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Digital Individual Learning Accounts in the Visegrad countries

D-ILA AI run protocols

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D-ILA AI run protocol

Basic data

Short name: Support of ICT skills
Identification code: CZ_AI run_1
Minutes prepared by: NVF
Date: April 2024
AI run by: KIFÜ

Professional concept

Government has limited resources for education and is considering to channel the resources only to development of ICT skills. With the help of the model we compare two situations:

- support of all skills (no filters applied)
- targeted support of ICT skills

The government seeks to answer the following questions:

- How many people will be supported in which scenario?
- What scenario is more cost-effective from the point of view of the Government?
- How do the ICT skills of people improve in each of the scenarios? (to be derived from the database of results, if possible: what skills are developed for how many people? how many people developed ICT skills?)

Suggestion: the governmental funds can be used only for trainings developing ICT skills (other courses stay in the database, but can be funded only from individuals' or employers' funds)

Expected results of the intervention

To find out the more cost-effective measure to support ICT skills development in the situation of limited budget.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

We calculate the total amount of state aid by summing the values of the Budget_state_contrib data field for the 600 persons. The state aid is left unchanged in all cases where there is DigComp framework training in one of the data fields Goals_individuals or Goals_states or Goals_employers. Where no DigComp training needs are specified, we set the State aid rate to EUR 0. The cancelled



state aid will be added up and distributed among the persons for whom a DigComp training claim is specified. The distribution is done in proportion to the existing State aid. If there is no existing State aid, the State aid should be EUR 500.

The total value of the data field Budget_state_contrib must be equal to the total value of the initial state.

Changes to the data table of trainings (courses)

No changes to the basic version are necessary.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-6. "Use budget allocation" parameter value when running AI: yes

Results of the AI run

In the sample of 600 people surveyed, there are 251 people with 0 DigComp competences among their learning goals (6 goals data fields). According to the professional concept, the state aid will be withdrawn from them, i.e. a total of 108 814 €. Based on the professional concept, this amount will be distributed among the persons whose learning objectives include at least 1 DigComp competence. There are 349 such persons. Out of these 349 persons, 35 persons will receive €0 state aid in the original table, in their case we will give them €500 state aid according to the professional concept. This leaves $349 - 35 = 314$ persons, among whom $108\,814 - (35 * 500) = 91\,314$ € have to be distributed in proportion to the original state aid, i.e. not evenly.

The results will be evaluated by using the evaluation methods 1-2-3.

	Base version	CZ_AI run_1_Support of ICT skills
Volume of the sample [persons]	600	600
Number of persons not recommended training by the algorithm [persons]	33	149
Proportion of persons not recommended training by the algorithm [%]	5,5%	24,8%
Total number of training courses offered [number]	2 002	1 902
Number of training courses per person [pcs]	3,34	3,17
Total cost of training offered [€]	379 799	382 348
Total cost of 1 training course per person offered in the first instance [€]	132 829	123 493
Training cost per person [€]	633,0	637,2

4. Number of recommended trainings broken down by framework combinations TOP10



Support of ICT skills

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
175	EntreComp	FinComp			
172	DigComp				
127	DigComp	DigComp	DigComp	DigComp	
100	DigComp	DigComp	DigComp	DigComp	DigComp
97	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
92	GreenComp				
91	FinComp	EntreComp	FinComp		
89	EntreComp	FinComp	FinComp		
85	LifeComp				
84	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL

Base version

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
197	EntreComp	FinComp			
159	DigComp				
146	LifeComp				
136	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
111	DigComp	DigComp	DigComp	DigComp	
106	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
102	EntreComp	FinComp	FinComp		
96	FinComp	LifeComp			
75	GreenComp				
70	DigComp	DigComp	DigComp	DigComp	DigComp

5. All transversal competency level changes available through the recommended trainings

Framework category	Base version	CZ_AI run_1_Support of ICT skills	Change
CEFRL	826	555	67,2%
DigComp	2960	3583	121,0%
EntreComp	2689	2189	81,4%
FinComp	682	669	98,1%
GreenComp	363	362	99,7%
LifeComp	1252	942	75,2%

6. Number of people who have been offered training under a specific framework



Framework category	Base version	CZ_AI run_1_Support of ICT skills	Base version	CZ_AI run_1_Support of ICT skills
CEFRL	87	67	14,5%	11,2%
DigComp	345	326	57,5%	54,3%
EntreComp	319	269	53,2%	44,8%
FinComp	241	197	40,2%	32,8%
GreenComp	167	166	27,8%	27,7%
LifeComp	305	292	50,8%	48,7%

Evaluation of the results

The aim of the state measure was to specifically support digital skills training by reallocating financial resources. The state contribution to education was redistributed so that citizens with a stated goal of developing their digital skills received an increased state contribution and training. The increase in the allowance was made possible by the redistribution of state resources: citizens with no intention to train in digital skills did not receive any state allowance for training.

The simulation results of this public education policy measure show that under these conditions, several times more adults (almost a quarter) will be excluded from education than in the original scenario. However, this smaller number will be offered more or less the same number of courses as in the previous scenario, so this group will have significantly more opportunities to learn digital skills, which meets the objectives of this measure.

In terms of skills acquired, the courses in the scenario tested have increased the level of digital skills more significantly, while the increase in skills in other areas has decreased somewhat. This is also in line with the expectations and intentions of the measure.

A surprising result is the distribution of courses offered for training: according to this statistic, there was no significant increase in the number of courses teaching digital skills, while the number and share of courses offered to develop business and financial skills decreased somewhat.

Conclusions for the D-ILA data model

The result of indicator 6 seems illogical given the increase in the financial state contribution for people with the intention to learn digital skills. The reason for this ambiguity could be the way we describe the content of each course: up to five different 'framework category' entries can be given for each course, which can lead to a 'blurring' of information about the content of the course, which is then reflected in the unclear results of this statistic.



D-ILA AI run protocol

Basic data

Short name: Introduction of a compulsory individual contribution

Identification code: CZ_2_AI run

Minutes prepared by: NVF

Date: April 2024

AI run by: KIFÜ

Professional concept

Government decided to support training for adults, and it is considering whether or not to introduce obligatory individual co-payment. With the help of the model we compare two situations:

- Government budget available is 2000 Eur for all people
- Government budget available is 2000 Eur for all people, but the individual needs to cover 20% of the price of the course

The government seeks to answer the following questions:

- How many people will be supported in which scenario?
- What scenario is more cost-effective from the point of view of the Government?
- How will the skills of people improve in each of the scenarios? (to be derived from the database of results, if possible: what skills are developed for how many people?)

Suggestion: Individuals are matched only with the courses, where they can cover at least 20% of the price from their private budget.

Expected results of the intervention

To increase the number of training provided to the adult population.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

The implementation partially differs from the professional concept. The first case is feasible: each person receives 2,000 euros of state support (Budget_state_contrib data field value is 2,000 euros),



while individual contributions do not change compared to the base version. The second case can be solved in the model by requiring the 20% mandatory individual deductible to appear on the individual account. In other words, in addition to the 2000 EUR state subsidy, individuals must pay 20%, i.e. 400 euro per person (Budget_private_contrib data field value = 400 euro)

The individual contribution can be higher in the base version than 400 euros. Then the amount specified in the base version remains.

Changes to the data table of trainings (courses)

No changes to the basic version are necessary.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-6. "Use budget allocation" parameter value when running AI: yes

Results of the AI run

In the base version, the amount of state support is 230 537 euros. Based on the professional concept, the amount of the state aid changes to 1 200 000 euros. In version 2, we proceed from here: there are 78 persons whose personal contribution in the base version is greater than or equal to 400 euros. In their case, we will not change the amount of the individual contribution. For the additional 522 persons, the amount of the individual contribution will be increased to 400 euros. With this change, the amount of individual contributions increased from EUR 78,662 to EUR 270,660. A further consequence is that in the case of 390 persons, instead of the previous individual amount of 0 euros, we now expect a contribution of 400 euros.

The results will be evaluated by using the evaluation methods 1, 2, 3:

	2000 Eur for all people	2000 EUR + 400 EUR individual contribution
Size of the sample [persons]	600	600
Number of persons not recommended training by the algorithm [persons]	7	7
Proportion of persons not recommended training by the algorithm [%]	1,2%	1,2%
Total number of training courses offered [number]	3 486	3 998
Number of training courses per person [pcs]	5,81	6,66
Total cost of training offered [€]	1 279 324	1 451 297
Total cost of 1 training course per person offered in the first instance [€]	454 036	374 965
Training cost per person per most recommended training [€]	756,7	624,9



4. Number of recommended trainings broken down by framework combinations

TOP10

2000 Eur for all people

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
370	LifeComp				
329	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
245	DigComp	DigComp	EntreComp	EntreComp	LifeComp
206	EntreComp	FinComp			
206	EntreComp	EntreComp	EntreComp	DigComp	DigComp
180	DigComp	DigComp	DigComp	DigComp	DigComp
170	DigComp				
141	FinComp	LifeComp			
127	GreenComp	GreenComp			
109	GreenComp				

2000 EUR + 400 EUR individual contribution

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
386	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
234	EntreComp	EntreComp	EntreComp	DigComp	DigComp
232	GreenComp				
219	LifeComp				
185	LifeComp	EntreComp	EntreComp	LifeComp	
179	DigComp	DigComp	DigComp	DigComp	
167	GreenComp	GreenComp			
162	FinComp	LifeComp	GreenComp	EntreComp	DigComp
155	DigComp	DigComp	DigComp	LifeComp	
154	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp

5. All transversal competency level changes available through the recommended trainings



Framework category	2000 Eur for all people	2000 EUR + 400 EUR individual contribution	Change
CEFRL	2697	2782	103,2%
DigComp	6163	6243	101,3%
EntreComp	7672	8452	110,2%
FinComp	702	737	105,0%
GreenComp	887	1210	136,4%
LifeComp	2963	3117	105,2%

6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	2000 Eur for all people	2000 EUR + 400 EUR individual contribution	2000 Eur for all people	2000 EUR + 400 EUR individual contribution
CEFRL	167	161	27,8%	26,8%
DigComp	455	515	75,8%	85,8%
EntreComp	434	484	72,3%	80,7%
FinComp	294	336	49,0%	56,0%
GreenComp	171	250	28,5%	41,7%
LifeComp	410	480	68,3%	80,0%

Evaluation of the results

The aim of the simulation is to inform the decision on whether it is appropriate to introduce a mandatory contribution to education by the citizen. The options considered are a state contribution for all without distinction and a state contribution for all but with a 20% contribution from the citizen. Some of the political representatives in the country see these funds as an incentive for people to be willing to complete their education and invest their time and money in it. However, this measure risks excluding the less well-off part of the population from adult education.

In particular, it would be interesting to know whether people would be willing to invest the necessary EUR 400 of their own money. However, this cannot be determined from the data model; it would be necessary to supplement the information from, for example, empirical research on this



topic, or the experience from the ongoing Czech e-course shop run by the Ministry of Labour and Social Affairs, which has similarly set up training conditions.

In our model, presumably due to the automatic allocation of relatively large amounts of training money (2000 EUR from the state and 400 EUR from the citizen's contribution) to each person in the database, almost all persons in the database participate.

In terms of the fields in which the courses have increased the level of competence of the citizens, the two variants are very similar. Most of the new skills acquired were in the area of business skills, followed by digital skills. Slightly lower skill increases are observed in Life Comp and language skills. Financial skills development was the least supported. The most significant difference between the scenarios is in the case of green competencies, which were selected rather less overall, but significantly more in the second option with mandatory citizen contribution.

In this case, assessing the efficiency of the invested funds from the point of view of the state is difficult. The total number of courses offered was slightly higher in the option with a compulsory citizen's contribution, in the model situation this would mean more educated citizens with the same state contribution, and the option with a citizen's contribution would be slightly more profitable. In reality, however, some citizens would not participate in this option precisely because of the need for a contribution, and it is likely that it would be people with lower incomes and less education who would remain excluded from adult education.

Conclusions for the D-ILA data model

Overall, we believe that the option with a mandatory citizen contribution behaves more like the option with a higher education budget in the model and this comparison cannot be used well for the original purpose, although some of the results are interesting and informative. The model has its limitations, which in reality would have to be compensated by using e.g. statistical data from different sources.

D-ILA AI run protocol

Basic data

Short name: Excess funding for the non-motivated

Identification code: CZ_3_AI run



Minutes prepared by: NVF

Date: April 2024

AI run by: KIFÜ

Professional concept

Government decides to increase the motivation of low-motivated people to learn. With the help of the model we compare two situations:

- support of all people (no filters applied)
- support of only those people who have not indicated any learning goals; we presume that these people are less motivated to learn in general

The government seeks to answer the following questions:

- What are the results with regard to the training realised and money spent?
- How does the group of low-motivated people (with no goals) benefit compared to the other group? (in terms of the number of training received, skills learned....)

Suggestion: only people with no personal learning goals receive a governmental budget; the other (“motivated”) people can use only their individual or employer’s money.

Expected results of the intervention

To increase the number of training received by low-motivated people (i.e. to increase their motivation).

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

In the basic version, we filter the persons whose data fields in Goals_individuals_1 or Goals_individuals_2 are not empty. In the case of these persons, the state support is reduced to 0 euros. Unmotivated people: Goals_individuals_1 and Goals_individuals_1 data fields are empty. State support for unmotivated persons remains unchanged.

Changes to the data table of trainings (courses)



No changes to the basic version are necessary.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-6. In some cases, the indicators are calculated separately for the unmotivated target group. "Use budget allocation" parameter value when running AI: yes

Results of the AI run

Based on the professional concept, there are 82 people who do not have an individual learning goal and 518 people who have a learning goal. In the case of the 82 persons, the amount of state support in the base version is 45,521 euros. We will not change this. The state support of the 518 motivated persons is 185,016, which we have reduced to 0 euros based on the professional concept.

The results will be evaluated by using the evaluation methods 1, 2, 3:

	Base version (HU_0)	Base version (HU_0) - unmotivated target group	Excess funding for the non-motivated	Excess funding for the non-motivated - unmotivated target group
Size of the sample [persons]	600	82	600	82
Number of persons not recommended training by the algorithm [persons]	33	8	323	9
Proportion of persons not recommended training by the algorithm [%]	5,5%	9,8%	53,8%	11,0%
Total number of training courses offered [number]	2002	323	1018	293
Number of training courses per person [pcs]	3,3	3,9	1,7	3,6
Total cost of training offered [€]	379 799	79 701	217 621	79 844
Total cost of 1 training course per person offered in the first instance [€]	132 829	24 245	62 492	25 156



Training cost per person per most recommended training [€]	221,4	295,7	104,2	306,8
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4. Number of recommended trainings broken down by framework combinations

TOP10

Extra funding for the non-motivated - unmotivated target group

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
31	LifeComp				
30	DigComp	DigComp	DigComp	DigComp	
27	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
21	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
18	DigComp				
16	DigComp	DigComp	DigComp	DigComp	DigComp
12	LifeComp	DigComp			
12	FinComp	LifeComp			
11	LifeComp	LifeComp	DigComp	DigComp	
10	EntreComp	LifeComp	LifeComp	EntreComp	

Base version (HU_0) - unmotivated target group

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
34	LifeComp				
30	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
23	DigComp				
21	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
17	FinComp	LifeComp			
16	DigComp	DigComp	DigComp	DigComp	



15	LifeComp	LifeComp	LifeComp	LifeComp	EntreComp
14	EntreComp	FinComp			
12	LifeComp	DigComp			
11	DigComp	DigComp	DigComp	DigComp	DigComp

5. All transversal competency level changes available through the recommended trainings

Framework category	Base version (HU_0) - unmotivated target group	Excess funding for the non-motivated - unmotivated target group	change
CEFRL	185	171	92,4%
DigComp	513	685	133,5%
EntreComp	465	328	70,5%
FinComp	67	37	55,2%
GreenComp	18	20	111,1%
LifeComp	305	262	85,9%

6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	Base version (HU_0) - unmotivated target group	Excess funding for the non-motivated - unmotivated target group	Base version (HU_0) - unmotivated target group	Excess funding for the non-motivated - unmotivated target group
CEFRL	13	15	15,9%	18,3%
DigComp	54	51	65,9%	62,2%
EntreComp	44	32	53,7%	39,0%
FinComp	29	20	35,4%	24,4%
GreenComp	15	12	18,3%	14,6%
LifeComp	50	47	61,0%	57,3%

Evaluation of the results



For the group of non-motivated learners the situation did not change considerably, compared to a situation where the state supported both groups financially. The number of offered courses stays for them more or less on the same level, the costs of education and new learned skills learned also. The state invested into the support of non-motivated the same amount and the results didn't change. For the group of motivated learners, the situation changed considerably: the state decreased the invested amounts and it caused lower numbers of offered courses, lower costs and less new skills.

For the state would this situation have an advantage of lower investments. The saved money could be then invested elsewhere and the group of low-motivated persons will still have a possibility to take advantage of state supported further education.

From the point of view of wholesome costs, the state invested considerably less, also the costs for one course per person decreased.

Conclusions for the D-ILA data model

We would consider for the next use of the model to prefer another type of parameter settings: the financial support for supported unmotivated groups should be increased, which enables us to understand if the motivation and participation in education will increase, decrease or stay on the same level. This approach would be more convincing.

D-ILA AI run protocol

Basic data

Short name: Individual and / or employer contribution

Identification code: CZ_4_AI run

Minutes prepared by: NVF

Date: April 2024

AI run by: KIFÜ

Professional concept

Government decides to support adult training with a contribution of 2000 Eur. To increase responsible choices there needs to be 20% co-funding from the participant. Two possibilities are



considered: either the individual must co-fund their training or co-funding from employer is also allowed. With the help of the model we compare two situations:

- Government budget is 2000 Eur for all; co-funding of 20% of the course price is mandatory from the individual budget
- Government budget is 2000 Eur for all; co-funding of 20% is mandatory and can be covered by an individual or an employer

The government seeks to answer the following questions:

- How many people will be supported in which scenario?
- How is the distribution of costs among state, individuals and employers in each scenario?
- Which is more cost-effective measure from the point of view of the state?

Suggestion: All individuals get 2000 Eur of governmental budget.

Suggestion:

scenario a: individuals are matched only with the courses, where they can cover at least 20% of the price from their private budget

scenario b: individuals are matched only with the courses, where either they or their employer can cover at least 20% of the price

Expected results of the intervention

To find out the most cost-effective measure to support number of trainings among the population, while maintaining high motivation and supporting responsible choices.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

Scenario A: The value of the "Budget_state_contrib" data field is set to 2,000 euros for each person. This setting is independent of the previous value, so the previous value could be either 0 EUR or more than 2000 EUR. The value of the "Budget_private_contrib" data field is increased to 400 euros wherever the original value is lower than this. If the original value is 400 euros or more, we leave it unchanged. The values of the "Budget_employers_contrib" data field will not be changed.



Scenario B: In this version, every person receives the 2,000 euro state subsidy. Based on the policy concept, if a given person has an employer, the employer will be required to pay a contribution of 400 euros. If there is no employer, the 400 euros must be paid to that person. If the employer pays the 400 euros, we will not change the individual's original payment.

The employer is determined based on the "Current_occu_cat" data field. The person has an employer where the value of the data field is not empty.

Changes to the data table of trainings (courses)

No changes to the basic version are necessary.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-6. In some cases, the indicators are calculated separately for the unmotivated target group. "Use budget allocation" parameter value when running AI: yes

Results of the AI run

According to scenario A, the amount of the original state aid is 230,537 euros. If each person receives 2,000 euros of state aid, the amount of state aid increases to 1,200,000 euros. The individuals' contribution was originally 78,662 euros. If we introduce a minimum deductible of 400 euros based on the policy concept, this will affect 514 people. It does not affect 86 persons, because their contribution was originally greater than 400 euros. This remains unchanged. Based on the political concept, the contribution of individuals increased to 267,460 euros.

Scenario B: There are 240 people who do not have an employer. In their case, the person's mandatory contribution will be 400 euros, if the previous value did not reach 400 euros. If the previous amount was greater than this, the original amount remains. We found 7 people in the original data table whose contribution was more than 400 euros, so these amounts did not change.

There are 360 people who have an employer. According to the policy concept, the employer's contribution is a minimum of 400 euros. There are 321 persons where the employer's contribution must be increased to 400 euros because the original value was lower.

	Budget_state_contrib	Budget_employers_contrib	Budget_private_contrib	Sum
Scenario A	1 200 000	57 410	267 460	1 524 870



Scenario B	1 200 000	169 845	166 241	1 536 086
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The results will be evaluated by using the evaluation methods 1, 2, 3:

	Scenario A	Scenario B
Size of the sample [persons]	600	600
Number of persons not recommended training by the algorithm [persons]	7	7
Proportion of persons not recommended training by the algorithm [%]	1,2%	1,2%
Total number of training courses offered [number]	3884	3 753
Number of training courses per person [pcs]	6,5	6,3
Total cost of training offered [€]	1 442 943	1 446 512
Total cost of 1 training course per person offered in the first instance [€]	334 505	447 372
Training cost per person per most recommended training [€]	557,5	745,6

4. Number of recommended trainings broken down by framework combinations

TOP10

Scenario A

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
444	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
326	LifeComp				
274	DigComp	DigComp	DigComp	DigComp	DigComp
248	DigComp				
174	GreenComp				
169	LifeComp	LifeComp	EntreComp	EntreComp	
160	DigComp	DigComp	DigComp	DigComp	
150	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
141	LifeComp	DigComp			



138	FinComp	LifeComp	GreenComp	EntreComp	DigComp
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Scenario B

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
441	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
1275	DigComp	DigComp	DigComp	DigComp	DigComp
250	EntreComp	FinComp			
217	LifeComp				
192	LifeComp	EntreComp	EntreComp	LifeComp	
186	DigComp				
162	LifeComp	DigComp			
152	EntreComp	EntreComp	EntreComp	DigComp	DigComp
134	FinComp	LifeComp			
132	FinComp	EntreComp	FinComp		

5. All transversal competency level changes available through the recommended trainings

Framework category	Scenario A	Scenario B
CEFRL	3 211	3330
DigComp	7 653	8612
EntreComp	5 994	8022
FinComp	447	914
GreenComp	957	593
LifeComp	3 170	3998

6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	Scenario A	Scenario B	Scenario A	Scenario B
CEFRL	158	169	26,3%	28,2%
DigComp	516	482	86,0%	80,3%
EntreComp	394	429	65,7%	71,5%



FinComp	288	261	48,0%	43,5%
GreenComp	207	130	34,5%	21,7%
LifeComp	483	465	80,5%	77,5%

Evaluation of the results

The inclusion of an employer contribution obligation has already significantly increased the cost of the first recommended course as well as the total cost of one (first) recommended course. In terms of overall costs, this option is therefore less cost-effective, but on the other hand, in this reality, employees have a better chance of accessing more expensive courses that would otherwise be out of their reach. Courses are often offered at higher prices for the more marketable qualifications, and so this alternative is also more advantageous for the state (from the perspective of society as a whole).

In the case of GreenComp, the number of people who were offered training was significantly higher for Option A (mandatory learner contribution). There were also more courses offered in Option A aimed at developing digital competences and significantly more courses aimed at developing LifeComp.

In terms of competency gains achieved, the biggest difference between Options A and B was in the case of Digital Competences and Entrepreneurial Competences. In Option B with a mandatory contribution from the employer or citizen, the overall biggest change in competences compared to the other scenario was for the entrepreneurial competences and then for the digital competences. Financial competences were also increased more in this option. These figures would be more consistent with the fact that if employers are to contribute compulsorily to courses, they will be interested in increasing skills in areas useful for their operations (digital skills, business-economic skills and financial competences). But we should be careful with such interpretation, even if in a real situation this would be probable.

Conclusions for the D-ILA data model

Some aspects influencing people's decisions about their education can only be captured to a very limited extent within the model. This case is an example of this limitation. In real-world policy decisions, politicians will have to take into account the resistance of citizens and firms to mandatory contributions to education, which in turn can significantly increase interest in education, but are difficult to capture in a model.



D-ILA AI run protocol

Basic data

Short name: Target group specific co-payment obligation

Identification code: CZ_5_AI run

Minutes prepared by: NVF

Date: April 2024

AI run by: KIFÜ

Professional concept

Government decides to support adult training with a contribution of 2000 Eur. To increase responsible choices there needs to be 20% co-funding from the participant, with an exception of some vulnerable groups. Government wants to favour target group where the measure would have the highest benefits.

With the help of the model we compare several situations, in each of them, a selected vulnerable target group is freed from the mandatory co-funding:

- Government budget is 2000 Eur for all; co-funding of 20% of the course price is mandatory from the individual budget
- Government budget is 2000 Eur for all; co-funding of 20% of the course price is mandatory from the individual budget, with the exception of a selected target group (immigrants, unemployed, low-educated, NEETs, over 50....)

The government seeks to answer the following questions:

- Support of which target group would be most cost-effective from the point of view of the state?
- How the structure of trained skills changes with different target groups being supported, compared to the “non-discriminatory” measure?

Suggestion:

scenario a: individuals are matched only with the courses, where they can cover at least 20% of the price from their private budget

scenario b: to the individuals from selected target group (immigrants, unemployed, low-educated, NEETs, over 50....) no co-funding from their individual budget is required for matching.



Expected results of the intervention

To support vulnerable target group, but with regard to the limited budget; thus, finding out which vulnerable target group is to be supported with what level of cost-effectiveness.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

Initial state setting: The value of the "Budget_state_contrib" data field is set to 2,000 euros for each person. This setting is independent of the previous value, so the previous value could be either 0 EUR or more than 2000 EUR. The value of the "Budget_private_contrib" data field is increased to 400 euros wherever the original value is lower than this. If the original value is 400 euros or more, we leave it unchanged. The values of the "Budget_employers_contrib" data field will not be changed.

Scenario A: In the case of people over 50 years old (based on the value of the data field Target_group_1 or Target_group_2 or Target_group_3), we cancel the 20% deductible, that is, we subtract 400 euros from the value of the data field "Budget_private_contrib". If an amount greater than this was originally stated, the difference remains.

Scenario B: In the case of the unemployed (based on the value of the Target_group_1 or Target_group_2 or Target_group_3 data field), the 20% deductible is deleted, i.e. 400 euros are deducted from the value of the "Expenditure_private contribution" data field. If an amount greater than this was originally indicated, the difference remains.

Changes to the data table of trainings (courses)

No changes to the basic version are necessary.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-6. In some cases, the indicators are calculated separately for the unmotivated target group. "Use budget allocation" parameter value when running AI: yes

Results of the AI run



Scenario A: Out of 600 persons, there are 175 persons who are older than 50 years in the base version of the D-ILA data model. Of these, there are 9 people whose individual contribution will not be 0 euros even after deducting the 400 euros. The amount of the individual contribution is reduced by $400 \cdot 175 = 70,000$ euros.

Scenario B: In the basic version of the D-ILA data model, 110 people out of 600 are unemployed or have been unemployed for a long time. Of these, there is 1 person whose individual contribution will not be 0 euros even after deducting the 400 euros. The amount of the individual contribution is reduced by $400 \cdot 110 = 44,000$ euros.

The results will be evaluated by using the evaluation methods 1, 2, 3:

	Scenario A	Scenario B
Size of the sample [persons]	600	600
Number of persons not recommended training by the algorithm [persons]	7	7
Proportion of persons not recommended training by the algorithm [%]	1,2%	1,2%
Total number of training courses offered [number]	3930	3 574
Number of training courses per person [pcs]	6,6	6,0
Total cost of training offered [€]	1 373 264	1 421 526
Total cost of 1 training course per person offered in the first instance [€]	284 866	392 150
Training cost per person per most recommended training [€]	474,8	653,6

4. Number of recommended trainings broken down by framework combinations

TOP10

Scenario A



Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
384	CEFR	CEFR	CEFR	CEFR	CEFR
364	DigComp				
308	LifeComp				
232	DigComp	DigComp	DigComp	DigComp	DigComp
196	FinComp	LifeComp	GreenComp	EntreComp	DigComp
171	FinComp	LifeComp			
143	LifeComp	LifeComp	DigComp	DigComp	
138	LifeComp	LifeComp	EntreComp	EntreComp	
137	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
115	LifeComp	EntreComp	EntreComp	LifeComp	

Scenario B

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
397	CEFR	CEFR	CEFR	CEFR	CEFR
351	DigComp				
282	LifeComp				
199	DigComp	DigComp	DigComp	DigComp	DigComp
192	DigComp	DigComp	EntreComp	EntreComp	LifeComp
163	GreenComp				
146	LifeComp	LifeComp	EntreComp	EntreComp	
116	DigComp	DigComp	DigComp	LifeComp	
107	EntreComp	EntreComp	EntreComp	DigComp	DigComp



102	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
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5. All transversal competency level changes available through the recommended trainings

Framework category	Scenario A	Scenario B
CEFRL	2 711	2836
DigComp	7 213	6595
EntreComp	6 971	6818
FinComp	552	375
GreenComp	617	878
LifeComp	3 834	3133

6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	Scenario A	Scenario B	Scenario A	Scenario B
CEFRL	152	170	25,3%	28,3%
DigComp	547	476	91,2%	79,3%
EntreComp	394	427	65,7%	71,2%
FinComp	351	195	58,5%	32,5%
GreenComp	229	179	38,2%	29,8%
LifeComp	473	443	78,8%	73,8%

Evaluation of the results

More cost-effective is option A, in which more courses are offered and the total cost of the course is lower. Also, the improvement in skills gained is slightly higher in Option A for most skills, the exceptions being Green Competencies and Financial Competencies.



If we observe how the number of courses developing individual competences developed, we can conclude the following: the group of frequently recommended courses included those offering the development of digital competences, language competences and LifeComp.

Courses for the development of digital competences are the most frequently offered in all variants. Compared to the baseline variant, the number of these courses offered to people has decreased, with a slightly larger decrease in the case of the remission of the allowance (and therefore the reduction of the amount of money available for training) for the unemployed. Courses developing language and life skills were similarly frequently offered. For these competences, too, the number of courses offered in both options A and B (remission of the allowance for the unemployed and the elderly) decreased compared to the original option. However, the change was only small. Thus, in terms of the number of courses available, the remission of the allowance for disadvantaged groups is feasible without a significant loss of training opportunities for these people.

If we compare options A (50+) and B (unemployed), we can see clearer differences in the number of people who were offered courses developing individual competences. The most significant difference can be seen in the FinComp category, where training was offered to a significantly smaller proportion of people in Option B (unemployed do not have to pay for the courses). This could be due, for example, to the large share of basic financial skills courses for the long-term unemployed, but we do not know whether this is realistic outside our model. We observe a similar but less pronounced difference in the model for green competencies and digital competencies. In both cases, such courses were offered to a noticeably smaller proportion of unemployed people than the 50%.

Conclusions for the D-ILA data model

The most complicated question we have to answer for proper usage of the model is, which factors could considerably influence the situation of adults considering further education and which could not be taken into account in the model. It will be in every single case necessary to think a lot about the concrete situation and about the probable behaviour of concrete people in the concrete country. This expects real labour market experts as users of the model.

D-ILA AI run protocol

Basic data

Short name: Base version analysis

Identification code: HU_AI run_0



Minutes prepared by: KIFÜ

Date: March 2024

AI run by: KIFÜ

Professional concept

The first AI run uses the data tables finalised by the experts without any changes. The purpose is to produce the results of the AI run base. Later, the effects of changes in the input tables can be compared with the values of the indicators established here.

Expected results of the intervention

For the evaluation of the results of the AI run, indicators have been developed in the project. The detailed description of the indicators is available in a separate document, the AI run protocols only refer to the indicators. We expect that the present AI run will make sure that all indicators can be produced and that the results of the AI run are realistic and explainable.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

No changes to the basic version are necessary.

Changes to the data table of trainings (courses)

No changes to the basic version are necessary.

Methods for evaluating results

Indicators used to evaluate the results of the AI run: 1 - 6

A detailed description of the indicators can be found in the Annex to the Methodological Guide.

Results of the AI run

1. Number and percentage of persons for whom AI has not provided training



	Use budget distribution	
	Yes	No
Size of the sample [persons]	600	600
Number of persons not in education or training [persons]	33	36
Proportion of persons with no qualifications as a percentage of the sample [%]	5,5%	6,0%

2. Number of training courses per capita

	Use budget distribution	
	Yes	No
Number of training courses per capita [pcs]	3,3	3,2

3. Total cost of recommended training courses

	Use budget distribution	
	Yes	No
Total cost of the training courses offered [€]	799 379	916 376
Total cost of 1 training course per person offered in the first instance [€]	829 132	270 135

4. Number of recommended trainings broken down by framework combinations

TOP10

Use budget distribution: yes

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
197	EntreComp	FinComp			
159	DigComp				
146	LifeComp				
136	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
111	DigComp	DigComp	DigComp	DigComp	
106	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
102	EntreComp	FinComp	FinComp		
96	FinComp	LifeComp			
75	GreenComp				
70	DigComp	DigComp	DigComp	DigComp	DigComp

Use budget distribution: no

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
173	LifeComp				
171	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
169	EntreComp	FinComp			
124	DigComp				
104	GreenComp				
99	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
76	DigComp	DigComp	DigComp	DigComp	
75	EntreComp	FinComp	FinComp		
73	FinComp	EntreComp	FinComp		
72	FinComp	LifeComp			

5. All transversal competency level changes available through the recommended trainings

Framework category	Use budget distribution	
	Yes	No
CEFRL	826	1036
DigComp	2960	2083
EntreComp	2689	2607
FinComp	682	569
GreenComp	363	396
LifeComp	1252	1412

6. Number of people who have been offered training under a specific framework

Framework category	Use budget distribution		Use budget distribution (% of 600 individuals)	
	Yes	No	Yes	No
CEFRL	87	116	14,5%	19,3%
DigComp	345	310	57,5%	51,7%
EntreComp	319	296	53,2%	49,3%
FinComp	241	212	40,2%	35,3%



GreenComp	167	160	27,8%	26,7%
LifeComp	305	295	50,8%	49,2%

Evaluation of the results

A D-ILA adatmodellben az állam, a munkáltató, a résztvevő vagy ezek kombinációja fizetik a képzés költségeit, .

Az AI futtatása során be lehet állítani, hogy a finanszírozók által biztosított összegek befolyásolják-e az ajánlott képzéseket. "Yes" választás esetén - leegyszerűsítve - az történik, hogy aki nagyobb összeget biztosít a képzéshez, annak a szándéka a képzés választásnál jobban érvényesül. Emlékeztetőül: a D-ILA adatmodellben az állam, a munkáltató és a résztvevő is 2 transzverzális kompetenciát jelölhet meg a rendelkezésre álló 67 lehetőségből. Tehát legfeljebb 6 preferenciát lehet meghatározni.

Ha az 1, 2 vagy 3 mutatószámokat nézzük, a két változat között nincs jelentős különbség. Ugyanakkor a 4. mutatószám jelentős eltérést mutat: "yes" opció esetén az állam preferenciái érvényesülnek, mert az állam adja a legtöbb pénzt a bázis verzióban.

A képzésekkel elérhető kompetencia szint változás (5. mutatószám) esetében is vannak eltérések. Például a DigComp esetében az látható, hogy az állam preferenciájának a figyelembe vétele esetén ("yes" opció) lényegesen nagyobb a kompetencia szint növekedés, mintha nem érvényesülne a támogatások összege a képzések ajánlásakor. Ha valós adatokkal ilyen eredmény jönne ki, akkor ez azt jelentené, hogy az állam kifejezetten olyan képzéseket preferál, ahol nagyobb a kompetencia szint ugrás, vagyis a képzések hozzáadott értéke. A "No" opció esetében nem érvényesül olyan mértékben az állam szándéka, ekkor kevésbé céltudatos a képzés ajánlás: Kevésbé azok a képzések kerülnek ajánlásra az AI által, amelyeknek nagy a hozzáadott értéke.

A 6. mutatószám eredményei alapján az állam preferenciájának - mint legtöbb pénzt biztosítónak - az érvényesülése esetén ("yes" opció) lényegesen több személy venne részt DigComp képzéseken, mint "No" opció esetén. Jól látszik az eredményekből, hogy a résztvevők és a munkáltatók a D-ILA adatmodell bázis változatában sokkal jobban preferálják az idegen nyelvi képzéseket. Ha az állam befolyását nem hagyjuk érvényesülni, akkor lényegesen több személy venne részt idegen nyelvi képzéseken.

In the D-ILA data model, the state, the employer, the participant or a combination of these pay the costs of the training.



During the running of the AI, it is possible to set whether the amounts provided by the financiers influence the recommended courses. In the case of a "Yes" choice - to put it simply - what happens is that whoever provides a larger amount for the training, his intention prevails more than the choice of the training. As a reminder: in the D-ILA data model, the state, the employer and the participant can mark 2 transversal competences out of the 67 options available to them. So a maximum of 6 preferences can be defined.

If we look at indicators 1, 2 or 3, there is no significant difference between the two versions. At the same time, the 4th indicator shows a significant difference: in the case of the "yes" option, the state's preferences prevail, because the state provides the most money in the base version.

There are also differences in the change in the level of competence achieved through training (indicator number 5). For example, in the case of DigComp, it can be seen that if the state's preference is taken into account ("yes" option), the increase in the level of competence is significantly greater than if the amount of subsidies does not apply when recommending the training courses. If such a result were to come out with real data, it would mean that the state specifically prefers training courses where the leap in competence level is greater, i.e. the added value of the training courses. In the case of the "No" option, the state's intention is not enforced to such an extent that the training recommendation is less purposeful: Trainings with a high added value are recommended less by the AI.

Based on the results of indicator number 6, if the state's preference - as the provider of the most money - prevails ("yes" option), significantly more people would participate in DigComp training than in the "No" option. It is clear from the results that participants and employers in the base version of the D-ILA data model much prefer foreign language training. If we don't let the state's control prevail, significantly more people would participate in foreign language training.

Conclusions for the D-ILA data model

A "yes" és a "no" opció jelentős eltérést okoz az eredményekben. Ebből következik, hogy a D-ILA modell alkalmazása során két eredmény csak és kizárólag akkor hasonlítható össze, ha ugyanazt az opciót használtuk az AI futtatása során.

A "yes" és "no" opció közötti döntés messze túlmutat a D-ILA adatmodellen. Nagyon komoly szakpolitikai - sőt társadalompolitikai - elemzésnek kell megelőznie a döntést, ha a D-ILA adatmodell módszertanát valós adatokkal, valós körülmények között kell alkalmazni.



The "yes" and "no" options cause a significant difference in the results. It follows that when applying the D-ILA model, two results can only be compared if the same option was used during the AI run. The decision between "yes" and "no" goes far beyond the D-ILA data model. A very serious political - even sociopolitical - analysis must precede the decision, if the methodology of the D-ILA data model is to be applied with real data, under real conditions.

D-ILA AI run protocol

Basic data

Short name: Increase GreenComp budget

Identification code: HU_AI run_1

Minutes prepared by: KIFÜ

Date: March 2024

AI run by: KIFÜ

Professional concept

We want to increase the number of GreenComp-type training courses offered by AI to those whose personal training goals include the development of at least 1 competence in the GreenComp framework.

To this end, each person who, in at least one of the 2 individual training objectives, has identified a transversal competence in the GreenComp framework as a competence area to be developed, will receive an increase of €1,000 in the amount of the State aid.

The increase of the State aid should be limited to EUR 1,000 even if a GreenComp competence in both individual target fields was indicated. The corporate and state target selections are ignored.

Expected results of the intervention

Increasing the level of state support will significantly increase the number of people who will be proposed for competence development training under the GreenComp framework.

Changes to the AI training data table



No changes to the basic version are necessary.

Changes in the data table of the persons analysed

The 600 people in the basic version remain. Where there is at least 1 GreenComp competency in Goals_individuals_1 or Goals_individuals_2, the amount of public support is increased by EUR 1 000 in Budget_state_contrib. The increase is made by adding EUR 1 000 to the original amount in the field.

Changes to the data table of trainings (courses)

No changes to the basic version are necessary.

Methods for evaluating results

Version 1 - 6 of the methods for evaluating the results. "Use budget allocation" parameter value when running AI: no. At least one of the 5 Skill categories describing the training GreenComp.

Results of the AI run

There are 104 people out of 600 in the basic version for whom the professional concept required an increase of €1 000 in the general training envelope provided by the State. As a result of the operation, the State training contribution of the 600 persons has increased by €104 000, bringing the total State contribution from €230 537 to €334 537.

The results will be evaluated by using the evaluation methods 1, 2, 3:

	Base version	increase greencomp budget
Size of the sample [persons]	600	600
Number of persons not recommended training by the algorithm [persons]	36	33
Proportion of persons not recommended training by the algorithm [%]	6,0%	5,5%
Total number of training courses offered [number]	1 933	2 340
Number of training courses per person [pcs]	3,22	3,90

Total cost of training offered [€]	376 916	462 331
Total cost of 1 training course per person offered in the first instance [€]	135 270	144 553
Training cost per person [€]	628,2	770,6

4. Number of recommended trainings broken down by framework combinations

TOP10

Increase GreenComp budget

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
233	GreenComp				
215	EntreComp	FinComp			
194	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
159	LifeComp				
144	DigComp				
124	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
111	EntreComp	FinComp	FinComp		
103	DigComp	DigComp	DigComp	DigComp	
91	FinComp	LifeComp			
89	EntreComp				

Base version

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
173	LifeComp				
171	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
169	EntreComp	FinComp			
124	DigComp				
104	GreenComp				
99	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
76	DigComp	DigComp	DigComp	DigComp	
75	EntreComp	FinComp	FinComp		
73	FinComp	EntreComp	FinComp		



72	FinComp	LifeComp			
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5. All transversal competency level changes available through the recommended trainings

Framework category	Base version	Increase greencomp budget	Change
CEFRL	1036	1254	121,0%
DigComp	2083	2934	140,9%
EntreComp	2607	3154	121,0%
FinComp	569	750	131,8%
GreenComp	396	860	217,2%
LifeComp	1412	1415	100,2%

6. Number of people who have been offered training under a specific framework

Framework category	Base version	Increase greencomp budget	Base version	Increase greencomp budget
CEFRL	116	116	19,3%	19,3%
DigComp	310	323	51,7%	53,8%
EntreComp	296	304	49,3%	50,7%
FinComp	212	233	35,3%	38,8%
GreenComp	160	156	26,7%	26,0%
LifeComp	295	277	49,2%	46,2%

Evaluation of the results

The implementation of the professional concept has significantly changed the results for indicators 1, 2 and 3. It appears that the number of courses offered by AI has increased substantially and has been accompanied by an increase in the overall cost of acquisition. Thus, on the input side, an increase in the public budget was associated with an increase in the number of courses offered and an increase in the total cost of courses offered on the output side. This is in line with the expectations.

For indicator 4, a similarly positive picture emerges from the impact of the intervention. In terms of popularity, GreenComp training has jumped to the first place, while in the baseline version it was only in 5th place.

Not surprisingly, the increase in GreenComp competency levels is the highest of all the others - as



can be seen in indicator 5.

However, the results for indicator 6 are very surprising. The number of people who received a GreenComp training offer remained essentially unchanged. Meanwhile, the number of participants has even increased for other frameworks compared to the baseline.

Conclusions for the D-ILA data model

Based on the D-ILA data model, the professional concept formulated is effective only in certain aspects: it is able to increase the number of GreenComp courses offered and it leads to a higher GreenComp competence level increase. However, it is not able to increase the number of people who have not yet attended a GreenComp training in the baseline version, but who have already received an offer of GreenComp training as a result of the intervention.

It would be important to analyse whether what is described is "due to" the specificities of the data model or whether the EU ILA concept is the cause of this phenomenon. We suspect the latter: there is no guarantee that the additional funding provided to a designated target group will be used by the target group for what it would have received from the state anyway. This seems to be a peculiarity of ILA. Based on the D-ILA data model, we conclude that if the state wants to develop competences in a more targeted way, it needs to narrow down the range of training courses it can choose.

D-ILA AI run protocol

Basic data

Short name: With higher education attainment do not get state money

Identification code: HU_2_AI run

Minutes prepared by: KIFÜ

Date: March 2024

AI run by: KIFÜ

Professional concept



Supposing they have better chances in the labour market, the state does not give any financial support to people having higher educational attainment. Their support should be distributed among the rest of the applicants. All other contributions (employers' and individuals') remain the same.

Expected results of the intervention

Supposing they have better chances in the labour market, the state does not give any financial support to people having higher educational attainment. Their support should be distributed among the rest of the applicants. All other contributions (employers' and individuals') remain the same.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

Those people with ISCED Bachelor, Master, Doctor will receive no money from the state. The amount of money taken from them will be distributed among the rest of the applicants in the same ratio as they got it before.

Changes to the data table of trainings (courses)

No changes to the basic version are necessary.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-6. "Use budget allocation" parameter value when running AI: yes

Results of the AI run

The professional concept defines 200 people with a tertiary education. A total of €65 967 in state aid will be deducted from them, i.e. the amount of state aid will be 0. The €65 967 in state aid thus released will be distributed proportionally among the 400 people with lower qualifications.

The results will be evaluated by using the evaluation methods 1, 2, 3:



	Base version	With higher education attainment do not get state money
Size of the sample [persons]	600	600
Number of persons not recommended training by the algorithm [persons]	33	118
Proportion of persons not recommended training by the algorithm [%]	5,5%	19,7%
Total number of training courses offered [number]	2002	1648
Number of training courses per person [pcs]	3,34	2,75
Total cost of training offered [€]	379 799	359 301
Total cost of 1 training course per person offered in the first instance [€]	132 829	130 931
Training cost per person per most recommended training [€]	221,4	218,2

4. Number of recommended trainings broken down by framework combinations

TOP10

With higher education attainment do not get state money

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
122	DigComp	DigComp	DigComp	DigComp	
115	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
110	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
98	DigComp				
95	EntreComp	FinComp			
92	GreenComp	GreenComp	EntreComp		
75	LifeComp				
71	GreenComp				
64	DigComp	DigComp	DigComp	DigComp	DigComp
53	EntreComp	LifeComp	LifeComp	EntreComp	

Base version

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
197	EntreComp	FinComp			
159	DigComp				



146	LifeComp				
136	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
111	DigComp	DigComp	DigComp	DigComp	
106	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
102	EntreComp	FinComp	FinComp		
96	FinComp	LifeComp			
75	GreenComp				
70	DigComp	DigComp	DigComp	DigComp	DigComp

5. All transversal competency level changes available through the recommended trainings

Framework category	Base version	With higher education attainment do not get state money	Change
CEFRL	826	774	93,7%
DigComp	2960	2956	99,9%
EntreComp	2689	2288	85,1%
FinComp	682	312	45,7%
GreenComp	363	336	92,6%
LifeComp	1252	1069	85,4%

6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	Base version	With higher education attainment do not get state money	Base version	With higher education attainment do not get state money
CEFRL	87	80	14,5%	13,3%
DigComp	345	295	57,5%	49,2%
EntreComp	319	273	53,2%	45,5%
FinComp	241	163	40,2%	27,2%
GreenComp	167	166	27,8%	27,7%
LifeComp	305	271	50,8%	45,2%

Evaluation of the results



Surprisingly, compared to the base version, the application of the professional concept significantly increased the number of people to whom the AI could not offer training. At the same time, the number of courses offered also decreased. Meanwhile, the total cost of the offered courses did not change essentially (indicator number 3).

Based on the 4th indicator, the order of the popular courses has also been rearranged. DigComp and courses that develop foreign language competences came to the fore, while EntreComp and FinComp courses were relegated to the background. This phenomenon might be explained by the fact that people with lower qualifications turn to more practical training if they get extra funds, while the withdrawal of funds from those with a higher education attainment results in a decrease in the number of recommendations for more theoretical training.

The analysis of changes in the level of competence (indicator number 5) also shows interesting results: in the case of all competence frameworks, the level of increase in the level of competence due to the training decreased. Looking at the total population of 600 people, the transformation of the support system according to the professional concept reduced the increase in the competence level achieved by the trainings at the system level. In other words: on the basis of the D-ILA data model, the redirection of state aid towards those with a lower educational attainment does not increase the level of competence at the population level. Lower-educated people are less able to increase their competence level despite the additional resources than higher-educated people are less able to increase their competence level as a result of the withdrawal of resources.

However, this image is extremely deceiving. The decrease in level rise can simply be caused by the fact that fewer people received fewer training offers, and this is the reason for the phenomenon shown in the data.

Indicator number 6 is in line with what was described earlier: in more or less all cases, the number of persons participating in training for a given framework decreases. An exception is GreenComp. In this case, the reallocation of resources does not seem to have changed the number of participants. As much as the number of participants with a higher education attainment could decrease, it could increase among those with a lower education.

Conclusions for the D-ILA data model

The indicator system developed to analyse the results of the D-ILA data model seems to be very sensitive to spillover effects. If, for example, the number of people who receive a training offer drops significantly, this alone can affect all other indicators. This causes a decrease in all other indicator values, which can lead to false conclusions. For the future, the development of additional indicators should be considered.



D-ILA AI run protocol

Basic data

Short name: Supported by other policy measures in a more targeted way

Identification code: HU_3_AI run

Minutes prepared by: KIFÜ

Date: March 2024

AI run by: KIFÜ

Professional concept

The state supports people not in the labour market for the long term and NEET people by other policy measures. The aim is to minimise deadweight loss, so these target groups will not be supported by the ILA scheme. Their state contribution should be distributed among unemployed people. All contributions from other resources (employers' and individuals' contributions) remain the same.

Expected results of the intervention

By the abolition of state support to NEET and long term unemployed people, these target groups will not have the opportunity to participate in trainings in the ILA scheme. (The reason is that they are supported by other policy measures in a more targeted way.)

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

All state contributions given to NEET and long term unemployed are taken (in target group 1, 2, 3) and this money is evenly distributed among unemployed people.

Changes to the data table of trainings (courses)



No changes to the basic version are necessary.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-6. "Use budget allocation" parameter value when running AI: yes

Results of the AI run

In the professional concept, 2 target groups are designated. A total of 65 people out of 600 people belong to the 2 target groups. The total state support of the 2 target groups in the starting state is 46 580 euros. According to the professional concept, the state support for the 2 target groups will be reduced to 0 euros. The 46,580 euros freed up in this way will be given to 77 unemployed persons. Due to the even distribution, $46\,580/77=605$ euros must be added to the already existing state support for 77 persons.

The results will be evaluated by using the evaluation methods 1, 2, 3:

	Base version	Supported by other policy measures in a more targeted way
Size of the sample [persons]	600	600
Number of persons not recommended training by the algorithm [persons]	33	85
Proportion of persons not recommended training by the algorithm [%]	5,5%	14,2%
Total number of training courses offered [number]	2002	1 725
Number of training courses per person [pcs]	3,34	2,88
Total cost of training offered [€]	379 799	387 140
Total cost of 1 training course per person offered in the first instance [€]	132 829	137 319
Training cost per person per most recommended training [€]	221,4	228,9

4. Number of recommended trainings broken down by framework combinations

TOP10

Supported by other policy measures in a more targeted way



Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
172	DigComp				
132	CEFR	CEFR	CEFR	CEFR	CEFR
105	GreenComp				
94	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
92	EntreComp	FinComp			
89	DigComp	DigComp	DigComp	DigComp	DigComp
72	GreenComp	GreenComp	EntreComp		
67	LifeComp				
66	DigComp	DigComp	DigComp	DigComp	
63	FinComp	LifeComp	GreenComp	EntreComp	DigComp

Base version

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
197	EntreComp	FinComp			
159	DigComp				
146	LifeComp				
136	CEFR	CEFR	CEFR	CEFR	CEFR
111	DigComp	DigComp	DigComp	DigComp	
106	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
102	EntreComp	FinComp	FinComp		
96	FinComp	LifeComp			
75	GreenComp				
70	DigComp	DigComp	DigComp	DigComp	DigComp

5. All transversal competency level changes available through the recommended trainings

Framework category	Base version	Supported by other policy measures in a more targeted way	Change
CEFR	826	841	101,8%
DigComp	2960	2681	90,6%
EntreComp	2689	2152	80,0%
FinComp	682	374	54,8%
GreenComp	363	468	128,9%
LifeComp	1252	1222	97,6%



6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	Base version	Supported by other policy measures in a more targeted way	Base version	Supported by other policy measures in a more targeted way
CEFRL	87	86	14,5%	14,3%
DigComp	345	312	57,5%	52,0%
EntreComp	319	294	53,2%	49,0%
FinComp	241	183	40,2%	30,5%
GreenComp	167	171	27,8%	28,5%
LifeComp	305	292	50,8%	48,7%

Evaluation of the results

Based on indicator number 1, the number of those who did not receive a training offer increased significantly. This result was expected and is in line with what was described in the policy concept. At the same time, the number of all recommended courses also decreased. While the total amount spent on training essentially did not change (indicator number 3). The combined interpretation of indicators 2 and 3 allows us to conclude that, in addition to the changed conditions, AI offered more expensive training to those who had access to additional resources.

The order of popularity of the types of training also changed, DigComp and foreign language trainings came to the fore, while trainings belonging to the EntreComp and FinComp frameworks were relegated to the back.

In the case of FinComp, this phenomenon is also reflected in the increase in the level of competence achieved by the training. As a result of the policy concept, it was essentially halved compared to the base version. On the other hand, the importance of the GreenComp competency area increased as a result of the change, that is, as a result of all the recommended training, the increase in the competency level can be said to be significant.

The FinComp competence area also differs from the other frameworks in the case of indicator number 6: significantly fewer people would participate in this type of training based on the D-ILA data model if the professional concept were implemented.



Conclusions for the D-ILA data model

Target group of inactive people is missing from the D-ILA model; it is recommended to analyse whether this group should be included.

The indicators used to evaluate the results cannot indicate that there have been significant changes in the financing of the target groups. The characteristics of the courses belonging to the FinComp framework have changed significantly, and their role in the training offer has also significantly decreased. We cannot connect this phenomenon to the fact that additional state resources are available for the unemployed. It seems that the D-ILA data model and/or the indicator system for evaluating the results is not very sensitive in detecting changes in funding affecting the target groups.

Here we would like to note that a sufficiently smart AI can act similarly, that is, it tries to "fix" the changes and compensate, so that the result approaches the optimal one. It is easy to imagine that when a target group is highlighted manually, the AI softens its effect and recommends trainings in such a way that the output does not show this drastic change, like what appeared in the input as a result of the professional concept.

D-ILA AI run protocol

Basic data

Short name: The state doubles support for those in need

Identification code: HU_4_AI run

Minutes prepared by: KIFÜ

Date: March 2024

AI run by: KIFÜ

Professional concept



The state provides support based on target groups and not based on trainings. (If trainings are specified, those not in need get money, too.) The state doubles support for those in need. State aid should be doubled in at least 5 target groups.

Expected results of the intervention

The target group can participate in more training in those trainings preferred by the given target group. Public spending will increase significantly.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

Target groups selected on the basis of the technical concept: unemployed; NEET; low educational attainment; workers in jobs at risk from digitalisation / automatization; socially disadvantaged people

Changes to the data table of trainings (courses)

No changes to the basic version are necessary.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-7. "Use budget allocation" parameter value when running AI: yes

Results of the AI run

Based on the professional concept, there are 233 persons for whom the state aid should be doubled. Doubling the State aid for these persons will increase the State expenditure by € 97 806. This means that public expenditure will increase from EUR 230 537 to EUR 328 343.

The results will be evaluated by using the evaluation methods 1, 2, 3:

	Base version	The state doubles support for those in need
Size of the sample [persons]	600	600

Number of persons not recommended training by the algorithm [persons]	33	33
Proportion of persons not recommended training by the algorithm [%]	5,5%	5,5%
Total number of training courses offered [number]	2002	1 974
Number of training courses per person [pcs]	3,34	3,29
Total cost of training offered [€]	379 799	485 071
Total cost of 1 training course per person offered in the first instance [€]	132 829	177 141
Training cost per person per most recommended training [€]	221,4	295,2

4. Number of recommended trainings broken down by framework combinations

TOP10

The state doubles support for those in need

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
160	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
136	GreenComp				
130	DigComp	DigComp	DigComp	DigComp	
102	GreenComp	GreenComp	EntreComp		
98	LifeComp				
96	DigComp				
86	EntreComp	FinComp			
81	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
77	DigComp	DigComp	DigComp	DigComp	DigComp
71	FinComp	EntreComp	FinComp		

Base version

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
197	EntreComp	FinComp			
159	DigComp				
146	LifeComp				
136	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
111	DigComp	DigComp	DigComp	DigComp	
106	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
102	EntreComp	FinComp	FinComp		
96	FinComp	LifeComp			
75	GreenComp				
70	DigComp	DigComp	DigComp	DigComp	DigComp

5. All transversal competency level changes available through the recommended trainings

Framework category	Base version	The state doubles support for those in need	Change
CEFRL	826	1005	121,7%
DigComp	2960	3425	115,7%
EntreComp	2689	2724	101,3%
FinComp	682	454	66,6%
GreenComp	363	449	123,7%
LifeComp	1252	1484	118,5%

6. Number of people who have been offered training under a specific framework

Number of persons	Percentage of persons
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Framework category	Base version	The state doubles support for those in need	Base version	The state doubles support for those in need
CEFRL	87	104	14,5%	17,3%
DigComp	345	347	57,5%	57,8%
EntreComp	319	339	53,2%	56,5%
FinComp	241	196	40,2%	32,7%
GreenComp	167	198	27,8%	33,0%
LifeComp	305	335	50,8%	55,8%

7. Number of training courses proposed by AI by target group

Target group	Number of training courses offered	
	Base version	The state doubles support for those in need
unemployed	178	196
workers in jobs at risk from digitalisation	114	108
socially disadvantaged people	120	130
low educational attainment	215	243
NEET	131	153

If a person belongs to more than one target group, they are classified in order of priority. NEET" is the highest priority and "unemployed" the lowest.

Evaluation of the results

The value of the first indicator does not differ in the two versions. Therefore, the additional public funds allocated to the target group do not reduce the number of those for whom AI does not offer any training. The difference in the number of recommended courses (indicator number 2) is also negligible. On the other hand, the total costs that can be spent on training shows a significant increase, that is, the additional resources provided by the policy concept appear in the results of the AI run.

A change can also be observed in the order of popularity of the types of training: foreign language trainings that develop a lot of language competences come to the fore, while trainings

recommended for the development of entrepreneurial and financial competences appear in the training offer for fewer people.

The values of indicator number 5 indicate that the recommended courses include a higher proportion of courses that enable a higher level of competence compared to the courses recommended in the base version. Among the frameworks, only in the cases belonging to FinComp did the increase in competence level decrease, in all other cases it increased, the largest in the case of GreenComp trainings.

Based on indicator number 6, there is no significant difference between the number of persons - except for FinComp, where a significant decrease can be observed. In other words, overall, as a result of the intervention, the number of people recommended for the training belonging to the given framework hardly changed.

Indicator number 7 focuses on 5 target groups selected by the policy concept. In a first approach, the data show that the number of training courses recommended for each target group changed only slightly, despite the otherwise significant change in the input data.

Conclusions for the D-ILA data model

The D-ILA data model, based on the results recorded in this AI running report, does not use the additional state resources provided to the specific target groups to increase the number of trainings or to highlight one training area, but rather to improve the quality of the recommended trainings - that is, to increase the level of competence achieved by the trainings.

It is important to note that indicator number 5, indicating an increase in the level of competence, is not completely correct. If the number of courses changes, it follows that this indicator will also change automatically. In other words, the two indicators are not independent of each other. In this case, it can be used because the number of recommended training courses has changed minimally in the two versions, i.e. the change in the competency level was not caused by the change in the number of recommended training courses.

D-ILA AI run protocol

Basic data



Short name: Shift the level of digital competences of citizens

Identification code: HU_5_AI run

Minutes prepared by: KIFÜ

Date: March 2024

AI run by: KIFÜ

Professional concept

In the age of artificial intelligence and robotization, it is essential to increase the digital competence level of citizens. That is why the state increases support for those who choose digital competence development: The state provides them with an extra 150,000 euros from EU funds. Employers supplement the state support and employers provide additional funds to those whose development of DigComp competences was previously supported. Due to the significant state subsidies, there is no need to use own funds for the persons concerned.

Expected results of the intervention

Increased public funding for the target group will increase the number of participants in DigComp training and/or allow for a higher competence level step.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

In the first step, select all persons who marked at least one transversal competence belonging to the DigComp framework in the Goals_individuals_1 or Goals_individuals_2 data fields. The 150,000 euros will be divided equally among these persons.

Employers increase the employer support provided to their own employees by an additional 20%, if transversal competence belonging to the DigComp framework is indicated in the data fields Goals_employers_1 or Goals_employers_2. The 20% employer supplement is only available to those who also receive additional state support.

Citizen funding is not required if a person receives additional government support. For these persons, the Budget_private_contrib data field takes the value 0.

Changes to the data table of trainings (courses)



No changes to the basic version are necessary.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-6. "Use budget allocation" parameter value when running AI: yes

Results of the AI run

Based on the professional concept, the support of 150,000 euros must be distributed among 196 people. This means that for the persons concerned, the state support increases by 765 euros per person. Out of the 196 people, there are 59 people where the employer would also like to develop competencies related to the DigComp framework. The employer's additional contribution of 20% therefore affects 59 persons. This increases the support of employers from EUR 6,680 to EUR 8,016. (Where the employer's support was 0 before, it will remain 0.) Finally, a total of €30,185 of private money will be deducted from the 196 employees, in line with the professional concept.

The results will be evaluated by using the evaluation methods 1, 2, 3:

	Base version	Shift the level of digital competences of citizens
Size of the sample [persons]	600	600
Number of persons not recommended training by the algorithm [persons]	33	30
Proportion of persons not recommended training by the algorithm [%]	5,5%	5,0%
Total number of training courses offered [number]	2002	2 271
Number of training courses per person [pcs]	3,34	3,79
Total cost of training offered [€]	379 799	499 539
Total cost of 1 training course per person offered in the first instance [€]	132 829	155 034
Training cost per person per most recommended training [€]	221,4	258,4

4. Number of recommended trainings broken down by framework combinations

TOP10

Shift the level of digital competences of citizens

Num. of	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category



trainings [pcs]					
203	DigComp				
186	EntreComp	FinComp			
157	CEFR	CEFR	CEFR	CEFR	CEFR
138	LifeComp				
136	DigComp	LifeComp			
108	EntreComp	FinComp	FinComp		
103	DigComp	DigComp	DigComp	DigComp	
96	DigComp	DigComp	DigComp	LifeComp	
95	FinComp	LifeComp	GreenComp	EntreComp	DigComp
85	DigComp	DigComp	DigComp	DigComp	DigComp

Base version

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
197	EntreComp	FinComp			
159	DigComp				
146	LifeComp				
136	CEFR	CEFR	CEFR	CEFR	CEFR
111	DigComp	DigComp	DigComp	DigComp	
106	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
102	EntreComp	FinComp	FinComp		
96	FinComp	LifeComp			
75	GreenComp				
70	DigComp	DigComp	DigComp	DigComp	DigComp

5. All transversal competency level changes available through the recommended trainings

Framework category	Base version	Shift the level of digital competences of citizens	Change
CEFR	826	956	115,7%
DigComp	2960	3285	111,0%
EntreComp	2689	2663	99,0%
FinComp	682	645	94,6%
GreenComp	363	353	97,2%
LifeComp	1252	1371	109,5%



6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	Base version	Shift the level of digital competences of citizens	Base version	Shift the level of digital competences of citizens
CEFRL	87	118	14,5%	19,7%
DigComp	345	374	57,5%	62,3%
EntreComp	319	348	53,2%	58,0%
FinComp	241	276	40,2%	46,0%
GreenComp	167	177	27,8%	29,5%
LifeComp	305	408	50,8%	68,0%

7. Number of training courses proposed by AI by target group

TOP10

The state doubles support for those in need

Target_group_1	Target_group_2	Target_group_3	Number of training courses offered
employed			231
no target group can be selected			87
unemployed			69
NEET			60
people over 50			59
employed	women		59
self-employed			53
women	people over 50		50
unemployed	women		48
self-employed	people over 50		45

Base version

Target_group_1	Target_group_2	Target_group_3	Number of training courses offered
employed			199
no target group can be selected			72
unemployed			63
people over 50			50
women	people over 50		49
employed	women		49



NEET			46
self-employed			42
low educational attainment	people over 50	women	40
unemployed	women		34

Evaluation of the results

The policy idea in the base version of the D-ILA data model affects one third of the applicants. Based on the indicators, both the number of courses recommended by AI and the total cost of the recommended courses increased significantly. The additional state resources also made it possible for the courses recommended in the first place to be more expensive than in the base version.

In the TOP10 list of training types (indicator number 4), the additional support for people choosing the DigComp training caused a significant change. In accordance with our expectations, those training courses that also develop digital competence have come to the fore.

The policy concept also has an effect on increasing the level of competence: the effect of raising the level of competence of DigComp training has clearly changed in a positive direction. This can be due to two components: on the one hand, it can be caused by the increased number of DigComp trainings, and on the other hand, it can be caused by the fact that the recommended DigComp trainings enable a greater increase in the level of competence compared to the base version. The reverse of this is true for FinComp trainings: despite the fact that the number of recommended trainings has increased, the competence level-increasing effect of AI-recommended FinComp trainings has decreased. So it seems that the additional cost spent on DigComp has a negative effect on other competence frameworks - which is manifested in a more modest increase in the competence level in the current version of the D-ILA data model.

If we analyse the number of people participating in the trainings broken down by framework, we get a somewhat surprising result: The number and proportion of people receiving offers for DigComp trainings increased minimally, despite the policy intervention, despite the provided additional state resources. From this, we conclude that those who wanted to participate in the DigComp training had the opportunity to do so in the base version as well.



Indicator number 7 shows the effects of the intervention on the target groups. The obtained results lead to the conclusion that the policy intervention based on the D-ILA data model has no special effect on the order of the target groups based on the number of recommended trainings: primarily the number of recommended trainings increased in all target groups, roughly proportionally. An exception is perhaps the NEET target group, where the number of recommended courses increased more than average as a result of the intervention.

Conclusions for the D-ILA data model

Overall, it can be said that, based on the D-ILA data model, the additional resources invested in DigComp trainings did not achieve their goal, because they did not increase the number of people receiving DigComp trainings. The situation would probably have been different if there were more people in the base version who wanted DigComp training, but their financial means did not make it possible. If the policy goal were to provide the affected persons with more and better training (increasing the level of competence), then we could talk about a successful policy intervention based on the D-ILA data model. It requires further analysis whether what is described here can be considered specific features of the D-ILA data model, or whether the introduction of the EU ILA concept would have similar consequences.

D-ILA AI run protocol

Basic data

Short name: Incentivising choice of high quality training

Identification code: PL_AI run_1

Minutes prepared by: SGH

Date: April 2024

AI run by: KIFÜ

Professional concept

To support spending money on high-quality training experience and increase the relevance of attained credentials, we want to incentivise learners to choose high-quality training (e.g. courses



with valid accreditation or quality assurance). We also want to increase the availability of such training.

We propose implementing a financial incentive for choosing quality-assured courses. Each learner will receive a discount of €150 on quality-assured training. To model this intervention, we propose to decrease the price of all quality-assured courses by €150. We acknowledge that in practice there may be relevant behavioural effects differentiating between discounting, subsidising and refinancing expenses on training using ILA. However, we assume that in the first modelling, focusing on estimation of the expected costs of such an intervention, this will have an identical effect as giving €150 to each learner, if he chooses a quality-assured course.

We assume that a course is quality-assured if it has one of the following categories indicated: an internal QA system, implemented ISO or has an external QA. The objects in the training database that have other parameters in the QA rubric will not be treated as quality-assured (that means that courses that indicate only collecting learners' feedback, have the datafield left empty or indicated "no QA" would be excluded from this intervention).

Expected results of the intervention

Supporting quality-assured courses should increase the effectiveness of learning and spending on training. We expect an increased uptake in quality assured courses in the results of the AI run. We also expect a future increase in the willingness of training providers to implement quality assurance.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

No changes to the basic version are necessary.

Changes to the data table of trainings (courses)

Filter the courses by category "Quality_assurance" deduct 150€ from all filtered courses Unfilter Save.

Filtering criteria set in the data field "Quality_assurance": "Internal QA systems" or "ISO" or "QA by an international organisation"

If the price of the training concerned was originally lower than 150€, then the original price will remain.

Methods for evaluating results



The results will be evaluated by using the evaluation methods 1, 2, 3 and 6. An individual indicator is created for the characteristic data of high-quality trainings. "Use budget allocation" parameter value when running AI: yes.

Results of the AI run

62 of 107 courses meet the above-defined criteria for high quality. Of the high-quality training, there are 5 where the price cannot be reduced by €150 because the original price is lower than €150. For these, the price has not changed, but in 57 cases the price of the training has been reduced by €150.

In the baseline version, the price of the high-quality training courses sums up to €40 236. After the change in the technical concept, the cost of the high-quality courses amounts to €31 691.

The results will be evaluated by using the evaluation methods 1, 2 and 3:

	Base version	PL_AI run_1_High quality training
Size of the sample [persons]	600	600
Number of persons not recommended training by the algorithm [persons]	33	15
Proportion of persons not recommended training by the algorithm [%]	5,5%	2,5%
Total number of training courses offered [number]	2 002	2 227
Number of training courses per person [pcs]	3,34	3,71
Total cost of training offered [€]	379 799	385 239
Total cost of 1 training course per person offered in the first instance [€]	132 829	119 763
Training cost per person [€]	633,0	642,1
Number of people receiving a high-quality training offer [persons]	409,0	478
Proportion of people receiving a high-quality training offer [%]	68,2%	79,7%
Number of high-quality training courses offered by AI [pcs]	698	1 024
Rate of high quality training offered by AI in relation to total number of training offered [%]	34,9%	46,0%

6. Number of people who have been offered training under a specific framework

Framework category	Base version	PL_AI run_1_High quality training	Base version	PL_AI run_1_High quality training
CEFRL	87	117	14,5%	19,5%
DigComp	345	360	57,5%	60,0%



EntreComp	319	329	53,2%	54,8%
FinComp	241	233	40,2%	38,8%
GreenComp	167	179	27,8%	29,8%
LifeComp	305	347	50,8%	57,8%

Evaluation of the results

The proposed evaluation of the AI run results requires a general disclaimer: the results are only as good as the data – the better the data meet the realities of a given country, the more accurate the results of the modelling.

Modelling the proposed intervention provides the following insights:

- The intervention increased the range of possible choices for individuals (by 0,37 courses per person from an average of 3,34 to 3,71 courses per person) and in the training offered the percentage of high-quality offers increased by 11,1 pp. (from 34,9% to 46%).
- Supporting high-quality training in the way proposed has yielded in an over 11,5 pp. increase in the percentage of recommended high-quality training offered (from 68,2% to 79,7% of people being offered at least one high-quality course).
- The recommendation of a given training and the actual choice made by individuals may not be identical, but it seems safe to assume that the budget constraint is one of the most relevant barriers for choosing a specific training.
- Because quality assurance is expensive and the costs will ultimately be paid by individuals from ILA, it seems that an intervention focused on supporting high-quality focused on reducing the costs for individuals makes sense. The costs of such intervention can be calculated based on the number of people receiving a high-quality offer and their willingness to choose on of these trainings: in the scenario 478 received at least one offer of high quality, the table below sums up the cost for various rates of uptake:

High-quality courses offered	Uptake rate	High-quality courses taken	Estimated cost of intervention
478	80%	382	57 300 EUR
478	70%	335	50 250 EUR
478	60%	287	43 050 EUR
478	50%	239	35 850 EUR
478	40%	191	28 650 EUR
478	30%	143	21 450 EUR

- The negative aspect of this intervention is the ratio of high-quality training, which would be chosen without financial support. For example: the number of high-quality training offered in base scenario was 409, which means, that ca. 85% of the training offered after subsidy would be offered anyway (but at an effectively higher price). This is not necessarily negative, because the money saved on ILA's can be used for funding training in the future, however, one might anticipate that training providers who expect that they would have been chosen anyway, may increase their offers price by €150 thus capturing the subsidy.
- Based on indicator number 6, there is no significant difference between the number of training offered under a specific framework (2-3 pp. differences, and LifeComp 7 pp.). It is safe to assume however, that quality can be correlated with training offered in specific sectors of education (e.g. adult learning vs higher education) or sectors of the economy (e.g. automotive vs. construction) – however it seems that the training database may not be reliable in this regard and (a reminder) does not contain specific competences courses.

Conclusions for the D-ILA data model

- Additional indicators for assessing the change of order of the recommended data could be valuable for finding more insight into the effects of the AI run.
- The data in the training database was largely inspired by real training offers, however information about quality assurance was more often (than not) added, since many courses did not provide information about standards, accreditations etc. This means that the training database may not resemble the reality of training offer on the market, however the relatively high percentage of training with indication of quality assurance was introduced purposefully. We assumed that any training offer register will have entry barriers for training offer, and that public funding will be linked with requirements linked to quality of the services.

D-ILA AI run protocol

Basic data

Short name: Targeted expansion of the training list

Identification code: PL_2_AI run

Minutes prepared by: SGH

Date: April 2024



AI run by: KIFÜ

Professional concept

To assess the effect of launching a targeted campaign of learning support based on providing coaching and individual counselling services to be financed from ILA, we propose to add new data to the training offer table.

We propose to add a training offer that would be individualised but because of its high unit price, we would only recommend it for selected target groups.

We propose to add individual coaching/counselling services to the database and indicate the NEET, low educational attainment, immigrants and socially disadvantaged people. These groups should receive LifeComp, EntreComp and DigComp support. The courses should be designed not to be exclusive because of their duration, way of teaching and/or other criteria. We propose to set a relatively low price, that would also not be exclusive. If necessary these programmes would be subsidised and the spending from ILA would be moderate (or one would receive an additional sum of money to be used for this type of development services).

Adding lines with a training course named “Coaching / counselling service for [target group]”, target group, 10 hours, cost 100€, no own learning, yes in QA (etc.) [the point is to provide information that does not discourage the algorithm from recommending and people from choosing these courses]

Expected results of the intervention

The number of persons from the targeted groups who would not choose any course from the offer would be diminished. Those who would not otherwise choose anything may choose a competence development service desirable from a policy standpoint.

Changes to the AI training data table

The training with the newly added M_PL_2 identifier is included in the training data table: We perform data filtering for NEET; low educational attainment; socially disadvantaged people target groups and the M_PL_2 training is assigned to each person on the list. In all cases, the M_PL_2 course is placed last among the courses recommended for the given person. (As a reminder: a maximum of 3 courses can be assigned to a person in the M1_T_ID, M2_T_ID and M3_T_ID data fields of the P_Data_300 table.) If the last data field (M3_T_ID) already contains the training assigned to the person, it will be overwritten with the M_PL_2 identifier.

Changes in the data table of the persons analysed

No changes to the basic version are necessary.



Changes to the data table of trainings (courses)

A new training will be added with the identifier M_PL_2. Target groups of the training: NEET; low educational attainment; socially disadvantaged people. Set the price of the training at €200. Frameworks developed by the training: LifeComp, EntreComp, DigComp

Methods for evaluating results

The results will be evaluated using the evaluation methods 1-7. "Use budget allocation" parameter value when running AI: yes

Results of the AI run

According to the professional concept, the number of training offers was increased by 1 training, so it became 107.

Based on the professional concept, 60 people will be assigned the new M_PL_2 training in the AI training data sheet. Out of the 60 people, there are 34 people who were originally given training. In the case of these persons, the previously assigned training was overwritten with the new training with the identifier M_PL_2.

The results will be evaluated by using the evaluation methods 1, 2, 3:

	Base version	Targeted expansion of the training list
Size of the sample [persons]	600	600
Number of persons not recommended training by the algorithm [persons]	33	47
Proportion of persons not recommended training by the algorithm [%]	5,5%	7,8%
Total number of training courses offered [number]	2002	1 907
Number of training courses per person [pcs]	3,34	3,18
Total cost of training offered [€]	379 799	389 352
Total cost of 1 training course per person offered in the first instance [€]	132 829	127 600
Training cost per person per most recommended training [€]	221,4	212,7

4. Number of recommended trainings broken down by framework combinations

TOP10

Targeted expansion of the training list



Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
151	EntreComp	FinComp			
144	LifeComp	EntreComp	DigComp		
127	LifeComp				
119	CEFR	CEFR	CEFR	CEFR	CEFR
115	DigComp				
95	DigComp	DigComp	DigComp	DigComp	
93	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
78	FinComp	LifeComp			
77	GreenComp	GreenComp	EntreComp		
73	FinComp	EntreComp	FinComp		

Base version

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
197	EntreComp	FinComp			
159	DigComp				
146	LifeComp				
136	CEFR	CEFR	CEFR	CEFR	CEFR
111	DigComp	DigComp	DigComp	DigComp	
106	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
102	EntreComp	FinComp	FinComp		
96	FinComp	LifeComp			
75	GreenComp				
70	DigComp	DigComp	DigComp	DigComp	DigComp

5. All transversal competency level changes available through the recommended trainings

Framework category	Base version	Targeted expansion of the training list	Change
CEFR	826	741	89,7%
DigComp	2960	2662	89,9%
EntreComp	2689	2522	93,8%
FinComp	682	558	81,8%
GreenComp	363	315	86,8%
LifeComp	1252	1435	114,6%



6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	Base version	Targeted expansion of the training list	Base version	Targeted expansion of the training list
CEFRL	87	68	14,5%	11,3%
DigComp	345	349	57,5%	58,2%
EntreComp	319	369	53,2%	61,5%
FinComp	241	219	40,2%	36,5%
GreenComp	167	155	27,8%	25,8%
LifeComp	305	346	50,8%	57,7%

Evaluation of the results

The AI run resulted in decreasing the number of people with recommended courses. It seems that the change in the AI training changed the way other trainings were allocated and by that we have not seen the expected intervention take place (in other words, some epiphenomena occurred, which shows that a different way of modelling the data for simulation is needed to prognose consequences of this intervention).

Conclusions for the D-ILA data model

We need to review the way this could be modelled or if there is a limitation to the scenario options we could consider.

D-ILA AI run protocol

Basic data

Short name: Splitting long courses into two

Identification code: PL_AI run_3

Minutes prepared by: SGH



Date: April 2024

AI run by: KIFÜ

Professional concept

In order to assess the effect of implementing modularisation in training provision and introducing micro-credentials, we propose to divide (split) each training course in two parts.

Modularisation is a solution that has been promoted in EU policy (e.g. [Council Recommendation on VET, Osnabrück Declaration](#)) and national policies, it has been widely implemented in IVET; however, we have limited knowledge of using it in adult learning. Modularisation should allow for reducing barriers of entry (such as limitations in time involvement or spending) or motivation (workload, difficulty, fear of overload etc). A more granular training offer would lead to smaller credentials.

Modularisation is often linked with restructuring existing training programmes as well as introducing new training offer and credentials. Introducing a variety of smaller objects in the training data base could also very well be seen as a result of implementing micro-credentials.

Suggested solution: splitting all trainings that have 60 hours of workload or more into two courses with the same characteristic, but half the workload and half the price (or 60% of the price). In some cases it would make sense to split the assigned framework categories, for example if a course has 5 assigned and then is split into two, then the first one has first 3 competences and the second one the least 3 competences assigned.

Expected results of the intervention

The number of persons who would not choose any course from the offer would be diminished.

The number of recommended courses for each individual would increase.

Learners would have a wider choice also in terms of course content.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

No changes to the basic version are necessary.

Changes to the data table of trainings (courses)



Out of the 106 courses included in the base version, there are 35 courses where, based on the Number_learning_hours data field, the time required to complete the course is higher than the 60 hours specified in the professional concept. According to the professional concept, we will double these 35 courses, so there will be 141 courses in the data table. Newly enrolled courses will receive a new code (T_ID data field). The Price_of_training data field will be 60% of the original value and the value of the Number_learning_hours data field will be forgotten. The maximum 5 competences originally assigned to the training are divided into two. The other parameters of the courses do not change.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-4 and 6. "Use budget allocation" parameter value when running AI: yes

Results of the AI run

Based on the professional concept, the total cost of the training courses increased from EUR 54,025 to EUR 59,751 in the data table containing the training courses, while the number of training courses increased from 106 to 141.

The results will be evaluated by using the evaluation methods 1, 2, 3:

	Base version	Splitting long courses into two parts
Size of the sample [persons]	600	600
Number of persons not recommended training by the algorithm [persons]	33	35
Proportion of persons not recommended training by the algorithm [%]	5,5%	5,8%
Total number of training courses offered [number]	2 002	2 000
Number of training courses per person [pcs]	3,34	3,33
Total cost of training offered [€]	379 799	327 560
Total cost of 1 training course per person offered in the first instance [€]	132 829	113 720
Training cost per person per most recommended training [€]	221,4	189,5

4. Number of recommended trainings broken down by framework combinations

TOP10

Splitting long courses into two parts

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
209	DigComp				
168	EntreComp	FinComp			
141	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
131	LifeComp				
115	DigComp	DigComp	DigComp	DigComp	
98	EntreComp	FinComp	FinComp		
94	FinComp	EntreComp	FinComp		
88	GreenComp				
84	FinComp	LifeComp			
78	GreenComp	GreenComp	EntreComp		

Base version

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
197	EntreComp	FinComp			
159	DigComp				
146	LifeComp				
136	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
111	DigComp	DigComp	DigComp	DigComp	



106	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
102	EntreComp	FinComp	FinComp		
96	FinComp	LifeComp			
75	GreenComp				
70	DigComp	DigComp	DigComp	DigComp	DigComp

6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	Base version	Splitting long courses into two parts	Base version	Splitting long courses into two parts
CEFRL	87	67	14,5%	11,2%
DigComp	345	342	57,5%	57,0%
EntreComp	319	322	53,2%	53,7%
FinComp	241	242	40,2%	40,3%
GreenComp	167	183	27,8%	30,5%
LifeComp	305	325	50,8%	54,2%

Evaluation of the results

The introduced changes resulted in a small decrease in the number of courses assigned (a fraction of percentage point change) as well as a small increase in the number of people without any course assigned (2 persons). These minimal but also undesirable changes were accompanied by a notable decrease in the costs of training offered, reducing the total cost of all offered training from €379 799 to €327 560 (ca. 14% decrease) and the total cost of the first trainings offered from €132 829 to €113 720 (ca. 14% decrease).



The intervention changed the structure of training offered, slightly increasing the proportion of GreenComp and LifeComp courses. This change shows that probably cost factor or availability of training offer are currently limiting factors.

The results of the AI run indicate should be treated with limited trust, although the decrease in total costs was expected, the increase of people without training assigned is difficult to explain in terms of rational decision-making. In both versions (base version and the analysed scenario) the initial list of trainings is supplemented by smaller trainings, yet some people do not get a recommended training.

Conclusions for the D-ILA data model

The results indicate that something like overtraining the model may have taken place or that some hidden factors influence the recommendations made. A larger and more differentiated list of training should be used for retraining the AI in the future.

D-ILA AI run protocol

Basic data

Short name: Comparison of PL and HU target group results

Identification code: PL_4_AI run

Minutes prepared by: SGH

Date: April 2024

AI run by: KIFÜ

Professional concept

Presenting how much the result would depend on the population in place. We would like to show, to what extent would the specific population A and B presented with the same funding options and the same training offer differ.

This concept would allow us to show that any intervention and/or decision concerning adult learning could have very different results depending on the population in question. To this end we would take the existing learners group and divide them into two groups (in the original database we could expect these groups to be different between countries – e.g. PL participants database and HU



database would have some difference arising from designers bias). Then we would also change the budget, for everyone to have the same one.

Division of the table in two parts, overriding the budget constraint – implementing the same amount – e.g. 500€ for all people. Run two simulations independently.

Expected results of the intervention

We observe the difference in recommended courses (e.g. which competence categories are being represented, the size of the courses) and the number of people without recommendation. We could also assess the total amount of spending if everyone chose the first recommended course or all courses recommended that fit the budget constraint.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

No changes to the basic version are necessary.

Changes to the data table of trainings (courses)

In the case of the PL scenario, only those persons recorded in the model by the SGH are included in the target group. For this, in the ID_P field, we filter the lines that contain the character string "PL".

In the case of the HU scenario, we perform the filtering as well, only in this case, by definition, we filter on the character string "HU" in the ID_P field.

According to the professional concept, the same funding amounts should be set in the two target groups. This is done by setting the value of the Budget_state_contrib data field to 500 euros for all PL and HU persons, while the values of the Budget_employers_contrib data field and the Budget_private_contrib data field are set to zero in the case of PL and HU as well. This ensures that the other characteristics determine the outcome of the AI run.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-6. "Use budget allocation" parameter value when running AI: yes

Results of the AI run



The results will be evaluated by using the evaluation methods 1, 2, 3:

	PL scenario	HU scenario
Size of the sample [persons]	150	150
Number of persons not recommended training by the algorithm [persons]	0	7
Proportion of persons not recommended training by the algorithm [%]	0,0%	4,7%
Total number of training courses offered [number]	445	475
Number of training courses per person [pcs]	3,0	3,2
Total cost of training offered [€]	67 290	62 831
Total cost of 1 training course per person offered in the first instance [€]	22 184	29 705
Training cost per person per most recommended training [€]	147,9	198,0

4. Number of recommended trainings broken down by framework combinations

TOP10

PL scenario

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
41	DigComp				
35	LifeComp				
32	LifeComp	LifeComp	LifeComp	LifeComp	EntreComp
32	CEFR	CEFR	CEFR	CEFR	CEFR
31	FinComp	LifeComp	GreenComp	EntreComp	DigComp



28	DigComp	DigComp	EntreComp	EntreComp	LifeComp
28	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
27	EntreComp	FinComp			
25	GreenComp	GreenComp	EntreComp		
24	FinComp	LifeComp			

HU scenario

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
57	DigComp	DigComp	DigComp	DigComp	
45	DigComp				
41	LifeComp				
35	FinComp	LifeComp			
33	EntreComp	FinComp			
25	GreenComp	GreenComp	EntreComp		
25	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
25	EntreComp	LifeComp	LifeComp	EntreComp	
21	EntreComp	FinComp	FinComp		
21	GreenComp				

5. All transversal competency level changes available through the recommended trainings

Framework category	PL scenario	HU scenario
CEFRL	179	145
DigComp	290	698
EntreComp	588	472



FinComp	111	131
GreenComp	71	127
LifeComp	278	277

6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	PL scenario	HU scenario	PL scenario	HU scenario
CEFRL	32	25	21,3%	16,7%
DigComp	107	81	71,3%	54,0%
EntreComp	92	78	61,3%	52,0%
FinComp	58	53	38,7%	35,3%
GreenComp	43	34	28,7%	22,7%
LifeComp	112	83	74,7%	55,3%

Evaluation of the results

The AI run has shown that the recommendations provided depend on the population in question to a large extent. The differences in terms of the composition of trainings recommended are well visible, for example for the Polish population almost 75% have been offered LifeComp trainings while for the Hungarian only 55%. In general the Polish population has been offered training containing more competences (courses had on average more framework categories assigned) – this shows that the results of intervention depend on the population to a large extent. As a consequence one can see that, the same allocations of funds to ILA in two different countries can lead to very different results.

Interestingly, the difference in the costs of training offered are nuanced. On one hand, the Polish population was recommended less trainings in general, but amounting to a higher sum – this means that more of more expensive courses were recommended. On the other hand, the Hungarian population was recommended more expensive first training.

Conclusions for the D-ILA data model

AI run proves that the indicated training needs significantly affect the recommendations – the model works.



D-ILA AI run protocol

Basic data

Short name: Reducing the quality of training courses (negative scenario modelling)

Identification code: PL_5_AI run

Minutes prepared by: SGH

Date: April 2024

AI run by: KIFÜ

Professional concept

Modelling how an effect of proliferation of low quality training offer could affect adult learning.

Acknowledging that learners have imperfect knowledge of the training offer and cannot assess if two similar courses differ in quality, we could expect that they would use price criterion to choose between two courses of similar content. This would lead to a market failure resulting in predatory practices – leading to lowering the quality of learning and training (less or lower levels of skills attained) and decreasing the value of credentials achieved.

Our database allows for modelling how strong such effect could be. In order to do that we should duplicate courses and input changes into the duplicates, that would reflect slightly less quality (I would propose 80% training time required and one less competence, possibly slightly lower price).

The case could be used for showing how important it is to either introduce measures to avoid proliferation and/or affect people's choice so that they would take quality into account.

Changes to the data table of trainings (courses): Duplicate all trainings, change workload to 80%, decrease price by 10%, delete last competence in the training.

Expected results of the intervention

Knowledge of the risks of proliferation of low quality training offer. This could be seen as a number of duplicated courses that would crowd out the original ones. This could also be measured in terms of "competence per € spent" difference – assuming one chooses all the courses recommended and that the "low quality" courses provide less competences and require less learning, we could end up with a measure of how much less one learns on average in that scenario or how much less competence categories are being developed.



Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

No changes to the basic version are necessary.

Changes to the data table of trainings (courses)

Due to the peculiarities of the D-ILA data model, doubling the number of training courses from 106 to 212 cannot be implemented. (A training can only have one identification number. If we assign new identification numbers to the new training during doubling, then the numbers identifying the new training will not be included in the 300-line training data table, i.e. the AI will not recommend the new training.)

So we partially deviate from the original concept: we do not change the number of courses. All other policy ideas will be implemented: All values of the "Number_learning_hours" data field will be reduced to 80% of the original value. All values of the "Price_of_training" data field are reduced to 90% of the original value. For each course, we delete the last competency developed by the given course. Unless 1 developed competency was originally specified. In this case, the original value remains.

With this solution, we create a situation similar to the original professional concept. The main difference is that we do not compare the impact of lower-quality courses within one AI run, but instead perform two independent AI runs. One with the original data and one with the reduced training quality data. We compare the results obtained in this way.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-6. "Use budget allocation" parameter value when running AI: yes

Results of the AI run

Based on the policy concept, the 5th transversal competence was cancelled in the case of 45 courses. There were 14 courses in the original table that developed 4 competencies. In the case of these, the 4th competency was deleted. In the case of 9 courses, the number of developed competencies was reduced from 3 to 2 by deleting the 3rd competency. There were 9 training courses where we reduced the number of developed competencies from 2 to 1.



The results will be evaluated by using the evaluation methods 1, 2, 3:

	Base version	Reducing the quality of training courses
Size of the sample [persons]	600	600
Number of persons not recommended training by the algorithm [persons]	33	28
Proportion of persons not recommended training by the algorithm [%]	5,5%	4,7%
Total number of training courses offered [number]	2 002	2 013
Number of training courses per person [pcs]	3,34	3,36
Total cost of training offered [€]	379 799	376 339
Total cost of 1 training course per person offered in the first instance [€]	132 829	111 892
Training cost per person per most recommended training [€]	221,4	186,5

4. Number of recommended trainings broken down by framework combinations

TOP10

Reducing the quality of training courses

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
210	EntreComp	FinComp			
177	LifeComp	LifeComp	DigComp		
124	CEFRL	CEFRL	CEFRL	CEFRL	
124	DigComp	DigComp	DigComp		
115	LifeComp				

113	DigComp				
107	LifeComp	LifeComp	LifeComp	LifeComp	
107	FinComp	LifeComp	GreenComp	EntreComp	
106	GreenComp	GreenComp			
89	LifeComp	LifeComp			

Base version

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
197	EntreComp	FinComp			
159	DigComp				
146	LifeComp				
136	CEFR	CEFR	CEFR	CEFR	CEFR
111	DigComp	DigComp	DigComp	DigComp	
106	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
102	EntreComp	FinComp	FinComp		
96	FinComp	LifeComp			
75	GreenComp				
70	DigComp	DigComp	DigComp	DigComp	DigComp

5. All transversal competency level changes available through the recommended trainings

Framework category	Base version	Reducing the quality of training courses	Change
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CEFRL	826	645	78,1%
DigComp	2960	2084	70,4%
EntreComp	2689	1884	70,1%
FinComp	682	330	48,4%
GreenComp	363	320	88,2%
LifeComp	1252	1926	153,8%

6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	Base version	Reducing the quality of training courses	Base version	Reducing the quality of training courses
CEFRL	87	81	14,5%	13,5%
DigComp	345	279	57,5%	46,5%
EntreComp	319	263	53,2%	43,8%
FinComp	241	256	40,2%	42,7%
GreenComp	167	174	27,8%	29,0%
LifeComp	305	420	50,8%	70,0%

Evaluation of the results

Because of the model limitations, the implemented changes actually reflect another concept. We observe the difference between two scenarios: the base scenario and a scenario with slightly smaller and cheaper training offer (also with a slightly smaller increase in competencies) .

The expected and observed overall results are: increasing the numbers of trainings offered, change in the structure of competences developed and trainings offered and lower level of costs.

An interesting result is the decrease in number of persons offered specific courses – e.g. much less people were offered DigComp and EntreComp. This result can have two different explanations:



- 1) it is possible that these competences were more often indicated as the last ones, and since the modification was done by deleting the last competence framework from a given training, these frameworks were matched less often. In this case the change is an artifact of the modification and not a real effect that reflects an impact of the changed training offer quality.
- 2) It is possible, that the preferences of the population include specific mix / composition of competences. In terms of real life, it could be that some learners only want training that is adequate to their needs (e.g. meets all or 2/3 of their indicated needs) and not a partial / inadequate solution (e.g. has only one common competence).

Conclusions for the D-ILA data model

The observations about the unexpected consequences would need to be taken into account in creating future data series for training models. This would allow to make more accurate models of the real life.

D-ILA AI run protocol

Basic data

Short name: Generate SK Scenario Zero

Identification code: SK_AI run_0

Minutes prepared by: ŠIOV

Date: April 2024

AI run by: KIFÜ

Professional concept

First, we need to create a basic scenario that will be used in our comparative analysis. In Slovakia, the State contribution will not exceed 250 €. That's why the current table of participants created by the partnership has to be modified. We limit the value in column Budget_state_contrib to 250 € for all, other parameters remain unchanged. The training course table remains unchanged. Budget distribution is set to 'Yes'. This run produces our Scenario Zero.

Expected results of the intervention



Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

In the Budget_state_contrib field, we filter the persons where the state aid is higher than €250. For these persons, the state aid rate will be adjusted to €250. Where the state aid amount is less than €250, the original amount remains.

Changes to the data table of trainings (courses)

No changes to the basic version are necessary.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-6. "Use budget allocation" parameter value when running AI: yes

Results of the AI run

Taking into account the policy concept, the State aid for 194 persons exceeds €250, so the State aid for 194 persons is reduced to €250. This reduces the total State aid for 600 persons from € 230 537 to € 115 401.

After the change provided for in the professional concept, AI cannot offer training to 47 persons, compared to 33 persons in the original sample. This represents an increase from 5.5% to 7.8% of the 600 persons not offered training.

The number of training courses per capita offered by AI per 600 persons decreased from 3.34 to 2.76, after the number of training courses offered by AI decreased from 1,655 in 2002 to 1,655 in 2006.

The total cost of the 1655 training courses offered by AI is €259 370. The total cost of the 2002 training courses recommended by AI in the original sample is €379 799. If only the training most recommended by AI is taken into account (1 training per person), the total number of training courses recommended amounts to € 107 254, while in the original sample the indicator was € 132 829.



4. Number of recommended trainings broken down by framework combinations

TOP10

SK Scenario Zero

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
181	EntreComp	FinComp			
132	LifeComp				
128	DigComp				
97	GreenComp				
90	DigComp	DigComp	DigComp	DigComp	
88	CEFRl	CEFRl	CEFRl	CEFRl	CEFRl
87	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
84	GreenComp	GreenComp	EntreComp		
68	FinComp	EntreComp	FinComp		
66	FinComp	LifeComp			

Base version

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
197	EntreComp	FinComp			
159	DigComp				
146	LifeComp				
136	CEFRl	CEFRl	CEFRl	CEFRl	CEFRl
111	DigComp	DigComp	DigComp	DigComp	
106	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
102	EntreComp	FinComp	FinComp		
96	FinComp	LifeComp			
75	GreenComp				
70	DigComp	DigComp	DigComp	DigComp	DigComp

5. All transversal competency level changes available through the recommended trainings

Framework category	SK Scenario Zero	Base version	Change
CEFRl	479	826	58,0%
DigComp	1 874	2 960	63,3%
EntreComp	1 765	2 689	65,6%
FinComp	524	682	76,8%



GreenComp	431	363	118,7%
LifeComp	1 113	1 252	88,9%

6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	SK Scenario Zero	Base version	SK Scenario Zero	Base version
CEFRL	65	87	10,8%	14,5%
DigComp	298	345	49,7%	57,5%
EntreComp	293	319	48,8%	53,2%
FinComp	211	241	35,2%	40,2%
GreenComp	180	167	30,0%	27,8%
LifeComp	302	305	50,3%	50,8%

Evaluation of the results

Conclusions for the D-ILA data model

D-ILA AI run protocol

Basic data

Short name: Only State contribution

Identification code: SK_AI run_1

Minutes prepared by: ŠIOV

Date: April 2024

AI run by: KIFÜ

Professional concept



We want to see the effectiveness of the ILA scheme if it operates in an isolated way from other sources of funding. This would mean only State contribution is available and no co-funding from the employer and the individual can be expected.

Set the values in columns Budget_employers_contrib and Budget_private_contrib to 0 € for all participants. Compare the results with Scenario 0.

Additionally, apart from the overall results including the whole pool of participants, we want to focus on data specific to 2 target groups: the low-qualified (up to ISCED 2 - lower secondary education) and NEETs.

Expected results of the intervention

Excluding sources of funding other than the State contribution will most probably lead to a decrease in the number of persons with at least one training course, and also it will decrease the average number of courses per participant.

We want to see how significant this change will be and also what impact it will have on the 2 specific target groups. Please, express in %.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

According to the technical concept, the maximum amount of state aid (Budget_state_contrib data field) is EUR 250. All values in Budget_employers_contrib and Budget_private_contrib are overwritten with 0.

Changes to the data table of trainings (courses)

No changes to the basic version are necessary.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-6. "Use budget allocation" parameter value when running AI: yes

NEET classification: at least one of the Target_group_1 or Target_group_2 or Target_group_3 data fields has the value "NEET".

Low-qualified classification: Highest_level_ISCED data field value "Primary education" or "Lower secondary education"



Results of the AI run

According to the professional concept, 377 people (62.8%) will receive public support of exactly €250, and 143 people (23.8%) will receive less than €250. A total of 80 persons will receive €0 in state aid. According to the technical concept, these 80 (13.3%) persons have no resources.

A total of 31 persons belong to the "NEET" group. Of these, 26 (83.9%) have a State aid of €250. The lowest state aid in the NEET group is €150.

There are 118 people in the "Low-qualified" group. Of these, 69 (58.5%) receive the maximum state aid of €250. There are 3 people in this group who receive €0 in state aid - and all other types of funding.

The results will be evaluated by using the evaluation methods 1, 2, 3:

	Scenario Zero	Only State contribution		
		Only State contribution	NEET	low-qualified
Size of the sample [persons]	600	600	31	118
Number of persons not in education or training [persons]	47	139	0	3
Proportion of persons with no qualifications as a percentage of the sample [%]	7,8%	23,2%	-	2,5%
Total number of training courses offered [number]	1655	1028	70	200
Number of training courses per person [pcs]	2,76	1,71	2,26	1,69
Total cost of training offered [€]	259 370	88 851	5 981	18 331
Training cost per person [€]	432,3	148,1	192,9	155,3

4. Number of recommended trainings broken down by framework combinations

TOP10

Only State contribution

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
130	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
98	DigComp				
83	GreenComp	GreenComp	EntreComp		
68	DigComp	DigComp	DigComp	DigComp	

63	LifeComp	LifeComp	DigComp	DigComp	
63	EntreComp	FinComp			
61	GreenComp				
57	LifeComp				
52	FinComp	EntreComp	FinComp		
49	GreenComp	GreenComp			

Scenario Zero

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
181	EntreComp	FinComp			
132	LifeComp				
128	DigComp				
97	GreenComp				
90	DigComp	DigComp	DigComp	DigComp	
88	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
87	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
84	GreenComp	GreenComp	EntreComp		
68	FinComp	EntreComp	FinComp		
66	FinComp	LifeComp			

5. All transversal competency level changes available through the recommended trainings

Framework category	SK Scenario Zero	Only State contribution	Change
CEFRL	479	85	17,7%
DigComp	1 874	1283	68,5%
EntreComp	1 765	577	32,7%
FinComp	524	271	51,7%
GreenComp	431	318	73,8%
LifeComp	1 113	632	56,8%

6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	SK Scenario Zero	Only State contribution	SK Scenario Zero	Base version
CEFRL	65	17	10,8%	2,8%



DigComp	298	271	49,7%	45,2%
EntreComp	293	185	48,8%	30,8%
FinComp	211	110	35,2%	18,3%
GreenComp	180	152	30,0%	25,3%
LifeComp	302	222	50,3%	37,0%

Framework category	Number of persons - Only State contribution		Percentage of persons	
	NEET	Low-qualified	NEET	Low-qualified
CEFRL	0	17	0,0%	14,4%
DigComp	20	71	64,5%	60,2%
EntreComp	13	27	41,9%	22,9%
FinComp	6	16	19,4%	13,6%
GreenComp	14	27	45,2%	22,9%
LifeComp	18	48	58,1%	40,7%

Number of NEET persons: 31

Number of Low-qualified persons: 118

Evaluation of the results

Conclusions for the D-ILA data model

D-ILA AI run protocol

Basic data

Short name: Generate SK modified Scenario Zero

Identification code: SK_2_AI run

Minutes prepared by: ŠIOV

Date: April 2024



AI run by: KIFÜ

Professional concept

First, we need to create a basic scenario that will be used in our comparative analysis. In Slovakia, the State contribution will not exceed 250 €. That's why the current table of participants created by the partnership has to be modified. We limit the value in column Budget_state_contrib to 250 € for all, other parameters remain unchanged. If the amount of the initial State aid is less than EUR 250, the State aid will be increased to EUR 250. The training course table remains unchanged. Budget distribution is set to 'Yes'. This run produces our Scenario Zero.

Expected results of the intervention

There are no specific results expected as the purpose of this AI run is not to test the algorithm and be compared to other previous scenarios. It is to produce the SK scenario zero and all the subsequent interventions according to other scenarios will be analysed in relation to it.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

In the Budget_state_contrib field, the amount of state aid is set to €250 for each person. Regardless of the amount of state aid previously received.

Changes to the data table of training courses

No changes to the basic version are necessary.

Methods for evaluating the results

The results will be evaluated by using the evaluation methods 1-6. "Use budget allocation" parameter value when running AI: yes

Results of the AI run

Results of the AI run

In the initial baseline version, the total amount of state aid per 600 persons is €230 537. Taking the policy concept into account, each of the 600 persons will receive €250 in state aid. The State aid per 600 persons has thus been reduced to €150,000, i.e. an overall reduction of €80,537.



There are 31 persons belonging to the "NEET " category and 118 persons in the "Low-qualified "category.

The results will be evaluated by using the evaluation methods 1, 2 and 3:

	Base version	SK_2_AI run_modified Scenario Zero (Distribution 'Yes')
Size of the sample [persons]	600	600
Number of persons not in education or training [persons] Number of persons not recommended training by the algorithm	33	45
Proportion with no qualifications as a percentage of the sample [%] Share of persons not recommended training by the algorithm [%]	5,5%	7,5%
Total number of persons recommended training		555
Share of persons recommended training		92,5%
Total number of training courses offered [number]	2 002	1757
Number of training courses per person [pcs]	3,3	2,9
Total cost of training offered [€]	379 799	312 327
Total cost of 1 training course per person offered in the first instance [€]	132 829	130 245
Average Training cost per person for the per most recommended training [€]	221,4	217,1

	SK_2_AI run_modified Scenario Zero (Distribution 'No')
Size of the sample [persons]	
Number of persons not recommended training by the algorithm	
Share of persons not recommended training by the algorithm [%]	
Total number of persons recommended training	
Share of persons recommended training	
Total number of training courses offered [number]	
Number of training courses per person [pcs]	
Total cost of training offered [€]	
Total cost of 1 training course per person offered in the first instance [€]	
Average Training cost per person for the per most recommended training [€]	

Results on NEETs and low-qualified persons are to be added, so that we can compare them with the results of the following scenarios.

4. Number of recommended trainings broken down by framework combinations

TOP10

SK modified Scenario Zero (Distribution 'Yes')

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
169	EntreComp	FinComp			



113	DigComp	DigComp	DigComp	DigComp	DigComp
107	LifeComp				
104	DigComp	DigComp	DigComp	DigComp	
99	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
96	GreenComp				
92	CEFR	CEFR	CEFR	CEFR	CEFR
86	EntreComp	FinComp	FinComp		
86	GreenComp	GreenComp	EntreComp		
84	DigComp				

Base version

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
197	EntreComp	FinComp	-	-	-
159	DigComp	-	-	-	-
146	LifeComp	-	-	-	-
136	CEFR	CEFR	CEFR	CEFR	CEFR
111	DigComp	DigComp	DigComp	DigComp	-
106	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
102	EntreComp	FinComp	FinComp	-	-
96	FinComp	LifeComp	-	-	-
75	GreenComp	-	-	-	-
70	DigComp	DigComp	DigComp	DigComp	DigComp

5. All transversal competency level changes available through the recommended trainings

Framework category	SK modified Scenario Zero (Distribution Yes)	SK modified Scenario Zero (Distribution No)	Base version	Change
CEFR	565		-826	68,4%



DigComp	3 181		-2 960	107,5%
EntreComp	2 072		-2 689	77,1%
FinComp	578		-682	84,8%
GreenComp	504		-363	138,8%
LifeComp	996		-1 252	79,6%

6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons as a percentage Share of the sample [%]	
	SK modified Scenario Zero (Distribution Yes)	Base version	SK modified Scenario Zero (Distribution Yes)	Base version
CEFRL	75	87	12,5%	14,5%
DigComp	313	345	52,2%	57,5%
EntreComp	320	319	53,3%	53,2%
FinComp	206	241	34,3%	40,2%
GreenComp	164	167	27,3%	27,8%
LifeComp	299	305	49,8%	50,8%

Evaluation of the results

The aim of this specific evaluation is not to compare the SK scenario zero with the base scenario used by the other project partners but rather to make sure that there are all the indicators processed that need to be available in the subsequent scenario analyses.

Conclusions for the D-ILA data model

In the future application of the data model, before running any scenarios, it is crucial to verify whether the input data is complete and valid, as well as that all data categories are available necessary for policy modelling and some specific scenarios.



D-ILA AI run protocol

Basic data

Short name: Only State contribution

Identification code: SK_3_AI run

Minutes prepared by: ŠIOV

Date: April 2024

AI run by: KIFÜ

Professional concept

We want to see the effectiveness of the ILA scheme if it operates as a sole source of funding. This would mean only State contribution is available and no co-funding from the employer and the individual can be expected.

Set the values in columns Budget_employers_contrib and Budget_private_contrib to 0 € for all participants. Compare the results with Scenario 0. (SK_2_AI run_modified Scenario Zero)

Additionally, apart from the overall results including the whole pool of participants, we want to focus on data specific to 2 target groups: the low-qualified (up to ISCED 2 - lower secondary education) and NEETs.

Expected results of the intervention

Excluding sources of funding other than the State contribution will most probably lead to a decrease in the number of persons with at least one training course allocated, and also it will decrease the average number of courses per participant.

We want to see how significant this change will be and also what impact it will have on the 2 specific target groups. Please, express in %.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

The default state is that the state subsidy for all 600 persons is €250, i.e. the value of the Budget_state_contrib data field is €250. The technical concept is that there are no other sources of funding for adult learning, so all values in the Budget_employers_contrib and Budget_private_contrib data fields should be overwritten with 0.



Changes to the data table of trainings (courses)

No changes to the basic version are necessary.

Methods for evaluating the results

The results will be evaluated by using the evaluation methods 1-6. "Use budget allocation" parameter value when running AI: yes

NEET classification: at least one of the Target_group_1 or Target_group_2 or Target_group_3 data fields has the value "NEET".

Low-qualified classification: Highest_level_ISCED data field value "Primary education" or "Lower secondary education"

Results of the AI run

The parameters are set according to the professional concept. A total of 31 persons belong to the "NEET" group. There are 118 people in the "Low-qualified" group.

The results will be evaluated by using the evaluation methods 1, 2, 3:

	SK_2_AI run_modified Scenario Zero	modified Only State contribution		
		SK_3_AI run_modified only State contribution	NEET	Low-qualified
Size of the sample [persons]	600	600	31	118
Number of persons not recommended training by the algorithm Number of persons not in education or training [persons]	45	60	3	9
Share of persons not recommended training by the algorithm Proportion of persons with no qualifications as a percentage of the sample [%]	7,5%	10,0%	9,7%	7,6%
Total number of persons recommended training	555	500		
Share of persons recommended training	92,5%	90%		
Total number of training courses offered [number]	1757	1371	84	243
Number of training courses per person [pcs]	2,9	2,3	2,7	2,1



Total cost of training offered [€]	312 327	113 569	6 138	23 232
Total cost of 1 training course per person offered in the first instance [€]	130 245	78 005	4 323	17 027
Average Training cost per person per most recommended training [€]	217,1	130,0	139,5	144,3

4. Number of recommended trainings broken down by framework combinations

TOP10

modified Only State contribution

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
172	EntreComp	FinComp			
115	FinComp	LifeComp			
112	DigComp				
96	LifeComp				
93	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
87	EntreComp	FinComp	FinComp		
68	GreenComp	GreenComp	EntreComp		
66	GreenComp				
62	FinComp	LifeComp	GreenComp	EntreComp	DigComp
56	DigComp	DigComp	DigComp	DigComp	

modified Scenario Zero

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
169	EntreComp	FinComp			
113	DigComp	DigComp	DigComp	DigComp	DigComp
107	LifeComp				
104	DigComp	DigComp	DigComp	DigComp	
99	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
96	GreenComp				
92	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
86	EntreComp	FinComp	FinComp		
86	GreenComp	GreenComp	EntreComp		
84	DigComp				



5. All transversal competency level changes available through the recommended trainings

Framework category	SK modified Scenario Zero	SK_3_AI run_modified only State contribution	Change
CEFRL	565	230	40,7%
DigComp	3 181	1 006	31,6%
EntreComp	2 072	1 134	54,7%
FinComp	578	585	101,2%
GreenComp	504	304	60,3%
LifeComp	996	782	78,5%

6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		SharePercentage of persons as a percentage of the sample [%]	
	SK modified Scenario Zero	SK_3_AI run_modified only State contribution	SK modified Scenario Zero	SK_3_AI run_modified only State contribution
CEFRL	75	46	12,5%	7,7%
DigComp	313	269	52,2%	44,8%
EntreComp	320	269	53,3%	44,8%
FinComp	206	244	34,3%	40,7%
GreenComp	164	158	27,3%	26,3%
LifeComp	299	271	49,8%	45,2%

Framework category	Number of persons – modified Only State contribution		Percentage of persons	
	NEET	Low-qualified	NEET (31 person)	Low-qualified (118 person)
CEFRL	1	12	3,2%	10,2%
DigComp	18	56	58,1%	47,5%
EntreComp	18	47	58,1%	39,8%
FinComp	15	41	48,4%	34,7%
GreenComp	14	23	45,2%	19,5%
LifeComp	16	50	51,6%	42,4%

Evaluation of the results



As expected, excluding sources of funding other than the State contribution did lead to a decrease in the number of persons allocated at least one training course (from 555 to 500, i.e. by almost 10%), and also it decreased the average number of courses per participant (from 2,9 to 2,3).

The total number of allocated courses decreased by almost 22%, as well as the total cost and average cost per participant.

Naturally, with a decrease of the number of courses, the extent to which competence levels changed was also reduced within all frameworks with the exception of FinComp, which remained at the same level.

A closer look at the individual frameworks and the share of participants that were allocated a course related to these frameworks shows that with the general decrease of the number of participants, also this indicator has a falling tendency in all frameworks except for one (FinComp). Also, the nature of top 10 recommended training courses in the two scenarios (Scenario Zero and State Contribution Only) shows that feeding the state learning goals into the algorithm can lead to excluding some frameworks completely (CEFRL) and bringing some forward (DigComp).

In conclusion, the state being the sole funder of the training can easily, through setting the learning objectives in one framework such as DigComp or FinComp, dictate what kind of training is followed (however, the structure of the sample has not been mapped in order to prove this assumption). The price paid for this control is a significantly lower number of training participants and attended courses.

Without any other parameters set, this measure has no targeted impact on the quality of the supported courses. We can only estimate that with a decreased total cost and average cost per course and participant, the quality of the training may also be lower.

How significant this change is within the target groups of the low-qualified and the NEETs:

The impact on the two specific target groups seem to be different from the one on the general sample. The share of persons recommended training remained unchanged in the target group of the NEETs (90.3%) and the low-qualified even increased slightly (from 91.5 to 92.4%). The average number of courses shows a slightly positive result with the NEETS - an increase from 2.6 to 2.7, and a decrease from 2.4 to 2.1 in the low-qualified category.

The distribution of courses under specific frameworks to the NEETS and the low-qualified does not follow the same trend as in the general adult population either. Most of the frameworks record an increase, except for CEFRL whose share decreased in both target groups.

This may be linked to the specificities of the target groups that have not been mapped yet, such as the interplay between the learning goals and their highest funding source. Or, simply, lower amounts of funding per participant are still enough to cover the needs of the representatives of these two target groups.

Conclusions for the D-ILA data model



In real life, to be able to make any relevant conclusions about the results of an AI run, it is of paramount importance that the users map their sample in a detailed way first. Interrelations between parameters can become more visible and some misleading evaluation statements can be avoided.

D-ILA AI run protocol

Basic data

Short name: Mandatory employer co-financing

Identification code: SK_4_AI run

Minutes prepared by: ŠIOV

Date: April 2024

AI run by: KIFÜ

Professional concept

First, we need to create a basic scenario that will be used in our comparative analysis. In Slovakia, the State contribution will not exceed 250 €. That's why the current table of participants created by the partnership has to be modified. We limit the value in column Budget_state_contrib to 250 € for all, other parameters remain unchanged. The training course table remains unchanged. Budget distribution is set to 'No'. This run produces our Scenario Zero.

We want to see the effectiveness of the ILA scheme if co-funding by the employer were obligatory. In our scenario the State contribution will be matched by a contribution from the employer. In the case of employed individuals, insert 250 € in the column Budget_employers_contrib. Budget distribution is set to 'No' and the Employer's goals take precedence (not the individual's). Compare the results with Scenario Zero, budget distribution set to 'No'.

Additionally, apart from the overall results including the whole pool of participants, we want to focus on data specific to 2 target groups: the low-qualified (up to ISCED 2 - lower secondary education) and NEETs.

Expected results of the intervention

An increase of funding will most probably lead to an increased number of employed persons with at least one training course, and also it may increase the average number of courses per participant.

We want to see how significant this change will be and also what impact it will have on the target group of the low-qualified and NEETs. Please, express in %.



Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

In the case of employed individuals, insert 250 € in the column Budget_employers_contrib. Mandatory employer contribution may be mandatory for those persons who have an employer. This is determined based on the current occupation category data field. There will be mandatory employer contribution where the current occupation category data field is filled out.

Changes to the data table of trainings (courses)

No changes to the basic version are necessary.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-6. "Use budget allocation" parameter value when running AI: no.

NEET classification: at least one of the Target_group_1 or Target_group_2 or Target_group_3 data fields has the value "NEET".

Low-qualified classification: Highest_level_ISCED data field value "Primary education" or "Lower secondary education"

Results of the AI run

Based on the professional concept, there are 360 people who have an employer. In the case of 360 persons, the amount of the employer's subsidy in the Scenario Zero is 57,000 €. Out of 360 persons, there are 295 persons whose employer's contribution in the Scenario Zero is lower than 250 €. In other words, in the case of 295 persons, based on the professional concept, the amount of the employer's subsidy increases to 250 €. With this intervention, the total amount of the employer's contribution increases from 57,000 € to 122,935 €.

The parameters are set according to the professional concept. A total of 31 persons belong to the "NEET" group. There are 118 people in the "Low-qualified" group.

The results will be evaluated by using the evaluation methods 1, 2, 3:

		Mandatory employer co-financing		
	SK_2_AI run Scenario Zero	ALL	NEET	Low-qualified

	(distribution 'No')			
Size of the sample [persons]	600	600	31	118
Number of persons not recommended any trainings by the algorithm [persons]	36	15	2	2
Proportion of persons not recommended any trainings by the algorithm [%]	6,0%	2,5%	6,5%	1,7%
Total number of persons recommended training	564	585	29	116
Share of persons recommended training [%]	94%	97,5%	93,5%	98,3%
Total number of training courses offered	1741	1 726	68	308
Number of training courses per person [pcs]	2,9	2,9	2,2	2,6
Total cost of training offered [€]	309 822	373 890	7 217	72 584
Total cost of 1 training course per person offered in the first instance [€]	121 770	163 603	5 042	31 054
Training cost per person per most recommended training [€]	203,0	272,7	162,6	263,2

4. Number of recommended trainings broken down by framework combinations

TOP10

Mandatory employer co-financing

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
200	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
138	GreenComp				
127	LifeComp				
108	DigComp	DigComp	DigComp	DigComp	
89	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
87	DigComp	DigComp	DigComp	DigComp	DigComp
84	DigComp				
80	EntreComp	FinComp			
73	LifeComp	LifeComp	EntreComp		
55	GreenComp	GreenComp	EntreComp		



SK_2_AI_run Scenario Zero (distribution 'No')

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
152	EntreComp	FinComp			
142	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
118	LifeComp				
103	GreenComp				
101	GreenComp	GreenComp	EntreComp		
93	DigComp				
92	DigComp	DigComp	DigComp	DigComp	
85	EntreComp	FinComp	FinComp		
81	FinComp	LifeComp			
64	LifeComp	LifeComp	LifeComp	LifeComp	EntreComp

5. All transversal competency level changes available through the recommended trainings

Framework category	SK_2_AI run Scenario Zero (distribution 'No')	Mandatory employer co-financing	Change
CEFRL	841	1 103	131,2%
DigComp	2208	2 610	118,2%
EntreComp	1977	1 822	92,2%
FinComp	564	346	61,3%
GreenComp	449	459	102,2%
LifeComp	1181	1 276	108,0%

6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	SK_2_AI_run Scenario Zero (distribution 'No')	Mandatory employer co-financing	SK_2_AI_run Scenario Zero (distribution 'No')	Mandatory employer co-financing
CEFRL	114	150	19,0%	25,0%
DigComp	258	282	43,0%	47,0%
EntreComp	298	306	49,7%	51,0%



FinComp	223	163	37,2%	27,2%
GreenComp	162	158	27,0%	26,3%
LifeComp	285	229	47,5%	38,2%

Framework category	Number of persons – SK_2_AI_run Scenario Zero (distribution 'No')		Percentage of persons	
	NEET	Low-qualified	NEET (31 person)	Low-qualified (118 person)
CEFRL	1	12	3,2%	10,2%
DigComp	18	56	58,1%	47,5%
EntreComp	18	47	58,1%	39,8%
FinComp	15	41	48,4%	34,7%
GreenComp	14	23	45,2%	19,5%
LifeComp	16	50	51,6%	42,4%

Framework category	Number of persons – Mandatory employer co-financing		Percentage of persons	
	NEET	Low-qualified	NEET (31 person)	Low-qualified (118 person)
CEFRL	4	46	12,9%	39,0%
DigComp	10	58	32,3%	49,2%
EntreComp	10	51	32,3%	43,2%
FinComp	4	18	12,9%	15,3%
GreenComp	6	21	19,4%	17,8%
LifeComp	18	50	58,1%	42,4%

Evaluation of the results

As might be expected, the increase in employer funding also increased the number of people receiving training from 94% to 97.5%. The number of people who were not allocated any training course fell by more than half (from 36 to 15).

In line with the increase in employer funding, the total financial cost of all allocated training courses increased from 309 822€ to 373,890€. Interestingly, however, the overall increase in funding did not affect the increase in the total number of courses allocated. On the contrary, it decreased from 1 741 to 1 726, i.e. by less than 1%. In addition, training cost per person per most recommended training increased from €203 to €272.70, suggesting that AI was not allocating a higher number of training courses to persons, but training courses at a higher cost. If we assume that a higher course cost also reflects a higher course quality, we can conclude that the increase in funding has contributed to an overall increase in the quality of the training courses allocated.



Looking at the number of recommended trainings broken down by framework combinations, we can see that the combination of measures such as an increase in funding from the employer and taking into account the individual learning goals only resulted in an increase in the number of training courses allocated for the development of language and digital skills (CEFRL and DigComp) and, conversely, a decrease in the number of training courses for the development of financial literacy and entrepreneurial skills (FinComp and EntreComp). This trend is also confirmed by the results showing changes in competence levels. The number of level changes, which increased by more than 30% in the CEFRL and by almost 19% in the DigComp, indicates that employees whose employers contributed to their training were particularly interested in investing these financial resources in the development of the transversal skills that are currently among the most in demand in the labour market.

In the case of indicator 6, the implementation of the professional concept resulted in a significant increase in interest in language skills development (CEFRL) and a significant decrease in attending FinComp in all target groups (general sample, NEETs, Low-qualified).

Overall, the number of NEETs who were allocated training courses from different frameworks was significantly lower after we implemented professional concept, suggesting that the increase in funding from employers had a negative impact on this particular target group.

Conclusions for the D-ILA data model

The D-ILA data model does not allow for changing some aspects, once the algorithm has been trained. For example, if you want to change the preference of learning goals in case of 'No' type of distribution from the individual's to the employer's. The user must count with this constraint in advance.

D-ILA AI run protocol

Basic data

Short name: The training offer is limited to accredited courses only

Identification code: SK_5_AI run

Minutes prepared by: ŠIOV

Date: April 2024

AI run by: KIFÜ

Professional concept



First, we need to create a basic scenario that will be used in our comparative analysis. In Slovakia, the State contribution will not exceed 250 €. That's why the current table of participants created by the partnership has to be modified. We limit the value in column Budget_state_contrib to 250 € for all, other parameters remain unchanged. The training course table remains unchanged. Budget distribution is set to 'Yes'. This run produces our Scenario Zero.

We want to see the effectiveness of the ILA scheme if only accredited courses are eligible. In this case, the training offer is reduced to courses with accreditation only. Budget distribution is set to 'Yes'. Compare the results with Scenario Zero, budget distribution set to 'Yes'.

Additionally, apart from the overall results including the whole pool of participants, we want to focus on data specific to 2 target groups: the low-qualified (up to ISCED 2 - lower secondary education) and NEETs.

Expected results of the intervention

Limited training offer will certainly lead to a decreased number of persons with at least one training course, and also it may decrease the average number of courses per participant. However, higher quality of training provision can be expected.

We want to see how significant this change will be and also what impact it will have on the target group of the low-qualified and the NEETs. Please, express in %.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

No changes to the basic version are necessary.

Changes to the data table of trainings (courses)

Only those courses remain in the list of courses for which the value of the "Accreditation" data field is "accredited by a national institution" or "accredited by an international organization". All other training will be cancelled.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-6. "Use budget allocation" parameter value when running AI: yes.



NEET classification: at least one of the Target_group_1 or Target_group_2 or Target_group_3 data fields has the value "NEET".

Low-qualified classification: Highest_level_ISCED data field value "Primary education" or "Lower secondary education"

Results of the AI run

Based on the professional concept, 58 of the 106 courses remain in the data table of the courses

The results will be evaluated by using the evaluation methods 1, 2, 3:

	SK_2_AI run Scenario Zero			The training offer is limited to accredited courses only			
	SK_2_AI run Scenario Zero	NEET	Low-qualified	The training offer is limited to accredited courses only	NEET	Low-qualified	
Size of the sample [persons]	600	31	118	600	31	118	
Number of persons not recommended training by the algorithm [persons]	45	3	10	44	2	11	
Proportion of persons not recommended training by the algorithm [%]	7,5%	9,7%	8,5%	7,3%	6,5%	9,3%	
Total number of persons recommended training				555	28	107	
Share of persons recommended training		92,5%	90,3%	91,5%	92,7%	93,5%	90,7%
Total number of training courses offered [number]		1757	81	288	908	36	135
Number of training courses per person [pcs]		2,9	2,6	2,4	1,5	1,2	1,1

Total cost of training offered [€]	312 327	6 738	56 328	248 529	6 940	31 699
Total cost of 1 training course per person offered in the first instance [€]	130 245	4 610	21 862	84 378	2 770	15 804
Training cost per person per most recommended training [€]	217,1	148,7	185,3	140,6	89,4	133,9

4. Number of recommended trainings broken down by framework combinations

TOP10

The training offer is limited to accredited courses only

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
237	DigComp				
125	GreenComp				
116	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
93	LifeComp	LifeComp	EntreComp		
59	EntreComp				
57	LifeComp				
49	DigComp	DigComp	DigComp	DigComp	DigComp
38	DigComp	DigComp	DigComp	DigComp	
25	LifeComp	EntreComp	FinComp	GreenComp	DigComp
22	GreenComp	GreenComp			

SK_2_AI_run Scenario Zero (distribution 'Yes')

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
169	EntreComp	FinComp			
113	DigComp	DigComp	DigComp	DigComp	DigComp



107	LifeComp				
104	DigComp	DigComp	DigComp	DigComp	
99	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
96	GreenComp				
92	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
86	EntreComp	FinComp	FinComp		
86	GreenComp	GreenComp	EntreComp		
84	DigComp				

5. All transversal competency level changes available through the recommended trainings

Framework category	SK_2_AI_run Scenario Zero (distribution 'Yes')	The training offer is limited to accredited courses only	Change
CEFRL	565	606	107,3%
DigComp	3 181	1 167	36,7%
EntreComp	2 072	634	30,6%
FinComp	578	53	9,2%
GreenComp	504	348	69,0%
LifeComp	996	652	65,5%

6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	SK_2_AI_run Scenario Zero (distribution 'Yes')	The training offer is limited to accredited courses only	SK_2_AI_run Scenario Zero (distribution 'Yes')	The training offer is limited to accredited courses only
CEFRL	75	107	12,5%	17,8%
DigComp	313	250	52,2%	41,7%



EntreComp	320	179	53,3%	29,8%
FinComp	206	37	34,3%	6,2%
GreenComp	164	99	27,3%	16,5%
LifeComp	299	163	49,8%	27,2%

SK_2_AI_run Scenario Zero

Framework category	SK_2_AI_run Scenario Zero		Percentage of persons	
	NEET	Low-qualified	NEET (31 person)	Low-qualified (118 person)
CEFRL	2	18	6,5%	15,3%
DigComp	15	60	48,4%	50,8%
EntreComp	13	44	41,9%	37,3%
FinComp	9	31	29,0%	26,3%
GreenComp	10	18	32,3%	15,3%
LifeComp	17	48	54,8%	40,7%

The training offer is limited to accredited courses only

Framework category	Number of persons – The training offer is limited to accredited courses only		Percentage of persons	
	NEET	Low-qualified	NEET (31 person)	Low-qualified (118 person)
CEFRL	1	25	3,2%	21,2%
DigComp	10	55	32,3%	46,6%
EntreComp	9	18	29,0%	15,3%
FinComp	0	1	0,0%	0,8%
GreenComp	5	9	16,1%	7,6%
LifeComp	9	22	29,0%	18,6%



Evaluation of the results

The implementation of the professional concept has resulted in a significantly limited training offer with an almost 55% decrease in the total number of training courses offered (from 106 to 58). We predicted that as a result of this there would be an increase in the number of persons not recommended training by the algorithm. However, there was only a slight increase in the Low-qualified target group (from 8.5% to 9.3%). Conversely, we observe a slight decrease for the whole pool of participants (from 7.5% to 7.3%) and NEETs (from 9.7% to 9.3%).

A significantly negative impact of this measure we could see on the Number of training courses per person, where the number of courses fell by half, both for the whole pool of participants and for NEETs and Low-qualified target groups.

The implementation of the professional concept also affected the structure of the Competency Frameworks and the number of training courses which were recommended to participants. While the base Scenario Zero was dominated by course offerings from EntreComp, FinComp, DigComp and LifeComp, the condition of accredited courses brought to the fore courses focused on competency development within DigComp, GreenComp, CEFR and LifeComp, with no framework combinations.

For Indicator 6, the number of people who have been offered training under a specific framework increased only for CEFR and only within the whole pool of participants. It seems to reflect the higher quality of training courses aimed at developing language skills, which include the highest proportion of courses that have been accredited at national or international level. In the case of the NEETs and Low-qualified target groups, the numbers fell for all Competency Frameworks, falling to almost zero in the case of FinComp.

Conclusions for the D-ILA data model

We hypothesized that the reduced number of training courses in the sample would result in a reduced number of individuals being assigned to a training course. However, this assumption did not hold; the algorithm was able to maintain a very similar rate for the numbers of people who were assigned training courses, even in specific target groups (e.g. NEETs and Low-qualified). From the above, we can conclude that limiting supply on inputs may not automatically limit outputs.

D-ILA AI run protocol

Basic data

Short name: People who choose non-accredited training receive lower state aid

Identification code: SK_6_AI run

Minutes prepared by: ŠIOV



Date: April 2024

AI run by: KIFÜ

Professional concept

We want to see the effectiveness of the ILA scheme if accredited courses are funded with 100% of State contribution and non-accredited ones require co-funding by the participant at the level of 20%. In our scenario, this would mean that the Budget_state_contrib is 250 € in case an accredited course is matched, and only 200 € in case a non-accredited course is matched with a participant. Budget distribution is set to 'Yes'. Compare the results with Scenarios 0 and 3.

Additionally, apart from the overall results including the whole pool of participants, we want to focus on data specific to 2 target groups: the low-qualified (up to ISCED 2 - lower secondary education) and NEETs.

Expected results of the intervention

We expect that a more advantageous funding of accredited courses will increase the share of accredited courses in the matching results. At the same time, a potential decrease in the number of persons and/or courses matched will be partly compensated with those participants having own resources and being matched with non-accredited courses.

However, it is also quite possible there will be a significant decrease, both in the number of persons and the number of courses matched. Still, higher quality of training provision can be expected.

We want to see how significant this change will be and also what impact it will have on the target group of the low-qualified and the NEETs. Please, express in %.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

No changes to the basic version are necessary.

Changes to the data table of trainings (courses)

No changes to the basic version are necessary.



Methods for evaluating results

Accredited courses classification: In the training data table (T-DATA), the Accreditation data field is set to "accredited by a national institution" or "accredited by an international organisation"

NEET classification: at least one of the Target_group_1 or Target_group_2 or Target_group_3 data fields has the value "NEET".

Low-qualified classification: Highest_level_ISCED data field value "Primary education" or "Lower secondary education"

Results of the AI run

We interpret the technical concept to mean that the result of running AI feeds back to the input parameters. So it is not a matter of setting the input data, running the AI, and finally analysing the results.

In our view, this is a real policy position. However, the D-ILA data model in its current form calculates the outcome in one step, i.e. it is not suitable for modelling the policy concept outlined. We cannot set in the D-ILA data model that those for whom AI offers non-accredited training at the output should have less state support at the input.

Evaluation of the results

In this case, we received no results, so the evaluation is not possible.

Conclusions for the D-ILA data model

With the help of the D-ILA data model, we could not model the formulated professional concept. While we believe that the professional concept fully reflects real needs.

The question arises as to whether the EU concept of ILA is in itself suitable for the implementation of such or similar policy ideas. We suspect not. If the state transfers the support to a person's account, does the state ask for a part of the support back after the choice, if the person chooses a non-accredited training? It doesn't seem like a feasible idea.

In a highly regulated system, the policy vision can be realised: the state will only provide higher state support to those who agree to choose accredited training. After that, the state checks that the



relevant person actually spent the state support on accredited training. If not, the state must request a certain part of the subsidy back.

In the traditional system without ILA, the policy idea can be implemented without any problems: the organisation providing the accredited training received as much state support as the number of persons who completed the accredited training.

D-ILA AI run protocol

Basic data

Short name: Doubling the number of courses and halving the price

Identification code: SK_7_AI run

Minutes prepared by: ŠIOV

Date: April 2024

AI run by: KIFÜ

Professional concept

We want to see the effectiveness of the ILA scheme if the training offer is extended (changes in quantity) and at the same time the ratio of shorter modularised courses with lower prices is increased (changes in quality).

In this scenario, double the number of courses (copy-paste the whole block without selection). The added courses should be shorter and cheaper - cut the number of notional learning hours and the price by half. Compare the results with Scenario 0.

Additionally, apart from the overall results including the whole pool of participants, we want to focus on data specific to 2 target groups: the low-qualified (up to ISCED 2 - lower secondary education) and NEETs.

Expected results of the intervention

A substantially increased training offer with shorter and less expensive courses will most probably lead to an increased number of persons with at least one training course, and also it may increase the average number of courses per participant.



We want to see how significant this change will be and also what impact it will have on the target group of the low-qualified and the NEETs. Please, express in %.

Changes to the AI training data table

No changes to the basic version are necessary.

Changes in the data table of the persons analysed

No changes to the basic version are necessary.

Changes to the data table of trainings (courses)

Due to the peculiarities of the D-ILA data model, doubling the number of training courses from 106 to 212 cannot be implemented. (A training can only have one identification number. If we assign new identification numbers to the new training during doubling, then the numbers identifying the new training will not be included in the 300-line training data table, i.e. the AI will not recommend the new training.)

So we partially deviate from the original concept: we do not change the number of courses. However, the original values of the "Number_learning_hours" data field and the "Price_of_training" data field are halved in half of the 106 courses. The relevant courses are selected randomly. With this solution, we create a situation similar to the original professional concept.

Methods for evaluating results

The results will be evaluated by using the evaluation methods 1-4, 6. "Use budget allocation" parameter value when running AI: yes

NEET classification: at least one of the Target_group_1 or Target_group_2 or Target_group_3 data fields has the value "NEET".

Low-qualified classification: Highest_level_ISCED data field value "Primary education" or "Lower secondary education"

The 5th indicator indicates the increase in the level of competence. In this case, however, we do not calculate this indicator, because halving the training time makes the degree of change in the level of competence uncertain in the case of the relevant training courses. In our opinion, the rule that the change in the level of competence will be half as much during the same amount of learning time cannot be applied.

Results of the AI run



The results will be evaluated by using the evaluation methods 1, 2, 3:

	SK_2_AI run_modified Scenario Zero			halving the duration and price		
	SK_2_AI run_modified Scenario Zero	NEET	Low-qualified	Halving the duration and price	NEET	Low-qualified
Size of the sample [persons]	600	31	118	600	31	118
Number of persons not in education or training [persons] Number of persons not recommended training by the algorithm	45	3	10	9	1	1
Proportion with no qualifications as a percentage of the sample [%] Share of persons not recommended training by the algorithm [%]	7,5%	9,7%	8,5%	1,5%	3,2%	0,8%
Total number of persons recommended training	555	28	108	591	30	117
Share of persons recommended training	92,5%	90,3%	91,5%	98,5%	96,8%	99,2%
Total number of training courses offered [number]	1757	81	288	1 988	86	307
Number of training courses per person [pcs]	2,9	2,6	2,4	3,3	2,8	2,6
Total cost of training offered [€]	312 327	6 738	56 328	297 612	7 386	52 916
Total cost of 1 training course per person offered in the first instance [€]	130 245	4 610	21 862	105 202	4 349	20 848
Training cost per person per most	217,1	148,7	185,3	175,3	140,3	176,7

recommended training [€]						
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4. Number of recommended trainings broken down by framework combinations

TOP10

halving the duration and price

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
172	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
149	LifeComp				
148	DigComp				
132	DigComp	DigComp	EntreComp	EntreComp	LifeComp
105	GreenComp				
102	EntreComp	FinComp			
97	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
85	DigComp	DigComp	DigComp	DigComp	
84	GreenComp	GreenComp	EntreComp		
77	FinComp	LifeComp	GreenComp	EntreComp	DigComp

modified Scenario Zero

Num. of trainings [pcs]	1_framework_category	2_framework_category	3_framework_category	4_framework_category	5_framework_category
169	EntreComp	FinComp			
113	DigComp	DigComp	DigComp	DigComp	DigComp
107	LifeComp				
104	DigComp	DigComp	DigComp	DigComp	
99	LifeComp	LifeComp	LifeComp	LifeComp	LifeComp
96	GreenComp				
92	CEFRL	CEFRL	CEFRL	CEFRL	CEFRL
86	EntreComp	FinComp	FinComp		
86	GreenComp	GreenComp	EntreComp		



84	DigComp			
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6. Number of people who have been offered training under a specific framework

Framework category	Number of persons		Percentage of persons	
	SK modified Scenario Zero	Halving the duration and price	SK modified Scenario Zero	Halving the duration and price
CEFRL	75	119	12,5%	19,8%
DigComp	313	405	52,2%	67,5%
EntreComp	320	374	53,3%	62,3%
FinComp	206	210	34,3%	35,0%
GreenComp	164	185	27,3%	30,8%
LifeComp	299	393	49,8%	65,5%

SK modified Scenario Zero

Framework category	SK modified Scenario Zero		Percentage of persons	
	NEET	Low-qualified	NEET (31 person)	Low-qualified (118 person)
CEFRL	2	18	6,5%	15,3%
DigComp	15	60	48,4%	50,8%
EntreComp	13	44	41,9%	37,3%
FinComp	9	31	29,0%	26,3%
GreenComp	10	18	32,3%	15,3%
LifeComp	17	48	54,8%	40,7%

Halving the duration and price

Framework category	Number of persons – halving the duration and price		Percentage of persons	
	NEET	Low-qualified	NEET (31 person)	Low-qualified (118 person)
CEFRL	4	26	12,9%	22,0%
DigComp	19	84	61,3%	71,2%



EntreComp	19	56	61,3%	47,5%
FinComp	8	29	25,8%	24,6%
GreenComp	9	29	29,0%	24,6%
LifeComp	23	73	74,2%	61,9%

Evaluation of the results

As expected, a training offer with a higher share of shorter and less expensive courses leads to an increased number of persons with at least one training course (their share increased from 92.5% to 98.5%), and also it increases the average number of courses per participant (from 2.9 to 3.3, i.e. by 13%). At the same time, the total cost of one training course per person offered in the first instance decreased (from 130 245 to 105 202 €, i.e. by almost 20%).

This seems to offer an option for situations when the total budget is strictly limited and a maximum possible coverage of the target audience is aimed at. Interestingly, all frameworks record an increased share among persons allocated a course, with some of them (LifeComp and DigComp) doing this to a larger extent. This could be related to their higher representation among the shorter and cheaper courses in the modified sample. A similar explanation could be used for the shifts in the combinations of frameworks in the allocated courses, where e.g. the language courses rose to the top. Usually, these courses are expensive and at the same time, language skills are quite frequent among the learning goals. However, the structure of the sample has not been mapped in order to prove this assumption.

How significant this change is within the target groups of the low-qualified and the NEETs:

The share of persons recommended training was significantly changed in the target group of the NEETs (from 90.3 to 96.8%) and the low-qualified (from 91.5 to 99.2%). Also the average number of courses shows a positive result - an increase from 2.6 to 2.8 with the NEETs and from 2.4 to 2.6 with the low-qualified category.

The distribution of courses under specific frameworks to the NEETS and the low-qualified does not follow the same trend as in the general adult population. Some frameworks record an increase, some a decrease. This may be linked to the specificities of the target groups that have not been mapped yet, such as the interplay between the learning goals and the highest funding source. Nevertheless, even in the NEETs and the low-qualified category, increasing the share of shorter and cheaper training courses leads to a better target group coverage.

Without any other parameters set, this measure has no targeted impact on the quality of the supported courses. We can only estimate that with a decreased cost per course and participant, the quality of the training may also be lower.

Conclusions for the D-ILA data model

The D-ILA data model does not allow for changing the input data such as increasing the number of training courses, once the algorithm has been trained. If we assign new identification numbers to new training courses, then the numbers identifying the new training will not be included in the training data table, i.e. the AI will not recommend the new training. The user must count with this constraint in advance.

