

Trust in Construction Projects: Literature Analysis Using Keywords

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DOI 10.5592/otmcj.2015.1.2
Research paper

Keywords

Trust, Interpersonal trust,
Intra-firm trust, Inter-firm
trust, Communication risk

COMMUNICATION RISK IS ONE OF THE MOST IMPORTANT VARIETIES OF RISK THAT OCCUR IN CONSTRUCTION PROJECTS, AND TRUST IS ONE OF THE MOST EFFECTIVE STRATEGIES TO MINIMIZE IT. For that reason, trust has been playing an increasingly important role in the construction management literature. Interest in communication risk and trust spans psychology, sociology, and economics. These social sciences are most relevant for the understanding of different dimensions of trust investigated in the context of construction project management. In construction projects, this applies to interpersonal, intra-firm, and inter-firm relationships between the project parties. This analysis of the construction management literature uses keywords containing trust and related concepts. Keywords have become important parts of academic papers, and they are crucial in the literature search. The present analysis of literature shows that a large proportion of research to date has been dedicated to the study of inter-firm trust in construction, most of which concerns long-term relationships, such as partnerships and alliances. However, this analysis demonstrates that there has been relatively little research dedicated to the study of interpersonal and intra-firm trust in construction. Future research needs to address these neglected areas.

INTRODUCTION

Trust has become one of the important subjects in the construction management field in the last couple of decades. Interest in it spans several social sciences that are relevant to the field of management in general. In particular, researchers in psychology, sociology, and economics have found common ground in the study of trust. So far, the research encompasses trust between persons, within firms or other organizations, and between firms or other organizations. All these forms of trust are relevant in the study of construction projects, which typically require collaboration between a large number of participants over several years.

Trust is often viewed as a foundation for social order (Lewicki et al., 1998:438). As Williams (2001:377) points out, interpersonal trust is an important social resource that facilitates cooperation and enables coordinated social interaction. The study of interpersonal trust has thus helped social scientists to better understand the dynamics of cooperation (Lewicki et al., 2006:991). Interpersonal trust underlies all other forms of trust. Also, trust within groups leads to trust between groups, which include both private and public organizations.

As has been argued in a previous literature review, the research of trust

in construction projects has heretofore focused on partnering (Ceric, 2014b). Partnering involves a wide range of cooperative arrangements between construction firms spanning a number of construction projects. Interestingly, this finding is supported by the literature review of trust by Gad and Shane (2014). Therefore, the research so far has focused on inter-firm forms of trust. To date, interpersonal and intra-firm trust have been sidelined. Now, the results of the present literature analysis confirm the previous findings. As will be shown below, partnering dominates the research of trust in construction projects.

This paper analyses the literature in construction management using keywords, which was introduced by Ceric (2013, 2014a). First the leading journals in the field are identified; then they are searched using “trust” as the main keyword to identify relevant papers; and lastly the associated keywords listed in the identified papers are analyzed. This approach offers welcome objectivity and precision to the literature review.

The rest of this paper proceeds by first introducing the methodology used in the literature analysis, which rests on previous research that is based on keywords. Then the key findings of the present study are presented and discussed. The emphasis is placed on

keywords associated with the main keyword. The paper closes with conclusions including limitations of the study and recommendations for future research.

Methodology

Following Ceric (2013, 2014a), this literature analysis started with the identification of the leading journals in the construction management field. For this purpose, the journals identified by Bröchner and Björk (2008) were used one more time. Their research focused on the preferences of the authors contributing to the construction management field. They followed the most cited authors, whose preferences they investigated by an opinion survey. In the process, they identified 45 journals in the field, from which they identified the seven leading ones. Together with their publishers, the seven leading journals in construction management identified by Bröchner and Björk (2008: 742) are shown in Table 1.

It should be noted that the archives of the journals go back to different years. In this particular case, JCEM archive goes back to 1930, BRI to 1973, CME and IJPM to 1983, AIC to 1992, ECAM to 1994, and CI to 2001. For this reason, the present review is slightly biased toward the journals with farther-reaching archives.

Journal	Acronym	Publisher
Automation in Construction	AIC	Elsevier
Building Research and Information	BRI	Taylor & Francis
Construction Innovation	CI	Emerald
Construction Management and Economics	CME	Taylor & Francis
Engineering, Construction and Architectural Management	ECAM	Emerald
International Journal of Project Management	IJPM	Elsevier
Journal of Construction Engineering and Management	JCEM	ASCE

Table 1. Top construction management journals by authors (Bröchner & Björk, 2008)

Keyword / Journal	AIC	BRI	CI	CME	ECAM	IJPM	JCEM
Papers	97	288	70	471	182	522	316
Titles	0	1	1	8	4	13	7
Abstracts	5	16	6	35	20	49	30
Keywords	0	1	3	12	5	22	3

Table 2: Incidence of the keyword “trust” in selected journals

As outlined in the previous section, the analysis of construction management literature proceeded in three distinct steps. First, the papers in the leading journals containing the main keyword “trust” in the listed keywords were identified by literature search. Second, all the associated keywords listed in these papers were identified. Third, the associated keywords were investigated in search of common characteristics underlying recent research in the construction management field.

Key Findings

Table 2 summarizes the search conducted in the seven leading journals. All together, the main keyword “trust”

appears 1946 times in the identified papers. Also, it appears in 34 titles and 161 abstract. Most important for this literature analysis, it appears in 46 lists of keywords, which will be addressed below.

Literature analysis proceeded by analyzing the associated keywords in the 46 papers in which the main keyword “trust” can be found in the keywords listed. These papers are presented in Table 3. The earliest paper with the main keyword is that by Munns (1995), but the bulk of the literature follows this lead by an entire decade.

This paper attempts a classification of keywords in selected papers so as to determine the connection between

the “trust” keyword and the associated keywords. In the 46 papers that include “trust” in listed keywords there are 167 keywords all together, or a bit less than four of them per paper. Predictably, a large number of identical keywords are shared by a number of papers.

Due to space limitations, only the most important among the keywords identified are presented here. For instance, keywords such as “construction” and “construction industry”, as well as “construction management” and “project management”, are excluded from further analysis as superfluous. General keywords, such as “electronic commerce” and “occupational health and safety”, and indefinite

Acronym	Papers cited
AIC	None
BRI	Ngowi & Pienaar (2005)
CI	Issa & Haddad (2008), Gajendran & Brewer (2012), Ling & Tran (2012)
CME	Wong et al. (2000), Ekström et al. (2003), Jin & Ling (2005), Wood & Ellis (2005), Ding et al. (2007), Ding & Ng (2007), Graafland & Nijhof (2007), Lau & Rowlinson (2009), Badenfelt (2010), Roehrich & Lewis (2010), Ayers et al. (2013), Shiu et al. (2014)
ECAM	Liu & Fellows (2001), Eriksson & Laan (2007), Tuuli & Rowlinson (2010), Brewer & Strahom (2012), Ding et al. (2013)
IJPM	Munns (1995), Damm & Schindler (2002), Cheung et al. (2003), Koskinen et al. (2003), Zaghoul & Hartman (2003), Kadefors (2004), Wong & Cheung (2004), Diallo & Thuillier (2005), Atkinson et al. (2006), Smyth & Edkins (2007), Pinto et al. (2009), Maurer (2010), Smyth et al. (2010), Cheung et al. (2011), Hsu et al. (2011), Chow et al. (2012), Daim et al. (2012), Lu & Hao (2013), Ding et al. (2014), Park & Lee (2014), Shazi et al. (2015), Suprpto et al. (2015)
JCEM	Girmscheid & Brockmann (2010), Laan et al. (2012), Cheung et al. (2013)

Table 3: Papers cited

Keywords / Journal	BRI	CI	CME	ECAM	IJPM	JCEM
Client-builder relationship					3	
Communication		2			2	1
Confidence					2	
Contracts			1		1	
Information systems					3	
Information technology		1			1	
Innovation					2	
Integrity			2			
Knowledge management		1	1		3	
Knowledge sharing		1	1	1	2	
Mediation				1		1
Opportunism	1					
Organizational culture		1	1			
Partnering	1		3	2	3	
Procurement			1	1	1	
Project team		2		2	1	
Relational contracting					1	
Relationship management		2			1	
Reputation		1				
Risk allocation			1		1	
Social networks					1	
Strategic alliance	1					
Transaction costs					1	
Uncertainty management					1	

Table 4. Incidence of associated keywords in selected journals excluding AIC

keywords, such as "culture" and "transparency", are also excluded. Similarly, names of countries and organizations, such as the World Bank, are excluded, as are technical terms, such as "factor analysis" and "systems analysis". In addition, the main keyword "trust" is excluded here since it explicitly occurs in all papers presented in Table 3.

The 24 remaining keywords, which appear in these 46 papers, are presented in Table 4. It should be noted that there are 30 such instances in IJPM, 11 each in CI and CME, seven in ECAM, three in BRI, and two in JCEM.

As can be seen from Table 4, the

most important keywords associated with trust is "partnering" that appears in nine papers. It is followed by "communication", "knowledge management", "knowledge sharing" and "project team", which appear in five papers each. Keywords "client-contractor relationship", "information systems", "procurement" and "relationship management" appear in three papers each. Keywords "confidence", "contracts", "information technology", "innovation", "integrity", "mediation", "organizational culture" and "risk allocation" occur in two papers each. Finally, the remaining six keywords appear in a

single paper each. Predictably, combinations of these keywords occasionally appear in the same papers.

It is clear from the literature analysis presented here that trust is connected mainly with partnering at this stage of development of construction project management as a field. All the other keywords can be understood in this specific context, as well. In particular, communication is central to the development of trust. Put differently, poor communication endangers trust between project participants. Knowledge shared across project teams needs to be properly managed

using information technology and contracts. The trust involved is mainly of the inter-firm variety. Even though interpersonal and intra-firm trust undoubtedly play a part in partnering, the focus is on inter-firm trust.

This is not to argue that there is anything wrong with the research in partnering, however. As Cheung (2007) points out, the paradigm shift in contracting culture can only be welcomed. The trust that underlies partnering in construction needs to spread in all three dimensions of cooperation. The same holds for construction management research, which needs to integrate interpersonal, intra-firm, and inter-firm trust along interdisciplinary lines. As Cheung (2007:10) argues, fragmentation in construction starts at the project level, and this is where cooperation needs to usher a transformation of the contracting culture. However, a large portion of construction projects are one-off, which points at the need to understand trust beyond partnering. This is where interpersonal and intra-firm trust are of utmost importance, and research in the construction management field needs to reflect it.

Conclusions

To date, the research in trust in the field of construction management has put strong emphasis on partnering. This form of collaboration between firms sometimes goes under the name of alliancing, as well. Although partnering is undoubtedly of great importance in contemporary construction, and although it stands to reason that inter-firm trust thus dominates the research in construction management, other forms of trust need to be given greater attention in the future. In particular, interpersonal and intra-firm trust are largely neglected by comparison with inter-firm trust. This is especially important because interpersonal trust underlies all other forms of trust.

Therefore, all three forms of trust need to be addressed in future research. This requires an interdisciplinary effort bringing together psychology, sociology, and economics at the foundations of management as an academic discipline (Ceric, 2014b). As argued by Ceric (2014b), the principal-agent theory offers a promising framework for the interdisciplinary study of trust in construction projects. This theoretical framework integrates all three forms of trust – interpersonal, intra-firm, and inter-firm. In addition, it provides a theoretical underpinning for the understanding of communication risk and most effective ways to minimize it.

A limitation of this literature analysis is that it concerns the leading journals in construction management only. Future research needs to widen the literature search to other journals in the field, of which there are more than 50 at this point in time. A more extensive study would undoubtedly offer new findings, but it is not very likely that the main conclusion of this paper would be challenged by it. Namely, partnering has undoubtedly dominated the research in trust over the last couple of decades. Therefore, the study of other forms of trust remains an important objective for future research in this promising field.

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