

The questionnaire was very short in order to reduce participant fatigue and maximise the response rate. Respondents first answered seven agree/disagree questions concerning their experience with the tool and a general opinion on it. Then they could add a comment in an open question. The questionnaire as well as the message inviting to take part in the study can be found in Appendix 5.2.

Sample

The first respondents participated in the research in March 2016. Data collection ended on 30 September 2017. The response rate was high for an online survey. 175 EMREX users took part in the survey, which constitutes almost half of all users. The number of respondents peaked during the last 4 months of the study.

Table 2.2.1 Number of respondents

Month	Number of respondents	Percent of respondents
Mar-16	4	2.2
Apr-16	4	2.2
May-16	1	0.6
Jun-16	10	5.6
Jul-16	3	1.7
Aug-16	10	5.6
Sep-16	5	2.8
Oct-16	4	2.2
Dec-16	5	2.8
Jan-17	22	12.3
Feb-17	9	5
Mar-17	3	1.7
Apr-17	5	2.8
May-17	5	2.8
Jun-17	22	12.3
Jul-17	30	16.8

Aug-17	14	7.8
Sep-17	19	10.6
Total	175	100

Norwegian students make up nearly half of the sample. Finnish students constitute the second largest group. Additionally, there are 25 students from Poland (which deployed EMREX at selected institutions), and 19 from Swedish institutions. There have been no Danish or Italian participants so far. The reason for that is that Denmark has not implemented the Student Mobility Plug-in so Danish students could not use the tool and participate in the survey. Over 60% of the respondents used the tool to import their records from Swedish institutions. Polish respondents used the system mostly to import records from other Polish institutions.

Table 2.2.2 Home and host countries

Home institution country	Host institution country						Total
	Denmark	Finland	Italy	Norway	Poland	Sweden	
Finland	0	0	0	9	3	37	49
Norway	19	0	2	0	1	60	82
Poland	1	0	0	1	20	3	25
Sweden	3	1	2	6	0	7	19
Total	23	1	4	16	24	107	175

2.3. Qualitative study

In the qualitative study, an in-depth interview was the research technique. The interview was semi structured and the topics for discussion were as follows:

- 1) the introductory questions about the student mobility at interviewee's institution and interviewee's role in the student mobility,
- 2) the recognition process,
- 3) the opinion on electronic systems for achievement recognition and the evaluation of EMREX and its implementation,
- 4) the opinion on the impact of EMREX on student behaviour.

The complete scenario, including complementary questions, is available in Appendix 6. The interviews lasted between 32 and 85 minutes (on average 54 minutes).

In total, there were 17 interviews at 16 institutions. Mostly these were individual interviews, but occasionally there were two people taking part in the conversation. Therefore, the total number of interviewees is 21. More detailed information on sample composition is presented in Table 2.3.1.

Table 2.3.1 Number of interviews, institutions and interviewees

Country	Number of institutions	Number of interviewees	Number of interviews
Denmark	3	3	3
Finland	4	6	4
Italy	1	2	1
Norway	3	4	3
Sweden	5	6	6
Total	16	21	17

The study was based on a purposive sample of administrative employees who have been engaged with student mobility and achievement recognition. The research sample comprises university employees who were responsible either for facilitating student mobility or student management systems at their institutions. Some worked in central administration while others were employed by departments or other units. Respondents differed also in terms of their engagement with students. Some had more coordinating or overseeing roles and had rather little contact with students whereas others were directly involved in helping students at different stages of mobility (with applications, the pre-approval of courses, study plans or learning agreements, recognition process etc.). Moreover, the sample reflects the diversity of HEIs in partner countries. The interviewees represent institutions of various sizes and types (e.g. universities, universities of applied sciences, business schools and medical academies).

The above described study was not the only qualitative research in the project. It was preceded by the initial qualitative study conducted between April and October 2015. Eleven members of administrative personnel from the partner countries were interviewed. The main objective of the research was to identify the potential barriers for introduction of EMREX and to investigate respondents' expectations towards EMREX (and, potentially, any other solution for automatic academic achievement recognition) before the beginning of the actual field trial. Some of the results of the pre-trial study are used in this report.

2.4. Administrative data analysis

EMREX aim was to improve the recognition process and by doing that to increase student participation in exchange programmes. The original research design included analysis of changes in the number of recognised grades or ECTS credits and if possible the recognition rates i.e. the share of recognised grades or ECTS credits as well as the monitoring of changes in the number of exchange students at both target and control group higher education institutions. However, in the course of the trial, the methodology had to be revised and simplified due to unforeseen complications.

First, the random assignment to the treatment and control group was not implemented. This step was taken in order to maximise the number of potential users. Ditching the random assignment let the project team to recruit more HEIs to offer the tool to students (participation in the trial was not mandatory for institutions).

Second, the set of indicators had to be adjusted because of data quality issues. By and large, administrative data are the best possible source of information for this type of research. Relying on administrative data allows to cover the entire population and greatly reduces the cost of such an endeavour, but it also limits the analysis to the kinds of information collected by the administration (Jasiński, Bożykowski, Zajęc, Styczeń, & Izdebski, 2015; United Nations Economic Commission for Europe, 2007; Wallgren & Wallgren, 2007).

Partners were responsible for providing the evaluation team with administrative data on student mobility in their countries. This allowed gathering the most complete data on student mobility in the quickest possible time. An important downside of this approach is that the standards of reporting vary from country to country and affect the comparability of the absolute numbers of students between countries. However, the data suffice to monitor changes in the mobility rate or the proportion of students going to a given country within a country or a HEI.

Originally data were to be exported separately for every semester. Unfortunately, that was impossible to achieve. The varying definition of semester (different starting and ending dates in various countries) was one problem. However, data availability was even more important issue. On the one hand, in countries collecting aggregated data from HEIs a typical reporting period is a calendar year or an academic year. Forcing HEIs to submit data twice a year would be a serious institutional change. On the other hand, in countries with centralised databases, universities fail to register all data regularly. Data quality improves dramatically before the scheduled exports for reporting purposes. Therefore, the analysis uses data for years (calendar or academic depending on the country) not semesters. The inflexibility of reporting systems has one more adverse consequence, namely different reporting periods. Some countries, including Denmark, collect statistics for academic years while others do so for calendar years.

Delays in data processing proved to be a serious challenge. It may take several months after the end of a semester or a year before official statistics are available. Even in countries where the export of the data was done directly from central databases reliable data for 2017 were not available. Institutions fail to keep their records up to date. Therefore, mobility data on 2017, the year with the highest number of EMREX users, could not be included in the analysis. However, it should be noted that the project was extended and data collection in 2017 was not a part of the original research design.

The number of recognised grades or ECTS credits (not even mentioning the recognition rates) proved to be even more problematic. The advantage of centralised data collection systems is their standardisation but they are often inflexible and lack more detailed data. The number of recognised grades needed to evaluate the impact on the recognition process is but one example of such information. The only solution would be to use data collected by universities which tend to have more detailed information (Norway is an exception because it runs a centralised database for all public institutions in the country). This solution was not organisationally viable in Sweden and Denmark. In Norway, Finland, and Italy the exported data on the recognised achievements did not seem reliable enough to be analysed. The differences in organisation of the recognition process between institutions or even between departments within an institution (mentioned in the qualitative study) may be to blame. Apparently without a centralised and standardised approach to such a complicated matter as recognition the records will not be useful for evaluation purposes.

After all the changes, the evaluation design looks as follows. The basic assumption is that the perspective of improved recognition process may affect student's willingness to study in countries offering the solution and translate into a greater participation in exchanges with the countries offering EMREX. The analysis monitors changes in both outbound and inbound mobility. If the impact of EMREX is independent of any other policy affecting student mobility that was implemented at the same time, the number of students going to or coming from one of the countries participating in the trial should rise faster or fall slower than the number of students going to or coming from the other countries. Therefore, this study focuses on the changes in the share of outgoing exchange students choosing to go to one of the trial countries and the share of incoming exchange students coming from trial countries. It compares the share of students going to EMREX countries or coming from such countries in the year when the tool was implemented and in the year preceding it. Focussing on the share of incoming or outgoing students has two advantages. First, it takes into account a possible variation in the number of students at an institution. Second, it should not be affected by a general rise or fall in student mobility.

EMREX promised easy transfers between three countries: Finland, Norway, Sweden, and selected institutions in Denmark and Italy. But EMREX's delayed roll-out in Denmark and limited implementation in Italy mean that during larger part of the field trial the system was operational only in Finland, Norway, and Sweden. That is why the share of exchange students coming from or going to EMREX offering countries was calculated twice: for all EMREX countries and only for the three countries that had fully implemented the tool.

The analysis has two levels: national and institutional (HEI). In the case of single HEIs not all results are presented as some institutions have the number of exchange students so small that even a minor change in student choices could significantly affect the indicators. In the case of outbound mobility only institutions with over 100 outgoing students in both measurements are included in the tables. Analogically, in the case of inbound mobility only institutions with over 100 incoming students in both measurements appear in the tables.

Data sources

There is no centralised register of all exchange students in Europe. Apart from Erasmus+ exchange programme institutions establish bilateral agreements for student exchanges as well as accept freemovers. Moreover, in student mobility between Nordic countries the Nordplus programme plays a significant role. Therefore, the partners were asked to provide data on student mobility in their countries. They were provided with a list of variables (see Appendix 7). The delivered datasets come from different types of sources and were collected with different methodologies.

An important downside of the lack of a centralised data collection system is that the collected data are not directly comparable between countries. However, a comparative analysis of any trends in student mobility is still feasible.

The first data exports were conducted in 2016. The aim was to establish a protocol for data exports and evaluate the reliability of the exported data. All data used in the study were delivered to the evaluation team between April and September 2017.

Denmark

Data on student mobility in Denmark came from the Danish Ministry of Higher Education and Science. Danish data are collected for academic years. This study analyses the latest available records i.e. on 2014/2015 and 2015/2016. The statistics contain not only information on academic mobility but also practical work placements abroad that are part of studies which EMREX does not affect. The data are somewhat imprecise in the case of small number of students. Due to privacy protection regulations, every time the number of students in a given cell is smaller than 3 it is replaced by an asterisk. In course of the analysis all the asterisks were replaced by the value of 1.5. This is a small inaccuracy that should not affect overall results.

Finland

In the case of Finland, data come from the Vipunen portal – the education administration’s reporting portal. Statistics published in the portal are based on data and registers collected by the Statistics Finland, the Ministry of Culture and Education and the Finish National Agency for Education. The methodology of student mobility data collection changed between 2015 and 2016. In 2015 (and earlier) the statistics on student exchanges were reported by HEIs in aggregated form to the Agency. Since 2016 individual level data were fetched directly from the VIRT system. The VIRT system is a higher education achievement register run by the CSC – IT Center for Science on behalf of the Ministry of Education and Culture. The system collects data on educational achievements including participation in student exchange programmes delivered by almost all higher education institutions in the country. Data on the number of exchange students were exported 2016, and the first half of 2017. However, the data on 2017 were exported before the reporting deadline for HEIs and seemed incomplete. They were judged not trustworthy and were not included in the study. Unfortunately, it was not possible to use VIRT system to export data for 2015 as they were incomplete.

Italy

In the case of Italy, the trial was limited to a small share of institutions and there were no attempts to collect data from all institutions (there is no national register of educational achievements). The data were exported directly from the registers of institutions participating in the trial but only data from the University of Siena were used in the study. The other institution was excluded from the analysis due to an insufficient number of observations. Available data cover 2015 and 2016, and the first half of 2017, but as it was the case with Finland the data for 2017 seemed not yet complete.

Norway

Norwegian data were exported from the Common Student System (Felles studentsystem FS). This is a centralised administrative system utilised by Norwegian higher education institutions. Data cover years 2015, 2016, and the beginning of 2017. The 2017 data were not included in the study after all as they were not really comparable with the earlier data.

Sweden

In the case of Sweden, the data on student mobility were initially to come from the Swedish Higher Education Authority (UKÄ) which prepares the official reports on exchange students. However, UKÄ compiles reports for academic years what means that the latest available data by the end of the field

trial would be for 2015/16. Because of that the Mobility Tool served as a data source instead of UKÄ reports. The Mobility Tool is more flexible and allows exporting data for periods from January to December instead of academic years. The data cover years 2015 and 2016. This means that a longer time period after the implementation of EMREX can be observed. The downside of using the Mobility Tool records is that they focus solely on the Erasmus+ programme and do not contain information on the other types of exchange students.

2.5. Exchange student survey (long survey)

Dissemination

The data were collected with 'Ankieter', a web survey software developed and hosted by the University of Warsaw. In order to broaden the access to the survey and maximise the number of respondents there were no restrictions on who could take part in the study i.e. everyone with the link could do it. The link was published on the project's website (emrex.eu). More importantly, it was also published on the websites of organisations involved in the dissemination of the survey, including universities and national agencies. Moreover, the survey was promoted with e-mails sent to students during the times of peak arrivals to home institutions. The details of dissemination varied from country to country to adjust to the local institutional arrangements.

Denmark

The Ministry of Higher Education and Science distributed the information about the survey to all Erasmus+ Coordinators at the Danish universities. They were asked to publish information about the survey on their websites and send the invitation via e-mail to all students participating in exchange programmes.

Finland

The survey was distributed through IROs (through the networks of international affairs), CIMO (the Finnish National Agency for Education), as well as ESN Finland. CIMO used its mailing lists to IROs and its position as a national agency to urge all HEIs to contact their exchange students. ESN Finland promoted the survey through social media.

Italy

In Italy, the survey was distributed through IROs at the institutions using CINECA's Mobility Module. The IRO's were urged to disseminate the survey during meetings and webinars.

Norway

In Norway three channels were chosen for the dissemination of the survey:

- 1) The institutional websites for exchange students with information and link to the survey.
- 2) Direct contact (e-mail) from FSAT. This applies to students that have been in contact with FSAT while using EMREX.
- 3) The Norwegian Centre for International Cooperation in Education (SIU).

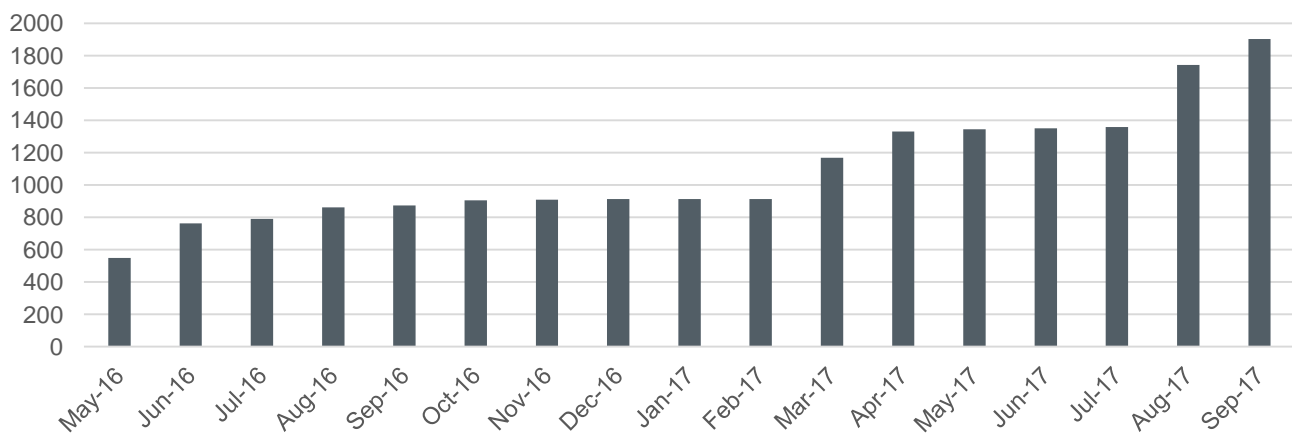
Sweden

All Swedish HEIs were encouraged to promote the survey among their students via their websites and social media as well as mailing lists. The administrative personnel was informed about the survey and asked for their support on multiple occasions, e.g. during gatherings like the NUA meeting in Stockholm or the Yearly Swedish Erasmus meeting. Additionally, UHR (Swedish Council for Higher Education) helped with distribution, through their networks of international coordinators.

Number of respondents

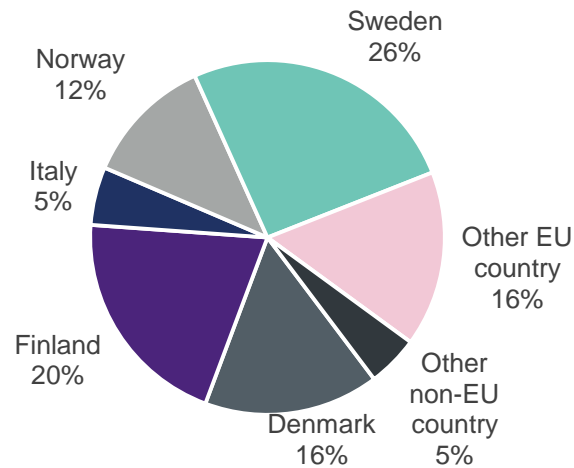
The highest increases in the number of respondents took place in the Spring 2016, Spring 2017 and Fall 2017. Figure 1 illustrates the growth of the number of respondents over time. By the end of the data collection 1929 respondents filled in the questionnaire. The data were then cleaned and 25 cases were excluded due to the large number of missing data. The final analytical dataset consisted of 1904 observations.

Figure 1 Overall number of respondents in consecutive months

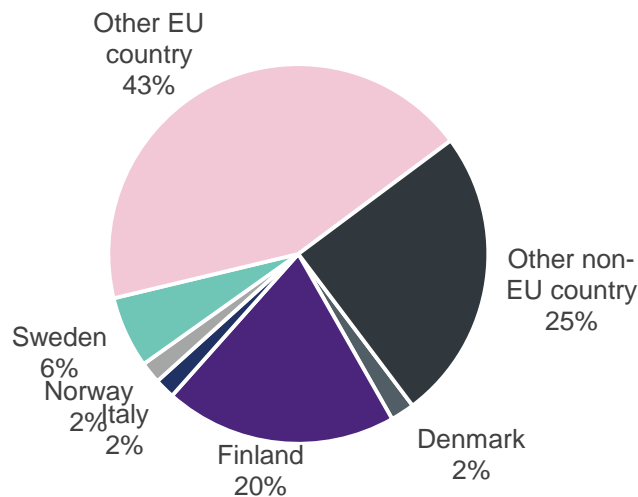


Sample composition

As it was already mentioned, the survey was disseminated to exchange students in the countries taking part in the field trial. Unsurprisingly students from these countries make up a vast majority of respondents – nearly 80% of the sample. Swedish students were most numerous. 25% of the sample came from Sweden. Further 20% came from Finland. The number of Italian participants was relatively small i.e. about 5% of the sample.

Figure 2 Respondents by home country

Field trial countries were the exchange destination for nearly one third of respondents. The rest went mostly to other EU countries. Out of all countries participating in the field trial Finland was most often the host country.

Figure 3 Respondents by host country

Other characteristics of respondents include the timing of the mobility, the mobility programme as well as the level of studies. Students enrolled in the first-cycle programmes are the dominant group constituting nearly two thirds of all participants. *Erasmus+* was by far the most popular exchange programme. 68% of respondents took part in it. The second most common arrangement was a bilateral agreement between the home and host university (22% of respondents). Most of the respondents spent abroad from three to six months. They typically finished their exchange between 2015 and 2017: 32% in 2017, 28% in 2016, and 26% in 2015.

Questionnaire

The questionnaire consisted of five blocks of questions or modules (see Appendix 8). The first module comprised questions identifying the home and host institutions of respondents and their countries and questions regarding the detail of the exchange, including the starting and ending date (month and year), exchange programme as well as basic information on respondents' academic programmes. The second block consisted of questions on organisation of the process of academic records recognition at a respondent's home institution. In the next section of the questionnaire respondents were asked what the process looked like in their case. The evaluation of the recognition process was the topic of the fourth section. In the final section EMREX and other electronic solutions for improving the recognition process were assessed.

Measuring the impact of EMREX

The main goal of the research was to evaluate the impact of the implemented policy on student behaviour and opinion on mobility. This study adopts difference in differences approach to estimate the treatment effect. The technique requires at least two measurements, one before the treatment and one after the treatment, for both the treatment and control groups. The before and after measurements are compared for each of the groups to establish the magnitude of change over time. Then these differences are compared. Any difference in these differences is interpreted as a treatment effect. The underlying assumption is that without the treatment the same trend should be observed for both groups (parallel trend assumption).

The compared groups are:

1. students who went from a field trial institution (all institutions in Finland, Norway, and Sweden) to a field trial institution (all institutions in Finland, Norway, and Sweden as well as selected institutions in Denmark and Italy) who constitute the treatment group;
2. other students i.e. those who either came from a non-field-trial institution or went to a non-field-trial institution who are the control group.

The research design includes two measurements: "before" and "after". The exposure to EMREX at the time of return is the treatment in this study therefore the distinction between "before" and "after" is made according to the time of return to the home institution. The first life tests with real students and real data were conducted in March 2016 therefore it is assumed that students who returned from their exchange studies in the fall semester of 2016 are those who were potentially affected by the implemented policy.

In other words, in order to evaluate the effects of the experimentation the following steps were taken:

- 1) the calculation of the difference in the values of indicators between respondents coming from or going to a non-EMREX institution who returned before September 2016 and those who returned in September 2016 or later,

- 2) the calculation of the difference in the values of indicators between respondents coming from and going to an EMREX institution who returned before September 2016 and those who returned in September 2016 or later,
- 3) comparison of the differences.

The Table 2.5.1 presents the number of students in each of the four groups described above.

Table 2.5.1 Number of respondents by control or treatment group and before-after measurement

Group	Number of respondents
Control group – 1st measurement	1032
Control group – 2nd measurement	760
Treatment group – 1st measurement	62
Treatment group – 2nd measurement	50
Total	1904

Evaluation of recognition facilitating tools

The above-mentioned evaluation of the treatment effect is not the only analysis in the study. EMREX is not the only electronic tool making the recognition process easier, faster, and more student-friendly. That is why the evaluation of the treatment effect is supplemented with an analysis of differences in student opinion and behaviour between institutions offering new technological solutions and those who rely solely on paper documents.

Changes in methodology

This means that the study departed to some extent from the original design. Originally the aim was to compare opinion on mobility and behaviour of EMREX users, EMREX non-users at institutions which implemented EMREX, and students from other institutions. After all, this was not possible. One of the contributing factors could be the decision not to promote EMREX under its name among students. This was motivated by the fact that the recognition process was already complicated and introduction of yet another element could be confusing for students. From a student's perspective, the tool is a part of a university's infrastructure. However, this decision had consequences for the survey. Unsurprisingly, it resulted in rather low brand awareness among students. Only 13 respondents answered that EMREX is offered at their institution. There is a chance they are aware of the new opportunities created by the tool but are not aware of the tool's name. Another problem is that for unknown reasons very few EMREX users took part in this study. Many of them took part in the user experience survey. It was not desirable to invite users to take part in the study after the short user experience survey. The aim of the exchange student survey was to study opinion of the achievement recognition process, of which a transfer of records is just the beginning.

3. Results

3.1. Analysis of EMREX logs (by Janina Mincer-Daszkiwicz and Anna Olczak)

Table 3.1.1 and Table 3.1.2 show numbers of users collected in the NCP and SMP logs. In total, there were 462 sessions recorded in the NCPs and 374 in SMPs.

According to NCP logs nearly 50% of connections were made between the Swedish NCP and Norwegian SMPs. The next most common connections were between Swedish NCP and Swedish SMPs (52 connections), Swedish and Finnish SMP (50), and Danish NCP and Norwegian SMP (45). These four connections cover most of visits.

Quite unsurprisingly the list of most common connections according to SMP logs is similar to the one observed in the case of NCP logs. The most common are connections between Norwegian SMPs and Swedish NCP. Next are connections in which data were transferred inside Sweden, transfers from Sweden to Finland, and transfers from Denmark to Norway.

Table 3.1.1 NCP and SMP log count

NCP			SMP		
Home institution country	Host institution country	Count	Home institution country	Host institution country	Count
FI	DK	1			
FI	FI	1	FI	FI	1
FI	NO	14	FI	NO	13
FI	PL	2	FI	PL	2
FI	SE	50	FI	SE	50
IT	SE	6	IT	SE	0
NO	DK	45	NO	DK	44
NO	FI	0	NO	FI	2
NO	IT	4	NO	IT	4
NO	PL	1	NO	PL	1
NO	SE	227	NO	SE	143
PL	DK	1	PL	DK	1
PL	FI	2	PL	FI	0
PL	IT	1	PL	IT	1
PL	NO	1	PL	NO	1
PL	PL	29	PL	PL	24
PL	SE	4	PL	SE	4
SE	DK	2	SE	DK	4
SE	FI	1	SE	FI	1
SE	IT	0	SE	IT	2
SE	NO	17	SE	NO	12
SE	PL	1	SE	PL	1
SE	SE	52	SE	SE	63
Total		462	Total		374

The most popular NCP was in Sweden and the most popular SMPs in Norway.

Table 3.1.2 NCP log count grouped by host country and SMP log grouped by home country

NCP		
Home country	Host country	Count
FI	DK	1
PL	DK	1
NO	DK	45
SE	DK	2
		49
Home country	Host country	Count
FI	FI	1
PL	FI	2
SE	FI	1
		4
Home country	Host country	Count
NO	IT	4
PL	IT	1
		5
Home country	Host country	Count
FI	NO	14
PL	NO	1
SE	NO	17
		32
Home country	Host country	Count
FI	PL	2
NO	PL	1
PL	PL	29
SE	PL	1
		33
Home country	Host country	Count
FI	SE	50
IT	SE	6
NO	SE	227
PL	SE	4
SE	SE	52
		339

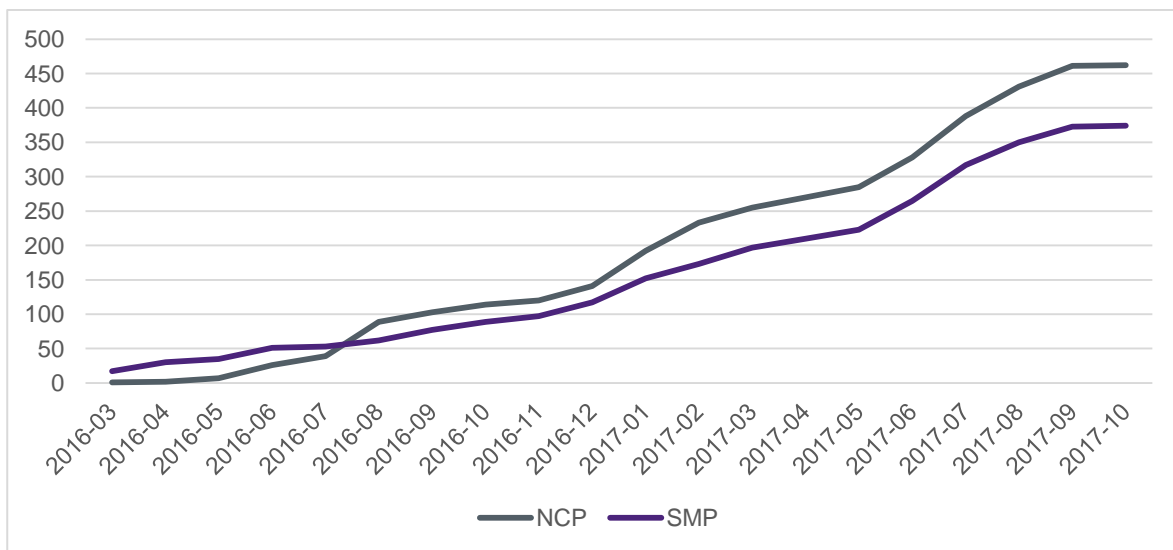
SMP		
Home country	Host country	Count
Home country	Host country	Count
FI	FI	1
FI	NO	13
FI	PL	2
FI	SE	50
		66
Home country	Host country	Count
Home country	Host country	Count
NO	DK	44
NO	FI	2
NO	IT	4
NO	PL	1
NO	SE	143
		194
Home country	Host country	Count
PL	DK	1
PL	IT	1
PL	NO	1
PL	PL	24
PL	SE	4
		31
Home country	Host country	Count
SE	DK	4
SE	NO	12
SE	SE	63
SE	FI	1
SE	IT	2
SE	PL	1
		83

The system administrators helped with cleaning the data, interpreting what might have happen at various stages of the EMREX procedure. A user can stop the session any time, for example can log in to SMP, be redirected to NCP, choose the courses to be imported and then, before the final confirmation, close the browser. Sweden started logging data at SMP at some later stage, so some visits are missing. This explains why the number of visits to NCP and SMP differs.

It should be noted that Poland was not part of the field trial but implemented both SMP and NCP as modules of the student management system which is used in more than 50 Polish HEIs. Seven of them deployed the EMREX solution between February 2017 and June 2017. The numbers of students using EMREX are thus shown also for Poland. As can be seen, in Poland EMREX was used mostly for internal mobility. Sweden is another country in which EMREX was also used to transfer data between institutions in the same country.

Figure 4 demonstrates the growth of the number of EMREX users over time. It has been growing steadily during the field trial. By the end of 2016 NCPs registered 141 sessions and SMPs recorded 117 sessions. This means that little over 30% of all recorded data transfers took place in 2016 and the rest happened in 2017. You may also note picks in August 2016, January-February 2017 and July-August 2017 – the end of semesters when mobile students return home.

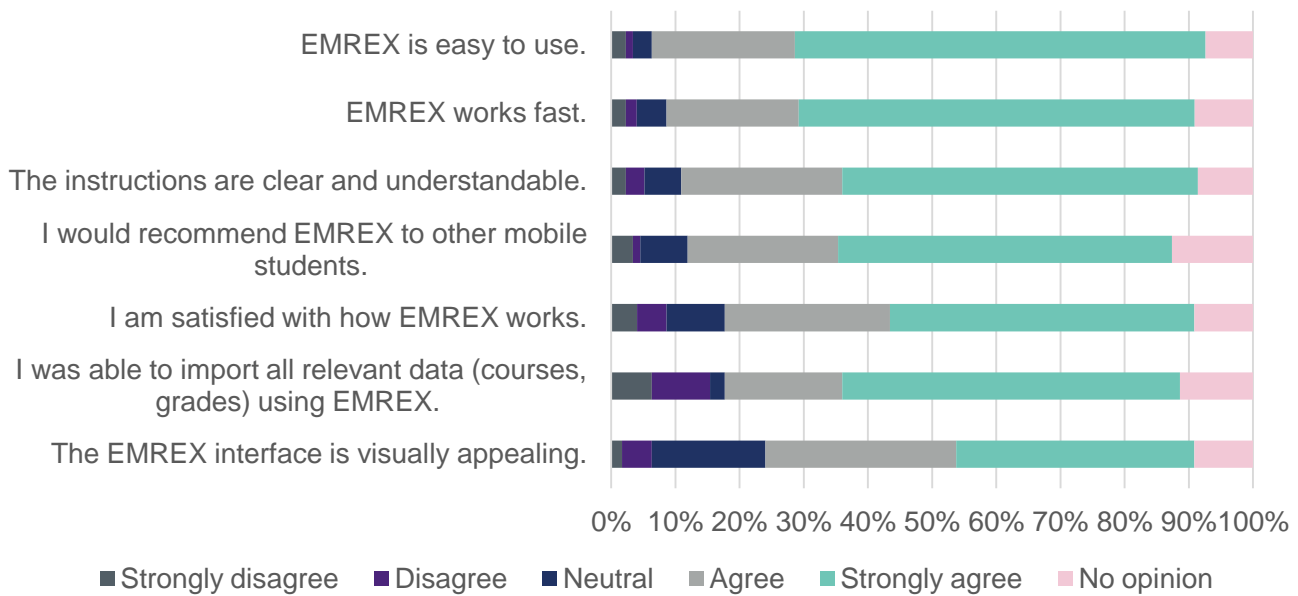
Figure 4 NCP and SMP cumulated log count



3.2. EMREX user experience survey (short survey)

By and large, respondents rate EMREX positively and are willing to recommend the tool to other students. For nearly every statement (see Figure 5), the share of the participants who have favourable views on EMREX is higher than 70%.

Figure 5 Evaluation of user experience (frequencies)



EMREX’s speed and the ease of use earned the biggest praises from the users. Nearly 65% of respondents strongly agreed with the statement that the tool was easy to use. Another 22% responded that they agree. The speed of EMREX got a similarly high rating. The clarity and intelligibility of instructions got visibly lower rating albeit still largely positive. Overall satisfaction measured the share of positive responses is the lowest in the case of EMREX’ visual appeal.

The system clearly does not work without hiccups. Respondents were most likely to disagree with the statement “I was able to import all relevant data (courses, grades) using EMREX”. More than 15% of them answered “disagree” or “strongly disagree” in the case of this statement. The comments in the open question confirm the occurrence of difficulties related to the process of import. Some respondents complained about grades missing from the system or the incompleteness of imported records. The evaluation of the ability to import all data was strongly correlated with the overall satisfaction with EMREX.

The students’ perception of EMREX is not correlated with the number of imported grades or the number of imported ECTS. However, the evaluations differ slightly between countries (see

Table 3.2.1 and Table 3.2.2). Students from Norway tend to evaluate EMREX higher than others. At the same time, students importing grades from Norway are the least satisfied, but still quite satisfied. However, given the small sample sizes, the results should be taken with a grain of salt.

Table 3.2.1 Evaluation of user experience (means) by home institution’s country

Home HEI’s country	EMREX is easy to use	The instructions are clear and understandable	EMREX works fast	I was able to import all relevant data using	The EMREX interface is visually appealing	I am satisfied with how EMREX works	I would recommend EMREX to other mobile

	EMREX												students	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
Finland	4.4	48	4.2	47	4.4	46	3.8	46	3.9	47	3.9	46	4.2	46
Norway	4.8	79	4.7	78	4.7	77	4.4	74	4.3	77	4.4	77	4.6	73
Poland	4.2	17	4.1	18	4.1	18	4.2	18	3.7	18	4.2	18	4.1	18
Sweden	4.3	18	4.2	17	4.3	18	3.9	17	3.9	17	4.1	18	4.2	16
Total	4.6	162	4.4	160	4.5	159	4.2	155	4.1	159	4.2	159	4.4	153

Table 3.2.2 Evaluation of user experience (means) by host institution's country*

Host HEI's country	EMREX is easy to use		The instructions are clear and understandable		EMREX works fast		I was able to import all relevant data using EMREX		The EMREX interface is visually appealing		I am satisfied with how EMREX works		I would recommend EMREX to other mobile students	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
Denmark	4.9	22	4.9	22	4.8	22	4.5	21	4.4	22	4.5	21	4.6	21
Norway	4.0	15	4.1	14	4.2	14	3.9	14	3.8	15	3.9	14	4.0	14
Poland	4.4	15	4.3	16	4.1	15	4.3	16	3.7	16	4.3	16	4.3	16
Sweden	4.6	105	4.4	103	4.6	103	4.2	100	4.1	102	4.2	103	4.4	97
Total	4.6	162	4.4	160	4.5	159	4.2	155	4.1	159	4.2	159	4.4	153

* Finland and Italy were excluded due to the small number of cases.

Most respondents did not answer the open question. 40 people contributed. Comments can be categorised into four major groups: identification-related, data-related, interface-related and project-related.

- 1) Identification-related, some of which were expected as identifying people between countries is quite a difficult task. Respondents reported having problems with the import caused by incorrect name in a host institution's database or added middle name (or just the first letter of it), or seeing error message while attempting to log in. The following quote is a good example of the login and identification problems:

"You should work with your identification system as your system says my identification couldn't be verified because the other of my user names has an "E" on it and the other doesn't (E comes from my middle name and I didn't even had a choice whether it's a part of my user name or not, apparently because there has been people with the same name as I am so kind of understandable). And I don't think I will be the only one with this kind of problem. Otherwise this works just great! Wonderful system!"

- 2) Data-related. Some respondents complained about the missing grades or the presence of courses that respondents did not attend. The following quote related to an already fixed bug in the early version of the system is a good example:

“I couldn't import half of my courses and instead the system though I had studied in Lund university which isn't true. Other than that the system is fast and nice and user-friendly!”

- 3) Interface-related comments included mostly complaints about the slowness and unresponsiveness of the system, or unclear instructions. The following quote is a good illustration of the later:

“The instructions are somewhat unintuitive. When you are choosing how to identify yourself it is unclear what this means. For me, being Swedish, my first thought is Mobilt BankID which is commonly used to identify yourself in Sweden. It should be clear that you are supposed to choose your home-university and log in through them. Another option could be to actually list all the options, rather than letting the user search without knowing what to search for. Also once you've chosen the country you want to import from it is slightly unclear. I needed to log in but none of the services in question were known to me before. I had to assume that Feide was the right option even though I have never seen it before, and that was only because I know that I don't have the required information to use ID-porten.”

- 4) Project-related comments which praises for creating a tool for transferring records, including:

“That was so easy and nice! Thank you very much! I thought it would be very difficult and take very long time. Thank you!”

“Everything was great”.

3.3. Qualitative study

Background

The interviews took place in March and April 2017 i.e. before the end of the trial. It is important to shed light on state of EMREX implementation at the time of the interviews before proceeding with the presentation of results. Countries varied in their stage of project realisation, which influenced the responses of interviewees.

Denmark

Denmark had neither Student Mobility Plug-in (SMP) nor National Contact Point (NCP) in production. The Danish NCP was taken into production in June 2017.

Finland

The Finnish SMP was taken into production in April 2016 with the first student users in June 2016. The Finnish NCP was released in August 2016. The Finnish SMP was available to all Finnish higher education students. However, the level of integration to the home institution's student information system (SIS) varied as there is not a single SIS in Finland but many different systems in use. From a student perspective EMREX worked in the same way, but the administrator at this time would receive a certified PDF of the results or a view of the results in her system. The data still had to be typed or copied and pasted into the home SIS by hand.

In Finland there are two major SISes, SISU (at the final stage of development) and PEPPI, that will most likely replace the existing SISes in the near future. The new system will replace the PDF file with direct transfer of data between systems.

Italy

By the time of the interview the system was implemented and installed at the two universities participating in the field trial. The NCP has been activated in the production environment at both HEIs. It allowed visiting students to import both the results and the PDF. Only the University of Siena activated the SMP in the production environment. It allowed students to import both the results and the PDF into the university's system.

Norway

Norway was the only country to offer full functionality of the system at the time of the interviews. Norwegian students could download their data from host institution's system and the transcript would be stored in the home institution's system.

Sweden

The Swedish NCP was in production in March 2016 and included all Swedish HEIs. In addition the SMP was released in September 2016 and was available for distribution for all Swedish HEIs. The solution was implemented in an existing system so ALL HEIs in Sweden got access immediately. Swedish International Coordinators invited their students to test the SMP.

During the time of the project a change of administrative system (SIS) has taken place. Because of this the transcript was not stored as data but as a PDF. In 2019 the new SIS will be running and the PDF will be replaced with direct transfer of data from the host university.

Number of EMREX users

The number of actual users is another factor crucial for the interpretation of the results. In total, in March 2017 there were about 100 students who used the tool (see section 3.1). The main cause is relatively small student mobility between partner countries. Moreover, some of the students eligible for the electronic transfer lost their login credentials to their host institution's data system (for more information see section "Organisation of student mobility" in chapter 3.3). Due to the above-mentioned reasons, the interviewees' experience with EMREX was in most cases limited.

Use of PDF

At the time of interviews some countries did not offer the full functionality of EMREX i.e. records were not imported directly into home institution's data system. They were delivered in the form of PDF document. It should be noted that PDFs were not recommended as the final solution but it was the only form of the EMREX generated transcript known to some respondents at the time of the interview. Therefore, PDFs are quite often mentioned in this report even though they were only a temporary solution.

Organisation of student mobility

The organisation of student mobility differs in detail from university to university, however there are some common elements concerning recognition. The following description of the process focuses on the elements affecting recognition. Regardless of the exchange programme students have to declare which courses they would like to take abroad and prepare some kind of learning agreement or study plan.

Depending on the institution and study programme, students may have a different level of freedom in shaping their study plans abroad. Many institutions offer so called mobility windows or elective semesters during which students are free to choose courses. This enables them to go to study abroad. Sometimes students are required to declare which courses at their home institution will be substituted by the courses taken abroad. In some rather rare cases of very structured programmes (e.g. some master level studies or programmes leading to a licensed profession) students' options are very limited. This is for example the case of medical students at Karolinska Institutet. Students are then steered toward certain programmes and course packages offered by an established partner, up to the point when students are told that certain university is suitable only for students of a certain semester. Institutions with strict curricula are more likely to send students for practice placements. Then students get neither credits nor grades.

The list of courses usually has to be pre-approved. The pre-approval can be granted by a study director, faculty member or members, or administrative coordinator — depending on the institution. The procedure is meant to guarantee the recognition of courses after the student returns to the home institution.

The biggest issue with the pre-approval is that the application process is so lengthy that at its beginning course catalogues for the mobility period are not yet available. Students are thus forced to plan their mobility basing on course catalogues from the year of application. In effect, changes to learning agreements and study plans are ubiquitous. According to interviewees, some students fail to update their study plans or do it shortly before the end of their exchange, even though they are usually strongly encouraged to report any changes immediately.

„Even if we inform the students many times before, during [their stay abroad], and so on that they need to make changes to learning agreement, they don't. And this is a big problem, because we get a lot of changes to learning agreements one week before, or two weeks, or three weeks before the students come back. That is a bit late, because what can we do at that point?“ (Head of student and staff mobility)

In order to reduce the need to update learning agreements some universities create modules or course packages for incoming students. Some bring forward the publication of next year's course catalogue. Others try to establish long term partnerships and identify which courses are offered constantly. However, these practices do not seem widespread.

After students come back, they usually have to apply for the recognition of courses taken abroad. The transcript of records is a crucial document in the process. Interviewees often cited the long wait time for transcript of records to arrive as main source of delay in the recognition process. Sometimes the

delay may be caused by the fact that some courses are not registered in time, but usually it is the administrative process of issuing and sending the transcript that should be blamed for the late arrival of transcripts. According to one of the interviewees, it can take up to six months for the transcript to arrive. The actual recognition process takes a couple of weeks. A delay may have profound consequences, it may prevent a student from getting achievements recognised in time and cause problems with a student loan or other forms of financial aid, even though there may not be an official deadline for recognition.

*“There is no deadline. The deadline is the graduation. They get support from the government to study each month and they can only be half a year late. [...] If they are behind, they will lose their economic support, so they have a motivating factor for speeding up the process”
(Staff member working with IT systems, formerly academic advisor for outgoing students)*

In order to speed up the process, some institutions allow the process of recognition to start before the arrival of the transcript, however recognised grades will not be registered in the local data system unless a proper transcript is delivered.

It is also worth noting that universities differ in their policies regarding the mode of transcript delivery. Some accept only hard copies of documents and at each step use paper documents only (applications for recognition etc.). Others are willing to accept scans of transcripts. However, the universities accepting e-mailed transcripts differ in their approach to what can be sent by e-mail. Some will accept only e-mails that are sent directly to the administration or accept a forwarded e-mail from host institution. Yet others are willing to use transcripts sent by students as well.

When everything is approved, the recognised courses can be registered in a local data system. Administration is responsible for typing-in or copying the records.

The lack of information during pre-approval together with the delayed transcripts were defiantly the most often cited and most serious problems affecting the recognition process. Otherwise the process of recognition is rather smooth according to the interviewees. There may be occasionally a problem with missing information on the transcript or students get confused about where and when they should deliver the document. Some institutions find it problematic to maintain a coherent approach to the courses and always recognise courses in the same way. Academic teachers may differ in their assessment of a given course. Ideally it would be the best if the recognition was synchronised between universities i.e. all universities would recognise a course in the same way. In a few cases, there are issues with incompatible systems of awarding credits for courses, e.g. the home institution awards a multiple of 7.5 credits per course and the host institution awards multiples of 5. There is no universal solution in case of such problems. It is possible that credits are upgraded or a student is asked to do some extra work to earn missing credits. However, in general there are no serious problems with the recognition process and unrecognised courses are rather rare. As one of the interviewees put it:

“I would say, so far it has worked pretty well. I just got feedback from our national Erasmus+ agency that actually 83% of our students from the past academic year had commented at the end of their exchange period that the studies had been accredited already. I find it rather amazing, because they fill in the survey immediately after the exchange so how can they

know at that early stage. (...) That's the general message that all studies that you complete and agree before will be accredited. I think the students do not see that as a challenge.” (Mobility team manager & Erasmus institutional coordinator)

Other interviewees also stressed that at their institutions students do not have to worry about the recognition of pre-approved courses and that there are no major problems with recognition.

Experience with EMREX or other similar solutions

Most respondents had had very little experience with EMREX by the time of the interview. First of all, the system was not ready in Denmark and respondents could not even see the system.

“I have been taken through part of the login process. (...) Maybe it was just because it was a test version. I had to log in several times with different logins and things like that. As I said, unfortunately we didn't reach the main site where you actually try the functionality” (Staff member responsible for incoming students 1)

In other countries, the universities struggled to find students who could test EMREX, mostly due to a small number of students going to the countries participating in the trial. Another issue limiting the number of testers was the short period after exchange when the login credentials at the host institution remain valid. In many cases, students lose access to their accounts at host institutions soon after the end of their mobility. Without an active account at the host institution the transfer is not possible.

“Actually, we look forward to start using it. We would really like to. (...) but we haven't really found any students to even test it.” (Staff member responsible for IT systems)

“Countries that [EMREX] works in have been so limited. We have had very, very few students who have been actually able to test it. Actually, only one student so far. (...) We have had all in all three students that would have been able to use it, but there is the problem of validity of user name and password for them. It expires so fast.” (Mobility team manager & Erasmus institutional coordinator)

The results of the tests were mixed. Not everyone succeeded in importing the data properly. There was, for example, a student from Norway who got wrong results (the problem has since then been fixed). Interviewees accepted that errors are part of any testing process, but in rare cases the mishaps had undermined the trust in the system and willingness to use it.

“We do not think it's good enough yet to just say 'Hello every student, just use this'. There are still some errors that have not been fixed” (Head of admissions and exchange office)

At the institution that used EMREX-generated transcript, the problem was that the PDF downloaded from the system was just “plain paper” without any attributes of an official document like logos or signatures etc.. The administration had to send the transcript to people responsible for the recognition, because they did not trust a document which was fetched by a student and then send outside the system for recognition.

The EMREX system is not the only electronic solution for handling record transfers known to the interviewees, however these systems work within one country. In Denmark, there is a system for transferring records during the application to master programmes. Students log into application and they give the access to their previous records. When the application is sent, the results are imported. In Finland, there is a national system for internal exchanges. A student logs into home institution's system and then fetches his or her data from the central system called Virta. Norway and Sweden have similar national systems.

Moreover, respondents were familiar with systems allowing exchange students to download records from host institution's system. Some of the institutions already offer such possibility to incoming students. Others know solutions of this kind from other countries.

Respondents could not indicate any features of these systems that could be added to EMREX. According to a Finnish interviewee, their national system is very similar to EMREX. The respondent offered the following description of the national system:

"It's quite a bit like EMREX actually. You just authenticate yourself using your home university's user name and password to the service and you can get your credits transferred."
(Staff member responsible for IT systems)

When asked whether there were any elements of the system that he would like EMREX to copy the respondent replied that those systems were copies already.

Moreover, some universities already use electronic systems for handling parts of the administrative processes related to student mobility. There are systems for applications, e.g. at Oulu University of Applied Sciences, students may apply for mobility using MoveON application and mobility management system. However, not all of these solutions eliminate paper documents altogether. Sometimes the systems enable only the preparation of a document which then must be printed and signed. Respondents would often like to see all the solutions integrated into a single system capable of handling the entire administrative process related to student mobility (see Feature requests / ideal system in section 3.3).

The evaluation of EMREX

Strengths

The system was evaluated as easy to use and rather simple. It was mostly seen as a tool to improve the efficiency of the transfer of academic records. Interviewees were, by and large, eager to use it. Even respondents disenchanted with the initial tests expressed their interest in using the tool as soon as all the technical glitches are eliminated and the system is stable.

"I think it is important to say that we are extremely positive to the solution. We're looking forward to start using it. Even if we have 'ifs' and 'buts', and all the stuff, and it does not work, we are really looking forward to have the solution in production." (Head of admissions and exchange office)

In Finland, where the system still did not offer its full functionality, respondents were looking forward to the transition to the PEPPI ecosystem. The new system has built-in tools for dealing with the data imported with EMREX, which would allow for a direct transfer of records between universities' systems instead of an option to download a PDF file with the records.

The speeding-up of the recognition process is definitely the biggest gain from EMREX's introduction. This is especially important for institutions relying solely on paper documents.

"Right now, the recognition process is done on paper. It's not complicated but it's time consuming." (Staff member working with information systems & former Erasmus institutional coordinator)

Both students and administration would gain from that. Students would not have to think about the delivery of a paper copy. They could expect the recognition process to end sooner and thus they could avoid getting into trouble with obtaining financial support or graduation.

The administration would save time and effort, because it would not have to type all information from transcripts into student management systems of their institutions. Moreover, the administration would be freed from contacting students or partner universities in case of missing transcripts.

Another significant feature of the system often mentioned by interviewees was the trustworthiness of the data imported with EMREX. Some institutions lack resources to validate transcripts. It is even more complicated when a university accepts scans delivered by students. Having an electronic system that enables direct transfer of data between universities' data systems would solve the problem.

"It [EMREX] would provide authenticated transcript of record that we could trust at least." (Staff member responsible for IT systems)

Especially data transferred directly to the system would be perceived as trustworthy.

"If the information is in the (...) system, then it is automatically considered reliable, because it's there already." (Erasmus institutional coordinator)

Direct transfer would also eliminate errors during entering the data into home institution's system.

Somewhat surprisingly for a system dealing with personal data, the safety of transferred information was not a big issue. Some respondents mentioned that the system may become a target of hacking attack. However, respondents were not pointing to any particular flaw that would make system vulnerable to such an attack. There were rather expressing a general concern with data security.

"There is always something such as hacking but you can have that in all systems" (Staff member responsible for incoming students 1)

Weaknesses

The overall positive evaluation of the system does not mean that interviewees did not spawn any doubts or critical comments. First of all, the implementation of EMREX, as of any other new system, is not cost-free. Some respondents were concerned whether the benefits would outweigh the costs. The

change itself maybe a problem as universities may not have enough resources to adapt to the new system. That does not mean that EMREX is particularly difficult or costly to implement. The problem is that there many other changes to which the administration has to adapt and it may lack means to work on EMREX as well.

In the partner countries, the members of the consortium are often responsible for creation and distribution of student management software, thus they are able to minimise the cost of implementing EMREX by building the necessary functionalities into the systems they distribute. However, there are higher education institutions that prefer to use their own systems, e.g. BI Norwegian Business School in Oslo. In case of such institutions, the costs of joining the system are considerably higher as the institution is responsible for adjusting the local system to the requirements of EMREX.

That is not the only type of costs. All institutions using EMREX, even those relying on centrally distributed IT solutions, will incur the cost of adjusting administrative processes to the new way of transcript delivery. As one respondent put it: *“an automatic system requires more planning in comparison to the current system which is kind of ad hoc”* (Mobility team manager & Erasmus institutional coordinator). User training was another type of cost that was brought up during the interviews.

Similarly to participants of the first qualitative study respondents pointed that the usefulness of EMREX largely depends on the number of countries connected with the system. The number of students going for exchange between partner countries is rather small. Interviewees would like to be able to transfer records from places where they send a lot of students, i.e. big European countries (Germany, France, United Kingdom), United States, Australia, China. Small number of countries would mean that benefits are too limited to justify costs.

“It is only a few countries and there will probably be a lot of work to get our system to work with the other systems. Will it be worth it just for a few countries?” (Staff member responsible for student management system 1)

“I think it has big perspectives if it gets rolled out, so it’s a lot of universities that participate. If it stays in a small number then it won’t be that interesting, because then we would still have to have the general making of transcripts (...) But if it could grow and be, say, half of our Erasmus partners or even more, then it would be very interesting. Because right now a lot of transcripts that we send out will either be lost in the mail or be sent to the wrong address.” (Staff member working with IT systems, formerly academic advisor for outgoing students)

Moreover, there are legal regulations that may diminish benefits of the introduction of EMREX. At this point EMREX allows students to pick courses that they want to import. This feature is problematic in Denmark. The Danish ministry responsible for higher education expects universities to collect the data on all courses taken abroad by Danish students. This is caused by the push for more balanced student mobility where the number of courses taken by incoming students is matched by the number of courses taken by outgoing students. The Danish interviewees complained that they would not be able to use the system for outgoing students unless the option to choose imported courses is removed.

“We simply have a law in Denmark saying that all the courses that you do on exchange should be transferred. (...) We have a kind of balance principle in Denmark. The ministry looks at difference between the number of ECTS that incoming students have done (for example at DTU) and the number of ECTS that our students have taken home from abroad. And then they calculate the difference. If more ECTS were taken than brought home from abroad, we will get a fine from the ministry. (...) So we get a fine each year” (Staff member responsible for incoming students 1)

Other countries did not have such regulations, nevertheless a couple of respondents expressed their desire to curb students’ freedom to choose which courses to import.

Documents required for recognition are another factor affecting the usefulness of EMREX. At some institutions, a transcript of records is not the only document that must be provided. One example of an additional document is the logbook documenting the activity during an exchange. EMREX cannot handle this type of documents yet.

Another obstacle to the realisation of the full potential of EMREX is a too short period during which students retain access to host institution’s system. In some systems, students lose their accounts immediately after they cease to be active students. Such students will be deprived of the possibility of using EMREX. Expiring accounts were cited as a serious problem, especially by interviewees from institutions that tested the tool.

Some respondents find the current model of logging-in cumbersome. They would like to see it simplified. Ditching multiple logins for a simplified system, e.g. one that students log to their local system only, would solve one more problem. Students tend to forget their username and password to host institution’s system.

There is also an issue of limited trust in electronic solutions. Not all respondents feel safe about relying solely on an electronic system. Some would prefer to keep the paper versions of transcripts as a backup.

„When we rely on a system 100%, it can be dangerous” (Staff member responsible for incoming students 2)

This opinion was based on previous experience with other electronic tools. Some of the tools failed to work properly. Some data were missing and had to be entered manually.

Impact on administrative workflow and workload

Interviewees commented on the impact of EMREX on administrative processes. In case of incoming students, assessment of EMREX varied significantly, even within countries. Their opinion on the tool depended on the current method of handling transcripts. Some institutions still issue transcripts in an old-fashioned way i.e. they are created one-by-one. The process is not automated and, as one respondent put it, *“it takes forever”* (Staff member working with IT systems, formerly academic advisor for outgoing students). Those institutions are very keen to start using EMREX for handling the incoming students.

“I think it might make the administrative process smoother and more efficient when it comes to recognition. Since, for example, we will be possibly freed from doing all the work with issuing transcript of records. If more of the universities which send students to us join that would free us from administrative burden of issuing the transcripts (...) It is quite an administrative task to do that. Although we do not do it as many times per year. Twice a year more less, after each semester, but it is still quite many students to issue transcripts for.” (International coordinator 2)

However, there are countries and institutions that already offer the incoming students an easy access to their records hence will not benefit as much from EMREX:

“It kind of works already for the incoming students, because we transfer all the credits to the national data system. (...) Everyone that was here can actually get their credits from the system.” (Staff member responsible for IT systems)

“I am not sure there is so much to gain from [EMREX] for the incoming students. Our incoming students can just log into our system. They can print their transcript of records and just bring it with them.” (Erasmus institutional coordinator & the leading user of a student management system)

The evaluation of the usefulness of EMREX in case of outgoing students depended on the mode of transcript delivery. A transcript delivered as a PDF file would not change the process a lot as administration would have to perform identical tasks as it performs today in case of transcripts sent by host institutions by e-mail. A system that delivers results directly to the student management system of the home institution was usually seen as a significant improvement to the process of recognition.

Despite the overall positive opinion on the system, some respondents wanted the consortium to pay more attention to administration’s needs as these are the people who will be important group of users as well.

“Right now, EMREX is more for students. It’s cool, it’s very good, but they have to think about the administration in the process as well. It’s actually the administration who is responsible for the last stage of the recognition process.” (Staff member responsible for incoming students 2).

Interviewees expect some hesitancy on the side of administrative personnel. The administration often feels under-resourced and tired of constant changes. They may need some convincing to start using EMREX. The administrative staff must be convinced that the system is safe, that it actually reduces the workload and that the imported data are trustworthy. It should help if the system is presented as part of already existing system, not an entirely new solution. If the administrative personnel can see the benefits, convincing them to use the system should not be a problem.

“The staff members, especially in the student services, who have been in the front row so to speak, they are actually taking all sorts of technical solutions eagerly into use if they see it

assists them and eases their workload, even if that would mean that the workflow must be changed.” (Mobility team manager & Erasmus institutional coordinator)

“They [administration] have to be convinced that this is helping. But I think the fact that you don't have to retype something that someone else has already typed once ... they're sold” (Staff member responsible for student management system 1)

Some respondents talked about the necessity of convincing academic staff involved in the recognition process to use the system. Anticipated difficulties are similar to those expected in case of administrative personnel.

Impact on student behaviour

Respondents by and large agree that the system will help students to have their records recognised quickly. Like in the initial qualitative study, respondents were rather sceptical about EMREX's possible direct impact on student behaviour. Only one interviewee said that the system might lead to an increase in the number of exchange students. In their opinion, the electronic system for achievement recognition would be a great help to students, but it is not what really matters when it comes to a decision whether to study abroad or where to go.

“I do not think that would be the decisive point of consideration, because what matters to [students] is to go a certain university that they have heard of or that have whatever prestige or where they speak English because our students do not speak many other languages.” (Staff member responsible for incoming students 1)

“I don't really think so. No. (...) Of course, it's a great thing. Everything that can help this bureaucracy and administrative part — absolutely yes, but I don't think [EMREX] will have an effect on students choosing to go or not.” (Head of student and staff mobility)

“Well, I wouldn't say that that would be a decisive factor. If the student is not motivated to go to any Nordic country so electronic system will not change that. The basic is that, of course, the studies are something that they can complete.” (Mobility team manager & Erasmus institutional coordinator)

Others would go even further and suggested they would not like students to choose their destinations based on the ease of recognition.

“I hope that this is not an issue when students choose their destination that they [students] can get their results digitally. I hope there are other reasons why they choose their destination.” (Head of admissions and exchange office)

Another respondent pointed out that the recognition takes place at the end of exchange and there are elements earlier in the process that are far more frustrating for students.

“It is one small stone that would be nice to remove, make it an easier path but I do not think that it will make a big difference in the numbers (...) It is so late in the process (...) The application and the pre-approval, that is what they [students] say is difficult and frustrating

and where they need help.” (Staff member working with IT systems, formerly academic advisor for outgoing students)

One of the interviewees said that an electronic system is something that students expect to have. Students are used to technology and electronic solutions and they actually demand this kind of tools.

„I would say that for the students, they are so used to [the idea] that everything is electronic nowadays, so probably they see the paper version [as such an] old-fashion, ancient system.” (Mobility team manager & Erasmus institutional coordinator)

“I would say that today students in general expect things to be digital. It's obvious for them that it is like this.” (Staff member responsible for student management system 2)

When it comes to communication to students, interviewees expressed their intention to promote the tool, mostly either via e-mails or websites. Some consider boosting the popularity of the tool by labelling it “a recommended solution”. In general, interviewees were willing to promote the tool mostly to students who have already been accepted to mobility programmes.

Interviewees said that they would avoid putting too much stress on the ease of recognition with EMREX as they already market international mobility and recognition as a fairly risk free process, where students do not have to worry too much about having grades recognised.

“We already tell them that they do get everything recognised or accredited if they go abroad. EMREX cannot change much there.” (Head of student and staff mobility)

Stressing the ease of recognition supported by EMREX could undermine previous efforts to create an impression that recognition process is frictionless.

Even at institutions willing to promote EMREX to every student the message would not include the name of the tool. It would be presented as a possibility of fully electronic recognition without mentioning the EMREX brand. That would simplify the message.

Feature requests / ideal system

An important part of the interviews was a discussion on possible improvements to the system. Interviewees were asked to name missing features and possible improvement to the current system as well as to share their visions of an ideal system for recognition.

Unsurprisingly, the respondents expressed their desire to see the solutions to the problems reported in the earlier parts of the report, i.e.:

- Extending the time during which students retain access to host institution’s system.
- Making EMREX work in more countries.
- Solving the problem of selective import in case of Danish outgoing students (barring students from selecting which courses to import).
- Validating PDF documents (in case when data are not transferred directly to the system).

Other features that could enhance the current system included:

- A system of notifications for administration. Some interviewees were not sure about the way they are going to be informed about new records imported by students. They would like to have some system of notifications about the availability of new records.
- An option for administration to initiate the process of achievement transfer. Some interviewees noted that in the current form the system relies on students to initiate the process, which may not be the most efficient solution. They would prefer that students granted the institution access to their data at the host institution and that administration would be able to import the data themselves. Another proposed solution was to let the host institution to initiate the process when the records are ready.
- A mechanism for handling the transfer while host or home institution's system is updated. One of the interviewees raised the issue of the possible effects of system upgrades on the transfer process. The question is what happens if a student tries to import credits or grades while either the home or host institution updates or upgrades its student management system.
- An original transcript used to be attached to a diploma when students graduate. EMREX enables direct transfer of records into home institution's system. One of the Norwegian respondents was not sure how the issuance of diplomas and attachments should be organised when EMREX is implemented, if there will be an option to generate an attachment with the imported information.
- A mechanism for handling cases when each part of a course is graded separately and then there is a final grade. Some incoming students request to have not only the final grade but also the partial grades on their transcripts.
- The creation of a single student ID would improve any transfer of data between systems and countries.

Interviewees had requests regarding the dissemination of information, too:

- According to one of the interviewees, the lack of a common interface for all countries (each NCP² has a distinctive look) may cause confusion among students. She requested promotional materials from the consortium to include screenshots of every national system. That would be useful for preparation of university's info packages for students.
- One of the interviewees strongly insisted that she maintains the communication with students and the consortium does not interfere in it. The rationale behind this was that additional messages to students may lead to confusion as the message may be not clear enough and may not reach the right people i.e. students not eligible to use EMREX. Students will end up asking administrators for help anyway.

² National Contact Point

- Another person asked for a template for internal dissemination, in other words:

“How to explain the tool to our colleagues. Very hands-on approach. Examples etc.” (Erasmus institutional coordinator & the leading user of a student management system)

- Information on the institutions that use the tool could help as well. New users of the system would be able to contact those who have more experience and learn from them.
- Interviewees often asked to be informed about new countries joining EMREX as this strongly affects the usefulness of the tool.

Interviewees assessed the content of the EMREX generated transcript in the current form. Usually respondents had suggestions what information should be added to the transcript offered by EMREX. Few respondents did not see the necessity to any information as EMREX already offers same information as a typical transcript does. Any additional information needed for recognition must be provided at some other point anyway, e.g. during the work on the learning agreement.

The list below comprises types of information requested by respondents. Of course, not all respondents asked for all types. The list is a collection of all kinds of data mentioned during the interviews. Institutions require some of the information already even though it may not be included in a typical transcript of records. Sometimes the information must be provided by students, for example in their applications for recognition.

- Name of the host institution in the original language and in English;
- Course name both in the original language and in English;
- Level;
- Language of instruction;
- Grading scale and its description – Some respondents would like to have ECTS grading scale as they use it and a grade in any other national system would have to be converted;
- CEFR scale for language courses;
- The description of the credit system or a link to such information;
- The date when the course ended.

Out of the items listed above, the course description would be most welcome.

„It would be great to have a link to the course description, because that’s probably the thing that the heads of the degree programmes first look at, because the name of a course doesn’t necessarily tell that much.” (Mobility team manager & Erasmus institutional coordinator)

“What is the description of course... To get that information is very important. It’s not only the points or credits that they got and what the course name was but what it is inside is the information that we really need.” (Staff member responsible for the recognition of prior learning, central administration)

„The course description really, really helps. Because otherwise, if it says „programming”, they are going to ask what language, how much, and did you do something, did you have to program, I don't know, a special game or what. And if it's already in there, that helps.” (Staff member working with information systems & former Erasmus institutional coordinator)

The interviews often included a discussion on the possible future developments of the system. Many respondents were interested in a system that enables linking the courses imported by EMREX with the courses in learning agreements or study plans i.e. courses that were already pre-approved. Such a solution should check if the right courses were present in the transcript of records and then automatically register them as recognised in the home institution's system.

“EMREX works only when you have finished your exchange. I think it would be a good feature if it also could somehow help before the exchange period. This is a totally different thing but it would actually really be useful to have the learning agreement registered somewhere where both partners can access the same learning agreement and can match the achieved credits with the learning agreement.” (Staff member responsible for IT systems)

„I would probably do so that the learning agreement phase could be done through some sort of an electronic system. Then it would be easier. It would be already approved in the beginning that the course will be taken. And it is the same course that comes through [EMREX] that would go automatically all the way to the study register without anybody interfering anywhere anymore, because it was already agreed in the beginning. Now we do the same stuff twice. First, they see 'ok, this is a good course' and then at the end 'this is the same course'.” (Mobility team manager & Erasmus institutional coordinator)

“For this to be really useful it should be so that once the people who register results get these transcripts, they could just automatically register them based on the learning agreement that was pre-approved. That would make it easier. The students wouldn't have to contact the teachers and go to seven different people. It could be done in the student service system. (...) That would mean that the learning agreement would have to be up to date and the teacher would have to have the course information already at the stage when the learning agreement is approved.” (Erasmus institutional coordinator)

Respondents were aware that such a solution would require an up-to-date learning agreement, which in turn would require a system for handling learning agreements. The system would be used to submit changes to learning agreements. Some found such a solution impossible, even though they had expressed a desire for the automatic recognition of pre-approved courses.

“In the perfect world, [the students] should apply for approval. Go abroad. Take the courses they said they would take. Get home. The results are automatically [transferred] to our system and the students don't have to do anything else. (...) That is the ideal world, that the pre-approval is the only thing that has to be done. But everyone working with student exchange knows that the world doesn't work like that.” (Head of admissions and exchange office)

Another much welcomed functionality would be an interface that helps with linking courses taken abroad reported in the transcript with the courses that are to be substituted by the foreign courses:

“When we start thinking about using the system for outgoing students, we will have to think about where the data are stored in our system and if they end up at the right place. It would be great to have the imported grades next to the preapproval. It would be ideal to have a ‘click and match solution’, so ‘this is this’, then click. (...). That would make the process much easier. The courses would still have to be evaluated by study boards. Not everything could be automated. (...) The matching could be done by a student and then approved by administration or academic staff.” (Staff member working with IT systems, formerly academic advisor for outgoing students)

It is worth noting that respondents see limits to the possible automation of the process. At some point, the decision whether a course can be recognised must be made. This must be done by some sort of programme director or the board of studies or other people able to evaluate the content of the courses. It is hard to imagine this process being automated. The processes taking place at the beginning and at the end of mobility will be the hardest to automate.

“I would say [EMREX] is very useful. Though, it won’t remove all the manual process, in the beginning at least, but it will work as a complement to the manual process. We can get the records electronically to the system at least. Then the recognition process will probably continue to be quite manual but we can automate the registration of records. (...) Doing manual recognition but with electronic information.” (Staff member responsible for IT systems)

Some would like the system for handling student mobility to go even further. They would like a single database for all exchange applications, where students can look for programmes and courses instead of navigating through numerous websites of various universities. However, another respondent noted that such a solution is unrealistic. According to that interviewee, EMREX is complex enough for now and should first be fully implemented before the discussion on further steps can begin.

Moreover, respondents expressed interest in using EMREX for the application process – for transferring previous academic records during application for second cycle studies. There are such systems working at national level in some countries and some respondents see bigger potential for EMREX as a tool for the recognition of prior learning than as a tool facilitating student mobility. Users of application systems would count in thousands.

“We have thousands of applicants from all over the world applying for [advanced] degree studies. (...) The biggest gain for us is to use [EMREX] for international applicants, because we have so many. (...) We would have valid information without the need to ask their university to validate that.” (Head of admissions and exchange office)

Interviewees noted that expiring login credentials would be even problem in case of the application system. Exchange students usually apply for recognition soon after the exchange ends whereas applicants may have graduated from the previous programme long time before the application.

Another way to utilise EMREX suggested during interviews would be to use it for transferring grades of students of double degree programmes. These are whole classes of students moving regularly back and forth between two or more partner institutions.

Summary

The key findings of the study are as follows:

- Despite the diversity of recognition related processes there are two common problems: ubiquitous changes in learning agreements and delays in the transcript delivery.
- The perception of EMREX among administrative personnel is mostly positive. However, the interviewees rather doubt that it may increase students' willingness to go abroad.
- The limited number of participating countries significantly reduces EMREX usefulness.
- In the future, interviewees would like to have an even more comprehensive tool for handling student mobility.

The organisation of student mobility varies across the countries and between institutions. There are, however, some common issues affecting the recognition of academic achievements. First, changes to learning agreement are ubiquitous, which is not necessarily students' fault. Course catalogues are often not yet available at the time of application. Decisions are then based on the catalogues from previous years which may be outdated when students arrive at their host institutions. Keeping learning agreements up to date is a daunting task. The pre-approval of courses listed in a learning agreement is meant to guarantee smooth recognition process. Any new courses (not taken into account in the learning agreement) may not be accredited. Second, transcripts of records are not always delivered in time. On rare occasions, students have to wait even couple of months for their transcripts to arrive. The consequences of the delays may be severe: the lack of transcript makes recognition impossible, which in turn may block graduation, deprive a student of financial support etc.

Interviewees by and large agree that EMREX could alleviate problems related to recognition mainly by speeding up the transfer of records. The interviewed administrators were keen to start using EMREX, although a few still had some reservations. In general, the system was evaluated as efficient, rather simple, and easy to use. Trustworthiness of the data received through the system is another advantage. The system could thus improve student experience with recognition as well as reduce the workload of administration. However, interviewees were sceptical about the possible impact of EMREX on students' willingness to go abroad. In administration's eyes, the recognition process is not a decisive factor when students decide whether to study abroad.

Interviewees pointed also some downsides of the system, including technical difficulties such as expiring login credentials etc. What seems to be the most important issue is the small number of countries where the system is available. Limited coverage substantially diminishes the usefulness of the tool as it would be available only to a small fraction of exchange students. A small number of students using EMREX would mean that the costs of implementing the new system could outweigh the benefits.

Interviewees suggested a series of improvements to the system. The most common request was the addition of course description to the records transferred with EMREX. Even a link to the information about a course would suffice. Many of the interviewees expressed their desire for a system which would integrate all administrative processes related to student mobility. They would like this system

to handle both learning agreements and transcripts of records and establish links between those two types of documents.

3.4. Administrative data

This section discusses the changes in student mobility patterns measured with administrative data. Due to differences in the data collection (described in detail in section 2.4) direct comparisons of the number of students between countries are not advised. Therefore, this section presents results in each of the countries separately. The final subsection summarises the observed trends.

Denmark

At the national level, outbound mobility to EMREX countries fell compared to the mobility to other countries. The share of exchange students going to all EMREX countries fell from 19% to 16%. In the case of exchange students going to countries that fully implemented EMREX the index fell from 16% to 14%.

Table 3.4.1 Outbound student mobility in Denmark – number of students per 100 exchange students

HEI	To all field trial countries		To full implementation countries	
	2014/15 (%)	2015/16 (%)	2014/15 (%)	2015/16 (%)
Copenhagen Business School - Handelshøjskolen	10	13	3	4
Danmarks Tekniske Universitet	35	30	33	28
Erhvervsakademi Aarhus	4	5	4	4
Erhvervsakademiet Copenhagen Business Academy	12	7	9	6
Erhvervsakademiet Lillebælt	2	2	2	1
Københavns Erhvervsakademi (KEA)	21	13	18	9
Københavns Universitet	18	17	16	14
Professionshøjskolen Metropol / Metropolitan UC	35	41	34	41
Professionshøjskolen UCC (University College)	18	14	18	13
Professionshøjskolen University College Nordjylland	20	13	20	13
Professionshøjskolen VIA University College	20	20	17	18
Syddansk Universitet	23	23	21	20
Aalborg Universitet	20	13	17	12
Aarhus Universitet	22	20	19	17
Denmark Total	19	16	16	14

At the institutional level the results are mixed. First of all, there is a large variation in the share of students going to EMREX countries between institution, for example in 2014/15 35% of outgoing students at Danmarks Tekniske Universitet when to one of the EMREX countries while at the Erhvervsakademiet Lillebælt only 2% did. The biggest change in the share of outgoing students choosing EMREX countries (reduction of 8) is visible at Københavns Erhvervsakademi (KEA). The same institution experienced the biggest fall in the share of students going to the three countries that fully implemented the tool. It is worth noting that this is an effect of 10 students fewer going to EMREX countries and 33 mobile students more.

The structure of the incoming students' population does not show any increase in the intensity of student mobility between Denmark and other EMREX countries. When measured by the share of

students coming from EMREX countries among all incoming students the intensity remained unchanged – around 18% of students visiting Denmark were from other countries participating in the field trial. In the case of mobility from Finland, Norway or Sweden the share dropped by 1 percentage point.

Table 3.4.2 Inbound student mobility in Denmark – number of students per 100 exchange students

HEI	To all field trial countries		To full implementation countries	
	2014/15 (%)	2015/16 (%)	2014/15 (%)	2015/16 (%)
Copenhagen Business School - Handelshøjskolen	16	19	6	7
Danmarks Tekniske Universitet	21	24	11	15
Københavns Universitet	23	22	18	16
Professionshøjskolen Metropol / Metropolitan UC	42	30	41	27
Professionshøjskolen VIA University College	16	12	11	7
Syddansk Universitet	13	19	4	6
Aalborg Universitet	22	15	13	8
Aarhus Universitet	15	15	7	8
Denmark Total	18	18	12	11

In the case of inbound mobility from all EMREX countries no trend is visible. Some HEIs experienced increase in the share of students coming from the countries participating in the field trial while the others noted a decline, sometimes even quite steep. At Professionshøjskolen Metropol the index fell by 12. In the case of inbound mobility from countries that fully implemented EMREX the changes over time are very similar. At the national level a small decline in the share of students coming from the three countries is visible.

Finland

In Finland, the national level structure of outbound mobility did not change almost at all between 2015 and 2016. EMREX countries became slightly more popular destination. The share of students going to EMREX countries grew from 16% to 17%. There was no change in the share of students going to other countries that fully implemented EMREX.

At institutional level both large increases and decreases are apparent. At the Itä-Suomen yliopisto the share of students going to one of the EMREX countries dropped by 5 percentage points whilst at the Hanken Svenska handelshögskolan the same indicator grew by 11 points. However, at most institutions the change was far less visible.

Table 3.4.3 Outbound student mobility in Finland – number of students per 100 exchange students

HEI	To all field trial countries		To full implementation countries	
	2015 (%)	2016 (%)	2015 (%)	2016 (%)
Aalto-yliopisto	27	28	15	16
Åbo Akademi	39	40	27	30
Haaga-Helia ammattikorkeakoulu	7	11	6	8

Helsingin yliopisto	22	23	13	12
Itä-Suomen yliopisto	24	19	19	14
Jyväskylän yliopisto	20	16	13	12
Lahden ammattikorkeakoulu	11	9	8	4
Lappeenrannan teknillinen yliopisto	17	20	12	12
Metropolia Ammattikorkeakoulu	12	10	5	4
Oulun ammattikorkeakoulu	14	15	5	6
Oulun yliopisto	21	24	10	14
Hanken Svenska handelshögskolan	16	27	11	19
Tampereen ammattikorkeakoulu	8	6	2	3
Tampereen yliopisto	12	12	7	7
Turun ammattikorkeakoulu	9	11	8	8
Turun yliopisto	19	19	12	14
Vaasan yliopisto	21	22	12	11
Finland Total	16	17	10	10

The index of inbound mobility from the countries with fully implemented EMREX remained the same or changed just a little at most institutions. At the national level it remained unchanged. The changes are similarly small In the case of the indicator for all field trial countries.

Table 3.4.4 Inbound student mobility in Finland – number of students per 100 exchange students

HEI	To all field trial countries		To full implementation countries	
	2015 (%)	2016 (%)	2015 (%)	2016 (%)
Aalto-yliopisto	16%	18%	6%	6%
Åbo Akademi	9%	9%	3%	1%
Haaga-Helia ammattikorkeakoulu	2%	3%	1%	0%
Helsingin yliopisto	11%	10%	2%	1%
Itä-Suomen yliopisto	7%	9%	0%	0%
Jyväskylän ammattikorkeakoulu	7%	7%	2%	1%
Jyväskylän yliopisto	11%	10%	0%	0%
Lahden ammattikorkeakoulu	4%	2%	0%	0%
Lapin yliopisto	11%	10%	1%	0%
Lappeenrannan teknillinen yliopisto	4%	6%	0%	2%
Laurea-ammattikorkeakoulu	7%	3%	1%	0%
Metropolia Ammattikorkeakoulu	5%	6%	0%	0%
Oulun ammattikorkeakoulu	7%	9%	0%	0%
Oulun yliopisto	10%	10%	1%	1%
Savonia-ammattikorkeakoulu	8%	9%	0%	0%
Seinäjoen ammattikorkeakoulu	5%	6%	0%	0%
Svenska handelshögskolan	12%	13%	5%	5%
Tampereen ammattikorkeakoulu	3%	3%	0%	2%
Tampereen teknillinen yliopisto	6%	10%	0%	1%
Tampereen yliopisto	15%	9%	4%	1%
Turun ammattikorkeakoulu	5%	5%	1%	0%
Turun yliopisto	11%	17%	4%	10%
Vaasan yliopisto	21%	17%	1%	2%
Finland Total	9%	9%	2%	2%

Italy

Italian data are limited to just one institution, the University of Siena, because there were not enough observations at the University of Verona which was the other participating Italian institution. Very little has changed in the composition of outgoing students. The share of those going to EMREX countries remained virtually unchanged. In the case of inbound mobility, a small decline in the share of students coming from EMREX countries is visible.

Table 3.4.5 Outbound student mobility in Italy – number of students per 100 exchange students

HEI	To all field trial countries		To full implementation countries	
	2015 (%)	2016 (%)	2015 (%)	2016 (%)
University of Siena	20	19	16	17

Table 3.4.6 Inbound student mobility in Italy – number of students per 100 exchange students

HEI	To all field trial countries		To full implementation countries	
	2015 (%)	2016 (%)	2015 (%)	2016 (%)
University of Siena	5	3	5	2

Norway

At the national level, Norwegian outbound mobility did not change significantly in terms of the share of students going to the field trial countries. The value of the indicator for the mobility to all field trial countries grew by 2 percentage points. The changes vary widely between academic institutions. Høgskolen i Sørøst-Norge noted 12 percentage point rise while at Høgskulen på Vestlandet the share of students studying in EMREX countries fell by 10 2 percentage points. In the case of mobility to Sweden and Finland (the two other countries that implemented EMREX) most institutions experienced a small decline which resulted in a decline by 1 percentage point at the national level.

Table 3.4.7 Outbound student mobility in Norway – number of students per 100 exchange students

HEI	To all field trial countries		To full implementation countries	
	2015 (%)	2016 (%)	2015 (%)	2016 (%)
Høgskolen i Oslo og Akershus	28	27	5	4
Høgskolen i Sørøst-Norge	11	24	5	4
Høgskulen på Vestlandet	42	32	9	7
Norges Handelshøyskole	25	22	7	5
Norges teknisk-naturvitenskapelige universitet	24	25	12	8
UiT - Norges arktiske universitet	47	46	18	14
Universitetet i Agder	16	10	2	1
Universitetet i Bergen	24	23	9	7
Universitetet i Oslo	19	27	3	4
Denmark Total	25	27	9	8

Inbound mobility in Norway remained largely unchanged. At the national level no change could be observed. At most institutions the change in the share of students coming from the field trial countries rises or falls minimally. The same could be said about the mobility from countries that fully implemented the tool. The only exception is Høgskolen i Oslo og Akershus where both measures fell significantly.

Table 3.4.8 Inbound student mobility in Norway – number of students per 100 exchange students

HEI	To all field trial countries		To full implementation countries	
	2015 (%)	2016 (%)	2015 (%)	2016 (%)
Høgskolen i Innlandet	7	9	5	7
Høgskolen i Oslo og Akershus	23	13	13	5
Høgskolen i Sørøst-Norge	13	11	2	3
Høgskolen i Volda	9	7	5	2
Høgskolen på Vestlandet	21	21	4	6
Norges Handelshøyskole	24	25	9	9
Norges miljø- og biovitenskapelige universitet	21	21	10	14
Norges teknisk-naturvitenskapelige universitet	15	14	5	4
UiT - Norges arktiske universitet	31	32	9	12
Universitetet i Agder	13	14	0	2
Universitetet i Bergen	13	15	3	3
Universitetet i Oslo	17	18	3	3
Universitetet i Stavanger	9	8	3	3
Denmark Total	16	16	5	5

Sweden

Both the share of outgoing exchange students choosing one of four others field trial countries and the share of outgoing exchange students going to Norway or Finland were rather stable over time. The latter did not change much at any institution significantly. The former was slightly more prone to change. However, the changes were not large. The only exception was the Stockholms Universitet.

Table 3.4.9 Outbound student mobility in Sweden – number of students per 100 exchange students

HEI	To all field trial countries		To full implementation countries	
	2015 (%)	2016 (%)	2015 (%)	2016 (%)
Chalmers Tekniska Høegskola	20	21	3	3
Goteborgs Universitet	14	17	3	4
Kungliga Tekniska Høegskolan	19	19	3	3
Linköpings Universitet	3	4	1	1
Linneuniversitetet	2	2	0	0
Lunds Universitet	11	9	3	3
Stiftelsen Høegskolan I Jonköping	12	12	2	2
Stockholms Universitet	5	11	0	1
Umea Universitet	10	9	3	2

Uppsala Universitet	7	6	1	1
Denmark Total	10	11	2	2

The share of incoming students coming from Finland and Norway did not change at the national level. At the institutional level, some differences between 2015 and 2016 could be observed, but they were not large. In the case of the share of students coming from all field trial countries a decrease can be observed at many institutions. It resulted in a decrease of 3 percentage points at the national level.

Table 3.4.10 Inbound student mobility in Sweden – number of students per 100 exchange students

HEI	To all field trial countries		To full implementation countries	
	2015 (%)	2016 (%)	2015 (%)	2016 (%)
Chalmers Tekniska Hoegskola	11	4	2	0
Goteborgs Universitet	13	5	4	3
Hogskolan Dalarna	29	18	1	5
Hogskolan I Halmstad	1	3	1	2
Karlstads Universitet	2	8	2	8
Kungliga Tekniska Hoegskolan	12	5	2	1
Linkopings Universitet	3	3	0	1
Linneuniversitetet	3	4	0	1
Lulea Tekniska Universitet	6	9	5	2
Lunds Universitet	6	6	1	2
Malmoe Hoegskola (Malmoe University)	3	5	1	3
Orebro University	7	3	2	2
Stiftelsen Hogskolan I Jonkoping	14	8	4	6
Stockholms Universitet	10	5	2	1
Umea Universitet	8	5	1	2
Uppsala Universitet	5	4	0	1
Denmark Total	9	6	2	2

Summary

The presented results do not indicate that EMREX affected student mobility in the planned way. All four used measures: 1) the share of outgoing students choosing one of four other field trial countries, 2) the share of outgoing students choosing one the countries that fully implemented EMREX, 3) the share of incoming students coming from one of four other field trial countries, 4) the share of incoming students coming from one the countries that fully implemented EMREX, remained unchanged or changed a little between two measurements. That would mean that any rise or fall in the number of students going from one field trial country to another is rather an effect of general increase or fall in student mobility than a result of the EMREX implementation.

The lack of observable effects of EMREX implementation does not necessarily mean that the tool has failed. Any innovation needs time to spread. In the case of EMREX that means that students have to learn about the tool, notice its usefulness, and only then they may convince others to base their decisions at least to some extent on the availability of tools like EMREX. This is a time-consuming process. Given the late rollout of the tool and limited number of users (see section 3.1) it is quite probable that there was not enough time for EMREX to impact students' perception of the recognition process sufficiently to alter their decision regarding participation in an exchange programme.

Moreover, this study should help in designing methodology of similar research in the future. The number of students going to or coming from a single country at the level of single institution is rather small. Therefore, it can be easily altered significantly by just a small number of students. Five new incoming students from a given country may present themselves as a substantial change in the mobility patterns. This type of change can occur spontaneously. A group of friends may decide that they are interested in going to the same hitherto unpopular country. The change may be an effect of a new agreement between institutions or some other small scale policy alteration. Presented data for institutions offer plenty of examples of small and large variations in the share of outgoing or incoming students going to or coming from the field trial countries. A reason for the variation is hard to identify. EMREX or any other policy experimentation for that matter cannot control every aspect the social system they attempt to affect. That is why in any future research it would be reasonable to focus on trends observable at a higher level of aggregation e.g. regional or country level.

3.5. Exchange student survey (long survey)

Recognition process

The evaluation of the impact of EMREX on the process of academic achievement recognition was the first step in the analysis. It focused on the following elements:

- 1) time needed to deliver the transcript of records to the home institution after the last grade was recorded,
- 2) duration of the recognition process at the home institution (measured since the delivery of transcript),
- 3) course recognition rate i.e. the share of courses taken abroad that were recognised by the home institution,
- 4) ECTS recognition rate i.e. the share of ECTS credits earned abroad that were recognised by the home institution.

The first two indicators are problematic because many students did not provide necessary information which reduces the reliability of the results as means calculated for small groups are easily affected by outliers. It is possible that respondents are not aware of how long it takes to deliver the records as they are not involved in the process.

The study offers little evidence of the impact of EMREX implementation on the recognition process. The average time needed to get a transcript delivered to a home institution fell slightly in the control group. At the same time, counterintuitively it grew in the treatment group. However, given the high standard deviations the observed differences should be taken with a grain of salt.

Table 3.5.1 The time needed for delivering a transcript of records to a home institution (in days)

	Mean	N	Standard Deviation
Control group - 1st measurement	40.56	565	38.607
Control group - 2nd measurement	38.42	392	32.385
Treatment group - 1st measurement	36.04	27	31.942

Treatment group - 2nd measurement	46.6	30	40.253
Difference in differences	12.70		

In the case of the duration of the recognition process the direction of change is in line with the expectations i.e. it shrinks between measurements. However, unexpectedly the pace of shrinkage is faster for the control group.

Table 3.5.2 Duration of the recognition process (in days)

	Mean	N	Standard Deviation
Control group - 1st measurement	32.38	547	43.191
Control group - 2nd measurement	23.95	312	26.332
Treatment group - 1st measurement	29.11	27	36.879
Treatment group - 2nd measurement	27.12	26	32.965
Difference in differences	6.43		

The course recognition rate was high before the trial. Over 90% of courses taken abroad were recognised. Over time it grew even further for both the treatment group and the control group. The increase was slightly higher for the treatment group, but the difference is too small to be interpreted as an effect of the policy experimentation.

Table 3.5.3 Course recognition rate

	Mean	N	Standard Deviation
Control group - 1st measurement	0.9349	900	0.18801
Control group - 2nd measurement	0.9547	551	0.14596
Treatment group - 1st measurement	0.9459	50	0.17678
Treatment group - 2nd measurement	0.9688	40	0.11585
Difference in differences	0.003		

In the case of ECTS recognition rate results are similar. The recognition rate was high before the EMREX implementation and it grew over time. The changes are similar for the treatment and control groups. The control group experienced marginally higher increase in the ECTS recognition rate.

Table 3.5.4 ECTS recognition rate

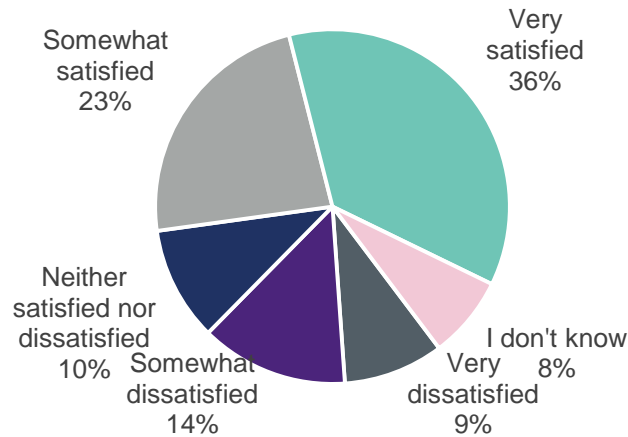
	Mean	N	Standard Deviation
Control group - 1st measurement	0.9336	880	0.17956
Control group - 2nd measurement	0.9585	542	0.12786
Treatment group - 1st measurement	0.9475	51	0.11206
Treatment group - 2nd measurement	0.9503	40	0.18928
Difference in differences	-0.022		

Evaluation of the recognition process.

In the second step, changes in students' perception of the recognition process were analysed. Respondents rated their overall satisfaction with the recognition process. They used a five-point scale, from 1 meaning "very dissatisfied" to 5 meaning "very satisfied". On the average respondents' level of

satisfaction is moderate. Nearly 60% of respondents were either satisfied or very satisfied with the recognition process. At the same time one quarter of survey participants were dissatisfied.

Figure 6 Satisfaction with the recognition process



A comparison of the average levels of satisfaction between pre- and post-treatment measurements shows a decrease of satisfaction for the treatment group and a very small decrease for the control group.

Table 3.5.5 Satisfaction with the recognition process

	Mean	N	Standard Deviation
Control group - 1st measurement	3.73	976	1.41
Control group - 2nd measurement	3.65	665	1.305
Treatment group - 1st measurement	3.79	57	1.398
Treatment group - 2nd measurement	3.45	49	1.473
Difference in differences	-0.26		

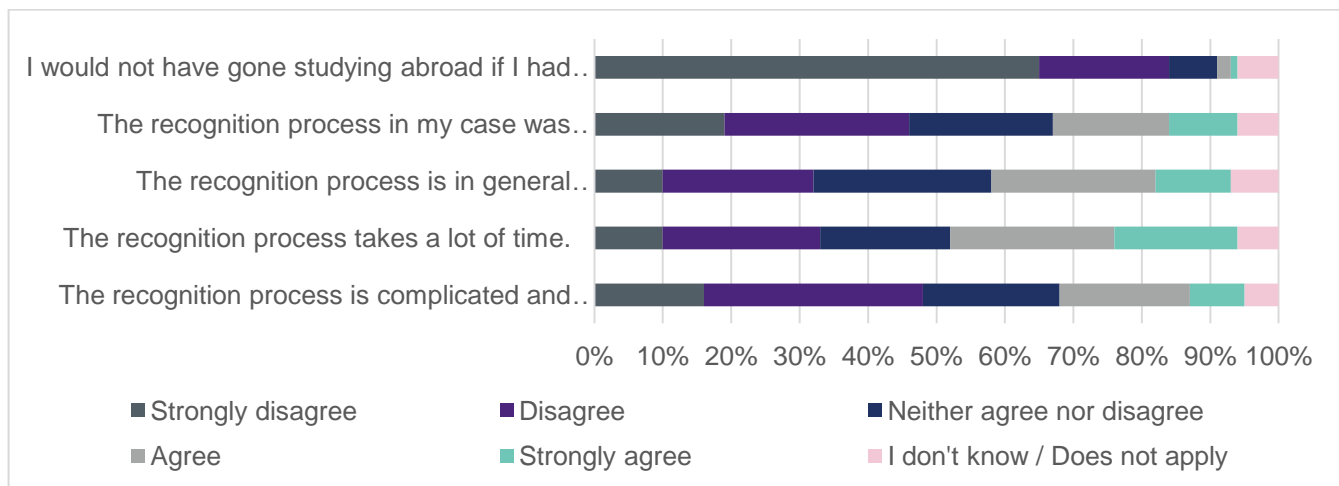
Beside the overall satisfaction, respondents rated their levels of agreement with the five following statements concerning the recognition process:

- The recognition process is complicated and difficult to understand.
- The recognition process takes a lot of time.
- The recognition process is in general burdensome for students.
- The recognition process in my case was burdensome.
- I would not have gone studying abroad if I had known that the recognition process is so complicated.

These are all negative statements so the stronger the agreement the worse the evaluation of the recognition process. The share of respondent who agreed is smallest in the case of the last statement. The recognition process and its potential complexity is not something that would prevent respondents from going abroad if there were to take that decision again. This implies that any problems with the recognition process are not as important for students as benefits coming from the participation in an international exchange programme.

In the case of other statements, respondents were a bit harsher but still held rather positive or at least neutral view of the process. 27% agreed that the process is complicated and difficult to understand. Moreover, 27% found the process burdensome in their case and 35% found it in general burdensome for students. The highest number agreed with the statement that the process takes a lot of time, but even in this case the share of those who agreed was roughly equal to the share of those who disagreed.

Figure 7 Evaluation of recognition process



By and large, the evaluation of the selected aspects of the recognition process did not change significantly between measurements. For the control group the level of agreement with the given statements rose between the measurements which means that respondents in the second measurement held less favourable opinion of the recognition process than those included in the first measurement. In the case of treatment group the results are mixed. Respondents in the second measurement are more likely to complain about the duration of the process but less willing to agree that they would not have gone aboard had they known about the complexity of the recognition process. As a result, the opinion on the recognition process improved faster or deteriorated slower among the respondents belonging to the treatment group than among the rest. However, the effects are very small.

Table 3.5.6 Evaluation of recognition process

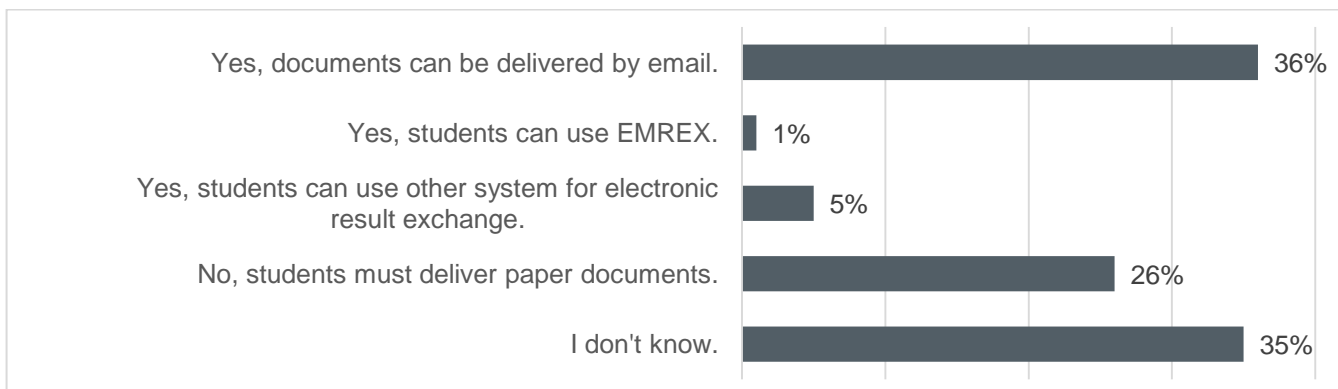
		The recognition process is complicated and difficult to understand	The recognition process takes a lot of time	The recognition process is in general burdensome for students	The recognition process in my case was burdensome	I would not have gone studying abroad if I had known that the recognition process is so complicated
Mean	Control group - 1st measurement	2.66	3.04	2.98	2.59	1.41
	Control group - 2nd measurement	2.78	3.34	3.13	2.82	1.53

	Treatment group - 1st measurement	2.73	3.22	3.13	2.72	1.63
	Treatment group - 2nd measurement	2.67	3.33	3.15	2.79	1.42
	Difference in differences	-0.129	-0.147	-0.148	-0.131	-0.293
N	Control group - 1st measurement	986	971	952	969	972
	Control group - 2nd measurement	703	706	691	695	702
	Treatment group - 1st measurement	56	58	56	57	59
	Treatment group - 2nd measurement	49	49	46	48	50
Std. Deviation	Control group - 1st measurement	1.219	1.271	1.187	1.258	0.796
	Control group - 2nd measurement	1.194	1.288	1.167	1.254	0.855
	Treatment group - 1st measurement	1.258	1.325	1.222	1.386	1.015
	Treatment group - 2nd measurement	1.214	1.345	1.21	1.304	0.702

Perception of EMREX

The questionnaire section focusing on EMREX started with a question if there are any methods of electronic record transfer available at respondents' institutions. More than one third of the respondents did not know. Another one third answered that documents can be sent by e-mail and 26% answered that only paper documents were used. Less than 1% (13 respondents) answered that EMREX is available and 5% that students can use some other system.

Figure 8 System for electronic result exchange (transferring academic records) offered by universities



Respondents were not evaluating EMREX user experience in this study, just the overall satisfaction. The results are not presented here due to a small number of respondents who declared that they used the tool. However, the user experience survey shows that those who used the tool were satisfied with it (see 3.1).

Respondents who did not know the tool were then presented with the following decryption of EMREX: "EMREX is the solution for electronic transfer of student records between higher education institutions in Europe. Students can use online tool to transfer their records from their host institution

to their home institution.”, and asked if they would be willing to use it. Most i.e. 61% answered ‘yes’. Negative answers were rare – just 4%. A large group i.e. 35% chose ‘I don’t know’ option.

Respondents who did not want to use the tool were asked for a reason for that. A quarter of them answered that they do not see a reason for a new system or that they find the old way of recognition process simpler and quicker. Around 20% did not believe that administration would accept transcripts transferred electronically. Further 18% answered that they do not know/never heard about EMREX.

The impact of electronic systems on student behaviour and opinion

This section focuses on the relation between the perception of recognition and the presence of electronic solutions facilitating achievement recognition. The sample was divided into three groups:

- 1) respondents from institutions offering EMREX or other electronic system for record transfer,
- 2) respondents from institutions which accept transcripts of records sent by e-mail,
- 3) other respondents.

Students coming from the institutions offering EMREX or other system for the electronic transfer were most satisfied with the recognition process. Those from the institutions using e-mail at best were somewhat less satisfied. The least satisfied were respondents whose institutions had not introduced any forms of electronic achievement transfer.

First group is most satisfied with the recognition process and is the least likely to see it as burdensome, time consuming, and discouraging from mobility. However, the differences are not very large and the relationship between these variables is not a very strong one.

Table 3.5.7 Please rate your satisfaction with the recognition process at your university

	Mean	N	Standard Deviation
EMREX or other system	3.94	96	1.23
E-mail	3.75	607	1.37
No	3.63	1041	1.385

The analysis of the responses to the more detailed questions support the claim that the higher levels of satisfaction with the recognition process are related to the introduction of electronic solutions for the transfer of records. On the one hand, those who come from institutions offering EMREX or a similar tool are the least likely to agree with the five negative statements regarding the recognition process. On the other hand, respondents not offered any such tool by their institutions are the most critical of the recognition process. As before, the remaining group of respondents whose institutions use e-mail stays somewhere in the middle.

Table 3.5.8 Evaluation of recognition process

		The recognition process is complicated and difficult to understand	The recognition process takes a lot of time	The recognition process is in general burdensome for students	The recognition process in my case was burdensome	I would not have gone studying abroad if I had known that the recognition process is so complicated
Mean	EMREX or other system	2.27	2.71	2.66	2.21	1.29
	E-mail	2.51	3.05	2.9	2.58	1.42
	No	2.87	3.29	3.18	2.8	1.5
N	EMREX or other system	96	97	95	97	92
	E-mail	624	622	605	618	618
	No	1072	1063	1043	1052	1071
Std. Deviation	EMREX or other system	1.147	1.33	1.234	1.172	0.621
	E-mail	1.127	1.275	1.155	1.2	0.812
	No	1.236	1.277	1.177	1.297	0.849

Differences between the three groups of respondents are not limited to their opinion on the recognition process. The recognition rates are also somewhat related to the used method of records transfer. The course recognition rate is 0.05 among respondents from the institutions offering tool for the achievement transfer. In the case of the ECTS recognition the difference is smaller – 0.03.

Table 3.5.9 Course recognition rate

	Mean	N	Standard Deviation
EMREX or other system	0.9765	84	0.08396
E-mail	0.9572	535	0.14489
No	0.9323	919	0.19098

Table 3.5.10 ECTS recognition rate

	Mean	N	Standard Deviation
EMREX or other system	0.9614	84	0.11596
E-mail	0.9589	528	0.12834
No	0.933	899	0.18049

Summary

This study aimed to investigate the impact of EMREX on the recognition process and students' perception of it. The answers of two groups of students were compared:

- 1) students who went from a field trial institution to a field trial institution,

- 2) other students i.e. those who either came from a non-field-trial institution or went to a non-field-trial institution.

Each group was divided into two subgroups: students who returned from exchange before September 2016 and those who returned from exchange in September 2016 or later. The aim was to assess if the opinion of the recognition process had improved faster in the first group than among students belonging to the other group.

The study offers little evidence of the impact of EMREX implementation on the recognition process. Compared were: the time of delivery of the transcript, the duration of the recognition process, the share of recognised grades and ECTS credits, and the opinion on the recognition process. None of those matters improved over time among the first group of students significantly faster than among the other group of students. The number of EMREX users taking part in the study is not high enough for providing evidence on the impact on the recognition process.

Only few respondents from those who used EMREX were able to assess its impact on their recognition process. However, after reading a brief description of the tool most declared that they would use it. Very few answered that they would not. The positive student attitude should help in EMREX dissemination. Moreover, the analysis shows that students at institutions offering electronic tools for easier recognition are more satisfied with the recognition process and have better recognition rates than respondents from institutions lacking such a solution.

4. Conclusions

This report summarises the results of four research studies which are parts of the EMREX evaluation process. It presents and discusses the methodology of these studies as well as changes that occurred during the field trial. Most importantly it provides a multi-angled assessment of the introduced tool and its impact on student mobility in the field trial countries.

The results of the evaluation are mixed. The user experience survey (short survey) clearly shows that students who used the tool to transfer their records are satisfied with it despite some reported problems with the tool. According to the respondents, the weakest spot of EMREX is its visual appeal, which nevertheless has been rated good.

The administrative personnel responsible for student mobility interviewed in the qualitative study expressed an overall positive opinion on EMREX. In general, the system was evaluated as efficient, rather simple, and easy to use. Trustworthiness of the data received through the system is another advantage. The interviewees were seeing the system as potentially very useful in alleviating some of the recognition aspects mainly by speeding up the transfer of records. They talked about a potential reduction of their workload as one of the effects of the systems' introduction. The administrators pointed also some downsides of the system. They mentioned technical difficulties such as expiring login credentials etc. What seems to be the most important issue is the small number of countries where the system is available. Limited coverage substantially diminishes the usefulness of the tool as it would be available only to a small fraction of exchange students. A small number of students using

EMREX would mean that the costs of implementing the new system could outweigh the benefits. A wider dissemination of EMREX would make the administration far more willing to adopt EMREX and promote it among students.

Last but not least, the interviewees as experts on student mobility assessed the potential of EMREX to impact student behaviour. They were rather sceptical about the possible impact of EMREX on students' willingness to go abroad. In administration's eyes, the recognition process is not a decisive factor when students choose whether to study abroad.

The research in which not only EMREX users were studied and which aimed at assessing its impact on student mobility offers a less favourable picture. Both the study of administrative data and the survey of exchange students aimed at comparing changes in the recognition process for students with access to EMREX and those without it. The survey tracked changes in the recognition rates, the duration of the process as well as students' opinion on it. The study based on administrative data monitored the share of students choosing to go from one EMREX-offering country to another. The underlying assumption was that students might be encouraged to choose one of the EMREX countries by a promise of easier recognition. None of the expected changes was observed in the studies. The proportion of students choosing EMREX countries among all exchange studies remained unchanged at the national level. This means that any changes in the number of students taking part in the exchanges between the field trial countries is rather an effect of changes in student mobility in general than a consequence of the introduction of EMREX. Similarly, the exchange student survey offer little evidence of EMREX's positive impact on student mobility at the institutions where it was introduced.

In other words, EMREX is on the one hand a tool that is positively evaluated by its users and on the other hand a technological solution that has yet to prove its potential for affecting student mobility at a macro level. There are few potential causes for that. As it was mentioned in the section presenting the administrative data analysis, any innovation needs time to spread. The rollout of EMREX was delayed and for most of the duration of the trial limited to three countries (Finland, Norway, and Sweden). The number of students going from one of these three countries to another is relatively small, e.g. compared to the number going to big European countries. That limited the number of actual users whose opinion is important for convincing other students to choose an EMREX country as their destination or at least to convince those who already choose such a country to use the tool. Moreover, a higher number of actual users is needed to affect students' opinion on the recognition process at their institution.

The study shows that there is a scope for improvement in the recognition process. EMREX can definitely cut the transcript transfer time. Sending paper documents is an outdated method and it is natural that students as well as administrators will at some point start demanding a more modern tool. This could be already observed during the qualitative interviews. Moreover, the survey of exchange students shows that students are willing to use EMREX. Despite the lack of the evidence of wider impact of EMREX on student mobility it is possible to recommend its further development and dissemination. It is a proven solution and as the short survey and the qualitative study show its users are satisfied with it.



In case of further dissemination of EMREX it is advisable that the evaluation process continues as well. The prepared methodology is easily scalable. The evaluation could be improved if there was a centralised and standardised data collection system that collected complete data on student mobility. Moreover, it is essential to improve the quality of data on the recognised credits and grades.



5. Appendix A — short survey

5.1. Survey Tool for the EMREX field trial (by Łukasz Karniewski)

In order to choose a feedback gathering tool for EMREX, we have looked for a survey application that would satisfy at least the first two of the following requirements:

1. The ability to make the survey publicly available via a common link,
2. The ability to pass initial data to the survey,
3. The ability to switch between languages,
4. The ability to customize the survey page (custom title, logo).

We have looked into the following options:

1. SurveyMonkey (<https://www.surveymonkey.com>),
 - + Satisfies all the requirements.
 - Some required features are only available in the most expensive license option (app. 850 EUR/year).
2. Webropol (<http://w3.webropol.com/startpage>),
 - + Already used at CSC (Finland).
 - Lacks the ability to pass initial data.
 - Uncertain licensing status, probably would have to buy a new license.
3. Ankieter (developed by MUCI).
 - + Developed and managed by MUCI.
 - + Free (no license required).
 - Lacks most of the required features.

As we are planning on gathering the feedback for at least 3 years, we have decided that the best course of action is to extend the MUCI's tool with the required functionality.

New features have been added in October. At this moment, Ankieter satisfies all requirements from the list, with the exception of adding a custom logo to the survey page.

The short EMREX survey has been published for testing on 31.10.2015 and is available via the link below:

https://ankieter.mimuw.edu.pl/surveys/79/?env=test&session_id=X&home_institution=X&home_country=X&host_institution=X&host_country=X&date_of_import=X&time_spent=X&grades_imported=X&ects_imported=X&grades_imported_percent=X&ects_imported_percent=X

The “Xs” will be replaced with actual values of the initial survey data.

5.2. Short survey – invitation, questionnaire and imported variables

Invitation

Now we would like to ask your opinion about EMREX. Please fill in the questionnaire below. This should take no more than 3 minutes of your time. Your responses are very important and will help us improve our software. Your answers will be completely anonymous.

Questionnaire

Please rate how much you agree or disagree with the following statements:

	1 – Strongly disagree	2 – Disagree	3 – Neutral	4 – Agree	5 – Strongly agree
EMREX is easy to use.					
The instructions are clear and understandable.					
EMREX works fast.					
I could import all relevant data (courses, grades) using EMREX.					
The EMREX interface is visually appealing.					
I am satisfied with how EMREX works.					
I would recommend EMREX to other mobile students.					

Do you have any other comments about EMREX?

Imported variables

- Each respondent in a separate row
- Each answer in a separate column
- For each respondent a set of variables from logs:
 - Home institution
 - Home institution country
 - Host institution
 - Host institution country
 - Date of import
 - Time spent in EMREX
 - Number of grades imported
 - Number of ECTS credits imported
 - What % of available grades was imported
 - What % of available ECTS credits was imported

6. Appendix B — qualitative study

6.1. Interview request

Dear [name of the prospective interviewee].

I am an Assistant Professor at the University of Warsaw, a member of EMREX consortium. I am responsible for the evaluation in the EMREX project. I received your contact details from [name of the contact person]. I am contacting you to ask if you would consider participating as a respondent in our research. As your responsibilities include coordinating students' mobility, your input would be of invaluable help for our team.

As you probably know, EMREX is a solution for electronic transfer of student records between higher education institutions in Europe. Its main objective is to increase availability, quality and reliability of information about student records of achievement and thus to make the administration of student mobility easier for students as well as for administration.

During the interview, I would like to discuss topics such as:

- Your opinion on the electronic systems for achievement recognition and their potential for further improving the recognition process.
- Your opinion on EMREX as a solution for improvement of academic achievement recognition.
- Your evaluation of EMREX implementation at your institution.
- Perceived usefulness of EMREX for administration and the effects of EMREX's implementation on administrative routines.
- The observed/potential impact of EMREX on students' behavior.

The estimated duration of the interview is around 60 minutes.

As the administrative personnel is one of the beneficiaries of the project, we are greatly interested in learning about the experiences with EMREX at your institution. Moreover, we highly value the administration's knowledge on students' perception of EMREX. Therefore, we would appreciate if you could help us by participating in the interview.

I hope we can find a time slot that will be suitable for you. My first suggestion would be to schedule the interview with you at your institution or at another suitable location on [dates].

6.2. Interview scenario

Introduction

General information about student mobility in the institution

- Could you please tell me about student mobility at your institution?

- How many students of your institution study abroad (per academic year)?
- How many students from abroad come to study at your university (per academic year)?
- Can you identify any patterns of international student mobility at your institution? What would they be?
- What are the typical destinations of students from your institution?
- Where do incoming students typically come from?

Respondent's role in student mobility

- How would you describe your role with regard to student mobility?
- Are you involved in helping students from your institution organise their exchanges? If yes, what is your role in that process?
- Do you assist foreign students when they come to your institution? If yes, what is your role in that process?

Recognition process

Respondent's involvement in the recognition process:

- Are you involved in the process of the academic achievement recognition?
- In what way do you participate in the recognition process?

Description of the recognition process at the institution

- Could you please describe the process of academic achievement recognition at your institution?
- What are the main problems with the recognition from your perspective?
- How do you deal with the problems? Can you recall the last problematic case and describe how it was tackled?
- What is a typical case? Can you describe some exceptional cases?
- Is the process burdensome for you or your office?

Recognition from student's perspective

- Based on your experience, what can you say about students' perceptions of the recognition process?
- What are their typical problems?

Opinions on the electronic systems for achievement recognition

Electronic systems for achievement recognition known to the respondents and his or her opinion about the systems.

- What electronic systems for achievement recognition do you know?
- Could you please describe those systems?
- How do they work?
- Which parts of the process are automated and which still require involvement of students or administrative personnel?

Advantages and disadvantages of using electronic systems.

- What are the main benefits and drawback of using each of those systems?
- In what way could those systems be improved to be more useful for you?

Evaluation of EMREX

Experience with EMREX

- Could you describe your experience with EMREX?
- Could you tell something about the implementation of EMREX at your institution? If you were to explain to a new employee at your office what EMREX is, how would you do it?

Usefulness of EMREX

- How would you evaluate the usefulness of EMREX for your institution?
- What has changed in the workflow of your institution since the introduction of EMREX? How did those changes affect your workload?

Possible improvements to EMREX

- What could be done to make EMREX more useful from your perspective? What are the missing features? Which features need improving? Can you recall any particular problem with using EMREX at your institution?
- Are there any regulatory/ legal issues which have to be solved in order to make EMREX more useful for you?

Implementation of EMREX

Opinion on the implementation of EMREX

- What is your opinion on the process of implementation of EMREX at your institution?
- What could have been done better?

Student behaviour

Observations regarding students' usage of EMREX

- How many students used EMREX at your institution?
- What could you tell about their reaction to the tool? Did they report any problems? Did they like it?

EMREX's impact on students' behaviour

- Have you noticed any impact of EMREX on the students' behaviour?
- Any changes regarding the recognition process?
- Any changes in the mobility destinations?

Ideal system for recognition

- Could you describe what in your view would be the ideal system for the transfer of academic records?
- * Are there any other issues you would like to comment on and were not raised before in the interview?

7. Appendix C — the list of variables in the administrative data

Partners received instructions on what types of data are required for the evaluation. The following table contains the list of variables that should be delivered.

HEI name

HEI country

HEI Erasmus code

HEI PIC number

Total number of students

Number of outgoing students - Denmark

Number of outgoing students - Finland

Number of outgoing students - Italy

Number of outgoing students - Norway

Number of outgoing students - Sweden

Number of outgoing students - other EU countries

Number of incoming students - Denmark

Number of incoming students - Finland

Number of incoming students - Italy

Number of incoming students - Norway

Number of incoming students - Sweden

Number of incoming students - other EU countries

~~Average length of study period~~

~~Average number of recognised ECTS~~

(the last two variables were mostly missing in the delivered data so could not be analysed)

8. Appendix D – long survey

8.1. Questionnaire for mobile students

Blue text are instructions for the survey tool and won't be displayed to respondents.

Dear Student!

EMREX is an EU-funded project that aims at easing the process of recognition of study courses taken abroad back at the home university. If you have ever participated in any exchange program, we would like to ask you to take part in our research on student mobility and subsequent recognition process. Please complete the following questionnaire. It should not take more than 15 minutes.

For more information on EMREX, visit the project's website (www.emrex.eu).
For more information on this survey, contact our help-desk (surveys@emrex.eu).

We would like to ask you a few questions concerning your **last exchange**.

Q1. Please indicate the country of your home institution:

1. Denmark
2. Finland
3. Italy
4. Norway
5. Sweden
6. Other EU country (please specify)
7. Other non-EU country (please specify)

Only for students from EMREX countries (Q1<6). A different version of question for each country.

Q1a. Please indicate your home higher education institution: [list of HEIs for each EMREX country](#).

For all students

Q2. Please indicate the country of your host institution(s):

1. Denmark
2. Finland
3. Italy
4. Norway
5. Sweden
6. Other EU country (please specify)
7. Other non-EU country (please specify)

Only for students going to EMREX countries (Q2<6). A different version of question for each country.

Q2a. Please indicate your <u>host</u> higher education institution(s)

Select all that apply

For all students

Q3. Please indicate in which exchange programme did you participate during your last exchange:

1. Erasmus+
2. Nordplus/Nordlys
3. Bilateral agreement between universities
4. Government programme
5. Private foundation
6. Other (please specify)

Q4. When did you actually start your studies at the host institution?

Month ____ Year ____

Q5. When did you finish your studies at the host institution?

Month ____ Year ____

Q6. What was the level of your studies during the exchange?

1. First-cycle (bachelor) studies
2. Second-cycle (master) studies
3. Uniform master-level (5-year master) studies
4. Third-cycle (doctoral) studies
5. Other (please specify)

Now we would like to ask some questions concerning the process of recognition of academic achievement.

Q7. Did you get your transcript of records for the exchange period before leaving the host institution?

1. Yes
2. No

Q8. Who is responsible for delivering the transcript of records (issued for you at host institution) to your home institution?

Select all that apply

1. You as a student
2. Administration of the host institution
3. Administration of the home institution
4. I don't know

Q9a. Has your transcript of records been delivered to your home institution?

1. Yes
2. No

-

If the transcript has been delivered (Q9a=1)

Q9b. Is the recognition process finished in your case?

1. Yes
2. No

-

If the transcript has been delivered (Q9a=1)

Q10a. How long did it take to deliver the transcript of records to your home institution since your last grade at the host institution was registered?

Please fill in an approximate number of days.

[] leave empty if you don't know

If the process is finished (Q9b=1)

Q10b. How long did it take your home institution to recognise your academic achievement since the transcript of records was delivered?

Please fill in an approximate number of days.

[] leave empty if you don't know

Q11a. How many courses did you complete during your exchange?

[] does not apply

Q11b. How many of those courses were recognised by your home institution?

[] does not apply

Q12a. How many credits (e.g. ECTS) did you earn in total during your exchange:

[] does not apply

Q12b. How many of those credits (e.g. ECTS) were recognised by your home institution?

[] does not apply

Q13. Were any of your grades downgraded in the recognition process?

1. No
2. Some were downgraded
3. Most were downgraded
4. All were downgraded
5. Does not apply

Q14. Were any of your credits (e.g. ECTS) downgraded in the recognition process?

1. No

2. Some were downgraded
3. Most were downgraded
4. All were downgraded
5. Does not apply

If not all credits/ courses were recognised (Q11b<Q11a or Q12b<Q12a)

Q15. What were the reasons for the partial recognition of your academic achievements?

Select all that apply

1. I was not satisfied with some of the grades and I did not apply for their recognition.
2. My university did not recognise some of the courses because they were not included in the Learning Agreement.
3. My university did not recognise some of the courses because they were not recognised as academic courses (e.g. they were language, cultural or sports courses).
4. My university did not recognise some of the courses because they were not from my field of study.
5. My university did not recognise some of the courses because of their level.
6. My professor(s) did not accept some of the courses because of their content.
7. Other (please specify).

If not all credits/ courses were recognised (Q11b<Q11a or Q12b<Q12a)

Q16. Did the problems with recognition affect your studies at the home institution?

Select all that apply

1. No, they did not. Excluding other answers
2. Yes, I had to take additional courses.
3. Yes, I had to pass additional exams (without taking courses).
4. Yes, I had to prolong my studies.

For all students

Q17. Please rate your satisfaction with the recognition process at your university

1. Very dissatisfied
2. Somewhat dissatisfied
3. Neither satisfied nor dissatisfied
4. Somewhat satisfied
5. Very satisfied
6. I don't know

Q18. Please rate the following statements concerning academic achievement recognition on scale of 1 (strongly disagree) to 5 (strongly agree).

- a. The recognition process is complicated and difficult to understand.
- b. The recognition process takes a lot of time.

- c. The recognition process is in general burdensome for students.
 - d. The recognition process in my case was burdensome.
 - e. I would not have gone studying abroad if I had known that the recognition process is so complicated.
1. Strongly disagree
 2. Disagree
 3. Neither agree nor disagree
 4. Agree
 5. Strongly Agree
 6. I don't know/ Does not apply

Q19. Does your university offer students a system for electronic result exchange (transferring academic records)?

Select all that apply

1. Yes, documents can be delivered by e-mail
2. Yes, students can use EMREX.
3. Yes, students can use other system for electronic result exchange.
4. No, students must deliver paper documents. Excluding other answers
5. I don't know.

If HEI offers EMREX (Q19=2)

Q20. Did you use EMREX yourself?

1. Yes.
2. No, because I did not want to.
3. No, because it was not available for my host institution.
4. No, because I was not aware of it while I was getting my records recognised.

If student used EMREX

Q21. Please rate your satisfaction with EMREX?

1. Very dissatisfied
2. Somewhat dissatisfied
3. Neither satisfied nor dissatisfied
4. Somewhat satisfied
5. Very satisfied
6. I don't know

If no because he or she did not know about EMREX or EMREX was not available (Q19!=2 or Q20>2)

Q22. EMREX is the solution for electronic transfer of student records between higher education institutions in Europe. Students can use online tool to transfer their records from their host institution to their home institution.

If EMREX was available for you, would you be willing to use it?

1. Yes.
2. No.
3. I don't know.

If no, because he or she did not want or would not be willing to use EMREX (Q20=2 or Q22=2)

Q23. Can you please give the main reason why you did not want to use EMREX?

1. I generally do not feel comfortable using electronic systems.
2. I trust paper documents more.
3. I have privacy concerns and I do not want my data to be transferred over the internet.
4. I know that my institution's administration prefers to use paper documents.
5. I find it simpler and quicker to have recognition done the old way.
6. Other (please specify)

Q24. Please rate how important it is for you that EMREX (or a similar platform) offers following benefits:

- a. Fast and easy transfer of transcript of records
 - b. Reduced dependency on other people to get access to transcript of records
 - c. Reduced risk of errors during a manual transfer of grades and credits from transcript of records to the home institution's IT system
 - d. No need for paper copies of the transcript of records
-
1. Not important at all
 2. Of little importance
 3. Of average importance
 4. Very important
 5. Absolutely essential
 6. I don't know

Q25 Which of the following features would be the most useful if introduced in EMREX (or a similar platform)?

1. Automatic grade conversion without the need of course evaluation by academic or administrative staff.
2. Possibility to pre-approve courses for import. Grades and credits earned for these courses would be automatically imported to home institution's system after they are recorded in the host institution's system.

3. Possibility to give employers access to verified records (e.g. signed PDF confirming academic achievement).
4. I don't know

Q26. Please share your opinion on how could the recognition process be improved.
[text box]

8.2. Cover letter to HEIs

We would like to request your university's assistance with dissemination of a survey which is part of EMREX project. EMREX is the solution for electronic transfer of student records between higher education institutions in Europe. Its objective is to increase availability, quality and reliability of information about student records of achievement and thus to make the administration of student mobility easier (EMREX.EU). Results of the survey along with outcomes of other research will be used for the solution's evaluation.

Our research team has prepared an online questionnaire for students who have returned from studies abroad (see attachment 1 - questionnaire). The main objective of this research is to gather students' opinion on the recognition process. Only a small section of the questionnaire concerns EMREX user experience.

The survey is hosted on a server of the University of Warsaw, which is a member of the EMREX consortium responsible for project's evaluation. It can be accessed *via* this link: <https://ankieter.mimuw.edu.pl/surveys/81/>.

We are going to run the survey during whole field trial i.e. until November 2017.

The survey is completely anonymous. We do not collect any personal information and the results of this research will be reported in aggregate form only.

We would like to ask for your help with survey's dissemination among exchange students of your institution. We have prepared a short invitation for students (see attachment 2 – invitation) and we would like to ask you to post it together with the link to the survey on your institution's websites, social media websites etc. that are most likely to be visited by exchange students who may be interested in taking part in the survey. We will also appreciate any additional form of promotion, e.g. occasional e-mails to students during the periods when the highest number of them get their achievements recognized.

8.3. Invitation for students

Have you studied abroad? Or have you been on exchange within your country? Are you satisfied with the achievement recognition process?



If you have returned from study abroad or at another institution in your country, please take part in [this survey](#) and share your opinion regarding the achievement recognition process (transfer of grades and credits). It should not take more than 15 minutes to complete. Your opinion is very important. It will help to improve the recognition process. Thank you.

