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Assessing supervision requirements of PhD students: the case of construction management and engineering in the UK

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There is an acknowledged problem with high non-completion rates of PhDs in the UK. Studies show that one of the major reasons for this is deficiencies in the supervision received. However, the unique and one-to-one nature of student/supervisor relationships makes it difficult to investigate the extent of these deficiencies. This article proposes a framework to evaluate the supervision requirements from the students' perspective. The supervision is divided into three elements: personal, indirect research-related and direct research-related help. The perceived shortfalls between expected and provided supervision for each element are then identified. A questionnaire survey is designed to act both as a test of the framework and to assess supervision requirements and their provision for PhD students in the construction management and engineering discipline in the UK. In addition, the student population is characterized and selected attributes; age, sex, industrial experience, full- or part-time status, nationality and funding sources, are compared with their supervision requirements. The results showed that the biggest discrepancy between expected and provided supervision was in direct research-related help. The framework is most valuable at individual level and for the framework to be effective communication is seen as being critical.

1. Introduction

A PhD study is a long and difficult process that requires working alone in uncertainty. PhD students face many difficulties regarding various aspects of their studies, such as choosing the topic, deciding on the research problem, designing the methodology, supervision, writing and examination. As a result of these difficulties, there is a high rate of students who fail to complete their studies. Studies into students' reasons for non-completion in the UK found that the most frequently cited, 30% of the cases, was problems with supervision (Buckley and Hooley 1988). Although this figure must be evaluated in the context of blame being passed elsewhere, it nevertheless constitutes a significant number.

Academically, the discipline of construction management and engineering (CME) is a relative newcomer. Researchers have entered the field from varied backgrounds, most notably architecture, civil engineering and surveying. As the field has grown, ideas and techniques have been drawn from economics, engineering, information technology, management and the social sciences (Haksever *et al*. 1994). The manner of the growth has affected its research culture and has given it a confused look with no clear set of guidelines or historical practices to refer to Betts and

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Lansley (1993) and Lansley *et al*. 1994). This confusion is amplified by the 'soft/hard science' nature of CME research. The research culture has a direct consequence on the relationship between the PhD researcher and the supervisor. This relationship, already a potential source of friction and inconsistency in other fields (Rudd 1987), is a big hurdle for CME research students because of this confusion. Consequences can range from temporary loss of motivation to withdrawal from the PhD.

Additionally, as the PhD programmes in the British education system are not based on formal lectures and credits, the supervision requirements of PhD students in the UK are generally greater than those who study under more formal and structured programmes, as is the case in the US and Europe. Therefore, the role of the PhD supervisor in the British education system is critical for a successful PhD process.

In view of this, the aim of this article is to present a framework for analysis of the role of the supervisor, which would enable both students and supervisors to express their expectations. This would provide an insight into the PhD student/supervisor relationship. In order to test the usefulness of the proposed framework, a survey of the PhD students in CME-related departments in the UK was undertaken. The article first highlights the scale of the problem associated with PhD supervision. Second, the proposed framework to assess supervision requirements is presented. Third, the student population is characterized and selected attributes—age, sex, industrial experience, full- or part-time status, nationality and funding sources—are compared with their supervision requirements. Finally, some conclusions as to the current situation in CME PhD supervision are drawn.

2. The scale of the problem

Research into the problems of students and supervisors in the completion of PhDs has generally been performed under the auspices of funding bodies. As the struggle for funding has become more frantic, research councils, such as the Economic and Social (ESRC) and the Science and Engineering (SERC) councils, now called Engineering and Physical Sciences (EPSRC), have become sensitive to the high rates of non-completion of sponsored research students (Rudd 1987, Williams 1992). Although low completion rates are not confined to students sponsored by such bodies, their data collection is better and larger in scale, so more significant. This has led to increasing numbers of researchers investigating the reasons for non-completion in an attempt to reduce occurrences. Indeed, the ESRC reported that: less than 20% of students receiving a grant completed within 4 years of starting; 27% completed within 5 years; and completion rates trailed off markedly after 5 years (Elton and Pope 1987). Current research (Haksever and Manisali 1999) has revealed that the situation has not changed significantly in recent years. The problem of non-completion can be seen as an important one.

The PhD research process involves participation from academic institutions, the supervisor and the student and each has their own part to play (Hughes 1994). Research into failure rates gave 11 reasons for non-completion, summarized in table 1, for each of the participants (Elton and Pope 1987).

Despite the number of factors having an influence over completion rates, a literature search provided evidence that the student/supervisor relationship is vital to the PhD process. This included such quotations as 'the single most important problem in the eyes of many respondents was the quality of supervision' (Buckley and Hooley

Role of academic institutions	Students can find no remedy for poor supervision
	Standard of the PhD is rising
	No effective appeal against examiners' decisions
Supervision	Bad choice of research topic
	No instruction in research techniques
	Neglected, incomplete or ill-conceived supervision
Problems of students	Students do not know what research involves
	Students lack motivation
	Students lack research flair
	Students lack discipline
	Difficulties that arise from delayed completion

Table 1. The reasons for non-completion of PhDs.
Source: *Bera Newsletter,* February 1987.

1988). This conclusion was reached after a survey of both doctoral students and supervisors. Various books have approached the acquisition of PhDs, including the management of the supervisor/student relationship (Philips and Pugh 1987), and many departments carry out their own surveys in an attempt to assess their performance in the supervision of their students. Concern over this issue has been reflected in some institutions by the setting up of courses for supervisors. Poor supervision can have a significant impact on students, not only limiting the quality of their work, but also their motivation.

3. The framework

It has been established that non-completion is a significant problem, and that one of the most important variables affecting the outcome of a PhD is the quality of supervision. Therefore, a method to improve it was sought. The solution to part of the problem was felt to be improved communication between the two parties. However, the problem to be addressed is how to enable the students to communicate their supervision requirements to their supervisors. The authors' experience has shown that most complaints are of the form either of 'my supervisor does not give me enough help' or 'my supervisor does not give me enough freedom to direct my research in the direction that I wish to go'. Any assessment must take into account the different requirements of individual students at different stages of their work. Obviously, communication must be two-way; supervisors should also be able to express the students' responsibilities.

Given the subjective and temporal nature of the problem, a tool that would impart a common language of supervision requirements to both student and supervisor has been developed. Following a pilot survey of students in The Department of Construction Management and Engineering at The University of Reading, UK, an approach has been settled upon which first requires a breakdown of the supervisory requirements of the student. These are defined as follows:

- *Personal help:* support, motivation, socializing, help in organizing accommodation and other things that may be required, but are unrelated to the research.
- *Indirect research related help:* providing contacts, both industrial and academic, providing equipment and initial help in locating references.
- *Direct research-related help:* critical analysis of work, help with methodological problems, precise direction and help with the management of the project.

The choice of three categories was designed to encompass all possible aspects of the supervisory role, yet retain simplicity and robustness. The inclusion of these sections is not meant to imply that the supervisor must supply all of them or indeed that the student will want them. Having broken the supervisor's role into more manageable components, students are then able to rate their supervision. This allows them to identify areas in which they feel they require more help. These areas are identified using the scales shown in table 2. The students are asked to rate the quality and quantity of each type of assistance they feel they require on a Lickert scale of 1 (very low) to 5 (very high). These can then be compared with ratings given to the perceived level of assistance actually provided.

For instance, in the example, the student feels that he or she requires very little personal help, which is adequately supplied. For indirect research-related help, a little more is required, but again is sufficiently supplied. However, for direct research-related help a large amount is required, a need which is not being met. Alternatively, a student who feels that personal help is unnecessary or intrusive could rate this as 1 on the expected scale. If the student also feels that the supervisor was offering such help despite this, then it could be rated as 3 on the received; this would then show as a positive comparison. The pilot study suggested that some students would require lower levels of assistance than others, and this comparative method would allow this to register, allowing the identification of any disparity. Ideally, the two levels should match.

It must, however, be remembered that these requirements may not be acceptable to the supervisors. They may feel that what has been defined as direct research-related help is not part of supervision. However, this framework should bring this out into the open and allow frank dialogue between the two parties. If communication is poor, then the process is likely to suffer, particularly as different students and supervisors will all have different approaches, opinions and requirements and this will affect the dynamics of their relationship.

4. The survey

As a test of the framework presented above, a questionnaire survey of doctoral students in CME departments in the UK was conducted (see Appendix A). CME was chosen as the survey sample for two reasons, the first being that this is the field in which the authors are most familiar, and the second, academically CME is a relative newcomer. Departments with an established reputation for research in the field were contacted. In each, the academic with overall responsibility for PhDs in

		Very low	Low	Medium	High	Very high
Personal help	Expected	(1)	2	3	4	5
	Provided	1	2	3	4	5
Indirect research-related help	Expected	1	2	(3)	4	5
	Provided	1	2	(3)	4	5
Direct research-related help	Expected	1	2	3	4	(5)
	Provided	1	(2)	3	4	5

Table 2. The elements of required/provided supervision and their measurement scale.

CME was asked to select suitable respondents. The departments which were selected to participate in the study varied greatly in their titles, including civil engineering, architecture, building engineering, surveying and construction (see Appendix B). However, in each there was a group of researchers whose work, as considered by the chosen academic, fell under the heading of CME.

The approach used was the acquisition of qualitative data using quantitative scales. Questionnaires would enable a wide spectrum of opinion to be gathered within a limited time period. Interviews would have produced too much redundant data, as the purpose of the investigation was not to assemble a detailed model of the student/supervisor relationship. The relationship was thought to be too dependent on the individual characters of the participants, that of the department they work in and the influence of outside sources, such as sponsors or industrial contacts. The complexity of the influences on the relationship caused the questionnaire to be developed as a one-sided tool to attempt to reduce outside influences. The results should be read with the awareness that the figures deal with the perceptions and expectations of the students only, without reference to the supervisor. The questionnaire was sent to 149 PhD students studying in CME-related departments in the UK. Fifty-seven responses were received, which provided a 38% return rate.

The collected data were analysed by calculating the mean values and provided help for all three elements of supervision and for subgroups of each attribute. The mean values show the extent of the required or received help, which could be between 1.00 and 5.00 due to the scale used in this research. The mean values are then compared with each other to see if they differ. This is done by the use of two techniques: application of the two-tailed *t*-test and showing the discrepancies in percentages. The first technique is used to show if the differences are statistically significant, and the second to illustrate the extent of the gap between expected and provided supervision. The criteria for acceptance levels for the *t*-test results are: if $t < 1.96$ it is insignificant; $t > 1.96$ is significant at the 5% level; and $t > 2.66$ is significant at the 1% level (Ehrenberg 1994). The use of percentages complements the *t*-test results and provides greater insight into the extent of the differences.

5. Findings

The findings are presented in two sections. In the first, the results for the respondents' level of expected and provided supervision are presented and analysed. This will provide the main justification for the effectiveness of the framework in analysing the supervisor's role. In the second, a breakdown of some of the more interesting results of the survey is provided. In this section, the characteristics of the respondents are compared to their supervision requirements. The aim is to provide an example of one of the uses of the framework; that is, generalizing the common supervision requirements of certain subgroups of PhD students.

5.1. *The overall supervision requirements*

The main aim of the survey was to demonstrate that the supervision requirements of the students could be adequately assessed using the framework. Responses to the survey showed that this indeed was the case. The responses are summarized in table 3, which shows the average responses to perceived expected and provided levels of supervision. It can clearly be seen that in each case there is a shortfall between expected and provided levels of supervision. These, for personal, indirect

	Expected	Provided	Deficiency (%)	*t*-Value
Personal help	2.54	2.51	1.4	0.26
Indirect research-related help	3.61	3.28	9.2	2.41
Direct research-related help	4.23	3.63	17.7	4.87

Table 3. The overall comparison of expected and provided supervision.
$t < 1.96$ insignificant, $t > 1.96$ significant at 5% and $t > 2.66$ significant at 1%.

and direct research-related help, are 1.4, 9.2 and 17.7%, respectively. This shows that the most neglected area of a supervisor's role is that of direct research-related help. If this is compared to the average expected levels of help, of which personal is 2.54, indirect research-related help is 3.61 and direct research-related help is 4.23, it can be seen that the students also feel that they require a far greater level of assistance in this area. This is a highly significant result, exhibiting a serious difference between the role that students expect of their supervisors and that which the supervisors are willing to perform.

Similar results were obtained by applying a *t*-test to show whether the differences between expected and provided supervision were significant for each type of supervision. The results show that the difference is not significant for personal help ($t = 0.26$), significant for indirect research-related help ($t = 2.41$) and very significant for direct research-related help ($t = 4.87$). These *t*-test results complemented the above percentage calculations between expected and provided help for each element of supervision based on means; they demonstrate that the most significant discrepancy is observed in the direct research-related help category. This is the area where most attention should be paid.

Analysis of the results from a different perspective, that of considering the number of students who indicated whether they received more, less or enough help for each type of supervision, is presented in table 4. The results show that 21% of students indicated that they received less personal help than expected. These figures are 35% for indirect and 42% for direct research-related help categories. These results complement the above findings as the percentage of students who are unhappy is highest in direct research-related help.

The results also indicated that 58% of the respondents were unhappy (received help is less than expected) with at least one of the three aspects of supervision they received. The remaining 42% were happy (received help is the same as or more than expected) with the complete supervision they received. This result clearly shows that more than half of the respondents were unhappy with the supervision they received.

	Provided less than expected (%)	Provided more than expected (%)	Provided as much as expected (%)
Personal	21	23	56
Indirect research	35	18	47
Direct research	42	4	51

Table 4. The difference between provided and expected help.

This is considered quite high, as the quality of supervision is extremely important for the smooth progress of the research project. This finding is similar to the results of a longitudinal study of University of Reading research students by Wright and Lodwick (1989), whose study revealed deficiencies in supervision.

5.2. *Students' attributes and supervision requirements*

This section discusses a closer investigation of the data, which uncovered some interesting results. A comparison of various attributes of the sample group, the average values of their responses to the expected and provided supervision, and the paired *t*-test to evaluate the degree of discrepancies was performed. The results, shown in table 5, revealed disparities between various groups. Unsurprisingly, the largest required personal help was asked for by the overseas contingent. However, the largest discrepancy was in the female group, with 21%. At the other extreme, part-time students expected the least assistance, reporting an excess of time spent on personal matters. Other groups did not diverge significantly from the mean. Overall, the gap between expected and provided help in personal help is not significant. This dimension of the supervision is covered well; the only group in this category which may need special attention is female students.

The distribution of indirect research-related help is very even. It does not show significant change from one group to another. The overall gap is around 10%. Considering that expectations of respondents will almost always be higher than reality, 10% can be seen as an acceptable gap. The groups which had the biggest discrepancy between expected and provided help were full-time and overseas students, with 11.2% ($t = 2.32$) and 15.9% ($t = 2.43$), respectively.

Direct research-related supervision is the area in which the gap is widest. The gap percentage varied from approximately 14–23%. Females, overseas and students under 30 years old were all around 23%. In terms of the *t*-values, female and industry-sponsored students do not differ significantly from each other, although they have high percentage differences. This is due to both groups having small sample sizes, 12 and 8, respectively. The direct research-related aspect of supervision appears to be the one that requires most attention.

The analysis shows that the framework can also be used to characterize the generalized supervision requirements of certain students. Although a more extensive survey would be required to validate these results, this section provides some guidance as to the probable supervision requirements of a possible student for the use of a supervisor. Such guidance is suitable only as a starting point for the supervisor; the framework should subsequently be used to confirm or adapt the supervision requirements of the students.

6. Discussion and general considerations

In this section, the effective uses of the proposed framework are discussed. The framework is thought to be useful on two separate levels. First, as a comparative tool to evaluate differences between different disciplines and departments. Second, as a tool to facilitate constructive discussion between the supervisor and the student as to their respective requirements.

The proposed framework could allow a general comparison between disciplines and departments. Carefully designed studies could elicit information, leading to a better understanding of PhD supervision in different disciplines. Such information

		Sample size	Expected score	Provided score	Gap (%)	*t*-value	Expected score	Provided score	Gap (%)	*t*-value	Expected score	Provided score	Gap (%)	*t*-value
Sex	Female	12	2.75	2.17	21.2	1.94	3.42	2.92	14.6	1.51	3.92	3.00	23.4	2.53*
	Male	45	2.49	2.60	−4.5	−0.74	3.67	3.38	7.9	1.90	4.31	3.62	16.0	4.15**
Status	Full-time	36	2.97	2.72	8.4	1.38	3.72	3.31	11.2	2.32*	4.11	3.42	16.9	3.59**
	Part-time	21	1.81	2.14	−18.4	−1.88	3.43	3.24	5.6	0.88	4.43	3.62	18.3	3.32**
Country	Overseas	22	3.14	2.91	7.3	0.92	3.73	3.14	15.9	2.43*	4.14	3.18	23.1	3.79**
	Home	35	2.97	2.72	8.4	0.56	3.72	3.31	11.2	1.05	4.11	3.42	16.9	3.19**
Age	Under 30	25	2.83	2.83	0.0	0.00	3.79	3.46	8.8	1.45	4.33	3.38	22.1	3.72**
	Over 30	32	2.33	2.27	2.6	0.37	3.48	3.15	9.6	1.94	4.15	3.58	13.9	2.72**
Funding	Industry	8	1.50	1.50	0.0	0.00	3.38	3.38	0.0	0.00	4.25	3.63	14.7	1.27
	Others	49	2.71	2.60	1.5	0.27	3.65	3.27	10.6	2.57*	4.22	3.47	17.9	4.83**
	Totals:	57	2.54	2.51	1.4	0.26	3.61	3.28	9.2	2.41*	4.23	3.63	17.7	4.87**

Table 5. Analysing the discrepancies between expected and provided supervision for different attributes using a paired *t*-test.
*Significant at the 5% level ($t > 1.96$).
**Significant at the 1% level ($t > 2.66$).

is valuable, particularly when considering the PhD in technology-based disciplines, where the value of the degree has been under debate for some time (Advisory Board for the Research Councils 1993). This is hypothesized as being partly due to the concept of the PhD emerging from more classical modes of study, where the research skills required are not entirely similar to those required in more vocational disciplines.

Comparison between departments could also be possible, though such information should be treated carefully. It is the use of such information by the British government to compare the performance of hospitals and schools that has caused controversy. These factors do not, however, reduce the validity of the framework itself.

The most useful application of the framework is on a personal, one-to-one basis, as problems between students and supervisors are generally highly individualized. The student/supervisor relationship depends significantly on the personalities involved. Students can use the framework presented to promote dialogue with their supervisors. However, the motivation to do this must come from the supervisors. The process must also be seen as constructive and non-adversarial. It is proposed that such an analysis of supervision requirements should be performed on a quarterly basis. This would account for students' changing requirements through their studies. It is also essential that the student can understand the requirements of the supervisor, who may not be willing to deal with personal problems or give a strict definition of work to be done. It is not the intention of this procedure that students view it as a chance to make unreasonable demands on their supervisors. It should be realized that the framework is intended as a tool to impart a common language of supervision requirements to both parties, not as a vehicle for criticism.

The identification of perceived shortfalls in particular areas by students is not enough to solve the problem. These need to be communicated to supervisors and discussed with them. This requires an open-minded and honest exchange of opinions and ideas between the parties. Without open and honest communication it is very difficult to identify the nature of and reasons for the shortfalls perceived by the student. This requires the relationship between student and supervisor to be professional in manner. Both parties should be open to criticism, willing to listen to each other and talk openly.

It appears then that despite the research that already exists, most of which cites the need for communication in the student/supervisor relationship, the communication gap remains. The framework only identifies the perceived gaps between student and supervisor, communication provides the additional insights for understanding the reasons for these gaps and finding a way of narrowing them. The reasons for these gaps vary a lot and many of them are individual and research-specific. It is beyond the scope of this paper to speculate as to the possible reasons. The point made here is that whatever the reasons, an attempt should be made to solve the problems through communication.

Discussion of these shortfalls does not necessarily indicate that the supervisor or student is not good enough for their role. It may be the case of giving more emphasis to one category than another because the student is not making his or her requirements clear. These three aspects of supervision identified are not interchangeable. Providing required help in one group does not necessarily solve the problems in others. Each needs to be treated separately, but in a co-ordinated manner. Some of these categories can also be controversial. Some supervisors may believe that it is

not their responsibility to deal with the personal problems of their students. They expect that students at that level should be able to solve their own private matters. They see the supervision relationship limited to the research project itself. Some others may feel that they are not responsible for dealing with the detailed issues of the research project, and that it is up to the student to sort it out. Examples of these kinds of opinions are numerous and it would be unwise to label them as right or wrong.

The proposed solution is that supervisors should be able to adopt flexible supervision strategies depending on the requirements of their individual students. Applying the same rigid strategy for each student may not always work effectively. Supervisors who have this flexibility can be more helpful to their research students. The extent of the flexibility is usually limited because of the difficulties of changing behaviour or attitudes. If the allowed flexibility does not help to narrow the gap, then, depending on the extent of the gap, considering working with another supervisor may be the only alternative.

7. Conclusion

The framework, which divided supervision into three elements, personal, indirect research-related and direct research-related help, was successful in identifying perceived shortfalls between required and provided supervision. The study found discrepancies between required and received supervision quality throughout the defined range of a supervisor's work in the CME discipline in the UK. Overall, the gap for personal and indirect research-related help did not appear dangerously big, but was significant and should provide the academic community with pause for thought. On the other hand, the highest need for supervision and the widest gap between expected and provided supervision was in direct research-related help. This aspect of supervision requires the most attention and research-specific requirements must be communicated to supervisors.

Supervisors, in order to be effective, should be aware of the requirements students have and try to fulfil them. If there are parts of these requirements which supervisors are unable to fulfil or consider inappropriate then it is important that they are not simply neglected. Supervisors should also be able to adopt flexible supervision strategies depending on the individual requirements, which are influenced by the attributes of the students.

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Appendix A: Construction management and engineering research supervision questionnaire – the student's viewpoint

Section A: Information about the researcher

This section is designed to develop a profile of the types of people currently performing research in the field of construction management and engineering.

1. Please give up to four key words which classify your research field. e.g. project management, information technology.
   ……
2. How old are you? …..
3. Your sex? ❑ Male ❑ Female
4. Are you a full or part-time student?
   ❑ Full ❑ Part
5. Are you a student from …?
   ❑ UK ❑ EEC ❑ Overseas
6. How are you funded? If a combination of these please tick as many as necessary.
   ❑ An overseas government or source ❑ British Council ❑ A research body in the UK
   ❑ Private or self sponsored ❑ Industry Other please state ……..…

7. What are your degree qualifications? e.g. Civil Engineering (BEng), Architecture, MSc etc. ……..…
8. How many years of industrial experience do you have? …….

Section B: Information related to the supervisor

This section is designed to elicit a profile of the supervisors currently working in the construction management and engineering field and also your opinion of the quality of the supervision you receive. If you have more than one supervisor, please consider the main supervisor.

9. How many supervisors do you have? …..
10. Is your supervisor working in an academic environment? ❑ Yes ❑ No
11. What academic qualifications does your supervisor have? Tick as many as necessary.
    ❑ BSc ❑ MSc ❑ PhD
12. Research experience of your supervisor? ….. years
13. How many previous PhD research students has he/she had approximately? …..
14. How often do you see him/her?
    ❑ weekly ❑ fortnightly ❑ monthly
    ❑ quarterly ❑ half yearly ❑ annually
15. Have you changed supervisors to this current one? ❑ Yes ❑ No
16. If you have, what was the reason?
    ❑ Inadequate supervision ❑ Personality clashes ❑ Change of research direction
    ❑ Retirement, supervisor left, death etc. Others (please specify) ……..
17. Please read this section carefully before filling in the question. The work of a supervisor has been broadly divided into three parts: personal, indirect and direct. Personal help includes things such as: socializing, organizing accommodation, help with personal problems and other activities not necessarily within a supervisor's remit, but which may be provided. Indirect help includes things such as: providing contacts, equipment and references. Direct help includes: critical analysis of work, help with methodological problems, precise direction and help with the management of work. You are now invited to comment on the quality and quantity of your supervision. For each type of help, please tick a number indicating the relative level of expectations and the relative level of provision.

	very low	low	medium	high	very high
Personal					
expected	❑ 1	❑ 2	❑ 3	❑ 4	❑ 5
provided	❑ 1	❑ 2	❑ 3	❑ 4	❑ 5
Research related (indirect)					
expected	❑ 1	❑ 2	❑ 3	❑ 4	❑ 5
provided	❑ 1	❑ 2	❑ 3	❑ 4	❑ 5
Research related (direct)					
expected	❑ 1	❑ 2	❑ 3	❑ 4	❑ 5
provided	❑ 1	❑ 2	❑ 3	❑ 4	❑ 5

18. How do you rate the level of your supervisor's encouragement?
    ❑ very low ❑ low ❑ medium ❑ high ❑ very high
19. How do you rate the level of your supervisor's motivation of you?
    ❑ very low ❑ low ❑ medium ❑ high ❑ very high

20. How often do you take part in social activities with your supervisor?
    ❑ never ❑ occasionally ❑ sometimes ❑ often ❑ very often
21. Please identify any major sources of help for your research other than your supervisor. e.g. other academics in your department or outside, industrial or other researchers. ……
22. Do you think it is important that at least one of your supervisors has a PhD degree?
    unimportant crucial
    ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5
23. To what extent has your view of the quality of your supervision changed over the years of your work?
    decreased increased
    ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

Section C: Information related to the research

This section is designed to assess your level of satisfaction with your work and your progress through the project.

24. How many years of your PhD programme have you completed? ….. years
25. What stage in your research have you reached?
    ❑ Choosing a topic and literature review
    ❑ Developing research methodology
    ❑ Developing a model (physical, mathematical)
    ❑ Preparation of a field study
    ❑ Experimentation or testing the model
    ❑ Collecting data (from field, model)
    ❑ Analysing data
    ❑ Writing up
    ❑ Waiting for viva
    ❑ Completed
26. How satisfied are you with your progress?
    very dissatisfied very satisfied
    ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5
27. If you have answered lower than 3 to question 26, can you identify the source of your dissatisfaction? Please tick as many as you feel necessary
    ❑ Loss of motivation and interest
    ❑ Poor supervision
    ❑ Financial difficulties
    ❑ Dealing with uncertainty if research
    ❑ Lack of personal support
    ❑ Better job offer

    Please add any other categories relevant to you ……
28. Please add any further comments concerning the relationship between yourself and your supervisor.
    ……

Appendix B: The list of participating departments

- Department of Construction Management and Engineering, University of Reading.
- Department of Surveying, University of Salford.
- Department of Civil and Building Engineering, Loughborough University of Technology.
- School of Architecture and Building Engineering, University of Bath.

- Department of Building Engineering, Manchester Institute of Science and Technology.
- Department of Building and Environmental Engineering, University of Ulster, Belfast.
- Faculty of the Built Environment, University of Western England, Bristol.
- School of Construction Engineering and Technology, University of Wolverhampton.
- Department of Civil Engineering, University of Leeds.
- Department of Property and Development Studies, University of Glamorgan.
- Department of Civil Engineering, University of Strathclyde, Glasgow.
- Department of Building Engineering and Surveying, Herriot-Watt University.
- Department of Civil Engineering, University of Dundee.
- School of Construction Economics and Management, South Bank University.