

CHANGING PARADIGMS IN CONSTRUCTION COMPETITIVENESS RESEARCH

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In the construction industry, every company has to apply some kind of strategic solutions in order to maintain their competitiveness. Although there are variety of discussions of what is the meaning of ‘competitiveness’ and ‘strategy’ keywords, in generic terms while the competitiveness means gaining advantage against rivals, strategy refers the actions that provide competitiveness. Construction management literature is abundant in researches, which evaluate the competitiveness strategies of construction industry organizations, however, they approach the “competitiveness” concept from variety of theoretical backgrounds and methodological perspectives. There is a requirement for a systematic summary of the literature in order to demonstrate the changing paradigms in competitiveness research. Therefore, the aim of this paper is to analyse and identify the changing paradigms in construction competitiveness research by utilizing meta-analysis methodology to six leading construction management journals from 2000 to 2014. Findings of the research will clarify how the research focus, level of analysis, sources of information, contribution of papers, author orientation and utilization of different schools of thoughts have changed in time and how future directions could be designed in construction competitiveness research.

Keywords: competitiveness, corporate strategy, meta-analysis.

INTRODUCTION

Construction management literature is abundant in researches, which evaluate the competitiveness strategies of construction companies from variety of perspectives. However, recent discussions call for a fresh perspective in competitiveness strategy research (Green *et al*, 2008a; 2008b). Most authors have not only discussed the ‘competitiveness’, ‘strategy’ and ‘performance’ keywords with referring to generic competitiveness strategy theories but also utilized them in their research without discussing the reasons why they have based their research on this particular theory. Although there are different theoretical perspectives in ‘competitiveness’ and ‘strategic management’ literature, most papers have analysed the research question from the perspective of a single theory, applied positivist methods, and suggested generic competitiveness indicators or indexes for company competitiveness. However, some recent studies indicate the benefits of holistic research approaches in which data is gathered by in depth analyses and analysed within the light of multiple research theories and techniques (Green *et al*, 2008b). Since, the competitiveness strategy theories are developing in line with the changing trends of today’s business and management systems, construction management scholars should study these changing

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paradigms and develop new competitive agendas. Therefore, a systematic analysis of the articles in referred academic journals could help the researchers to gain a wider perspective of the field quickly and make further advancement in the chosen topic.

Academic journals are the key sources where the academic debates take place and the knowledge development process of a specific research subject could be observed (Betts and Lansley, 1993). For this reasons, it would be valuable to use meta-analysis as a research methodology in order to examine academic studies on competitiveness research in construction management literature. Meta-analysis, by providing ways to examine published studies on the chosen topic, will be used to integrate results from individual studies for the purpose of integrating the research findings (Betts and Lansley, 1993). As far as the scope of this paper is concerned, it intends to analyse research inclination and identify the potential research gaps on the subject of competitiveness in the construction industry.

RESEARCH METHODOLOGY

As a sizable body of research results on competitiveness in construction has accumulated, it becomes increasingly difficult to find which research direction is most important and whether a definite conclusion can be reached. For this reason, inspired by the meta-analysis concept, we employed a structured approach to review the competitiveness studies in construction management literature from six leading construction-related journals. The approach employed in this study is composed of the following steps:

1. Defining the research question: Where is the pattern in current competitiveness research in the construction industry? On what common structure are those consigned with understanding construction competitiveness?
2. Conducting the literature review: The articles related to competitiveness from 2000 to 2014 were analysed in terms of countries of origin, content (research focus, level of analysis), style (sources of information, contribution of papers) (Betts and Lansley, 1993), and school of thoughts introduced in the studies.
3. Research Trend Analysis: This step consists of identifying trends for the research topic chosen (tendency in theoretical background selection).
4. Interpretation of results: The results of the literature review are evaluated with respect to research thrust.

DATA ANALYSIS AND RESULTS

After defining the research question, a set of inclusion and exclusion criteria was drawn up to undertake a literature review. A search with the keywords derived from "*compete*" was conducted at the search engines of selected journals (Journal of Construction Engineering and Management (JCEM), Construction Management and Economics (CME), International Journal of Project Management (IJPM), Building Resource and Information (BRI), Journal of Engineering in Management (JME) and Engineering, Construction and Architectural Management (ECAM) in a fourteen years' time period (2000-2014). Following this, an abstract review of the papers was conducted in order to see whether they are directly relevant to the topic of the meta-analysis or not. After the grey literature papers were excluded, a total of 122 papers were identified as being published in the selected eight construction journals. The meta-analysis started with presenting the number of articles from each journal publisher by their publication years. Clearly, as Table 1 shows, within the studied period, the journals CME, JCEM and IJPM have published the highest number of

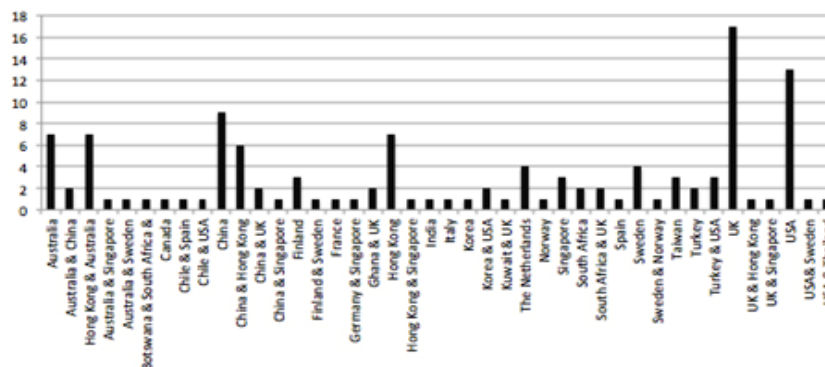
competitiveness papers, respectively 39, 26, and 26. The number of competitiveness papers published in CME is much higher than any of the other selected journals, providing the greatest contribution to competitiveness studies in construction. Besides, the statistics in Table 1 show that the selected journals published 18 papers in 2013; the highest point during the studied period and competitiveness has received attention in construction management literature throughout the selected time period.

Table 1: Chronological Distribution of Articles by Journals

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014 1 st Quarter	Total
JCEM	0	0	1	1	2	2	1	0	2	2	6	2	3	3	1	26
CME	3	3	2	1	2	1	2	3	5	6	5	0	2	4	0	39
JME	1	1	1	0	0	1	0	1	2	0	0	2	1	3	0	13
IJPM	1	2	1	1	2	0	2	1	2	2	1	1	1	7	2	26
ECAM	1	0	0	2	0	0	2	0	0	1	1	1	1	1	1	11
BRI	1	0	1	0	2	0	0	0	2	1	0	0	0	0	0	7
Total	7	6	6	5	8	4	7	5	13	12	13	6	8	18	4	122

Country of origin analysis shows that authors from 27 different countries were involved in competitiveness research. The countries that dominate competitiveness research in construction management are UK, USA, China, Hong Kong, and Australia. Results revealed that 41 papers (%34) involve a collaborative study of the authors from different countries. Among them, Australia & China and Hong Kong & China realized the highest number of collaborative study. The reason could be attributed to their geographical proximity, emerging economic developments in these areas and their active role in international construction sector. Increasing volume of collaborative studies could provide comprehensive analysis with introduction of different local parameters and interpretations from fresh perspectives. Figure 1 indicates that although some countries have dominated the competitiveness research, it has also gained attention from the countries in Europe, South Africa and Asia as well as Canada.

Figure 1: Country of Origin Analysis of Competitiveness Research

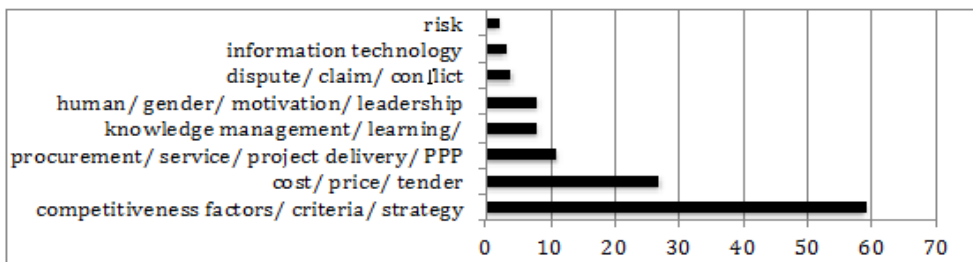


Content

Content analysis focused on two main sub-categories as research focus (subject) (Figure 2) and level of analysis (Figure 3). Distribution of articles by *research focus* revealed that the articles could be classified under eight main research area as (i) competitiveness factors/ criteria/ strategy, (ii) cost/ price/ tender, (iii) procurement/ service/ project delivery/ PPP, (iv) knowledge management/ learning/ education, (v) human/ gender/ motivation/ leadership, (vi) dispute/ claim/ conflict, (vii) information technology, and (viii) risk. Figure 2 portrays that the majority of the articles focus on

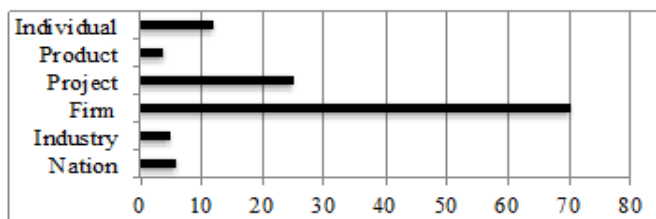
the *Competitiveness factors/ Criteria/ Strategies* with the number of 59 studies (%48 of total articles). Most of the articles within this group intend to explore how competitiveness is gained in construction market and explain according to what factors a specific geography/ country or sub-sector could gain competitive advantage over its rivals (i.e: Zhao & Shen, 2008; Deng *et al*, 2013). 27 articles (%20 of total articles) examine the competitiveness from *Cost/ Price/ Bid/ Tender* perspective, and most of them discuss the competition of contractors on the tendering phase (i.e: Fu *et al*, 2002; Yuan, 2012). Next, *Procurement/ Service/ Project Delivery/ PPP* subject involves 11 articles and the papers within this category mostly deal with the competitiveness in procurement phase. 8 articles focus on *Human/ Gender/ Motivation/ Leadership* subject and they discuss the competitiveness from the perspective of psychological capital, women, discrimination, coordination, and project management. 8 articles in the *Knowledge Management/ Learning/ Education* section deal with the issues related to innovation, education, learning, knowledge management and networks. There are 4 articles in *Dispute/ Claim/ Conflict* subject area and the papers focus on contract laws, penalty, disputes in partnerships, and change orders. *Information Technology* subject involves 3 papers, which discusses the software and web technologies in relation with competitiveness. Finally, 2 papers fall into the research category involving *Risk* related issues such as risk attitudes and risk allocation of contractors.

Figure 2: Distribution of Articles by Research Focus



The second part of the content analysis focuses on *level of analysis*. A four level of analysis, involving nation, industry, firm and project were adopted from Flanagan *et al.*'s research on competitiveness (2007). After the review of selected papers this four-level analysis was extended to a six-level analysis with the addition of individual and product levels. Figure 3 reveals that the most common level of analysis on which the competitiveness papers focused is firm level (57%), followed by project (20%), individual (9%), nation (4.9%), industry (4.1%), and then product levels (3.28%). This tendency for the levels of analysis contradicts with the view that competitiveness can be considered a multidimensional construct and requires multiple levels of analysis, which complement each other (Osarenkhoe, 2010). Yet, it may be argued that the use of multi-level analysis may provide more valuable results than single level analysis due the embedded relationship between individual and society.

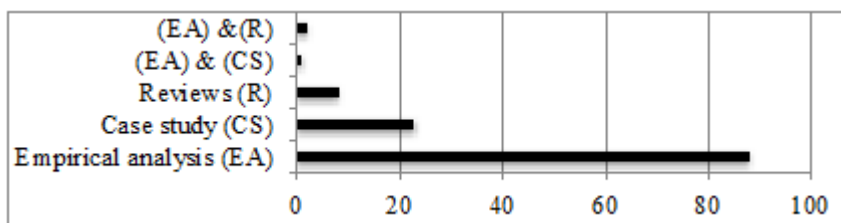
Figure 3: Distribution of Articles by Level of Analysis



Style

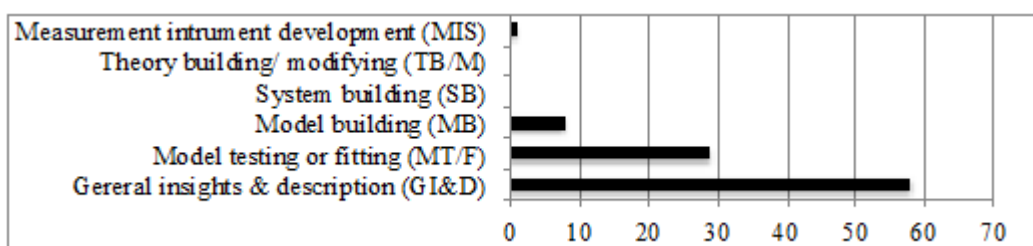
The second part of the meta-analysis focuses on the sources of information (*Figure 4*) and contribution of the papers (*Figure 5*). Initially, studies were analysed in terms of the *sources of information* including empirical analysis (EA), case studies (CS), reviews (R) and combination of them. As seen in *Figure 4*, all sources of information were used in construction competitiveness research. Among them, empirical analysis is the most frequently used method with 88 articles (%72 of total articles). This is followed by case studies with 23 articles (%19 of total articles). While only 8 articles base their research on review method, 2 of them comprise both empirical analysis and review and only 1 of them makes room for both empirical analysis and case studies. The results show that most researchers in construction competitiveness studies do not equally adopt a quantitative or a qualitative approach and that they tend to choose the quantitative approach. Conversely, the qualitative approach increases the researcher's ability to describe a complex social system, and gives a greater guarantee of internal validity of results (Marshall and Rossman, 1989). As such, it would be ideal to assure the greatest validity in results by employing both of these approaches together by means of triangulation (Thietart et. al., 1999).

Figure 4: Distribution of Articles by Sources of Information



As for the contribution of selected papers, they were evaluated in terms of the output they produce such as (i) general insights and descriptions, (ii) model testing or fitting, (iii) model development, (iv) system building, (v) theory building/ modifying, and (vi) measurement instrument development (*Figure 5*). General insights & description comprises the majority with 58 articles (%48 of total articles). 34 articles (%28 of total articles) intend to contribute to the literature with model building and most of them intend to produce critical success factors / key performance indicators or frameworks to explain or manage the competitiveness strategies of organizations /sub-sectors or regions. 29 papers (%24 of total papers) deal with model testing of fitting which means mobilizing one or more school of thought in the research in order to explain the competitiveness. Only 1 of them, which aims to analyse the cost-estimating competencies produces a measurement instrument. None of the papers attempt to contribute by theory building / modifying or system building. This indicates that general tendency is adopting generic competitiveness theories in order to discuss the construction sector competitiveness.

Figure 5: Distribution of Articles by the Contribution of Papers



Research Trend Analysis

The major schools of thought applied in competitiveness are SWOT Analysis (Learned *et al.* 1965), The Strategic Positioning School (Porter, 1980; 1985), Core Competence View (Prahalad & Hamel, 1990), The Action School (Mintzberg, 1990), The Resource-Based view/RBV (Barney, 1991), The Process School (Pettigrew and Whipp, 1991; Pettigrew, 1997), The Dynamic Capabilities School (Teece *et al.*, 1997) and The Practice School (Jarzabkowski, 2005). Figure 6 illustrates how these theories were employed in the papers. The grey areas present the papers that utilize these theories to answer their research questions, whereas the black areas refer to the articles that give place these theories only in literature review section. Results reveal that the Strategic Positioning School is the most referred theory in construction management literature. While 20 articles bases their research on that theory, 20 of them content with referring to it. The Resource Based View is the second most popular theory and referred by 20 articles. Most of the papers referred to RBV in order to analyse endogenous resources that make the companies competitive in the market. Although the action school becomes the third most reviewed theory, only one study prefers using it as a theoretical base. On the other hand, Dynamic Capabilities View (3 of 7) and the Action School (3 of 7) find application as a theoretical base that shapes the competitiveness research design. Results indicate that the utilization of Process School and Practice School are limited in construction management literature. Future studies could mobilize those theories or other current trends (i.e.: network theory) in order to bring fresh perspective in competitiveness research.

Figure 6: School of thoughts in competitiveness research

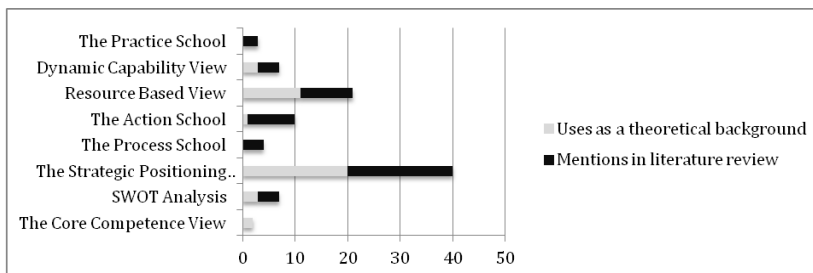
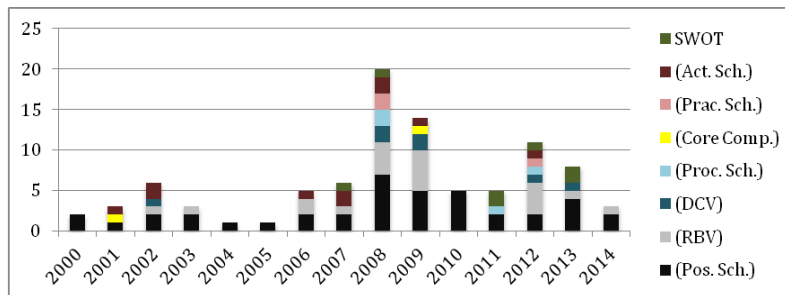


Figure 7 highlights the yearly distribution of the cited school of thoughts in construction management literature. Results show that Porter’s Positioning School is the most commonly cited theory in the given reporting period. The Resource-Based View is the second most frequently cited theory and has found application in most years since 2002. Although the first reference to the Dynamic Capabilities View occurs in 2002, it has gained wide acceptance in 2008 and the following years. It is worth indicating that the application of SWOT analysis in construction competitiveness studies appeared in 2007 despite its early utilization in general management literature since the 1960s. As seen from Figure 7 there is a proliferation in application of various schools of thought in 2008 and 2009. As level of analysis embedded within different theories (or schools of thoughts) -ranging from industry level (Strategic Positioning School) to organization (RBV and DCV) and individual (Practice School) levels- change, the focus of competitiveness research is shifting from industry level of analysis to the organizational and individual level of analysis. However, there is still a gap in individual level of analysis in competitiveness research in construction industry. Apart from the above-mentioned theories, social network theory is gaining importance in construction competitiveness research. Recent studies started to stress the importance of embedded characteristics of business relations and

the impact of social structure in which the company is embedded as well as the characteristics of relations with the external environment. For instance, Kao *et al* (2009) suggested ‘localized learning’ and ‘embeddedness’ as alternative discourses for competitiveness research in construction industry. Besides, Ling *et al* (2012) combined the social network approach with Porter’s strategic positioning school and Sun Tzu’s Art of War in order to analyse the competitiveness components in the Chinese construction industry.

Figure 7: Distribution of thoughts in competitiveness research



With regard to the number of theories involved in the papers, 26 papers explicitly analyse a single theory, whereas the other articles include multi-theory. 11 out of 26 explicitly refer to the theories as a foundation of their concepts and models whereas the remaining articles only refer to the theories in the theoretical literature review. As for the papers employing multiple theories, 10 articles refer to two different theories in their study, however, only 3 of them use both theories as a theoretical background for the empirical study. 7 articles refer to three different schools of thoughts in their study. While one of them mobilized all three theories in their empirical analysis, 3 of them prefer utilizing two theories as a theoretical base for their study and use the third one in literature review section. In short, only a limited number of papers give place several schools of thought in their studies, and few pay attention to a critical discussion of competitiveness theories. For instance, Green *et al* (2008) proposed a comprehensive discussion about the theories that are mobilized in construction management research and suggested ‘indicating the importance of the –context- in which the competitiveness is questioned’ and ‘mobilizing current theories as the constitutes of a broader discourse’.

Here, the important point is that the use of multiple perspectives is more likely to lead on to the rich insights that will most benefit researchers in construction management. Rather than mentioning a specific theory, researchers should go further and carry out a critical analysis of mainstream theories of competitiveness in their methods and approaches. Besides, most researchers prefer using a single level of analysis and single source of information; however, combination of multiple level of analysis and sources of information as well as discussing the research question from the perspective of multiple theories could reveal more comprehensive results. Despite all changes in industry dynamics and business models, it is interesting to note that Porter’s positioning school dominates the competitiveness research in construction management literature. In fact, above-mentioned theories mostly accept the organizations as atomistic units and ignore the effects of interactions with other organizations on the strategy-planning phase. However, modern economics prefers analysing the companies as social entities that are embedded in different networks.

Therefore, construction companies should keep up with this trend and shape their strategies according to the social contexts in which they have been embedded.

Consequently, meta-analysis of the data gathered from 122 papers revealed that research interests in competitiveness within the construction industry have not steadily increased or decreased throughout the years, but rather been somewhat of a rollercoaster. Also, this study identified that researchers from UK, USA, China, Hong Kong and Australia published the most of the papers on the research topic, ahead of researchers from other countries. Due to the comprehensive scope of research on competitiveness, eight categories have been classified as the primary research interests, including (i) competitiveness factors/ criteria/ strategy, (ii) cost/ price/ tender, (iii) procurement/ service/ project delivery/ PPP, (iv) knowledge management/ learning/ education, (v) human/ gender/ motivation/ leadership, (vi) dispute/ claim/ conflict, (vii) information technology, and (viii) risk according to majority. Within the sample group of this study, it is also clear that the techniques adopted in the papers vary from qualitative to quantitative analyses; however, empirical analysis and quantitative approach are prevalent among others. Also, organization (firm) level of analyses gained much attention than other levels, and the dominance of application a single level of analysis indicates the requirement for multiple level of analysis in a single study. Since the schools of thoughts focuses on different level of analysis and approach the competitiveness concept from differentiated perspectives, utilization of multiple theories could bring more comprehensive findings.

CONCLUSIONS

The popularity of many management topics has been found to decline over time (Carson, Lanier, Carson, and Guidry, 2000). However, some management topics such as competitive analysis become so popular and useful that they evolve into mainstays of general management literature and construction research in particular (Gibson and Tesone, 2001). This study has uncovered the main research directions in the field of competitiveness, and has reflected what was published in the six construction related journals across a fourteen year period. It also has implications for the conduct of meta-analysis as a framework in competitiveness related studies in construction management literature. The approach used in the study goes beyond a classic meta-analysis because there are not quantitative variables to be measured, but trends to be clarified. Overall, the analysis proposes two taxonomic frameworks that constitute a useful basis for providing a systematic way to review and classify the competitiveness literature in construction. The first taxonomy may classify the papers according to the eight main research subjects find room in construction competitiveness research in construction management literature. The second taxonomic framework suggests the usage of a taxonomy comprised of eight distinct types of school of thoughts about the competitiveness. The schools of thought classification is expected to help identify the areas and gaps in competitiveness research within the construction industry that are needed by both scholars and practitioners for further research.

Table 2: Distribution of Articles by the Main Theoretical Backgrounds of Competitiveness Research

	Positioning School	RBV	DCV	Process School	Core Comp.	Practice School	Action School	SWOT
2000	CME-56*							
	JME-19**							
2001	CME-54**							
					LPM-61**		LPM-61**	
2002	BRI-12*	BRI-12**	BRI-12**				BRI-12*	
	JCEM-70**							
							CME49/1*	
2003	CMEK-1*							
	CMEK-8*							
	BRI-11*	CMEK-8**						
2004	JCEM-57*							
2005	CME-34**							
2006	ECAM-12*							
		CME-34*						
	CME-32**						ECAM-12*	
2007	CMEK-3**	CME-37*						
	BRI-6*						CME-32*	
	CME-27*						CMEK-3*	CME-32*
2008		CMEK-3**						
		BRI-6*						
	CME-28*							
	CME-29**		BRI-6*	BRI-6*		BRI-6*		
	CME-31*	JCEM-42**						
	JCEM-42*							
	BRI-8*	CME-29*						
	CME-21*	CME-31*					CME-29*	CME-28*
	CME-22**						CME-31**	
	CME-23**							
	LPM-32**							
	JCEM-2**		CME-31**	CME-31*		CME-31*		
2009	CME-20*	CME-21*						
	JCEM-27*	CME-22*						
	JCEM-31*	CME-23**						
	JCEM-24*	LPM-32**						
	ECAM-9**	JCEM-2**	CME-21*					
	JCEM-4**		CME-22**					
2010	JME-4**							
					CME-23**		JCEM-2*	
	JCEM-17**							
	ECAM-4**							
2011								
	CME-6*							
	JCEM-11*	JCEM-17**						
	JME-3**	JMEK-7**						
2012		ECAM-4*						JCEM-4**
	ECAM-1**	LPM-1*	JCEM-17*				JCEM-17*	JME-4**
	JCEM-1**			ECAM-5*				JCEM-17**
		CME-6*		JCEM-17*		JCEM-17*		
2013			CMEK-4**					
		LPM-3**						
2014								CME-6*
								JME-3*

The articles, which refers to the school of thought in literature review. ** The articles, which bases its theoretical background on the school of thought.

REFERENCES

- Barney, J B (1991) Firm resources and sustained competitive advantage. *Journal of Management*, **17**(1), 99–120.
- Betts, M and Lansley, P (1993) Construction management and economics: A review of the first ten years. *Construction Management and Economics*, **11**, 221-245.
- Carson, P P, Lanier, P A, Carson, K D and Guidry, B N (2000) Clearing a path through the management fashion jungle: Some preliminary trailblazing. *Academy of Management Journal*, **43**(6), 1143-1158.

- “*compete*, v.” The Oxford English Dictionary. OED Online. Oxford University Press. 02 May 2014 < http://www.oxforddictionaries.com/us/definition/american_english/compete>
- Deng, F, Liu, G and Jin, Z (2013) Factors Formulating the Competitiveness of the Chinese Construction Industry: Empirical Investigation, “*Journal of Management in Engineering*”, **29**(4), 435-455.
- Flanagan, R, Lu, W, Shen, L and Jewell, C (2007) Competitiveness in construction: a critical review of research. “*Construction Management and Economics*”, **25**(9), 989–1000.
- Fu, W K, Drew, D S and Lo, H P (2002) The effect of experience on contractors' competitiveness in recurrent bidding. “*Construction Management and Economics*”, **20**(8), 655-666.
- Gibson, J W, and Tesone, D V (2001) Management fads: Emergence, evolution, and implications for managers. “*Academy of Management Executive*”, **15**(4), 122-133.
- Green, S D, Harty, C F, Elmualim, A A, Larsen, G D and Kao, C C (2008a) On the discourse of construction competitiveness. “*Building Research & Information*”, **36**(5), 426–35.
- Green, S D, Larsen, G and Kao, C C (2008b) Competitive strategy revisited: contested concepts and dynamic capabilities. “*Construction Management and Economics*”, **26**(1), 63–78.
- Jarzabkowski, P (2005) “*Strategy as Practice—An Activity- Based Approach*”, Sage, London.
- Kao, C, Green, S D and Larsen, G D (2009) Emergent discourses of construction competitiveness: localized learning and embeddedness. “*Construction Management and Economics*”, **27**(10), 1005-1017.
- Learned, E P, Christensen, C R, Andrews, K E, and Guth, W D (1965) “*Business Policy: Text and Cases*”, Irwin, Homewood, IL.
- Ling, F Y Y, Shan L, Pheng, L S, George, O. (2012) Mathematical models for predicting Chinese A/E/C firms' competitiveness. “*Automation in Construction*”, **24**, 40-51
- Marshall, C. And Rossman, G.B. (1989) *Designing Qualitative Research*, California: Sage.
- Mintzberg, H (1990) The design school: Reconsidering the basic premises of strategic management. “*Strategic Management Journal*”, **11**, 171–195.
- Osarenkhoe , A (2010) A study of inter-firm dynamics between competition and cooperation – A coopetition strategy, “*J of Database Mkt & Cust Strat Man.*”, **17**, 201–221.
- Prahalad, C and Hamel G (1990) The core competence of the corporation “*Harvard Business Review*” **68**(3), 79–91
- Pettigrew, A M (1997) What is a processual analysis? “*Scandinavian J. Mgt*”, **13**(4), 337–348.
- Pettigrew, A and Whipp, R (1991) “*Managing Change for Competitive Success*”, Blackwell Publishers Ltd, Oxford, UK.
- Porter, M E (1980) “*Competitive strategy: techniques for analysing industries and competitors*”, The Free Press, New York, NY.
- Porter, M E (1985) “*Competitive Advantage*”, Free Press, New York, NY.
- Teece, D J, Pisano, G, and Shuen, A (1997) Dynamic capabilities and strategic management. “*Strategic Management Journal*”, **18**(7), 509–533.
- Thietart R A et.al. (1999) *Doing management research: A comprehensive guide*. London: Sage.
- Yuan, X X (2012) Bayesian method for the correlated competitive bidding model. “*Construction Management and Economics*”, **30**(6), 477-491.
- Zhao, Z Y and Shen, L Y (2008) Are Chinese contractors competitive in international markets?, “*Construction Management and Economics*”, **26**(3), 225-236.