

RESOLVING THE METHODOLOGICAL CONUNDRUM: BOLSTERING THE RESEARCH ACHILLES HEEL IN SOUTH AFRICA

F.A Emuze¹ and W.M Shakantu²

¹*Built Environment Research Centre (BERC), School of the Built Environment, Nelson Mandela Metropolitan University, PO Box 77000, Port Elizabeth, South Africa, 6031*

²*Department of Construction Management, School of the Built Environment, Nelson Mandela Metropolitan University, PO Box 77000, Port Elizabeth, South Africa, 6031*

Determining, understanding, writing and applying research methodology to treatises, dissertations and theses has been and continues to be a major challenge for students and supervisors alike. This research was thus conducted in order to chart a pathway out of the methodological conundrum. The method used is an expository review of the methodology chapters of existing honours treatises, masters treatises and dissertations, and doctoral theses archived in a South African university. The critical literature examination was however limited to construction management research (CMR) outputs. The findings reveal that the research planning, locating the related literature, balancing between describing the problem qualitatively and quantitatively, establishing the number of parameters that need to be measured / observed, and determining the nature of the research problem are the weak points in the establishment of an appropriate philosophical position and associated selection of method. Moreover, there are instances where instead of letting the nature of a particular research problem dictate its means of solution, favourite methodological frameworks and methods were employed without a reflection about the features of the problem. The implication for this research is that it is necessary to situate the research background in the relevant research paradigm. In other words, resolving the methodological conundrum could bolster the research Achilles heel that has hitherto bogged down research productivity and completion.

Keywords: education, philosophical position, research methodology, South Africa

BACKGROUND

Fellows (2010) noted that paradigms concern ontology and epistemology and so, relate directly to methodology and, then, proceed to data collection and analyses. He further suggests that it is essential to understand the terms clearly and to express the position adopted based on justifiable theoretical and / or pragmatic considerations. Pragmatic considerations in turn brush aside the quantitative / qualitative divide by contending that the key question is whether the research has assisted investigators to find out what they want to know (Feilzer, 2010). Although it is not rigidly fixed on

¹ Fidelis.Emuze2@nmmu.ac.za

methods used as long as the methods used have the potential of providing answers to what the researcher want to know, pragmatism requires a rigorous understanding of both quantitative and qualitative method that is transparent and replicable as much as possible (Feilzer, 2010).

Fellows (2010) equally observed that for some time now, researchers have been required to adopt, articulate and justify their ontological and epistemological position and, thus the paradigm adopted, so that the research method / methods, and findings can be examined in context. Within the construction and built environment research domain, Fellows (2010) noted that the dominant paradigm has manifestly been positivistic and quantitative, followed by the qualitative / or constructivist paradigm that has gained ascendancy by employing interpretivism, grounded theory and other research strategies. The emergent paradigm based on the triangulation debate involve the integration of previously individual paradigms, and their adopted methods of investigation, into a more complex, and perhaps, realistic view (Fellows, 2010).

Given the number of paradigms and research strategies available to a researcher in the multi-disciplinary construction management subject area, the choice of methodology to be used for an enquiry can be worrisome to students and supervisors. Therefore, this paper addresses the challenge by conducting a research so as to chart a pathway out of the methodological conundrum.

SYNOPSIS OF THE RESEARCH PARADIGM DEBATE

Almost all research studies in social and behavioural sciences, regardless of disciplines / programmes, require a rationale before it can proceed. The rationale / basis are often called the theoretical framework, which indicates the big research picture, identifies the literature reviewed and then, directs the research objectives (Radhakrishna, Yoder & Ewing, 2007). Thus, the decision to select a research design depends on the goals of the study and the review of related literature that provide a solid foundation for developing the theoretical framework.

Developing knowledge when conducting research could be made easier when a structured approach that will aid the tackling of the project in sequential and manageable way is followed. Layers of research could start at the paradigm layer and then move to strategies, choices, approaches, and time horizons until a method or methods are chosen (Collins, 2010). In this context, a research project can begin by choosing paradigms such as positivism, realism, interpretivism, objectivism, subjectivism, pragmatism, functionalism, radical humanist and radical structuralist. It can then proceed with strategies that are not limited to experiment, survey, case study, action research, grounded theory, ethnography and archival research. Whatever paradigm or strategy that is used, project participants need to clearly understand it, and the choice should aid the realisation of stated objectives.

The complexities of the industry in terms of its dominant project nature and the need to proffer solutions to old and new problems by researcher have encouraged debates about how knowledge is created in the domain. The methodological debate related to construction management research began when Seymour and Rooke (1995) suggested that the dominant rationalist paradigm is used within the research domain (Edwards & Holt, 2010). While proposing different perspectives, the debate by several researchers (see Edwards & Holt, 2010) went on to call for an examination of construction management research paradigms.

The construction management research methodological debate then led to the investigation of the objective / subjective or quantitative / qualitative divide. For example, Dainty (2008) examined methodological positions and research methods used by a sample of the construction management research community and raised questions related to its constricted ontological and epistemological position. The article that discussed the implications of the apparent narrowness of the construction management research community's methodological outlook and the implications for understanding the practice of construction concluded that the field appears to be firmly rooted within the positivist tradition (Dainty, 2008).

RESEARCH STRATEGY & RESULTS

The method used for generating the primary data is an expository review of the methodology chapters of existing honours treatises, masters treatises and dissertations, and doctoral theses archived in a South African university. The examined research outputs were submitted between 2008 and 2012. In total, 64 research reports were reviewed. The critical literature examination was however limited to construction management research outputs.

Table 1 indicates the methodological approaches denoted by the BSc (honours) treatises that were reviewed. Out of a total number of 42 treatises, 5 were submitted in 2009, 12 were submitted in 2011, and 25 were submitted in 2012. The review of the treatises submitted in 2009 show that the results of 4 were based on quantitative survey method and 1 was conducted with a mixed methods approach. The 2011 treatises that were reviewed indicate that 10 students utilised the quantitative method, while 2 of them used mixed methods. In addition, in 2012 that 25 treatises were submitted, the quantitative method account for 21 treatises, while the qualitative method and the mixed methods were used by 4 students. A closer look at the treatises also show that in terms of unit of analysis, 31 focussed on projects, while 11 addressed industry issues. With titles such as "planning and control of construction projects", all the 2009 BSc (honours) graduates addressed project management related issues.

The treatises show that topics such as defects, non-conformances, quality, communication on site, delays, management information systems, rework, productivity, risks, health and safety (H&S), the environment, construction and demolition (C&D) wastes, and labour intensive construction were addressed by the students with regard to project management. Although treatises that addressed industry issues were few, they nevertheless examined the intricacies surrounding corruption and ethics in the industry. The impact of the recent global financial meltdown on the industry as a whole, and the residential property sector in particular in terms of profitability and organisational sustainability were also researched..

While a sizeable number of the sample strata were compiled by a random sampling method, some of the 2012 treatises relied on the purposive sampling method.

Purposive sampling is a procedure in which the researcher samples those that are deemed to be representative of a given population (Springer, 2010). The difference between purposive sampling and probability sampling methods is that purposive sampling is based on the researcher's informal ideas about representativeness.

Furthermore, the entire BSc (honours) treatises featured the survey or interview of general contractors (GCs) in the Southern Africa region. With the exception of 4 treatises that featured primary data that were generated in Botswana (I), Swaziland

(1), and Lesotho (2), the other BSc (honours) treatises addressed project issues in South African construction.

Table 1 The methodological approaches denoted by BSc (honours) treatises

Year	Submitted	Research Method			Unit of Analysis	
		Quantitative	Qualitative	Mixed Method	Project	Industry
2009	5	4	0	1	5	0
2011	12	10	0	2	7	5
2012	25	21	2	2	19	6
Total	42	35	2	5	31	11

Table 2 indicates the methodological approaches denoted by the MSc treatises and dissertations that were reviewed. Although the numbers of reviewed MSc research outputs were fewer than the BSc (honours) treatises, the quantitative method seems to dominate. Of the 13 MSc treatises / dissertations that were examined, 8 used the quantitative method, 2 used the qualitative method, and 3 used the mixed method for generating primary data for the empirical studies. The 2 treatises that utilised the qualitative method examined industry phenomena through a multi case study approach, while the 3 studies based on mixed methods used interviews to validate / or support findings from an initial quantitative survey.

However, most of the research reports addressed industry issues. This is a steady departure from the BSc (honours) treatises. The industry issues that were addressed include the training of artisans; corruption and its effects on the industry; hyperinflation and its effect on the industry; service delivery in the public sector; sustainable development; and the constraints faced by small, medium and micro enterprises (SMEs) in the industry. Concerning project as a unit of analysis, topics such as supply chain management were addressed.

In addition, GCs, clients, subcontractors, suppliers and other concerned parties were either surveyed or interviewed by the MSc students. The scope of the studies ranged from a single country to 2 countries in the form of comparative studies in the Southern African region. However, most of the purposive surveys were conducted in South Africa among GCs and designers.

Table 2 The methodological approaches denoted by MSc treatises and dissertations

Year	Submitted	Research Method			Unit of Analysis	
		Quantitative	Qualitative	Mixed Method	Project	Industry
2009	2	1	0	1	0	2
2010	5	4	0	1	1	4
2011	2	2	0	0	0	2
2012	4	1	2	1	2	2
Total	13	8	2	3	3	10

Table 3 indicates that between 2008 and 2012, 9 PhD in construction management studies were completed in the university. Of this number, 5 primarily utilised the quantitative method for the generation of the primary data that led to the development of proposed models. 3 used qualitative method that embraced multiple case study

approach and 1 mixed method study was recorded. It is notable that some of the studies involved the compilation of primary data from other regions of the continent of Africa.

While viewing the theses in order to decipher the unit of analysis adopted by the candidates, it was discovered that most of the studies focussed on industry issues. In particular, the 6 doctoral studies that addressed industry issues examined topics that were not limited to H&S inspectorate functions in South Africa; the impact of public private partnership (PPP) projects in South Africa; and the competitiveness and development of construction SMEs in South Africa.

Unlike the BSc (honours) and MSc treatise, the PhD theses stated the philosophical position that each research adopts after presenting a range of options. The different methodological approaches available were also often discussed before proceeding to present the population and sample strata for the study.

Table 3 The methodological approaches denoted by PhD theses

Year	Submitted	Research Method			Unit of Analysis	
		Quantitative	Qualitative	Mixed Method	Project	Industry
2008	3	2	1	0	1	2
2011	2	1	1	0	1	1
2012	4	2	1	1	1	3
Total	9	5	3	1	3	6

DISCUSSION

In general, it was observed that at each level of research project execution, the quantitative method seems to be the preferred method that was utilised by the students. This corroborate the perception that the construction management research may be firmly rooted in the positivist approach that adopts an objective orientation, where the purpose is about the discovery of factual findings pertaining to a phenomenon (Dainty, 2008). The positivist approach that emphasise causality and generalisation is in accordance with the empiricist view that knowledge stems from human experience, which portrays the ontological perception of the world comprising of discrete and observable elements and events that interact in a determined and regular manner (Collins, 2010).

Although the built environment research is reportedly project based (Segal, 2011), it is incumbent on supervisor to chart appropriate research course for students, especially at the undergraduate level. While not exhaustive because of it limited sample size, a recent research findings suggest that the nature of investigation and research problems constitute the primary factors that contribute to the choice of methodological approach adopted by a doctoral construction management researcher in a South Africa university (Emuze and Smallwood, 2011). Emuze and Smallwood (2011) further noted that it is imperative that methods and factors that are associated with research methodology should be thoroughly investigated and contextualised through their ability to provide useful avenues for achieving stated objectives.

Granted that research at the doctoral level has been defined as seeking a scholarly approach towards creating original knowledge; at the masters level, it is more focused on developing research skills; and at the undergraduate level, it is often about encouraging constructivism and enquiry-led learning (Lee, 2012), it can be argued that

the spirit of research and enquiry should run through the experience of all students in higher educational institutions (Brew, 2006). In effect, it is necessary to situate the research background in the relevant research paradigm rather than adopting a research method out of convenience.

This is important since built environment research should seek to quantify performance of an isolated circumstance as a means of assisting with the prediction of performance in another (Segal, 2011). In other words, if academic knowledge is to merit application in practice, its means of generation should be robust enough to achieve desired objectives (Segal, 2011). The import of the discourse is centred on the need to focus on how graduate or postgraduate students are educated in terms of research methodology. According to Lee (2012), a globally competent postgraduate should possess research skills that include research design and methods; methods of analysis; academic writing; literature searches; project management; ethical issues; and oral as well as written presentation of findings. Lee (2012) equally posits that it is important for a researcher to imbibe the philosophy of knowledge in terms of how knowledge emerges; sociology and politics of knowledge creation; philosophical approaches to ethical issues; disciplinary and interdisciplinary ways of thinking; and enculturation in different cultures / disciplines.

CONCLUSIONS

The study was embarked upon based on the premise that determining, understanding, writing and applying research methodology to treatises, dissertations and theses has been and continues to be a major challenge for students and supervisors alike. The research was thus conducted in order to chart a pathway out of the methodological conundrum.

The methodological debate in the construction management research area has highlighted salient issues related to the objective / subjective or quantitative / qualitative divide. A major highlight of the debate was the perceived dominance of the quantitative approach in the subject area, a situation that was corroborated in this study. As indicated in the treatises, dissertations and theses that were examined, the quantitative research method seems to dominate, especially among the BSc (honours) and MSc treatises. This invariably suggests the projection of the positivist approach to most of the empirical studies that were undertaken at the university. However, given the complexities of project environments and the industry at large, it can be argued that it is necessary to situate the research background in the relevant research paradigm. If this is the case, perhaps the number of research outputs based on the quantitative approach may be minimal among the examined treatises, dissertations and theses.

In effect, resolving the methodological conundrum could bolster the research Achilles heel that has hitherto bogged down research productivity and project completion. When the quality of supervision among BSc and MSc students is improved and researchers are made aware, and then, encouraged to examine a wide range of paradigms and strategies when making methodology related decisions, the challenge may be surmounted. Because most quantitative surveys are based on the perceptions of respondents that may be far from the reality, it is incumbent on supervisors of research projects to encourage critical reflections before a field work is embarked upon by students. More so, the limited responses rates recorded in quantitative surveys in South Africa as exemplified in the examined outputs (less than 50%) necessitate the

use of other methods for research enquiries because of issues related to generalizability, reliability, and validity of findings.

REFERENCES

- Brew, A., 2006. *Research and Teaching: beyond the divide*. Basingstoke: Palgrave Macmillan.
- Collins, H., 2010. *Creative research: the theory and practice of research for the creative industries*. Lausanne: AVA Publishing SA.
- Dainty, A.R.J., 2008. Methodological pluralism in construction management research. In: A. Knight & L. Ruddock, eds. *Advanced research methods in the Built Environment*. Oxford: Wiley-Blackwell. Pp. 1-11.
- Edwards, D.J. & Holt, G.D., 2010. The case for "3D triangulation" when applied to construction management research. *Construction Innovation*, **10**(1), pp.25-41.
- Emuze, F.A. & Smallwood, J.J. 2011. Viewpoint: navigating methodological crossroads in PhD (Construction Management) research. In: *Proceedings of the 10th International Postgraduate Research Conference (IPGRC)*, 14-15 September, Salford UK, pp. 517-524.
- Feilzer, M.V., 2010. Doing mixed methods research pragmatically: implications for the rediscovery of pragmatism as a research paradigm. *Journal of Mixed Methods Research*, **4**(1), 6-16.
- Fellow, R., 2010. New research paradigms in the built environment. *Construction Innovation*, **10**(1), 5-13.
- Lee, A., 2012. *Successful research supervision: advising students doing research*. Oxford: Routledge.
- Radhakrishna, R.B., Yoder, E.P. & Ewing, J.C. 2007. Strategies for linking theoretical framework and research types. In: *Proceedings of the 2007 American Association for Agricultural Education (AAAE) Research Conference*, 16-18 May 2007, Minneapolis, Minnesota, pp. 692-694.
- Segal, T., 2011. Practice-based research through project work in the built environment disciplines. In: *Proceedings of the 10th International Postgraduate Research Conference (IPGRC)*, 14-15 September, Salford UK, pp. 568-580.
- Springer, K. (2010) *Educational research: a contextual approach*. New Jersey: John Wiley & Sons.