

A retrospection of methodological pluralism in the *Journal of Financial Management of Property and Construction* (2005-2020)

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ABSTRACT

Purpose

This paper presents a review of research methodologies used in addressing problems in the financial management of property and construction journals from 2005 to 2020.

Design/methodology/approach

Content analysis of 258 research papers published in the Journal of Financial Management of Property and Construction was carried out, enabling the exploration of research approaches, epistemology, strategies, data collection and data analysis methods used in addressing problems researched in the area of financial management of property and construction

Findings

The findings show that quantitative approaches and methods dominate, whereas qualitative and mixed methods were prominent in-depth understanding of a topics were needed. Interestingly, almost a third of the publications did not adopt quantitative approaches. In some journal issues, there was relatively high use of qualitative and multi-method approaches and up to 12% of the articles published over the past 16 years could be described as based on pragmatism.

Research limitations/implications

An important implication of this paper is that a conventionally number-based area of research does not preclude the use of qualitative and mixed approaches. The findings are only generalisable to the Journal of Financial Management of Property and Construction.

Practical implications

Financial management researchers could benefit greatly by considering pluralistic approaches more in the design of their studies.

Originality/value

To the best of the authors' knowledge, this study is an original synthesis of the articles published between 2005 and 2020. It provides new insight into the use of research methodologies by authors and how they have been combined to address their research problems. It further investigates an old issue or question about methodological choice-making using new evidence and original empirical work.

Keywords: Construction, Property, Research, Methodology, Pluralism

Paper type: General paper

INTRODUCTION

The problems of the construction industry are diverse in scope and complexity. Accordingly, research in the area has been characterised by the use of varied methodologies. Driven by the need to change and innovate constantly, new approaches to solving the industry's problems have been advocated (Dainty *et al.*, 2017). This can also be attributed to the

significantly varied nature of construction industry activities, processes, participants (Runeson, 1997). A substantial portion of the built environment research continues to draw from natural and management science methodologies (Dainty, 2008), often covering behavioural and social research; Financial Management of Property and Construction research broadly fits this mould. However, before now, there have been criticisms regarding the focus of built environment research on quantitative methods (Runeson, 1997). Runeson (1997) argued against claims by some construction industry researchers, including Seymour et al. (1997), that positivist methods are not appropriate because they focus on cause and effect. Runeson (1997) affirms that positivist research is still important to prevent what was described as 'bad research' and reducing subjectivity although one could also argue that subjectivity is not the problem, it is the credibility of research processes and outcomes. Over the years, methodological traditions in construction and financial management research have evolved borrowing from other fields (Kaushik and Walsh, 2019). This is common sense; Miles et al. (2014) argue in favour of drawing eclectically from different methodologies as necessary.

Early dialectic discourse on methodological decisions alludes to the need to consider one's view of reality and, perhaps, more importantly, decisions about what kinds of knowledge are appropriate for addressing a research problem (Howard, 1983). Even though choices can be purely teleological, researchers' firmly held beliefs about reality can be heavily influential, even if sometimes to the detriment of the study; researchers often find themselves making methodological decisions based only on their expertise and less regard for the problem type. Howard (1983) advocates consideration for whether the chosen perspective will help develop a better understanding of the world or problem and, interestingly, with gaining prominence of alternative methodologies, contemplated the possibility of traditional experimental approaches becoming obsolete. Wildermuth (1993), as did Mingers (2001), suggests that approaches that adopt worldviews other than objectivity and the transcendence of individual experiences and/or perspectives are post-positivist (post-empiricist) and also advocated pluralism.

Methodological pluralism can take three forms: first, in a discipline supporting form, encouraging a variety of paradigms, characterised by the use of various methods, and non-prescriptive (loose pluralism); second, in the use of multiple methods originating from different paradigms (strong pluralism); and thirdly, through the acknowledgement of the

internal consistency of different paradigms and that their use may be appropriate for a given situation (complementary pluralism) (Mingers, 2001). In this study, the aim was to investigate pluralism in the use of research approaches and methods by researchers whose papers have been accepted and published by the Journal. Methodological pluralism has remained an interesting subject within and outside built environment research. Outside the field, there are numerous examples (Marchi, 2015; Mingers, 2001; Taylor and Medina, 2011). Whilst similar, albeit few, studies have been carried out with a focus on the construction management (Agyekum-Mensah *et al.*, 2020; Dainty, 2008) this study provides more in-depth insights into research trends in a vital section of built environment research and could guide methodological choice making for researchers. This also enables an appreciation of the extent to which methodologies were combined and applied considering that construction industry research is claimed to be traditionally positivist (Seymour *et al.*, 1997). Nevertheless, whilst one might expect published works in a journal whose main subject is financial management to be principally objectivist, there is undoubtedly room for subjectivists and pluralists.

The Journal of Financial Management of Property and Construction, which commenced publication on the internet in 2003, aims to provide an international platform for bringing theoretical and empirical developments and novel thinking together in select aspects of construction-related research. Among others, it covers issues relating to project and corporate financing, risk management; market analysis, modelling and valuation of property; building/construction economics; investment theory and practice, economics of sustainability and renewal; financial implications of IT systems, financial aspects of statutory regulations, energy and environment; and cost evaluation and financial implications of alternative procurement methods ("Emerald Publishing", 2021). It was chosen as the focus for analysing financial management of property and construction research in this study due to its reasonably diverse scope and coverage in terms of authorship and readership. The Journal, published by Emerald Group Publishing and supported by the International Council for Building (CIB), is one of the foremost in the field. Beyond the foregoing, it is also worth investigating whether the a priori assumption that a journal that publishes papers bordering on finances or cost issues should lean towards objectivist approaches.

Unlike the earlier study by Dainty (2008) on construction management and economics journal, where only one volume for the year 2006 was used, this research covers the period 2005 to 2020, a sixteen-year period. The scope of this study mainly covers the research

approaches taken by the authors of papers analysed, their philosophical assumptions, research strategy, data collection methods, and methods for data analysis. Additionally, although the Journal is UK-based, the issues researched are relevant to an international audience; this is illustrated in Table 3. Furthermore, this study provides further evidence on an old question or problem (research methodology) and executes original empirical work that is significant (Phillips and Pugh, 2010); these have been achieved in this paper as it is an original synthesis of the articles published from 2005 to 2020.

Different authors have defined the various concepts bordering on methodologies differently, subtle in some cases and in others, quite profound. Therefore, in the rest of the paper, first, an attempt is made to describe some of the key concept(s) to ensure consistency in usage and because they are known to be open to several interpretations (Mingers, 2001). Next, explanations on the methods used in conducting the systematic review of the literature and present the results and final arguments.

Philosophical world views

The philosophical positions taken by researchers influence the choices they make in research approaches, strategies, and specific methods they employ. Worldviews, often branded epistemologies, are the fundamental beliefs that drive an action (Guba, 1990, cited in Creswell (2009). Creswell identifies the worldviews as positivism, post-positivism, constructivism, interpretivism and pragmatism. Easterby-Smith, Thorpe and Jackson (2015) identify strong positivism, positivism, constructivism and strong constructivism as different epistemology. This is further put in four quadrants namely detached positivism (critical realism), detached constructivism (hermeneutics, postmodernism), engaged constructionism (pragmatism, critical theory, feminism, structuration theory) and lastly engaged positivism (systems theory). Additionally, Barbie (2013) argues that worldviews are discipline specific and identifies positivism, Darwinism, conflict paradigm, symbolic interactionism, ethnomethodology, structural functionalism, feminism and critical theory as worldviews used in the social sciences. In this study, worldviews are discussed under five distinctive categories; positivism, post-positivism, constructivism, interpretivism and pragmatism as those common to financial management of property and construction research.

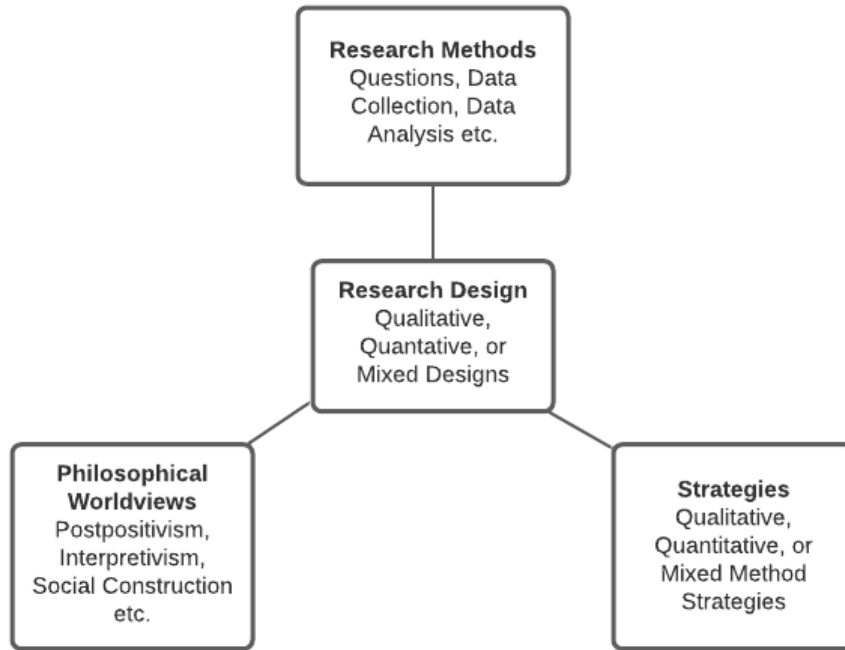


Figure 1: A Framework for defining research approach – The relationship between Worldviews, Strategies of Inquiry, and Research Methods. Adapted from Creswell (2009)

It is important to note that Creswell (2009) offers a separate perspective to understanding positivism vs post positivism in contrast to the idea expounded in the first section. Whereas in the seminal literature, there seem to be two main categories delineated by their leaning towards either objectivism or subjectivism, respectively, Creswell (2009) explains post-positivism somewhat differently; that post-positivism steps away from positivist traditions in the rejection of absolute truth even though equally deterministic and reductionist (Creswell, 2009). Therefore, while positivist research tends towards experimental, scientific methods or natural science research, it encourages belief in the possibility of absolutes. This is quite similar to Fellows and Liu's (2015) description of the positivist paradigm; it recognises the observability of facts where the observer is devolved from the observation and measurement. Post-positivism assumes that knowledge is conjectural, acknowledges the impossibility of finding absolute truth, the fallibility of all research, and the impossibility of proving a hypothesis (Creswell, 2009). In this sense, some qualitative research could be described as post-positivist (Creswell, 2013).

The social constructivist philosophical worldview is different and typically lends itself to qualitative approaches – although many qualitative studies are post-positivist (Creswell, 2013). It holds that individuals usually seek an understanding of the world they live in (Creswell, 2013). Rather than begin with a pre-existing theory as with the post-positivist

position, researchers often intuitively develop theories, patterns, or conceptualisations. Importantly, social phenomena are reviewed and reconstructed by participants through social interaction and reflection (Matthews and Ross 2010). Close to constructivism in the continuum is interpretivism the opposite of determinism according to Fellows and Liu (2015). Constructivism emphasises that knowledge emerges through the individual's interaction with the environment in the course of an experience (Bell *et al.*, 2018), while interpretivism leads to a theory that possibly does not have strong predictive power rejecting the notion that a single, verifiable reality exists independent of our senses (Rehman and Alharthi, 2016). Data collection can involve any one or a combination of interviews, documents, observations, or artefacts. Interpretivism, very much like constructivism, enables researchers to study phenomena within their social settings, and therefore, investigators aim to construct interpretations of practices and meanings (Urquhart, 2013). There are, therefore, subtle differences between constructivism and Interpretivism.

With pragmatism, the focus is more on the problem being studied than a focus on methodology. Thus, it favours applying the best-fit approaches that best provide solutions to problems (Creswell, 2009). A combination of strategies and methods are typically applied, and pragmatists essentially believe that truth is what works at a particular time (Creswell and Clark, 2017). Thus, for pragmatists, emphasis is placed on using a functional mix of qualitative and quantitative approaches to achieve the best results (Creswell, 2009; Creswell and Clark, 2017). However, that is not to say that the use of a mixed method strategy/approach always means that the researcher holds a pragmatist world view.

Finally, regarding realism, this is by no means an easy concept to define considering the different perspectives and variants. It is often defined in relation to other philosophical stances rather than as a standalone philosophical position (Schiller, 2016). It is somewhat unique in the sense that it enables a view of the world that assumes independence of thought and even the existence of humans (Schiller, 2016) and attempts to move beyond what can be evidenced in the immediate whilst avoiding the 'incomplete' positions of positivism and constructivism (Bergin *et al.*, 2008).

Research Approach

Creswell (2009) advanced three main approaches – quantitative, qualitative, and mixed. According to Leedy *et al.* (2014), a quantitative approach is fundamentally number-based, while qualitative approaches focus on text, whether captured, spoken, and written, for

analysis. It is not uncommon for the latter to involve collecting audio/visual and observational data for analysis. Therefore, a mixed research approach combines quantitative and qualitative approaches (Creswell and Clark, 2017). The diverse nature of construction-related activities necessitates the mixing of research approaches, and, therefore, it is often beneficial to employ a strategy of triangulation to strengthen research results (Easterby-Smith *et al.*, 2015). Typically, qualitative research entails exploring and understanding participant perspectives and meanings about social and/or human problems and characterised by an inductive style of reasoning. It involves description, comparison, pattern analysis, theory testing and theory building, among others (Bazeley and Jackson, 2013); the generalisability of results generated using this approach is enhanced by using theory (Patton, 2015). On the other hand, quantitative research provides an avenue for objective testing of theories by investigating the relationship between variables (Creswell, 2009; Saunders *et al.*, 2012). Researchers adopting the latter approach essentially arrive at their conclusions deductively, and it provides the potential to generalise results over an entire population under study.

Quantitative approaches employ predetermined and instrument-based methods, with statistical analysis and interpretations being the backbones of these methods (Leedy *et al.*, 2014; Easterby-Smith *et al.*, 2015). By contrast, Qualitative approaches use emergent methods involving largely open-ended questioning, and the collection of textual, audio-visual, and observational data. Analysis of this data is usually done by identifying themes and patterns in the data collated (Creswell, 2009, 2013). Expectedly, for mixed research methods, both quantitative and qualitative methods are employed, and multiple forms of data are generated. Analyses likewise can include both statistical and textual analysis methods and techniques as appropriate (Creswell and Clark, 2017). Creswell (2009) provides a clear analysis comparing the three approaches as illustrated in Table 1. Furthermore, since it is often easier to discuss methods in relation to the overarching approach taken, this paper does not present a different explanation of strategies and methods.

Table 1: Qualitative, Quantitative and Mixed Approaches

	QUALITATIVE APPROACHES	QUANTITATIVE APPROACHES	MIXED METHODS APPROACHES
Philosophical Assumptions	<ul style="list-style-type: none"> Constructivist/advocacy/participatory knowledge claims; reality is subjective 	<ul style="list-style-type: none"> Positivist/post-positivist knowledge claims; reality is observer independent 	<ul style="list-style-type: none"> Pragmatic knowledge claims

Strategies of Enquiry	<ul style="list-style-type: none"> ● Phenomenology, grounded theory, ethnography, case study, and narrative 	<ul style="list-style-type: none"> ● Experimental and non-experimental strategies (Surveys and experiments) 	<ul style="list-style-type: none"> ● Sequential, concurrent, Convergent, transformative
Reasoning	<ul style="list-style-type: none"> ● Inductive/deductive 	<ul style="list-style-type: none"> ● deductive 	<ul style="list-style-type: none"> ● Abductive, deductive, inductive
Research Methods	<ul style="list-style-type: none"> ● Open-ended questions, emerging approaches, text, or image data ● Observations/ participant observations ● Interviews ● Content analysis ● Thematic content analysis ● Typically, purposive or opportunistic participant selection methods 	<ul style="list-style-type: none"> ● Questionnaires, data proformas ● Closed-ended questions (Including Interviews) ● Structured observations or interviews ● Statistical analysis ● Ideally random selection of participants 	<ul style="list-style-type: none"> ● Both open and closed-ended questions, both emerging and predetermined approaches, and quantitative and qualitative data and analysis.
Procedures	<ul style="list-style-type: none"> ● Collection of participant meanings ● Focus on a single concept or phenomenon ● Bring personal values into the study and emphasise the context or setting of participants ● Validate the accuracy of findings ● Make interpretations of the data ● Create a plan for change or reform ● Collaborate with participants ● Focused on case description 	<ul style="list-style-type: none"> ● Reductionist ● Test or verify theories or explanations; hypothesis driven ● Identify variables to study ● Relate variables in questions or hypotheses ● Validity and reliability are important ● Observe and measure information numerically ● Use of unbiased approaches ● Focused on developing general laws 	<ul style="list-style-type: none"> ● Collect both quantitative and qualitative data ● Develop a rationale for mixing ● Integrate data at different stages of inquiry ● Present visual pictures of the procedures in the study ● Employ practices of both qualitative and quantitative research

Adapted from Wellington and Szczerbinski (2007) and Creswell (2009)

RESEARCH METHODS USED IN THIS PAPER

A systematic review of the literature was carried out using all the research papers published in the Journal of Financial Management of Property and Construction between 2005 and 2020 excluding editorial papers. Therefore, there was no need for defining search terms and criteria for selecting papers for the review. The papers were downloaded from the Emerald Insight website, and all the papers were after that uploaded into the Nvivo 12 Pro qualitative analysis software. This enabled a systematic and quick exploration of the papers. Furthermore, using the Nvivo 12 Pro textual analysis functions made it possible to gain a sense of which topics and ideas were studied by the authors of papers published in the journal quite quickly.

Table 2: Research framework showing categories of data of interest

Category	Subcategory
Year	Issue no, nature of the issue (normal or special)
Author information	Name, affiliation
Research focus	Cost, performance, risk, modelling, PPP, economics, prices, procurement, contracts environment, resources, information, quality, values, housing, design, finance, etc.
Research philosophy	Positivism, post-positivism, realism, constructivism, interpretivism, pragmatism
Research strategies	Survey, case study, experiment, action research, grounded theory, ethnography, archival
Research approach	Qualitative, quantitative, mixed
Research data collection methods	Questionnaire, interview, documents, observation, secondary data, simulation, modelling
Method mix	Mono method, mixed, and multiple
Data analysis method	Descriptive statistics, inferential statistics, case description and content analysis, other
Country used to collect data	worldwide

Once the papers had been downloaded, categories and subcategories of important content were formulated to guide the content analysis of the documents, as shown in Table 2. The categories of data followed after the initial review of the literature presented in the previous section. Table 2 provided a framework for extracting information systematically to answer the questions posed by identifying the approaches, worldviews, strategies and methods used by author publications under the journal of financial and property management in construction.

A total of 258 published papers by 565 contributing authors were retrieved from the journal website. This implies a reasonably good level of collaboration among the researchers, with just over two contributors per paper, 28 single-author articles and fourteen authored by more than four contributors. Data collected through content analysis included author information (author names and affiliation), the country in which the research work was carried out, and the number of publications by year.

Word clouds help provide informative visual summaries of textual data. Using Nvivo Pro 12, a Word Frequency query was carried out using all the downloaded articles. This function performs a search that was set to include only words with a minimum length of 3 and exact matches of the most frequently used words in the text. To ensure that only words that illustrate the issues most commonly discussed or researched were included in the word cloud (see Figure 4), in two steps, words like 'construction', 'project', 'management', 'financial', 'research', and 'property' etc. were excluded (added to the stop-word list).

ANALYSIS AND FINDINGS

Origin of the papers

Research published in the Journal of Financial Management of Property and Construction originates from several countries, as shown in Figure 2 and in more detail in Table 3. Figure 2 shows the origin of the papers by the location of the institutions. While there is a reasonable spread of the authors/institutions across continents, there is a significant dominance of articles published by institutions in the United Kingdom and other English-speaking countries.

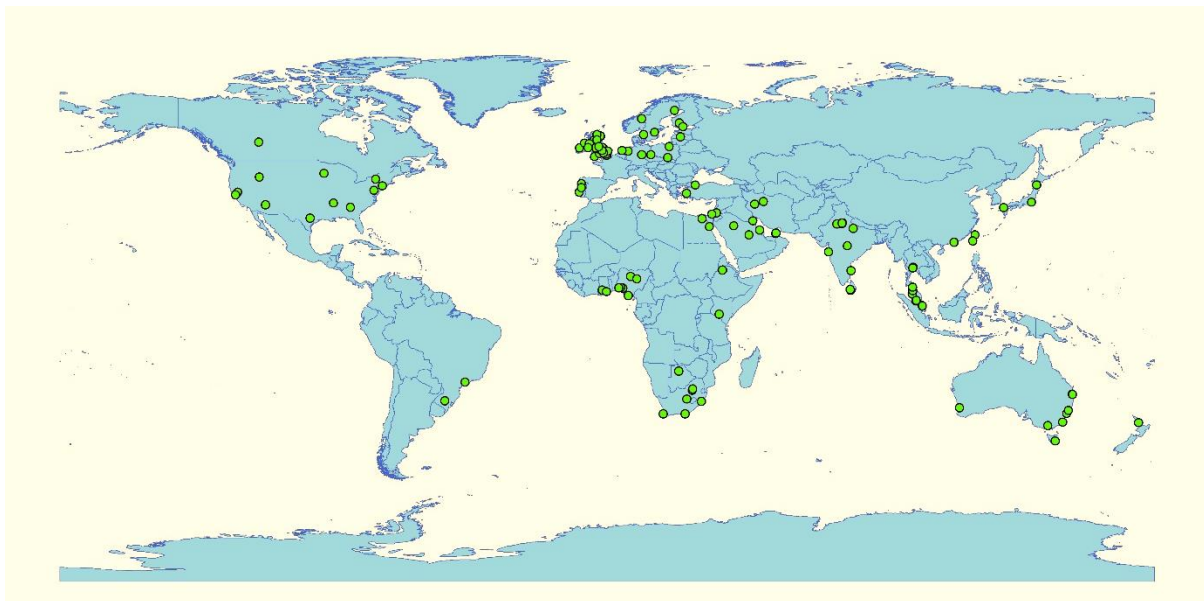


Figure 2: Mapping of the authors' affiliation (points are mapped once for each location)

The results reported in the journal originated from about 36 different countries, 10.08 % of them were cross-border (from more than one country), and 3.49% were not precisely defined. Significantly, up to 19.77% of all the research was conducted in or about the UK. The next closest to the UK was in Nigeria at 10.08 % and then Australia at 6.2%. Over half (63.6%) of the papers published in the journal have used data collected in or about developing countries, while 36.7% of the data was collected in or about developed countries. Given the foregoing,

there is a fair balance in terms of the representation between developed and developing nations. Furthermore, it appears developing countries have many un-researched issues and may be the focus for future research.

Table 3: Country where data was collected or research was carried out

No.	Country	Frequency	Percentage
1	Australia	16	6.20
2	Afghanistan	1	0.39
3	Brazil	4	1.55
4	China	3	1.16
5	Cross-border	26	10.08
6	Czech Republic	1	0.39
5	Egypt	4	1.55
7	Ethiopia	1	0.39
8	Finland	2	0.78
8	Gaza/Palestine/West bank	11	4.26
9	Germany	1	0.39
10	Ghana	10	3.88
11	Hong Kong	11	4.26
12	India	13	5.04
12	Iran	1	0.39
13	Indonesia	1	0.39
14	Ireland	1	0.39
15	Japan	4	1.55
16	Kenya	4	1.55
16	Kuwait	1	0.39
17	Malaysia	11	4.26
18	Nepal	1	0.39
19	Netherlands	1	0.39
19	New Zealand	2	0.78
20	Nigeria	26	10.08
21	Pakistan	2	0.78
22	Poland	1	0.39
23	Portugal	2	0.78
23	Saudi Arabia	1	0.39
24	Scotland	1	0.39
25	Singapore	3	1.16
26	South Africa	9	3.49
27	Sri Lanka	6	2.33
27	Sultanate of Oman	1	0.39
28	Sweden	2	0.78
29	Tanzania	1	0.39
30	Thailand	3	1.16
30	Turkey	1	0.39
31	UK	51	19.77

32	Undefined	9	3.49
33	United Arab Emirates	3	1.16
34	USA	4	1.55
35	Zambia	1	0.39
		258	100

Publications by year

Figure 3 shows the number of papers published yearly, which indicates an average of about 16 papers published per year. Furthermore, in instances where there was a special call for papers, there was no noticeable increase in the number of articles published. Eight special calls were made over the period under consideration. One call in 2009 in the third issue themed property finance and investment in Asia had five papers, while the 2010 special issue themed Public-Private Partnership had six papers, including the editorial in the third issue. 2011 had two special calls, with its first issue focusing on commercial aspects of lean construction (seven articles) and the third issue focussing on property and construction (six papers). While 2014 had a special issue themed exploring project cost overruns in the first issue with five articles. The 2016 special issue in Issue 2 was themed economic and financial issues for creating an age-friendly built environment and had five papers. In 2018, the special issue for Issue 1 was focused on the stakeholder's financial performance (seven articles). Another special issue focused on psychosocial and organisational culture influences on construction stakeholders' financial performance in the first issue of 2018 with seven papers. In the second issue of 2019, there was a special call focussing on financing infrastructure and public services within cities with a particular focus on the challenges of property tax valuation and administration for municipal income with nine papers. The calls have focussed on essential issues in financial management. Yet, the authors' response has been below average, as the special issues on average contained six papers, with the mode being five.



Table 4: Research approaches used

	Frequency	Percentage
Quantitative	170	65.9%
Qualitative	54	20.9%
Mixed	34	13.2%
Total	258	100.00

The dominance of the quantitative method clearly shows the method of choice for most researchers. This can be explained as being due to the nature of studies undertaken that are centred mostly on cost, value, time and risk which are quantifiable parameters. However, it is significant that up to a third of the papers adopted either qualitative or mixed approaches. Although there was an increase in the qualitative approaches in 2010 and 2011 (Figure 5), the trend has not continued. This in the last 2 years may be attributed to the Corona virus which has affected the globe in terms of being able to apply qualitative methods which would normally need a face-to-face interaction.

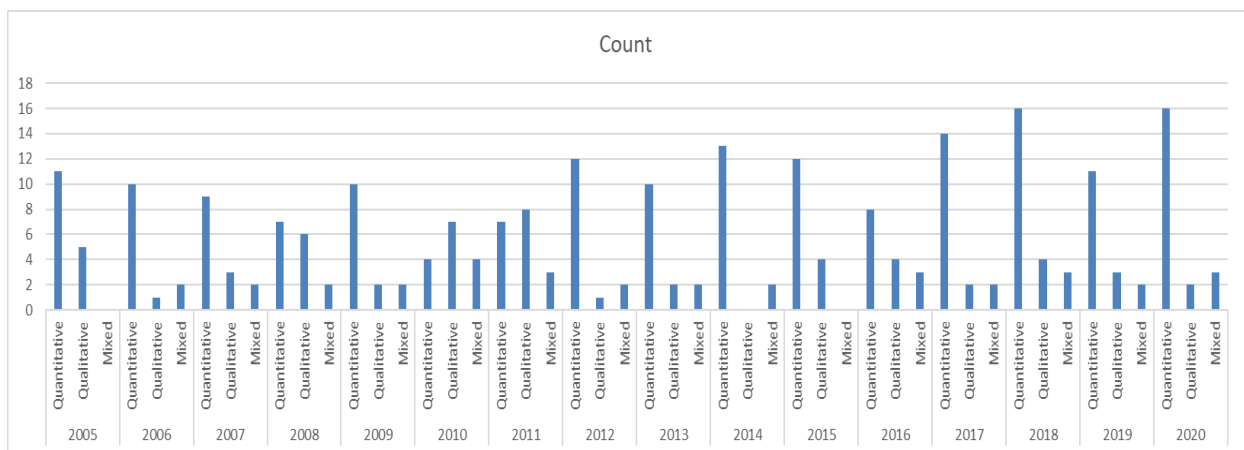


Figure 5: Research approaches (design) by years

Research philosophy employed

Approaches could strongly influence the epistemological position taken by a researcher (and vice versa). Quantitative approaches lean more towards positivism and post-positivism, while qualitative lean towards constructivist and interpretivist studies even though some qualitative studies can be unmistakably post-positivist (Creswell, 2013). Although much of the researchers' philosophical standpoints are hidden in their research (Creswell, 2009), they are discernible from the pattern by which research is carried out and reported. This was identified by in-depth analysis of the content of each work under review. 71% of the papers leaned towards a post-positivist/positivist standpoint, while 15.9% were carried out under

interpretive and constructivist frameworks. Pragmatism, which follows for a mixed-methods approach to research, accounted for 12% of the reviewed works.

Table 5: Philosophical worldview

	Frequency	Percentage
Positivism	83	32.2
Post-positivism	100	38.8
Constructivism	4	1.6
Interpretive	37	14.3
Realism	1	0.3
Pragmatism	31	12.0
Undefined	2	0.7
Total	258	100.00

Table 6: Epistemological positions taken by researchers

Year	Positiv ism	Post- positiv ism	Pragm atism	Interpr etivism	Constr uctivis m	Realis m	Undefi ned	Total
2005	0	12	0	2	2	0	0	16
2006	0	11	2	0	0	0	0	13
2007	0	9	3	2	0	0	0	14
2008	0	7	2	6	0	0	0	15
2009	0	10	2	2	0	0	0	14
2010	0	4	4	7	0	0	0	15
2011	0	7	3	8	0	0	0	18
2012	0	12	2	1	0	0	0	15
2013	0	10	2	1	1	0	0	14
2014	0	13	2	0	0	0	0	15
2015	15	0	0	1	0	0	0	16
2016	9	1	2	2	0	1	0	15
2017	18	0	0	0	0	0	0	18
2018	14	2	3	2	0	0	2	23
2019	11	0	2	2	1	0	0	16
2020	16	2	2	1	0	0	0	21
Total	83	100	31	37	4	1	2	258
%	32.2%	38.8%	12.0%	14.3%	1.6%	0.3%	0.7%	100.0%

Table 6 shows the researchers' epistemological positions (even though not explicitly stated in the papers). Judging from the word cloud in Figure 4, most of the dominant focus areas are quantifiable, namely value, risk, time, performance, and others. Given the nature of the research foci of the Journal, it is to be expected that the findings show positivism/post-positivism to be the most frequently taken positions. However, it is beneficial for authors to provide objective explanations of phenomena just as it is to provide answers to the how and why questions in their studies. For these, qualitative approaches are helpful, supported by appropriate epistemological positions.

Research strategies

Over half of the papers (53%) used a survey strategy (see Table 7). The next most common strategy was the use of desk study research, primarily using secondary data. Secondary data usage is common in developed countries, and this could be due to better recording keeping practices and the availability of already existing information. Case study strategies were also used, as shown in Table 7.

Table 7: Research strategies employed

Strategies	Frequency	Percentage
Survey research	137	53.1
Case study	40	15.4%
Action	3	1.2%
Model building	2	0.8%
Experimental	3	1.2%
Quasi-Experimental	1	0.38%
Concurrent mixed strategy	9	3.5%
Sequential mixed strategy	12	4.6%
Phenomenology	4	1.5%
Desktop research	46	17.8%
Participatory action research	1	0.38%
Total	258	100.0

The various strategies were executed using various data collection methods, as shown in Table 8. An analysis of the research works' contents revealed that questionnaires and archival data were prominent choices for researchers as specific methods for achieving research objectives.

Table 8: Data collection methods used

Methods	Frequency	Percentage
Questionnaire	108	34.5
Archival data	98	31.3
Interview	63	20.1
Observation	4	1.2
Data proforma	2	0.6
Documents	33	10.5
Simulation	3	0.9
Focus group discussion	2	0.6

These results have been reported only in frequencies and percentages, which accounts for multiple occurrences in the papers. It was not uncommon for a single study to have more than one data collection method, as shown in Table 9.

Table 9: Use of multi-methods for data collection

Methods	Frequency	Percentage
Questionnaire & Interview	15	27.8

Interview & Secondary data/Documents	10	18.5
Questionnaire & Secondary data/Documents	10	18.5
Secondary data/Documents & Interview	8	14.8
Interview, Observation & Secondary data/Documents	2	3.7
Questionnaire, Interview & Observation	1	1.9
Observation & Documents	2	3.7
Secondary data & Simulation	1	1.9
Questionnaire, Observation & Documents	1	1.9
Observation and Interview	2	3.7
Questionnaire, Interview, Focus group	1	1.9
Secondary data, interview & questionnaire	1	1.9

Table 9 shows the mix of methods and also the sequence in which they were applied. Worthy of note is that a triangulation of questionnaire data and interview (semi-structured interviews) data with other forms of data is prominent among these, followed by interviews and secondary data/documents – as shown in Table 9. Nevertheless, most of the data collection methods are quantitative only.

Methods used for data analysis

Table 10 reveals that quantitative data analysis methods are common, with a combined frequency of 246 for both descriptive and inferential statistics. The common inferential statistics used include regression, T-test, Correlation, ANOVA, modelling, Mann-Whitney U, and others. For descriptive analysis, frequencies, percentages, means, and modes were reported. For qualitative analysis, the authors used mainly content analysis. Other methods of analysis used included Factor analysis (confirmatory and exploratory), SWOT analysis, cost-benefit analysis, fuzzy logic, structural equation modelling and social networks analysis.

Table 10: Methods of data analysis employed

Methods	Frequency	Percentage
Descriptive statistical analysis	110	33.4
Case description & content analysis	66	20.1
Inferential statistical analysis	136	41.3
Others	17	5.2

Apparently, the authors used the most appropriate methods of analysis following the requirements of the quantitative and qualitative and mixed approaches. Research of a quantitative nature employed a wide variety of methods, prominent among which was the use of descriptive statistical analysis and, in instances, the use of parametric and non-parametric types of inferential statistical analysis.

The results yielded some interesting albeit surprising results particularly considering that almost a third of the publications did not adopt quantitative approaches and in certain years, there was relatively high use of qualitative and mixed-method approaches; up to twelve percent of the articles published over the last sixteen years could be described as based on pragmatism. Therefore, this research confirms some of the positions of authors in the field and provides new insight into methods used and how they have been combined.

DISCUSSION

Construction and financial management research areas are still developing. Like some other fields that are well established, they are known to rely mostly on objectivism and quantitative approaches. Indeed, the prevalent position taken in the construction and financial management research is post-positivism, an evolution of positivism (Creswell, 2009). Depending on the nature of the problem studied, this might enable only a limited understanding. It does not always allow for problems to be understood in-depth but instead gives an appreciation of how widespread certain concepts, problems, practices or issues, *inter alia*, are (Easterby-Smith, 2015). Indeed, there are benefits to rigorously developing theory through the systematic application of quantitative approaches but combining it with other views of reality can enhance the quality and relevance of research results. Issues around the practice of financial management of property and construction in projects, workplaces and the built environment may often be subjective. The subjectivity is understood better by the use of complementary methods such as interviews in addition to, for instance, questionnaires. Nevertheless, the findings show that this journal (financial management of property and construction) is one instance where the nature of the problem studied most of the time predetermines the research approach (Table 4 and Figure 5). That is, principally, purpose drives methodological choices.

Methodological pluralism promotes the idea that no single method is better than the other, but rather the suitability of methods is dependent on the problem at hand. From the word cloud in Figure 4, the focus of most issues in financial, property and construction research is value, time and risk centred. Therefore, it is unsurprising that quantitative strategies executed using surveys and reviews/desk study are the dominant ones employed as shown in Table 8. Notwithstanding, qualitative approaches mainly using interviews and documents are used to a lesser but extent, although they are significant considering the focus of the journal. There has been an increase over the years in the use of qualitative methods, mainly to complement

information from quantitative sources. This is evidenced in studies using multiple methods to collect data (Table 9), although studies conducted this way remain either positivist or post-positivist in nature. From this, it can be deduced that there could be an increase in studies using multiple methods in the frame of complementary pluralism.

Most desk studies originated from developed countries, with much of the research conducted in developing countries using questionnaire surveys and structured questionnaires as primary data collection methods. The findings, therefore, suggest that quantitative strategies, specifically using reviews/desk study, are much more efficiently executed in developed countries, as they typically have access to better databases where the required information is readily available. Overall, the highest contribution of papers in the journal is from developed countries. Additionally, the availability of secondary data in developing countries cannot be ignored as a factor influencing the methodology choice by authors.

As expected, specific analysis methods are dominant when certain approaches and methods of data collection are used. The journal reviewed quantitative methods of analysis, using statistics in descriptive and inferential forms being heavily utilised due to the approaches used and data collection methods. Nevertheless, some researchers employed multiple methods, usually with a mix of qualitative (content/thematic analysis) and quantitative (descriptive and inferential statistics). Also, in the reporting of the results, the quantitative methods tended to dominate even when measures like semi-structures interviews are utilised. Therefore, the methodological pluralism observed could be described as mainly complementary, as evidenced by the mixing of methods in Table 9.

CONCLUSIONS

Through a content analysis of 258 published research papers in the Journal of Financial Management of Property and Construction between 2005 and 2020, this study has found that the use of quantitative approaches to research is still dominant. The problems faced by the construction industry are myriad and therefore require robust research approaches that can provide the best solutions. It is also important to note that the management of finances relating to property and construction projects is pertinent to success. This premise may explain the diverse approaches that have been employed to tackle identified problems by the authors. Whilst quantitative approaches and methods have remained prominent in the financial management of property and construction research, the use of qualitative and mixed

approaches, theoretical perspectives and methods have also become common. This is increasingly viewed as necessary to provide practical solutions to the myriad challenges the construction industry currently faces.

In summary, there seems to be some level of pluralism in the methodologies used in construction and financial management, but expectedly, a quantitative approach (positivist/post-positivist epistemology) continues to dominate. The methods and strategies used are aligned with this paradigm, and its frequent use might be attributed to the nature of problems under investigation. Given that the editorial board of any given journal is primarily responsible for the nature of the work published, is it unclear whether the approach adopted influences the acceptance or rejection of papers. One important implication of this study is that a conventionally number-based area of research does not preclude the use of qualitative approaches. Clearly, some of the special issues suggest that the editorial board has given opportunities for investigating the softer issue relating to construction and financial management. It could be argued either way, on the one hand, that there is a need for more methodological pluralism since people who carry out management functions in construction, even while cost-centred, are often faced with problems that cannot be adequately explained using qualitative or quantitative methods only. On the other hand, that the level of pluralism seems adequate considering that the foci of the journal centre mainly on cost. Overall, it appears that, for this journal, future research will continue to follow the trend evidenced by this review. However, one journal (Financial Management of Property and Construction) research cannot represent what is going on across the entire field, it is recommended that similar in-depth studies be carried out to explore beyond the financial management of property and construction.

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