Evaluation report on intellectual output O3 (interactive books) within the DIMBI project

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Abstract. The purpose of this paper is to present the process of evaluating the intellectual output O3 (interactive books) within the DIMBI project (www.dimbi.eu). The books are "Data Warehouse" (https://activetextbook.com/active_textbooks/13535) and "Business intelligence" (https://activetextbook.com/active_textbooks/13534). Data for this paper is collected through an online questionnaire with 14 questions using Google forms. The respondents are the co-authors of the books and the administrative staff, who is engaged with the project. Using descriptive statistics, correlations, cross tabulation and manual text mining techniques the evaluation report for O3 is created.

Key words: DIMBI project, intellectual output, evaluation

1. Introduction

The DIMBI project – "Developing the innovative methodology of teaching Business Informatics" is co-funded by the Erasmus+ Programme of the European Union. The aim of the project is introducing the innovative practices leading to high quality of teaching and learning in Business Intelligence (BI) and Data Warehouse (DW). More information about the DIMBI project is available on the project web site – http://www.dimbi.eu/.

Intellectual outputs of the DIMBI project are divided into O1, O2 and O3. O1 concerns the preparation of Business Intelligence (BI) and Data Warehouse (DW) curricula. O2 concerns the preparation of the methodology of teaching BI and DW. O3 concerns the preparation of interactive books in BI and DW.

The research work is carried out in two scientific teams with two scientific managers assigned. They are responsible for the implementation of O1 and O2. Two researchers from the DIMBI team are responsible for O3.

2. Evaluation of intellectual output O3 (interactive books)

The evaluation of intellectual output is conducted through an anonymous online questionnaire. It is sent to 15 members of the DIMBI team − co-authors of the interactive books and administrative staff (5 from Bulgaria and 10 from Poland). 14 answers are received. The response rate is 93%.

The O3 survey was conducted during the period 25 September 2017 − 04 October 2017. The received answers are converted into an XLSX file and after that − to a SAV file for PSPP or SPSS. Coding of variables is done. Using descriptive statistics several tables with aggregated data are created.

The first question (Q1) in the survey concerns the different groups of people, who may benefit from both books (table 1).

Table 1.

Results of the question concerning different groups of people, who may benefit from both books (Q1.1 − Q1.5)

Options	Given answers (in %)	
	The option is checked	The option is not checked
Q1.1. General public	57.1	42.9
Q1.2. Students	100.0	0.0
Q1.3. Teachers	100.0	0.0
Q1.4. Researchers	85.7	14.3
Q1.5. Businessmen, practitioners	85.7	14.3

All respondents consider that students and teachers will benefit from both books. 85.7% of the respondents think that researchers, businessmen and practitioners may benefit from both books. 57.1% of the respondents are in the opinion that general public may gain profit from both books.

Since respondents had the chance to mark several groups of people, the number of groups is aggregated by the number of respondents (table 2). Most of the respondents (57.1%) think that all given groups of people will benefit from the books.

Table 2.

Results of the question concerning different groups of people, who may benefit from both books

Count of groups of people, who may benefit from both books	Number of respondents (in %)
1 (one group was marked)	0.0
2 (two groups were marked)	7.2
3 (three groups were marked)	14.3
4 (four groups were marked)	21.4
5 (five groups were marked)	57.1

The next group of questions (Q2 – Q7, Q10, Q13 and Q14) measures the respondents' opinions regarding the contents of the books and the novelties in Business informatics (table 3).

Table 3.
Results of the questions concerning contents of the books (Q2-Q7, Q10, Q13 and Q14)

Questions	Given answers (in %)				
	1	2	3	4	5
	Strongly disagree	…	…	…	Strongly agree
Q2. The two books are written by several authors. Do the authors have consensus on the used terminology?	0.0	0.0	3.6	42.9	57.1
Q3. Most of the authors have given clear examples and explanations.	0.0	0.0	7.1	35.7	57.1
Q4. Texts in some chapters are difficult to understand.	42.9	35.7	7.1	7.1	7.1
Q5. The web site www.activetextbook.com is appropriate for uploading the PDF files of both books. The web site provides the expected functionality concerning interactivity.	0.0	0.0	14.3	64.3	21.4
Q6. Each chapter of the book contains links to online resources for further reading.	0.0	0.0	7.1	50.0	42.9
Q7. The writing style of both books is understandable.	0.0	0.0	0.0	35.7	64.3
Q10. When you read the chapters of other authors, you extended your knowledge in business informatics.	0.0	0.0	0.0	57.1	42.9
Q13. The book "Data Warehouse" contains novelties in Business informatics (new curricula, new teaching methods, new contents).	0.0	0.0	0.0	18.2	81.8
Q14. The book "Business intelligence" contains novelties in Business informatics (new curricula, new teaching methods, new contents).	0.0	0.0	0.0	18.2	81.8

Source: Own calculations

57.1% of all respondents are in the opinion that the authors of the books have consensus on the used terminology. 57.1% of the respondents are satisfied with the given examples and explanations. 42.9% of the respondents strongly disagree that texts in some chapters are difficult to understand. 64.3% of the respondents agree that the web site www.activetextbook.com is appropriate for both books and provides interactivity. 50.0% of the respondents agree that each chapter of the books contains links to online resources for further reading. 64.3% of the respondents strongly agree that the writing style of the books is understandable. 57.1% of the respondents think that reading the chapters of other authors has extended their knowledge in business informatics. 81.8% of the respondents strongly agree that the books "Data Warehouse" and "Business Intelligence" contain novelties in Business informatics.

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Respondents, who are co-authors of the active books, were asked whether they are satisfied from the collaborative work as a co-author of the active books (Q8). 80% of them are satisfied from the collaboration with their colleagues (table 4).

Table 4.

Results of the question concerning the collaborative work of the active books (Q8)

Question	Given answers (in %)				
	1	2	3	4	5
	Dissatisfied	…	…	…	Satisfied
Q8. If you are a co-author of the active books, please, tell us if you are satisfied from the collaborative work as a co-author of the active books.	0.0	0.0	10.0	10.0	80.0

The next question (Q9) concerns the recommendations on the work of the co-authors. 42.9% of the respondents have no recommendations on the chapters of the other co-authors. Slightly more than 1/3 of the respondents have some recommendations on the work of their colleagues (table 5).

Table 5.

Results of the question concerning the recommendations on the work of the co-authors (Q9)

Question	Given answers (in %)				
	1	2	3	4	5
	No recommendations	…	…	…	Many recommendations
Q9. You read the chapters of other co-authors. Did you have any recommendations on their work?	42.9	14.3	0.0	35.7	7.1

Q11 is an open text question related to the book "Data Warehouse": "If there is a second edition of the book "Data warehouse", what has to be revised or extended? If a new chapter is useful, please, write your recommendations". Three people have no opinion and any recommendations. Five people wrote: "Some chapters lack examples. These examples have to be added. A new chapter "Hierarchical data warehouses" may be added in future editions of the book DW.", "Examples of exercises (task to do) should be improved. In addition, consistency of the particular chapters content should be verified.", "Chapters that have mainly theoretical concepts have to be extended with practical examples.", "Statistics about best practices when they appear.", "More practical examples."

Q12 is an open text question related to the book "Business Intelligence": "If there is a second edition of the book "Business intelligence", what has to be revised or extended? If a new chapter is useful, please, write your recommendations." Three people have no opinion and any recommendations. Five people wrote: "A new chapter about "BI methods for analyzing unstructured information" may be added in future editions of the book on BI.", "Apart of the mentioned above – content of the selected chapters should be updated.", "A

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new chapter may be "BI and robotics".", "Statistics about best practices when they appear.", "More practical examples."

Since the variables Q2-Q10, Q13, Q14 are on an ordinal scale, the Kendall's tau-b coefficients are calculated. A great number of the calculated correlations coefficients are not statistically significant (p>0.05). It means that the respondents did not give one and the same answer to a great number of the questions with an answer on a scale "strongly agree" – "completely agree". The correlation coefficient between Q10 and Q13 (r = 0.606, p<0.05) shows a dependency.

Table 6.

Dependency between Q10 and Q13 (in % of total)

Questions	Q13 - answers			Total
Q10 – answers	0	4	5	
4	21.4	14.3	21.4	57.1
5	0	0	42.9	42.9
Total	21.4	14.3	64.3	100.0

It may be concluded that 42.9% of the respondents who read the chapters of other authors, extended their knowledge in business informatics strongly agree that book "Data Warehouse" contains novelties in Business informatics (new curricula, new teaching methods, new contents).

The correlation coefficient between Q10 and Q14 (r = 0.606, p<0.05) shows a dependency.

Table 7.

Dependency between Q10 and Q14 (in % of total)

Questions	Q14 – answers			Total
Q10 – answers	0	4	5	
4	21.4	14.3	21.4	57.1
5	0	0	42.9	42.9
Total	21.4	14.3	64.3	100.0

It may be concluded that 42.9% of the respondents who read the chapters of other authors, extended their knowledge in business informatics strongly agree that the book "Business intelligence" contains novelties in Business informatics (new curricula, new teaching methods, new contents).

The correlation coefficient between Q13 and Q14 (r = 1, p<0.05) shows a dependency.

Table 8.

Dependency between Q13 and Q14 (in % of total)

Questions	Q13 – answers			Total
Q14 – answers	0	4	5	
0	21.4	0	0	21.4
4	0	14.3	0	14.3
5	0	0	64.3	64.3
Total	21.4	14.3	64.3	100.0

All answers are situated on the diagonal of the cross table. It may be concluded that all respondents gave one and the same answer to Q13 and Q14. 64.3% of the respondents say that both books contain novelties in teaching Business informatics.

3. Conclusion

The intellectual output O3 (interactive books) is innovative and beneficial according to the opinions of the co-authors and administrative staff in the DIMBI project. Both interactive books have very good quality and contain novelties. Most of the respondents strongly agree that they are satisfied from the contents of the books. The chosen platform for uploading the interactive books provides the expected functionality (described in the project application form).

The results show that the respondents did not give one and the same answer to all questions. The open text questions give some recommendations on the future work of the research team.

The results in this evaluation report are based mainly on descriptive statistics, correlations and cross tables using the answers of an intellectual output O3 evaluation survey. Future research may focus on changing the scope of respondents.