UC-CROWD
universities & companies
crowdsourcing

European Report – Final Results on

WP4 – Teaching Learning Case Study - Professors

partner in charge ***Varna Free University "Chernorizets Hrabar"***

date ***9th of May 2014***

location ***Varna, Bulgaria***

type of report ***European Report – Professors' perspective***

1. Objectives and general description of the activity

UC-CROWD/Universities-Companies Crowdsourcing is aimed at strengthening linkages between Companies and Higher Education Institutions (HEI) by mean of the reinforcement of an alternative way of dialogue focused on company's needs. Core aim of the project is to contribute to "new learning and teaching methods" by creating a Crowdsourcing platform to match company needs and academic innovative solutions. The platform developed will highlight the "challenges" (problems to solve) provided by companies specialized, in this pilot version, in the energy sector. University professors and students will further reply to the "challenges" suggesting their "solutions".

Crowdsourcing, thus, can be defined also as a Collective Intelligence which involves groups of individuals collaborating to create synergy, something greater than the individual part, which will allow enlarging the process of research innovation to think up new inventions in the next years. Crowdsourcing, in fact, applied to fundamental research and private sector, is described as a more effective research collaboration that radically enlarges the pool of scientific collaborators (Castelluccio 2006).

In UC CROWD project, the international "Crowd" is the real protagonist of this innovative project venture. In order to strengthen the knowledge triangle between education, research and business, European and International ground of enterprises and universities will contribute to the empowerment of the UC-CROWD Platform to create a unique network oriented towards energy efficiency and sustainable growth.

Rationale of UC CROWD Research is to investigate the actual knowledge, expectations and needs related to the Crowdsourcing platform. One of the main stakeholders' groups is represented by PROFESSORS which are going to be the main guarantor for the quality of the solutions generated by the academic to solve challenges set by the companies. The professors are very important for the success of the Crowdsourcing Platform as they are one of the key actors who guarantee the quality of the work of the academic teams.

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Through the research, partners have pointed out i.e. What kind services should the platform offer to be attractive to professors; What do professors expect to find at this type of network; What benefits professors have from being closer to the companies and the business world.

Thanks to the results come from research phase it has been then possible to highlight the essential features of the platform, the main aims, the strengths and weaknesses of UC CROWD translational project venture.

2. Introduction

Survey Background: UC CROWD survey has been designed and developed to identify and process data about Crowdsourcing competence, background motivations, obstacles, incentives or relevant functionalities witnessed by entrepreneurial target group.

The report furthermore highlights the emerging strengths or threats that could positively or negatively influence the project's success.

As previously mentioned, one of the most important project stakeholders' group is represented by the professors which will supervise the quality of the provided solutions to the real life projects in the Crowdsourcing Platform.

A suitable involvement in the project will influence the next success of the project. Through responses professors have pointed out actual competencies in the field, perceptions on how the platform should be to cope with their needs and expectations.

The Survey has been designed and developed by WP3/WP4/WP5 leader partners. In order to facilitate the management and the administration of the questionnaire a unique survey has been designed addressed to all 3 target groups: companies, university professors and university students.

Although there was a unique survey, specific questions were directed to investigate the specific needs of professors.

The action plan was addressed to reach clusters of:

P1 - 7 Portuguese and Spanish professors;

P4 - 7 Polish professors;

P5 - 7 Italian professors;

P7 - 7 Slovenian professors;

P8 - 7 Bulgarian professors;

P10 - 7 Belgian professors;

P11 - 10 UK professors.

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Such survey has been translated into different languages: English, Italian, Portuguese, Spanish, Polish, Slovene and Bulgarian languages.

Surveys have been administered face to face, by fax, email and through online software.

Survey has been uploaded into online survey software in order to facilitate the collection and the elaboration of data.

As concerns the statistic research strategy, the questions with rank responses (1-7) have been analysed providing:

- *the visual representation of **row data** related to each option which allows you to understand the amount of responses for each option;*
- *the visual representation of **means** related to each option which allows to point out immediately the most important options chosen by participants;*
- *Finally, the visual representation of the **confidence intervals** related to each option, a type of interval used to indicate the reliability of an estimate.*

*Besides that, a grid for each matrix question provides all the aforementioned values including the **standard deviations** which show how much variation or dispersion from the average exists.*

Analysis

After approximately one month March 2014, we have reached a cluster of 111 professors coming from European and Third Countries:

European Countries Questionnaires

Andorra	*1*
Belgium	*11*
Bulgaria	*22*
Italia	*19*
Poland	*8*
Portugal	*23*
Romania	*1*
Slovenia	*7*
Spain	*4*
United Kingdom	*15*

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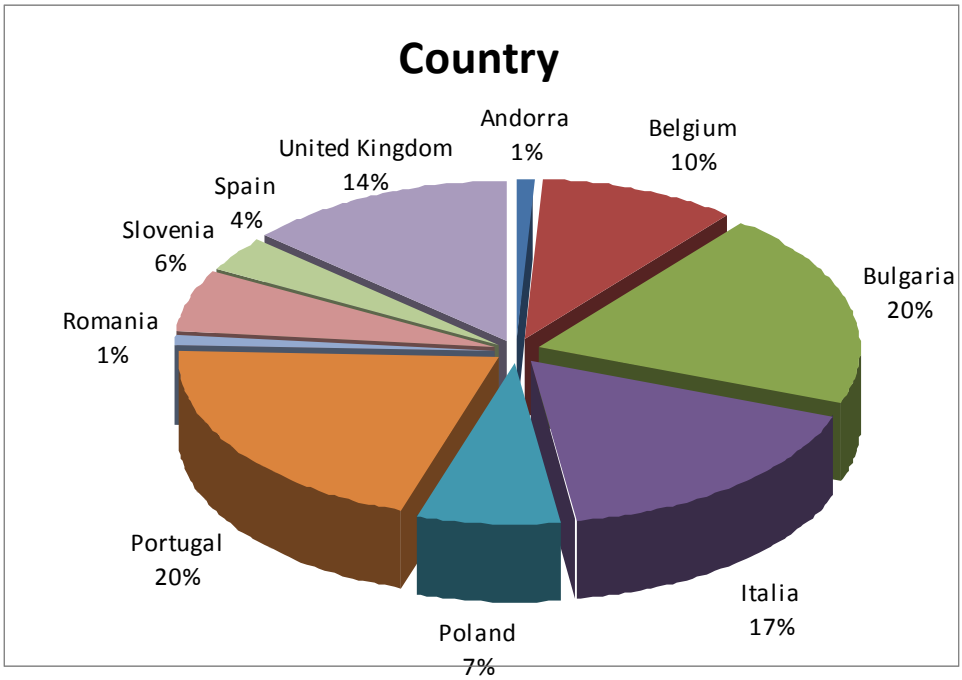
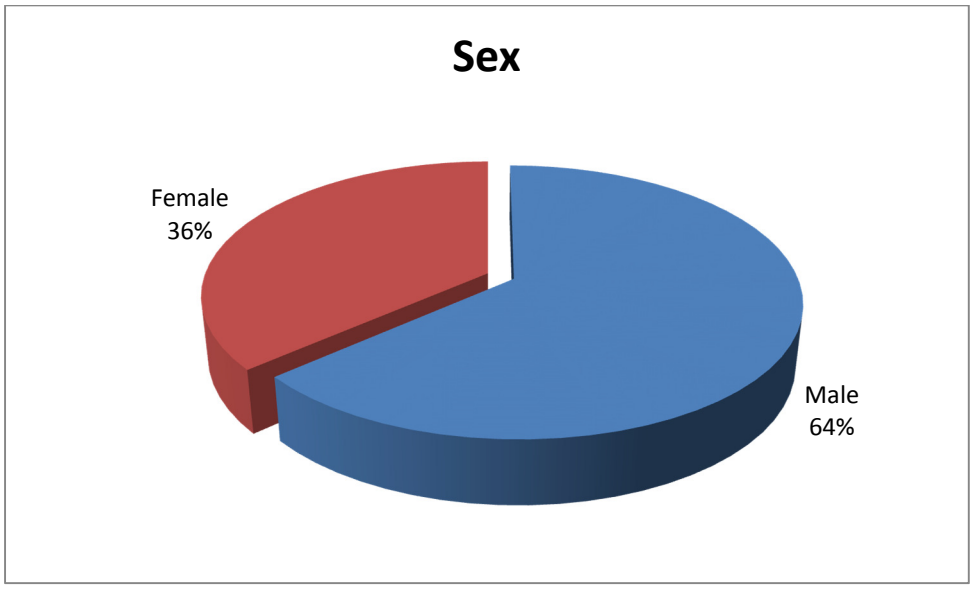


Graphic 1 – Statists about country



*Graphic 2 - The majority of professors' representatives are composed by **male**.*

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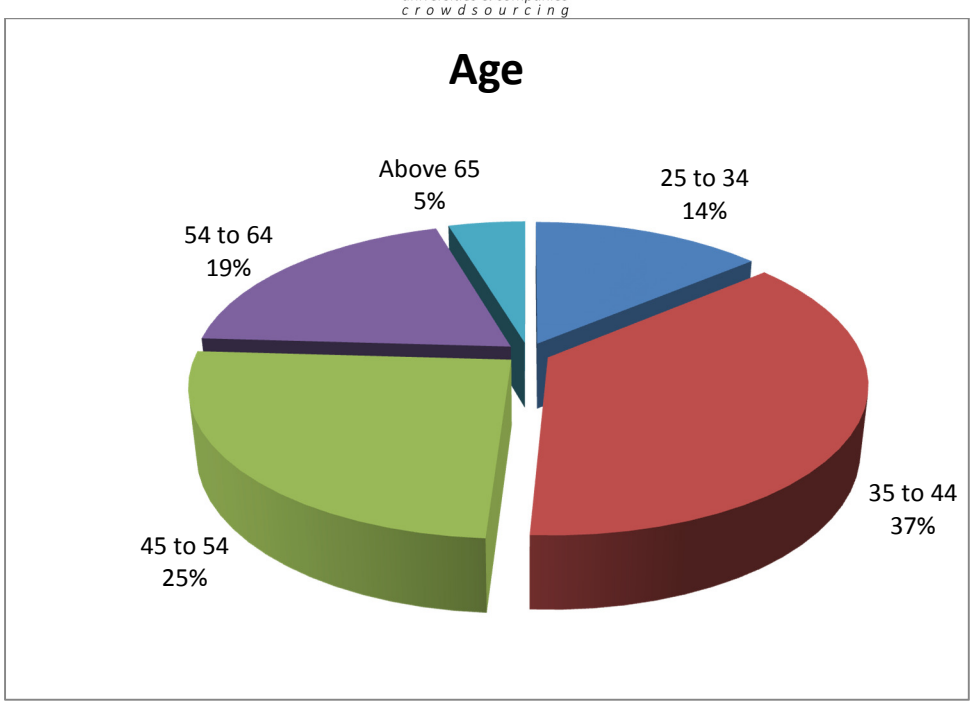
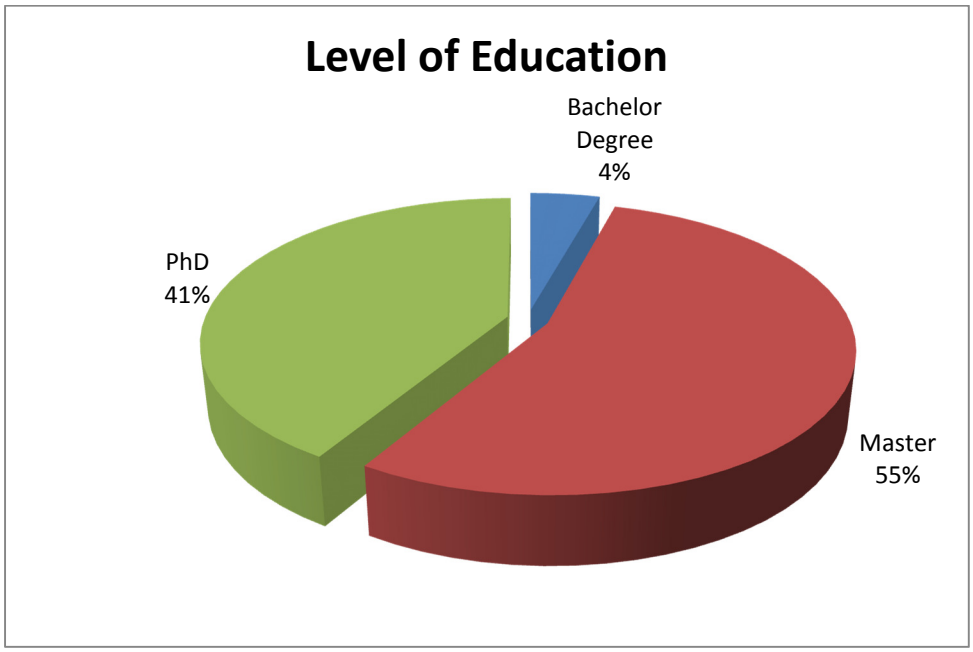


*Graphic 3 - Majority professors' representatives belong to a range age of **35 to 44 years old**.*



*Graphic 4 - As concern the educational level, majority has a **master level – 55% as the PhD are 41%**.*

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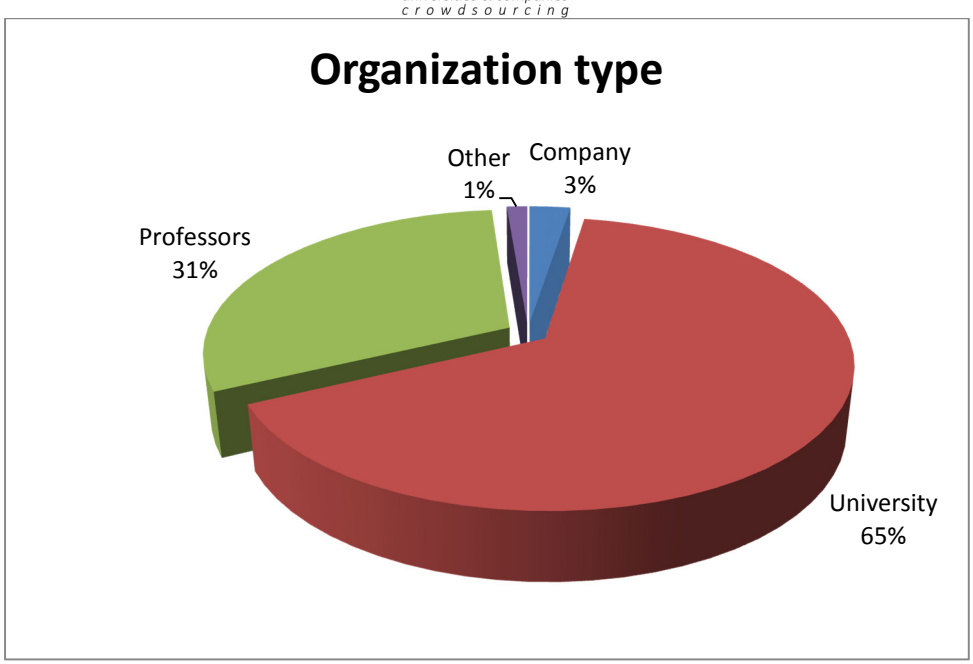
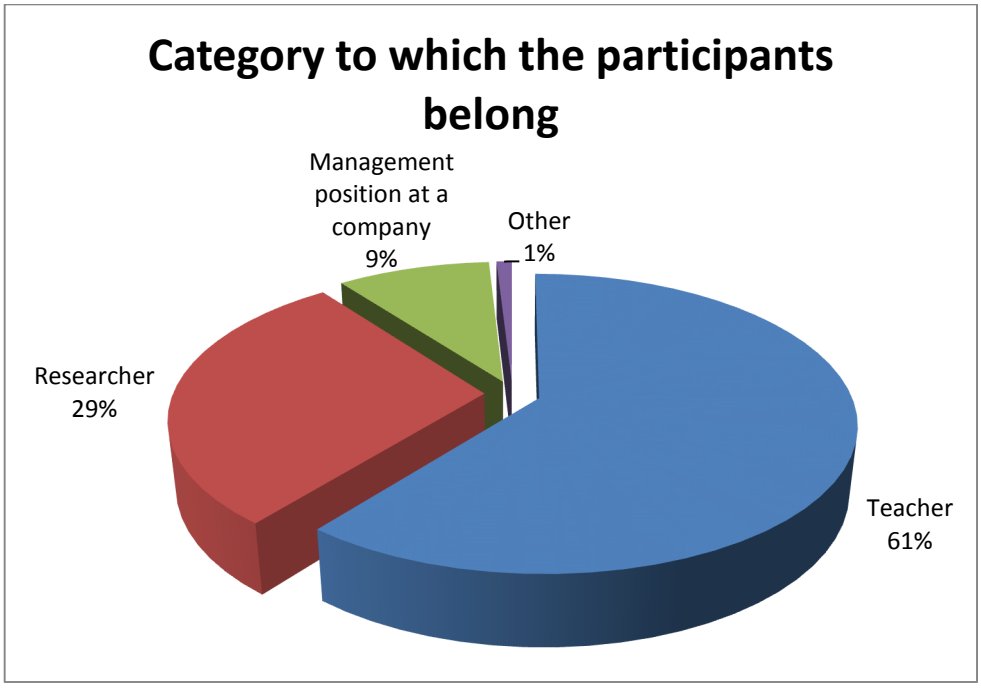


*Graphic 5 - The **type of Institution** professors belong, the great part comes from the **Universities**.*



*Graphic 6 - The **category to which the professors belong** most of them are teaching – 61%, the researchers are 29% and the ones on the management positions are only 9%.*

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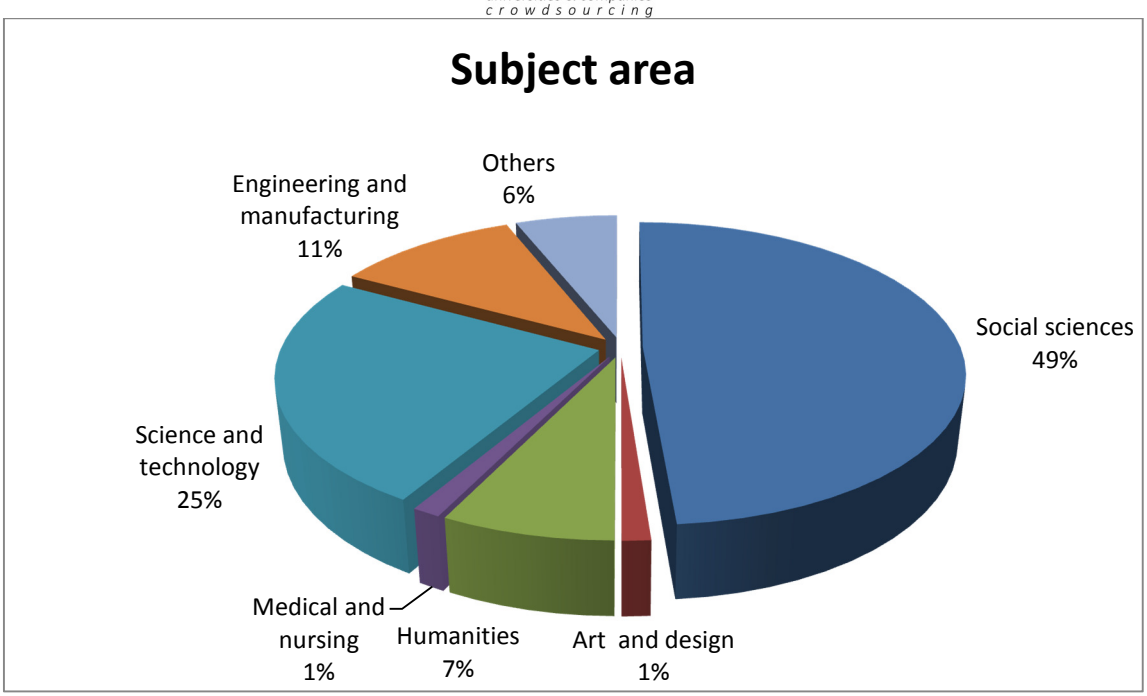

Graphic 7 – Statists about subject area

Source: Question 24: Sex, question 25: Age, question 27; Organization type, Question 28: Other organisation type; Question 29: level of Education, Question 32: Which category do you classify yourself, Question 33: Other category, Question 34: Subject area and Question 35: Other type of subject area.

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3. Motivations / Opportunities

Purpose: Matrix Question was addressed to understand the factors that could mostly motivate the ***professors*** *to actively participate to a Crowdsourcing platform.*

Analysis: as concern motivation factors the most relevant motivation engines are represented by

1. *Creating contacts with stakeholders e.g. companies/academics/communities/students/research centers;*
2. *To transfer scientific knowledge into practice, by developing research projects based on the companies' problems;*
3. *The satisfaction of solving of a problem or receiving a solution for your problem*
4. *New ideas for research opportunities.*

The responses provided witness that the ***professors*** *representatives have very clear priorities. The first is to create new contacts and maintain relationships with relevant stakeholders. The second is to transfer scientific knowledge into practice, by developing research projects based on the companies' problems. The third important motivation for professors is the satisfaction of solving of a problem, using their knowledge and experience.*

According to these important lessons acquired it is necessary for the UCCROWD project that its CS Platform will be highly diffused and benefit from many participants. Academic and business Professionals need to join the platform in order to enrich the level of scientific exchange.

The second important lesson relevant for the project is that the level of qualification of participants needs to be high to be able to provide successful solutions of real life problems and to transfer scientific knowledge into practice.

In general, all the participants have chosen high rates witnessing that, on average all the responses have been considered relevant. Very few have chosen from 1-3 of the rank.

Confidence intervals related to each option indicate the reliability of the estimate.

Source: Question 7 Motivations

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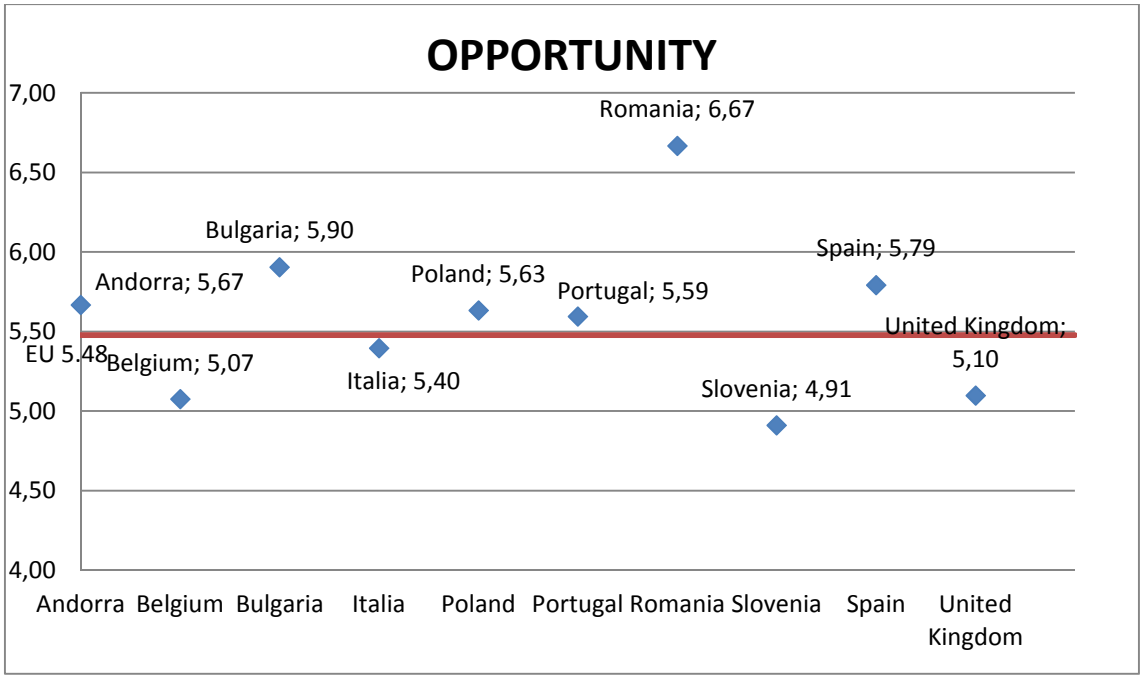
2.1.1. Motivations / Opportunities - Cross Country Comparison



Graphic 8 - Comparison of average motivation values

Graphic 8 highlights the EU average motivation value is equal to 5,47, which indicates that all of the proposed motivation factors were evaluated highly by professors. It can be seen that Bulgaria (5,90) and Spain (5,79) have the highest motivation values among all of the reviewed countries. In contrast Slovenia (4,91), Belgum (5,07) and the UK (5,10) have the lowest motivation values. Another interesting finding was that average motivation values of Italy (5,40) and Portugal (5,59) were the closest to the average value of the EU (5,47).

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2.1.2. Motivations / Opportunities - One sample T-test

Country	One-Sample Statistics				One-Sample Test					
					Test Value = 5.476650564					
	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Andorra	1a	5.67								
Belgium	11	5.07	0.75	0.23	-1.78	10	0.11	-0.40	-0.91	0.10
Bulgaria	22	5.90	0.54	0.11	3.74	21	0.00	0.43	0.19	0.67
Italia	16	5.40	0.82	0.21	-0.40	15	0.70	-0.08	-0.52	0.36
Poland	8	5.63	0.94	0.33	0.47	7	0.66	0.15	-0.63	0.94
Portugal	23	5.59	1.22	0.25	0.46	22	0.65	0.12	-0.41	0.64
Romania	1a	6.67								
Slovenia	7	4.91	1.12	0.43	-1.33	6	0.23	-0.57	-1.61	0.47
Spain	4	5.79	1.10	0.55	0.57	3	0.61	0.32	-1.43	2.06
United Kingdom	15	5.10	1.15	0.30	-1.28	14	0.22	-0.38	-1.02	0.26

a. t cannot be computed because the sum of caseweights is less than or equal 1.

b. t cannot be computed. There are no valid cases for this analysis because all caseweights are not positive.

a. No statistics are computed for one or more split files

Graphic 9 – Statists about motivations / opportunities

Bulgaria is the only country for which there is statistically significant difference with the average of motivation, adopted at EU level of significance £=0,05.

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2.2. Obstacles

Purpose: Matrix Question was addressed to point out the factors that could damage and negatively influence the development of a crowdsourcing platform.

Analysis: as concern obstacles the most relevant threats were represented by:

1. *Intellectual Property issues especially on the ownership of ideas (copyright, patent etc.);*
2. *Companies have the perspective that there is a gap between what is taught in universities and what is useful for companies;*
3. *Difficulties of companies to internalize the knowledge from outside i.e. it may be difficult for companies to implement external help/ideas/assistance/etc.;*
4. *Lack of participation from the companies.*

*The responses provided witness that the **professors** representatives have a main concern related to the Intellectual Property issues especially on the ownership of ideas. According to this information UCCROWD platform needs to provide solutions to protect copyright owners in order to encourage professors to share their intellectual property.*

Besides that, the professors' concerns are that companies have the perspective that there is a gap between what is taught in universities and what is useful for companies. This could be based on professors' previous experiences with the business.

Academic is concerned that it may be difficult for companies to implement external help/ideas/assistance which could create possible threats for project success. Professors' workshops could be a profitable ground to establish linkages and contrast the aforementioned perspective. Face to face communication during such events could change the past experiences.

Professors are also concerned that there could be lack of participation from the companies, which would be a significant obstacle for the success of the platform.

Finally it is interesting underline that the less relevant obstacles were that the platform was in English and the exchange ground was through an online platform. The basic knowledge related to English language and familiarity with platform represents positive aspects for the widespread use of such environment.

Confidence intervals related to each option indicate the reliability of the estimate.

Source: Question 9 Obstacles

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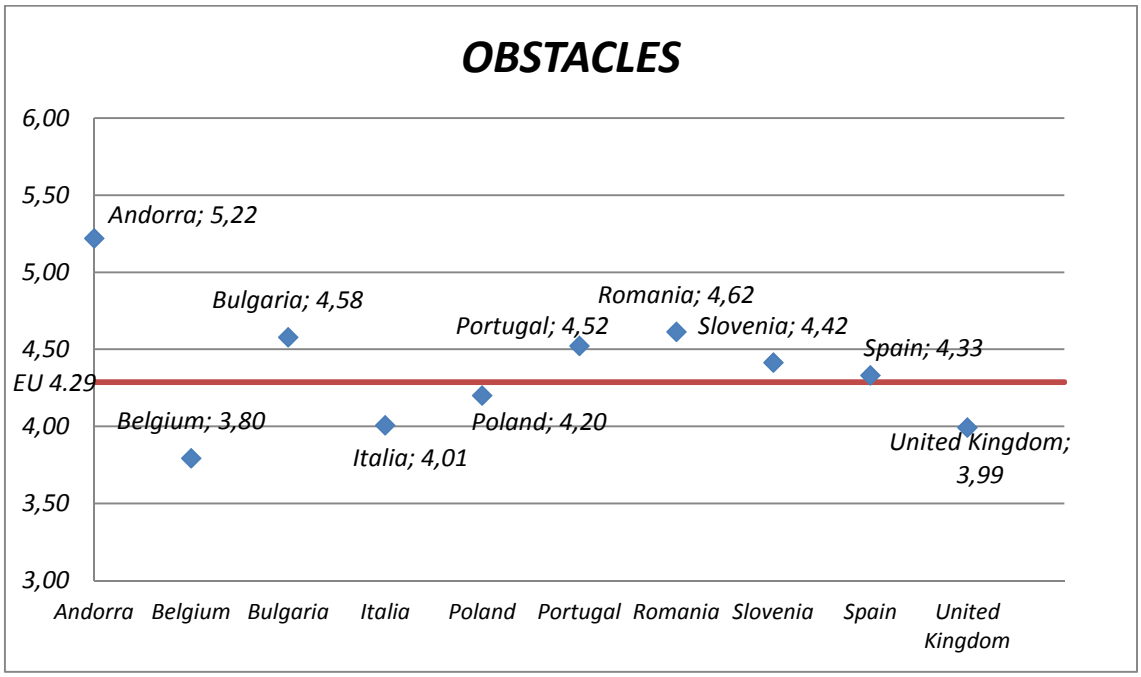
2.2.1. Obstacles - Cross Country Comparison



Graphic 10 - Comparison of average obstacles values

Graphic 10 illustrates that the EU average value of possible obstacles is equal to 4,29, which indicates that all of the possible crowdsourcing obstacles were considered as slightly more important as neutral. It can be also observed that among all of the countries, Andorra has the highest average obstacles value (5,22), indicating that professors in Andorra are more concerned with the potential crowdsourcing obstacles comparing to professors from Belgium (3,80), UK (3,99) and Italia (4.01).

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2.2.2. Obstacles – One sample T-test

Country	One-Sample Statistics				One-Sample Test					
					Test Value = 4.28748068					
	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Andorra	1a	5.22								
Belgium	11	3.80	0.68	0.21	-2.39	10	0.04	-0.49	-0.95	-0.03
Bulgaria	22	4.58	1.15	0.25	1.19	21	0.25	0.29	-0.22	0.80
Italia	16	4.01	1.26	0.32	-0.88	15	0.39	-0.28	-0.95	0.39
Poland	8	4.20	0.73	0.26	-0.33	7	0.75	-0.09	-0.70	0.53
Portugal	23	4.52	0.94	0.20	1.22	22	0.24	0.24	-0.17	0.64
Romania	1a	4.62								
Slovenia	7	4.42	1.31	0.49	0.26	6	0.80	0.13	-1.08	1.34
Spain	4	4.33	0.43	0.21	0.21	3	0.84	0.05	-0.63	0.73
United Kingdom	15	3.99	0.93	0.24	-1.23	14	0.24	-0.29	-0.81	0.22

a. t cannot be computed because the sum of caseweights is less than or equal 1.

b. t cannot be computed. There are no valid cases for this analysis because all caseweights are not positive.

a. No statistics are computed for one or more split files

Graphic 11 – Statists about obstacles

Belgium is the only country for which there is statistically significant difference with the average of motivation adopted at EU level of significance £=0,05.

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2.3 – Incentives

Purpose: Matrix Question was addressed to point out the incentives (in particular academic) that could be used to encourage professors to participate with the crowdsourcing platform.

Analysis: as concerns incentives the most relevant opportunities are represented by:

1. *Ability for students to attract future employments;*
2. *To use particular challenges as examples in class and for case studies*
3. *Internship opportunities;*
4. *Start cooperation with firms and invite them to make University lesson.*

Responses witness that professors believe that the biggest incentive is the ability for the students to attract future employments.

Professors believe that the projects provided through the crowdsourcing platform could be used as examples in class and for case studies, which eventually will increase the practical side of the lessons.

Professors also find important the Internship opportunities and the opportunity to start cooperation with firms and invite them to make University lesson.

Confidence intervals related to each option indicate the reliability of the estimate.

Source: Question 11 Incentives

2.3.1 - Incentives - Cross Country Comparison

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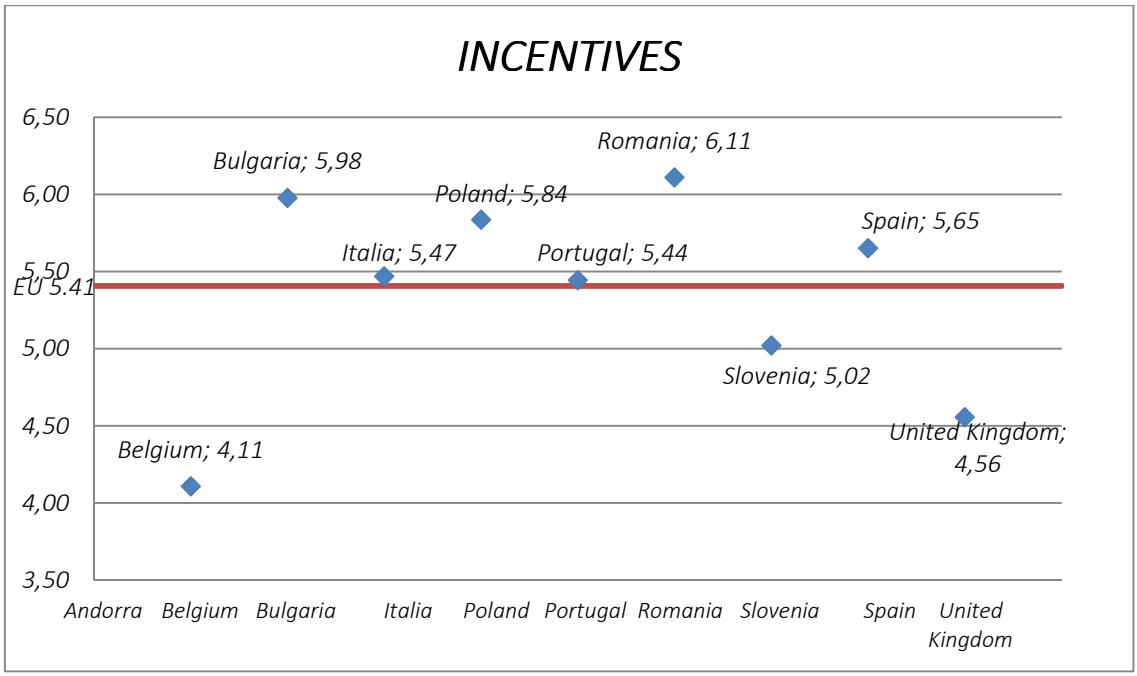

Graphic 12 - Comparison of average values of incentives

According to graphic 12, professors in the EU have highly evaluated all of the proposed incentives options, as the average score is equal to 5,50. Interestingly, despite the rather high average score, there were 3 countries with scores below the EU average (Belgium (4.11), UK (4.56) and Slovenia (5.02). The analysis has also demonstrated that Romania (6.11), Bulgaria (5.98) and Poland (5.84) have the highest scores among all of the reviewed countries. The latter fact demonstrates that proposed incentives would be slightly more effective in Romania, Bulgaria, and Poland rather than in Slovenia, Belgium and the UK.

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2.3.2. Incentives - One sample T-test

Country	One-Sample Statistics				One-Sample Test					
					Test Value = 5.406849315					
	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Andorra	0[a,b]									
Belgium	4	4.11	0.49	0.24	-5.33	3	0.01	-1.30	-2.08	-0.52
Bulgaria	22	5.98	0.75	0.16	3.54	21	0.00	0.57	0.24	0.90
Italia	17	5.47	0.79	0.19	0.33	16	0.75	0.06	-0.35	0.47
Poland	8	5.84	0.71	0.25	1.73	7	0.13	0.43	-0.16	1.02
Portugal	9	5.44	1.28	0.43	0.09	8	0.93	0.04	-0.95	1.02
Romania	1[a]	6.11								
Slovenia	7	5.02	0.92	0.35	-1.11	6	0.31	-0.39	-1.24	0.47
Spain	4	5.65	0.82	0.41	0.60	3	0.59	0.25	-1.05	1.55
United Kingdom	15	4.56	1.42	0.37	-2.31	14	0.04	-0.85	-1.64	-0.06

a. t cannot be computed because the sum of caseweights is less than or equal 1.

b. t cannot be computed. There are no valid cases for this analysis because all caseweights are not positive.

a. No statistics are computed for one or more split files

Graphic 13 – Statists about incentives

Belgium, Bulgaria and the UK are the countries for which there is statistically significant difference with the average of motivation adopted at EU level of significance £=0,05.

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The Crowdsourcing platform

3.1 - Basic information of users

Purpose: To understand the proposed functions that were suggested and preferred by the respondents so that we can incorporate it into the platform.

Analysis

Most of the information mentioned in the questionnaire related to the Student, Professor and University profiles has been assessed as relevant; they only recommended not including were i.e. the title, the address. .

The same, in general, was for the company profile where they only recommend not i.e. including the title, the amount of transactions.

We suggest including in the registration some "compulsory" information, the other as optional.

The other suggestion is to exploit the university page of the department/professor for the academic staff.

3.2 - Functionality

Purpose: To understand which are the most important functions suggested and preferred by the respondents so that we can incorporate it into the platform.

Analysis: as concerns the platform functions, in general, all the functions have been considered relevant and necessary. In particular the first places underlined as the most important have been the following:

1. *Option to view stakeholders (universities/companies) with the same area of interests Projects that are satisfying my scientific fields;*
2. *Receive notifications when new problems are displayed;*
3. *Option for creating a team composed by students from the same/different universities*
4. *Profile search options.*

According to the professors opinion the most important Functionality of the platform is the Option to view stakeholders with the same area of interests. Projects that are satisfying their scientific fields, which express their interest to form teams to work on different challenges.

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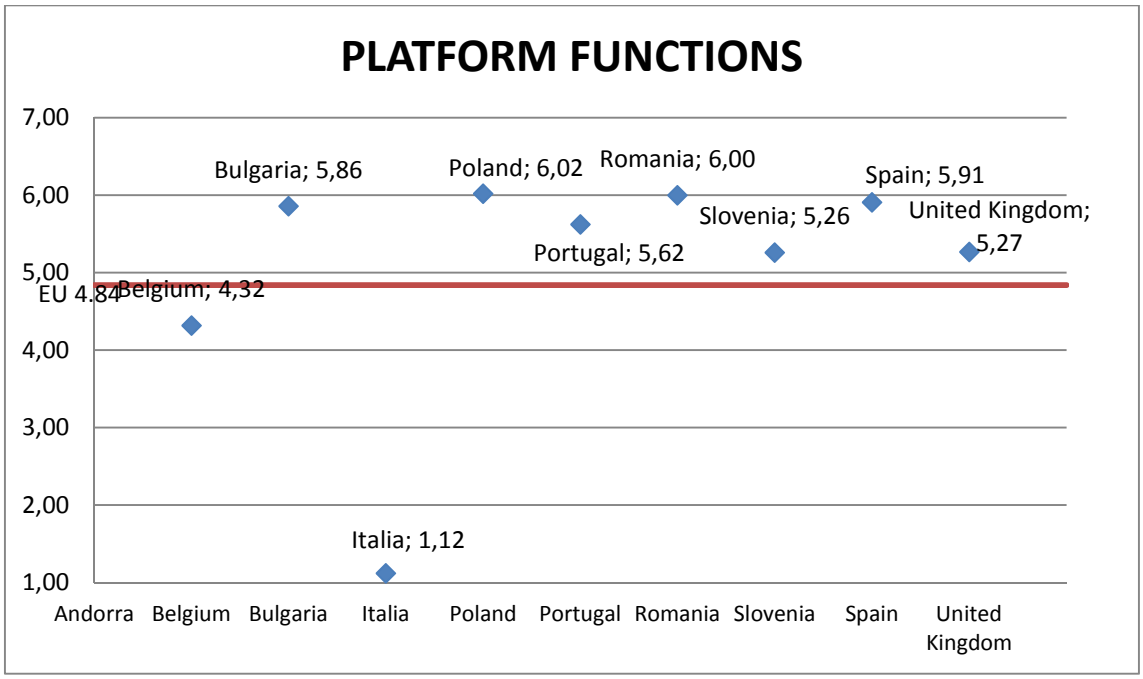
Also very important Functionality for professors is to receive notifications when new problems are displayed. This means they want to be informed on any new challenge, which could provide them an opportunity to use their knowledge to solve the real-life problems.

Professors feel that the Option for creating a team composed by students from the same/different universities has significant value and also a Profile search options included would improve their benefits from the platform.

Confidence intervals related to each option indicate the reliability of the estimate.

Source: Question 21 - Functions

3.2.1 – Functions – Cross Country Comparison



Graphic 14 – Comparison of average values of functions

In accordance with graphic 14, it can be seen that the EU average value of possible crowdsourcing functions is equal to 4.84, which indicates that professors in Europe have considered all of the possible functions to be important. Another interesting observation is that Poland and Romania were the only country which scored 6, 00 at the average value of potential crowdsourcing functions. In comparison, Italy

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has the lowest average value (1, 12) among all of the countries. It can also be seen except Italy and Belgium, and all other countries are with average value of functions above the EU average rate.

3.3.2 - Platform Functions - One sample T-test

Country	One-Sample Statistics				One-Sample Test					
					Test Value = 4.83831283					
	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Andorra	0[a,b]									
Belgium	10	4.32	0.63	0.20	-2.62	9	0.03	-0.52	-0.97	-0.07
Bulgaria	22	5.86	0.81	0.17	5.88	21	0.00	1.02	0.66	1.38
Italia	16	1.12	0.15	0.04	-97.63	15	0.00	-3.72	-3.80	-3.64
Poland	8	6.02	0.72	0.26	4.62	7	0.00	1.18	0.58	1.79
Portugal	23	5.62	1.09	0.23	3.47	22	0.00	0.79	0.32	1.26
Romania	1[a]	6.00								
Slovenia	7	5.26	0.88	0.33	1.27	6	0.25	0.42	-0.39	1.23
Spain	4	5.91	0.41	0.21	5.18	3	0.01	1.07	0.41	1.73
United Kingdom	15	5.27	0.99	0.26	1.67	14	0.12	0.43	-0.12	0.98

a. t cannot be computed because the sum of caseweights is less than or equal 1.

b. t cannot be computed. There are no valid cases for this analysis because all caseweights are not positive.

a. No statistics are computed for one or more split files

Belgium, Bulgaria, Italy, Poland, Portugal and Spain are the countries for which there is statistically significant difference with the average of motivation adopted at EU level of significance £=0,05.

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4 – Discussion

Purpose: to tailor all of the findings from the previous sections to the research aims and objectives.

Summary of all focus areas in table format:

Variables	***Explanation (summary of result)***
MOTIVATIONS OPPORTUNITIES	*1. Creating contacts with stakeholders e.g.; companies/academics/communities/students/research centers;* *2. To transfer scientific knowledge into practice, by developing research projects based on the companies' problems;* *3. The satisfaction of solving of a problem or receiving a solution for your problem;* *4. New ideas for research opportunities;* *5. Opportunity to access to the knowledge developed inside the Universities across Europe;* *6. Raising your knowledge after you have solved the problem;* *7. Contact with the real working world problems;* *8. Opportunity to explore the latest technologies developed by researchers and presented on the profile;* *9. Reputation-peer & colleagues recognition;* *10. To adjust the curriculum to the companies' needs;* *11. Possibility to attract future employees/employer or opportunity to obtain internship;* *12. The opportunity for additional income (bonus on the salary; financial reward).*
OBSTACLES	*1. Intellectual Property issues especially on the ownership of ideas (copyright, patent etc.);* *2. Companies have the perspective that there is a gap between what is taught in universities and what is useful for companies;* *3. Difficulties of companies to internalize the knowledge from outside i.e. it may be difficult for companies to implement external help/ideas/assistance/etc.;* *4. Lack of participation from the companies;* *5. Low quality of the final product e.g. irrelevant ideas, complexity of provided help, etc.;* *6. Lack of participation from the students;* *7. Companies could have to display internal information;* *8. Lack of support from professors/ researchers;* *9. Low financial compensation;*

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10. *Difficulties to find projects that are satisfying to my interests;*
11. *Difficulties in communication between users from countries with different languages;*
12. *Difficulties in using online platforms;*
13. *The platform is displayed in English.*

INCENTIVISATION	1. *Ability for students to attract future employments;* 2. *To use particular challenges as examples in class and for case studies;* 3. *Internship opportunities;* 4. *Start cooperation with firms and invite them to make University lesson;* 5. *To use work on the project to develop into coursework or bachelor / master / doctoral thesis;* 6. *Enhance the future opportunities to study and/or work abroad;* 7. *Incentives provided by the academic teaching material related to learning process;* 8. *Payment incentives;* 9. *Compulsory registration by students to monitor engagement in class.*
PLATFORM FUNCTIONALITY	1. *Option to view stakeholders (universities/companies) with the same area of interests Projects that are satisfying my scientific fields;* 2. *Receive notifications when new problems are displayed;* 3. *Option for creating a team composed by students from the same/different universities;* 4. *Profile search options;* 5. *Option to categorize types of projects e.g. students, research centers, professors and people in general;* 6. *Discussion board about the challenges;* 7. *Option to invite other stakeholders e.g. students, universities, companies, professors and research centers;* 8. *Option to contact other users in a private way using the email;* 9. *Option to endorse/recommend other users;* 10. *To be available as an app in order to be used on tablets and smartphone devices;* 11. *Self-promotion space for companies and academic actors.*

5 – Recommendations

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According to the professors' responses, as concerns INCENTIVATION, professors would be motivated knowing that the platform could provide the ability for the students to attract future employments. Also it is very important for the professors to be able to use particular challenges as examples in class and for case studies.

According to these important lessons acquired it is necessary for the UCCROWD project that its CS Platform to be highly diffused and benefit from many participants. It is very important for the Academic platform to provide benefits for the students both in finding future employment and in solving real time problems in the classes.

The next important feature of the platform from professors' point of view should be providing the internship opportunities and development of cooperation with firms and involving them in university lessons.

According to the professors' responses, as concern OBSTACLES, professors expect difficulties with protecting their intellectual property and especially on the ownership of the ideas. According to this information UCCROWD platform needs to protect the copyright owners and to provide a solution for Intellectual Property issues.

Moreover, professors believe that the Companies have the perspective that there is a gap between what is taught in the universities and what is useful for the companies. Professors are worried that this could reduce the success of the platform.

Professors think, based on their previous experience that there are some Difficulties of the companies to internalize the knowledge from outside i.e. it may be difficult for the companies to implement external help/ideas/assistance/etc. To ensure the success of the platform a dialogue should be guaranteed between academic and companies through workshops and also through special features of the platform such as forums.

As concerns FUNCTIONS, professors ask the possibility to view stakeholders (universities/companies) with the same area of interests Projects that are satisfying their scientific fields. Very important feature of the platform is the possibility to Receive notifications when new problems are displayed and the Option for creating a team composed by students from the same or different universities.

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