

An interdisciplinary perspective of conflict and relationships in construction procurement and logistics

Mostafa Babaeian Jelodar, School of Built Environment, Massey University, New Zealand

Andries van Heerden, School of Built Environment, Massey University, New Zealand

Gregory Chawynski, School of Built Environment, Massey University, New Zealand
m.b.jelodar@massey.ac.nz

ABSTRACT

Due to the construction industry's eagerness to lifting adversarial trends and realising the benefits of good relationships, the current research intends to investigate the construct of relationship quality in construction projects; especially in the event of a conflict. An interdisciplinary construct is derived using a three step methodology and wide range of theories from a comprehensive literature review. These theories range from relational marketing to relational contracting and construction project management. A conflict process model is used to outline the association of conflict and relationship quality in construction projects. Concepts such as psychological meaningfulness, psychological availability, resource availability, aligned-commitment, teamwork, performance satisfaction and trust are attributed to relationship quality. An interdisciplinary construct with antecedents, core attributes and outcomes are achieved. Conflict is demonstrated as a potential antecedent of relationship quality. Finally, moderating factors such as actions and strategies, some of which could be used in conflict management are identified as moderators of relationship quality. By identifying and mapping all the possible components in relationship quality, its different constructs and potential interactions can be recognised. This is extremely important in future investigations of relationship quality in relation to construction project issues and training project teams. The choices of components for the construct are extracted from existing literature; however other components may be of effect which are not included and explored in the future. The model can be used to achieve project integration goals and joint problem solving strategies.

KEYWORDS: Conflict, Construction project management, Procurement, Relationship quality.

INTRODUCTION

The construction sector plays an important role in socio-economic development and a large economic powerhouse which is extremely resource-consuming and also responsible for a great number of employment opportunities (Aryal & Dahal, 2018; Soni, Pandey & Agrawal, 2017). It is a means for creating prime infrastructure and development of nations worldwide (Lyiola & Rjoub, 2020). The sector's contribution to GDP is around 7% to 10% in underdeveloped economies and 3% to 6% in developed economies (Chern & Lowe, 2013). On the other hand, there are clear signs of mismanagement and underperformance within the sector. Until now the construction industry has been protected by governments in a number of ways which has led to its prosperity without the need for major innovation and creativity in both methodology and processes. One other problematic aspect of the industry is the effective inability of its people skills in dealing with day to day problems, such as managing conflict and relationships; in addition to managing the projects (Aryal & Dahal, 2018; Lyiola & Rjoub, 2020). However,

recent economic recessions or significant periodic downturns and instabilities worldwide have changed the scenery, compelling the industry participants to re-think people processes and technology matters (Wolstenholme, 2009). As a result of the fragmented and adversarial construction culture plagued with conflicts and disputes, the industry has adopted more relational approaches and has made more industry players to be aware of different methods of procurement as opposed to the traditions priced focus ones. Hence understanding the nature of relationships and how they vary during and after the completion of a project is of great importance. In previous work undertaken by Jelodar *et al.* (2013) the concept of relationship quality in construction procurement and projects was introduced; however, the link between its attributes and inevitable people related events such as conflicts, disputes and their handling and management styles have not been deeply discussed.

THE CHANGE REQUIRED IN CONSTRUCTION PROCUREMENT

Construction professionals and researchers have associated a great amount of negativity towards the current procurement and contracting practices within the construction industry. There is too much fragmentations and significant lack of innovation and modern strategies to enforce more collaboration and enhancing constructability (Jelodar, 2009; Pulaski & Horman, 2005). There is a lack of shared vision and practical design solutions as a result of this design and construction fragmentation. In addition, lowest price tendering remains the bases of selection for most modern-day contracts (Jelodar *et al.*, 2017). These issues are thought to be major contributors to the problem of underperformance leading to major unwelcomed; conflict, disputes and defects within the construction industry (Love *et al.*, 2002). There is a growing awareness that the lingering underperformance of the construction sector can be moderated and potentially prevented through revisions in operations and strategies associated with procurement. In addition, the construction process is generally complex and problematic which makes it almost impossible to manage or handle without integration, good quality relationships and teambuilding with the inclusion of all stakeholders. However, a systematic change or way of thinking will create more desirable outcomes in the long term. Jelodar *et al.* (2016a) have elaborated and focused on this systematic approach and specific actions and strategies which can create better relationships within project teams. As a result, they have conceptualised relationship quality in construction. Furthermore, there has recently been great emphasis on relationship contracting in all its forms such as partnering, and alliancing in some prominent research work (Jelodar *et al.*, 2016b; Meng, 2010; Zou *et al.*, 2014), however, the events and factors that affect relationships during a project's lifecycle is still unclear and unexplored. More modern approaches of offering solution processes in minimising conflict and bringing teams together during a project's lifecycle should be investigated. Recently this is sought through the incorporation of building information modeling (BIM) and digital technologies. This can have the effect of ensuring that project information is clearly understood and expectations tempered during a project's lifecycle thus mimimising conflict e.g. rework and defects and client dissatisfaction. It has been noted that facility manager's benefit most, financially from the incorporation of BIM (Ali *et al.*, 2020; Eadie *et al.*, 2013).

However the attributes of complexity and link of different events and inevitable conflict incidents in construction projects is still not fully explored. Further explorartion suggests that these issues are interdisciplinatory in nature. Therefore, a practical and easy to understand model is required to explain the variations of relationship quality within the uncertain and rapid changing construction project environment. Hence this study will look into this gap of knowledge and employ an interdeciplinary approach to link conflict processes to construction procurement and also overall project relationships.

METHODOLOGY

The study is of an exploratory nature and to achieve the goals of this investigation a novel three step methodology is developed. These stages include comprehensive literature search, followed by content analysis, and finally, systematic model development. These stages are described in the following sub-sections.

Stage one: Comprehensive literature search

The domain of the investigation and scope of work is identified by keywords which represent the issues of concern in this investigation. Supply chain relationships, relational contracting, construction relationships and relationships in project management were identified to represent the studies concerning relationship quality in construction projects. Accordingly, keywords such as disputes, problem solving, contractual provisions plus conflict management, and handling were used to represent the theoretical domain of conflicts in construction projects. In addition, partnering and alliancing studies were also examined for their conflict management and handling mechanisms and relationship preservation techniques.

More than 30 studies were identified to be relevant from mainstream and international recognised sources. These studies were further examined and used as the theoretical basis of this study in the following stages of the investigation. This is a systematic approach in identifying relevant literature which has been adopted in many other studies (Jelodar *et al.*, 2016a; Tang *et al.*, 2010).

Stage two: Content analysis and concept development

In a process of reduction and classification of concepts from the identified texts common in these types of studies (Walker, 2016; Xiaolong *et al.*, 2014), two separate theoretical clusters are created to address issues in association with ‘conflict’ and ‘relationship quality’. This is a type of qualitative coding of different information (Jones, 2007). Content analysis is used to identify different patterns and structures within the identified literature. The analysis culminates into different constructs for conflict process in construction and also relationship quality amongst construction participants and parties.

Stage three: model development

In this stage the findings of the previous stages are re-conceptualised to find new patterns and construct formation. A framework of causes and effects are proposed based on the findings of the literature search and content analysis. The framework is the basis for a theoretical and dynamic model which describes the nature of conflict process and relationship quality in construction projects. The model is proposed via aggregation of the newly found constructs and theoretical links embedded in the identified literature (Jelodar *et al.*, 2016c).

The following sections are organised according to the methodology outcomes and will include the results and discussions of the study in a systematic approach.

CONSTRUCTION CONFLICT

Construction projects are filled with complexities and unforeseen events which can immensely influence the course of a project. One of these events which can be extremely problematic and very common in construction projects are conflicts and disputes. The conflicting triple constraint of time, cost and quality are part and parcel of any construction project (Mersino,

2013). Projects and especially construction projects are festering grounds for conflict. Although conflict and dispute are two different concepts, they are quite often loosely used interchangeably as one. The fundamental difference between the two can best be explained as follows: conflicts are inevitable and exist in all human interaction because of differences in opinions and approaches (Jelodar & Yiu, 2012b; Jones, 1994). Schermerhorn (2012, page 220) stated that “conflict occurs whenever disagreements exist in a social situation over issues of substance; or whenever emotional antagonisms create friction between individuals or groups”. Kreitner and Kinicki (2010) and Brevis *et al.* (1998) also highlight the word ‘perceived’, as this indicates that conflicts can be real or imagined, and they can be managed over time. In addition to this Lau (2011) stated that conflict contains both trust and distrust at the same time. However, disputes are avoidable and should be prevented because they generally have extremely negative effects on the relationships, performance and other outcomes of the project (Gardiner & Simmons, 1992). A dispute is generally the aftermath or result of uncontrolled and neglected conflict. However, less attention is paid to conflict, its structure process and emergence, with the general focus being on the dispute and how to deal with it in construction projects and contracts. One of the reasons may be that conflict always has a presence in the project and its processes are less visible and tangible compared with disputes, where its emergence is normally formalised by official notifications hence demonstrating the existence of a problem.

In general conflict and dispute may affect trust and aligned-commitment levels among different contractual parties (Roberts *et al.*, 2003). There is a fundamental difference between commitment and aligned-commitment. According to Coetzee (2002), commitment only refers to be a part of a shared vision. Whereas aligned-commitment is expressed as a multiplicative equation. i.e. ‘Alignment-commitment = Knowledge × Information × Empowerment × Rewards & Recognition × Shared Goals & Values’. If anyone of these elements is missing the end result will be zero. Further to this, for people to fully engage with their work the importance of psychological meaningfulness, available resources and psychological availability was confirmed (Olivier & Rothmann, 2007). One of the four (4) major relationship quality attributes is identified as aligned-commitment, therefore, without aligned-commitment, one cannot be fully engaged with the work or set tasks. It is thought that trust and aligned-commitment are defining attributes in relationship quality levels (Jelodar *et al.*, 2016a), hence it is imperative to investigate the process of conflict and its systematic association with these attributes especially where there is so much unknown about the conflict process. In order to have a better understanding, this study tries to adopt the concepts from different disciplines and systematically apply them to construction projects to create an interdisciplinary mind-set to relationship quality during the conflict process in construction projects.

RELATIONSHIP QUALITY: THE DEVELOPMENT OF A CONCEPT

After it was realised that the cost and complexities of finding new customers are significantly more than keeping the current customers, the focus shifted in marketing strategies to managing existing relationships and enhancing the buyer-seller dyad in order to retain the bulk of customers already in a transaction (Hennig-Thurau, 2000). Barwise (1995) has suggested that it is much more profitable to concentrate limited resources on creating long-term relationships and customer retention. Hence relationship marketing was introduced and championed as a measure for building strong relationships with individual customers (Low, 1999). It was also seen as the ‘degree of the appropriateness of a relationship to fulfil the needs of the customer associated with the relationship’ (Hennig-Thurau & Klee, 1997). However, these definitions failed to capture a consensus because of their extremely subjective nature. In construction projects, concepts such as trust-building/maintenance, long-term aligned-commitment, and

generating/evaluation of mutual goals were attributes and sited as underlying relationship development factors (Davis & Walker, 2009). This was the instigation of various attributional definitions which basically realised that different levels of relationship quality will exhibit different attributes (Jelodar & Yiu, 2012b). This was also demonstrated for the construction industry in a study performed by Jelodar *et al.* (2016a) where five levels of relationship quality were introduced each exhibiting different levels of distinct attributes. Similar to marketing literature relationship quality demonstrated the permanence and intensity of any relationship (Hennig-Thurau, 2000), which in construction projects can lead to successful project implementation.

Similarly, as keeping track of relationships and their quality is of great importance for future salesperson-customer interactions in marketing it can be vital to the success of construction projects too. The concept of relationship quality can be used across disciplines to benefit the overall construction industry outcomes. Generally, relationship quality is regarded as a measure or monitoring tool for observation of relationship status. This is beneficial for the assessment of crucial relationships because as Roberts *et al.* (2003) stated time and money is spent to keep some relationships proactive in a prosperous order. A serious problem for the maintenance of relationships is uncontrolled and mismanaged conflict. As mentioned in the previous section conflict and disputes need to be controlled and monitored to prevent major problems within construction procurement. This is of critical importance for the relationship between the client and the contractor, as this particular relationship is vital for the successful continuation of the project (Mitkus & Mitkus, 2014).

Table 1: Components of relationship quality in relational marketing literature

Antecedents of relationship quality	Components or measures of relationship quality	Possible outcomes of relationship quality
Participation, Formalization, Centralization (Dwyer & Oh, 1987)	Customer satisfaction and trust in the sales person (Crosby <i>et al.</i> , 1990)	Anticipation of interaction, sales effectiveness (Crosby <i>et al.</i> , 1990)
Similarity, service domain expertise, relational selling behaviour (Crosby <i>et al.</i> , 1990)	Affective conflict, manifest conflict, trust, commitment, willingness to invest, and expectation of continuity (Kumar <i>et al.</i> , 1995)	Customer retention (Henning-Thurau & Klee (1997) Peak performance and productivity (Coetsee, 2002)
Distributive fairness, bilateral communication, impartiality, refutability, explanation, knowledgeability, curtesy (Kumar <i>et al.</i> , 1995)	Trust, satisfaction, commitment, opportunism, customer orientation, ethical profile (Dorsch <i>et al.</i> , 1998)	Work engagement (Olivier & Rothmann, 2007)
Causes (Dorsch <i>et al.</i> , 1998)	Aligned-commitment (Coetsee, 2002)	BIM approach to control conflict causes before the occurrence of disputes (Charehzehi <i>et al.</i> , 2017)
Psychological meaningfulness, psychological availability, resource availability (Olivier & Rothmann, 2007)	Integrated model to mitigate conflict in construction projects (Charehzehi, <i>et al.</i> , 2017)	Performance and continuation of work (Maiti & Choi, 2018)
Root causes of conflict (Jelodar <i>et al.</i> , 2016b)	Moderating factors of conflict and disputes (Charkhakan & Heravi, 2019)	Decision support tools Via BIM (Ali <i>et al.</i> , 2020)
Building information modeling in construction conflict management (Charehzehi, <i>et al.</i> , 2017)	Commitment and teambuilding (Tabassi <i>et al.</i> , 2018)	
	Conflict moderation (Maiti & Choi, 2018)	

RELATIONSHIP QUALITY: A CONSTRUCT IN MARKETING AND IN CONSTRUCTION

Traditionally in the realm of marketing and business, relationship quality is reflected as a high order construct (Crosby *et al.*, 1990). Psychological meaningfulness, psychological availability, resource availability, trust, satisfaction, aligned-commitment, minimal

opportunistic behaviour etc. were all regarded as components of relationship quality by different researchers; which is an indication that a possible pattern may exist, although there is no clear consensus as to what may be attributed to relationship quality (see Table 1).

Most studies have indicated trust and satisfaction as main concepts attributed to relationship quality (Crosby *et al.*, 1990; Dorsch *et al.*, 1998; Dwyer & Oh, 1987; Kumar *et al.*, 1995). On the other hand, aligned-commitment is also mentioned and well documented as an associated concept to relationship quality, peak performance and productivity. In general, the literature surrounding relationship quality in marketing and business suggests that relationship quality has components, antecedents and outcomes as illustrated in Table 1 (Bejou *et al.*, 1996; Dorsch *et al.*, 1998; Jelodar & Yiu, 2012b; Lages *et al.*, 2005; Toms, 2004; Walter *et al.*, 2003). This first view of relationship quality is traditional to marketing and business disciplines and widely accepted. But there need to be further investigations into how relationships are governed and maintained in construction projects.

Construction relationships are generally formalised through relationship contracting forms such as partnering, alliancing and supply chain management strategies. Hence a study of the relevant literature would be essential to any relationship research in construction. In addition, hardly any specific research work has attributed or conceptualised the bond or relationships among project participants in construction projects (Meng, 2010). Therefore, this study enhances the same high order construct idea and develops a measure of relationship quality structure for construction projects. Nevertheless, the whole environment, antecedents, components and outcomes are specific to the construction activities and its corresponding culture.

For instance, partnering in construction projects is defined by the Construction Industry Institute CII as "...a long-term commitment between two or more organisations for the purpose of achieving specific business objectives by maximising the effectiveness of each participant's resources. The relationship is based on trust, dedication to common goals, involvement and understanding each other's individual expectations and values" (CII, 1991 p. iv). Although the definition does not imply as to what is the structure of the concept, it indicates that trust is the desired component. In most studies trust is considered as a key relationship indicator (Meng, 2010). Black *et al.* (2000) regarded mutual trust as the basis of partnering arrangement while Larson (1997) suggests that the adversarial relationship is characterised by suspicions and distrust in construction projects; in addition, mistrust is recognised as an inhibiting factor to partnering success (Ng *et al.*, 2002).

Nevertheless, it is important to understand how trust can be achieved to build and sustain a relationship. Jelodar *et al.*, (2017) suggested that trust is the component required for both building and especially maintaining the ultimate level of bond or relationship between two parties. Nevertheless, trust will require time and effort to be achieved and is not a short-term phenomenon (Jelodar *et al.*, 2017). This is why a construct of actions, strategies and attributes is proposed for relationship quality in construction. It is suggested that certain actions can make some relational efforts and achieve a level of relationship quality, however, to excel beyond this there need to be clear strategies which are the intelligent selection of actions and bundling them together in order to create a better relationship level. If the goal is to go beyond this point in any relationship certain attributes have to be achieved. The four major relationship quality attributes are identified as aligned-commitment, teamwork, performance satisfaction and trust (Jelodar *et al.*, 2016c). Having said that in order to achieve the ultimate level of relationship quality trust has to be achieved through the achievement of the other three attributes. For instance, actions and strategies which can enhance commitment and teamwork are required

plus the notion of continuous improvement and other strategies to achieve performance satisfaction; this accumulation of time and effort may result in trust being developed between the parties and the foundation for a strong relational bond. This second view is more attributional and is rooted in the construction culture.

How does this work within the earlier mentioned and more traditional view; which suggested a high order construct for relationship quality in marketing and business disciplines? Integrating the aforementioned attributional definition and construct of relationship quality with the high-order construct model used in marketing and business can be complex but may provide a better explanation of how relationships work in construction projects. This integration is demonstrated through an interdisciplinary model in Figure 1.

As classified literature shows in Table 1, relationship quality has antecedents and outcomes. Hence in a conceptual proposed model in this study; prior to the actual component constructs of relationship quality there should be an antecedent layer, and potentially after, there is an outcome layer (see Figure 1).

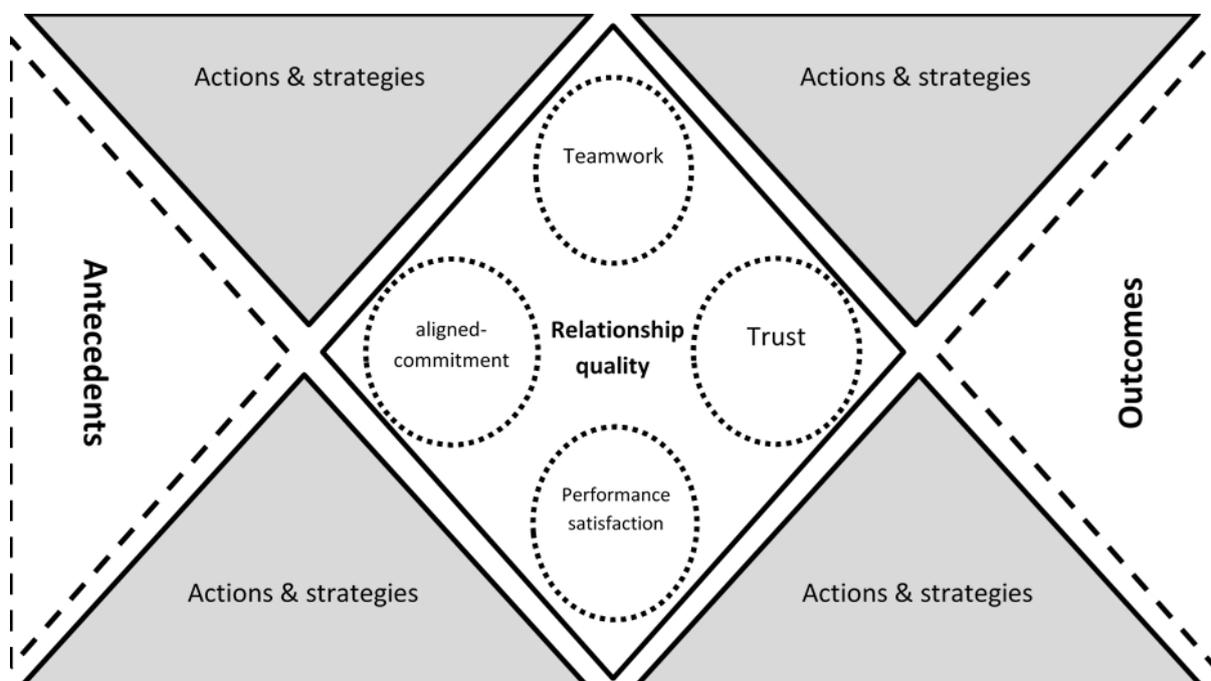


Figure 1: The interdisciplinary model of relationship quality

As illustrated in Figure 1, the core diamond with four separate attributes represents relationship quality and accordingly the antecedent feed into relationship quality by influencing the four attributes or relationship as a whole. This will ultimately result in different consequences represented by the outcome triangle at the right side of the core diamond. At the same time, it is appreciated that time and effort is required for certain attributes to be built into a relationship and improve the overall relationship quality. This was explained by certain actions and strategies that are needed and require planning. These actions and strategies are also demonstrated by four different triangles (Figure 1). The positioning of these triangles is an indication that these actions and strategies can be planned and implemented in any stage either concurrently with the antecedents or post-antecedents. They can also be incorporated before the outcomes are apparent or even during surfacing of some outcomes. These actions and strategies can to some extent modify and moderate relationship quality according to

circumstances. This means that there is a potential to take action if certain antecedents occur or certain outcomes are surfacing in order to change the relationship quality level to a desired level.

INEVITABLE CONFLICT IN CONSTRUCTION RELATIONSHIPS

Conflict is an inevitable common and complex phenomenon in human activities, especially in construction projects where it has proven to be destructive and time consuming if not controlled appropriately. Construction professionals spend a substantial portion of their time on conflict resolution. In some instances, the construction professionals are directly involved or act as mediator between two parties. Good managers must have the ability to identify early, possible conflict situations and deal with them before they arise and/or escalate (Schermerhorn, 2012) to costly litigations (Charehzehi *et al.*, 2017). It is thought that conflict will influence the bond and relationship of the parties involved. In every relationship certain levels of conflict exist (Mallen, 1963), this conflict can escalate or be controlled which will lead to variations in the status of relationship quality. Chaudhuri (1997, 1998) suggests that conflict is a negative indicator of relationships and its quality; as greater risks are the consequence of greater negative effects. This is why a conflict incident can be regarded as a potential antecedent of relationship quality demonstrated in the conceptual model discussed in the previous section. However, it is equally important to understand the conflict process before inserting it into the developed relationship quality conceptual model.

With some initial research into conflict nature, the process model proposed by Pondy (1967) was identified to be of significant importance. According to this model and as illustrated in Figure 2, five incidents are involved in the event of a conflict episode. These series of incidents start with 'Latent conflict' and proceed into 'Perceived conflict' followed by 'Felt conflict' and 'Manifested conflict'. Manifested conflict is the outward behaviour exhibited by individuals and is assumed to affect the quality of relationships between the parties involved in the project (Jelodar *et al.*, 2015; Pondy, 1967).

Conflict aftermath is basically the phase after Manifested conflict has surfaced. Although most have reported the aftermath with a negative impact it is not always the case. Many believe that conflict itself can be functional or dysfunctional, and managing conflict in both forms is of extreme importance because it can support the development of sustainable long-term relationships (Toms, 2004). Dysfunctional conflict (destructive) must be dealt with quickly by the manager to prevent or minimise all the disadvantages with regard to it; as it is just the opposite of constructive conflict. Most of the time, dysfunctional conflict deals with personalities and not necessarily with issues (Schermerhorn, 2012; Sinding *et al.*, 2018). The basic idea is that conflict is not always negative and dysfunctional it can be functional and add to the strength of a relationship; hence early-stage conflicts in the construction project tend to be more functional than dysfunctional (Kumaraswamy, 1997). As an old Persian proverb says the "*initial war is better than the end peace*" which can also be said that "*a word before is worth two after*". This indicates that early conflict or initial differences in viewpoints during projects may be beneficial to the outcome of projects. On the other hand, unattended and neglected conflicts can result into claims and disputes, leading to lost time and money consuming litigation and arbitration cases (Chen *et al.*, 2014; Leung *et al.*, 2013). Adding to the latter, the previous conflict that was resolved on a temporary resolution would only set the stage for the same or similar conflicts in the future, resulting again into claims and disputes (Schermerhorn, 2012). These are the undesired aftermath of a conflict situation (Jelodar & Yiu, 2012a).

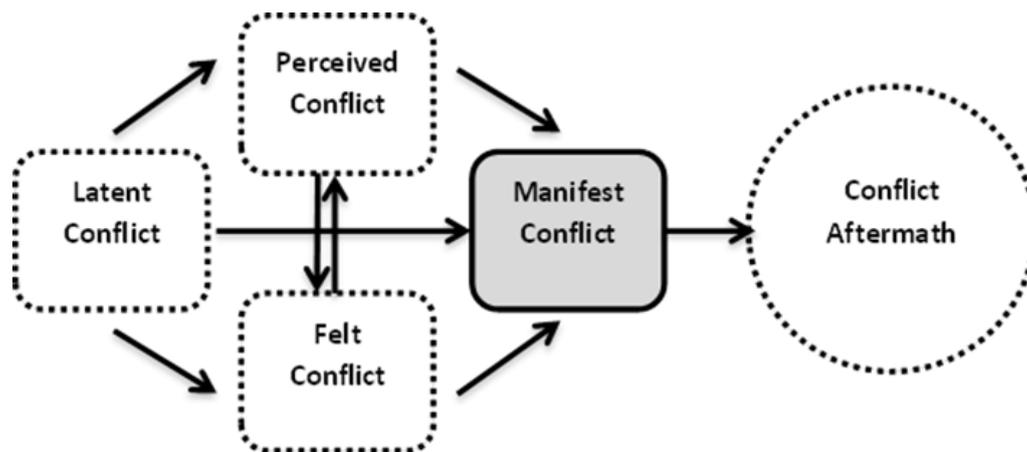


Figure 2: The process of conflict events (Source: Pondy, 1967)

On the other hand, ignoring or delaying the resolution of conflict can have serious implications for present and future relationships of the parties involved (Bristow & Vasilopoulos, 1995). Conflict and disputes can result in all sorts of problems such as disruption of construction schedules, increases in project costs, and even adverse influences on relationships between project participants (Yiu & Cheung, 2004). Hence conflict in particular since it is also the trigger behind disputes can be assumed as an antecedent to construction relationship quality. In addition and as a consequence the conflict-handling styles and resolution methods may also contribute to variations in relationship quality.

INCORPORATING CONFLICT INTO THE INTERDISCIPLINARY MODEL

In order to have an infused interdisciplinary approach conflict events are considered within the antecedent layer of the relationship quality model as illustrated in Figure 3. The model must be modified to suit a conflict scenario in a construction project. The process model for conflict (Figure 2) clearly shows a progression on a trigger or event into a potential manifestation of conflict. All the components illustrated in the conflict process model will have some sort of effect on the attributes of relationship quality and ultimately relationship quality itself. However normally when conflicts are perceived, different actions and strategies may be taken in order to inform the other party. This is in line with previous literature may be done to prevent escalation (Tabassi *et al.*, 2018). The sooner conflict is realised and dealt with there is more chance of it going into a functional state rather than a dysfunctional state which could damage the relationships (Charkhakan & Heravi, 2019).

Therefore, as shown in Figure 3 from the moment of perceived or felt conflict some action will be probably taken as a counter or moderating measure; which later could develop into full-scale strategies. In addition, before the impact on relationship quality is identified and even before manifested conflict, the parties will try to have some prevention strategies (Figure 3). After the manifestation of conflict and realisation of its effects on relationship quality conflict management and resolution strategies will be more applied. Finally, if the relationship is of strategic importance; prevention of conflict escalation or dispute resolution strategies are practiced in order to avoid further damage to relationship quality (Figure 3).

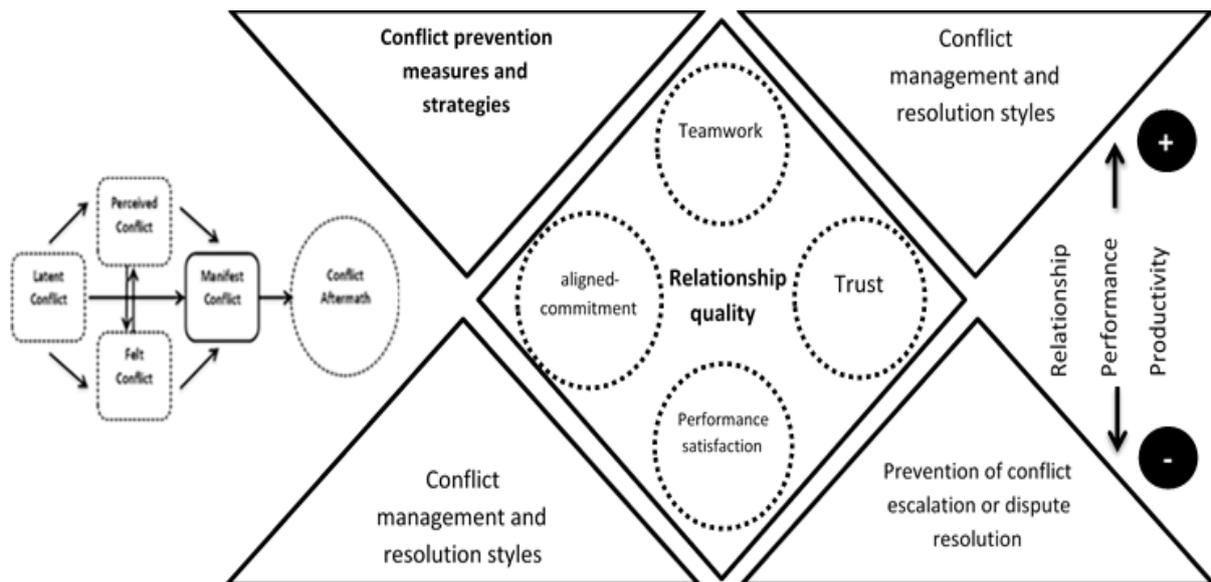


Figure 3: Conflict as an antecedent of relationship quality

In this model one of the effects of conflict aftermaths is its implication on relationship quality. On the other hand, the strategies used to eradicate or reduce this impact will form a moderating factor on relationship attributes. They will try to enhance commitment and teamwork regardless of the type of conflict manifested. These enhancement and application of other strategies are to potentially boost performance satisfaction in the hope of the ultimate goal of increasing or at least restoring trust among the parties. Accordingly, it can be suggested that a moderation layer composed of different actions and strategies surround relationship quality in construction projects. Therefore, relationship quality has antecedents and outcomes plus moderation factors which are the practised actions and strategies.

This is comparable with the findings of others, for instance Acharya *et al.* (2006) have investigated the key factors of conflicts in the Korean construction industry. Five groups have been identified by them with regard to causes by the conflict initiator (Mitkus & Mitkus, 2014). This fulfils the need for a triggering or antecedent layer and in almost all studies there is a mention of moderating factor not total prevention of conflict which seems to be highly unlikely (Cheung & Yiu, 2006; Maiti & Choi, 2018).

In New Zealand, the cause of many construction related disputes has been previously noted as contractually related. This appears to be an ongoing situation according to opinion from lawyers who deal with these situations (McVeagh, 2018).

It is believed based on these assumptions that some of the root causes and difficulties in conflict which proceeds into dispute is inherent in the nature of the industry. For instance low profit margins and skill shortages are huge contributing factors to these issues. On the other hand there are more controllable aspects which relate to relationship management, risk allocations and contractual terms and conditions. Hence providing relationship based skills and extra efforts in creating a joint understanding of contractual arrangements and obligations can have a major preventive effects of conflict escalation (Jelodar *et al.*, 2016a; McVeagh, 2018).

Issues such as understanding different stages of conflict, identifying signs of unmanifested conflict can lead to proactive and rapid responses to unforeseen future problems. The expectations can be explained and different parties can see causes of conflict, such as delays

and payment issues from different vantage points (Tabassi *et al.*, 2018; Walker, 2016). This article uses this interdisciplinary model to explain the variations in relationship quality. In addition, the model acknowledges that the different components of this relationship quality model will lead to other consequences within the outcome layer such as variations in overall performance and productivity. In simple terms, the antecedents, actions, strategies and attributes achieved can influence performance and productivity as well as relationship quality. The above model can be a theoretical background for such endeavours and can be used in different training and project briefing activities. The potential project charter can take into account these theories and have different thought-out action plans for various eventualities.

CONCLUSION

Relational contracting is seen as a change necessary and beneficial in procurement strategies and is popularized since old methods of procurement are responsible for a series of cascading problems. In construction mainstream literature and practice better relationships were sought without fully identifying the components and methods of tracking or understanding variations in relationship quality (Jelodar *et al.*, 2016a). Based on the relationship quality concept developed in other disciplines an interdisciplinary construct approach has been suggested for construction contractual agreements and projects (Dorsch *et al.*, 1998; Jelodar *et al.*, 2015; Walter *et al.*, 2003). This construct is created via a three step methodology including a comprehensive literature search, content analysis, and model development. This is illustrated in Figure 3 which demonstrates the relationship between antecedents, core attributes and outcomes.

The model is based on available theories and although concepts such as aligned-commitment, teamwork, performance satisfaction and trust could be attributed to relationship quality, it can be concluded that the concept is inherently complex by nature. For instance, it has been shown that many antecedents can influence attributes in different ways. Even the timing of these antecedents such as the conflict process is extremely important (Charkhakan & Heravi, 2019). However, not all of the relationship quality attributes are achievable in the same manner; for instance, trust requires time and effort to be achieved and cannot be a short-term phenomenon. Adding to this, for people to be engaged in their work, they must find their work activities meaningful and have the resources to make themselves available. On the other hand, with some planning in actions and strategies attributes such as aligned-commitment, teamwork, performance satisfaction and productivity can be achieved. According to the model if these attributes are realised, then achieving trust becomes more likely. This can lead to the ultimate level of relationship quality and also help in attaining higher levels of performance and productivity. In other words, variations in attributes can result in variations of relationship quality, overall project performance and productivity. This is also in line with previous literature (Jelodar *et al.*, 2017; Maiti & Choi, 2018) hence, the project team needs to be fully aware of these implications and receive the necessary training and instruction to avoid performance and productivity decline due to poor relational attributes.

Using a well-established conflict process model the interdisciplinary construct of relationship quality is re-generated. It is also shown that the conflict management and resolution actions or strategies will also affect the relationship quality attributes (Tabassi *et al.*, 2018). Hence these could be similar or completely exclusive of the actions and strategies taken to enhance relationship quality attribute. Nevertheless, they all have moderating effects on relationship quality. Therefore, apart from antecedents and outcomes, relationship quality also has moderators. These moderators are generally in the form of actions and strategies and can influence the attributes individually or as a whole.

Apart from the mentioned practical implications, the model can be formally used for training purposes and achieving common problem solving strategies. This can streamline project initiation phase and enhance construction project bonds and relationships which are temporary in nature increasing chances of project success. In summary, more empirical research must be undertaken to demonstrate in real life how practices could be improved based on the developed model and controlling variations of relationship quality throughout different phases of construction projects.

REFERENCES

- Abdou, S.M., Yong, K. & Othman, M. (2016). Project complexity influence on project management performance - The Malaysian perspective. *MATEC Web of Conferences*, 66, 6. <https://doi.org/10.1051/mateconf/20166600065>
- Acharya N.K., Dai Lee, Y., & Man Im, H. (2006). Conflicting factors in construction projects: Korean perspective. *Engineering, Construction and Architectural Management*, 13(6), 543-566. <https://doi.org/10.1108/09699980610712364>
- Ali, B., Zahoor, H., Nasir, A.R., Maqsoom, A., Khan, R.W.A., & Mazher, K.M. (2020). BIM-based claims management system: A centralized information repository for extension of time claims. *Automation in Construction*, 110, 102937. <https://doi.org/10.1016/j.autcon.2019.102937>
- Aryal S., Dahal, R.K. (2018). A review of causes and effects of dispute in the construction projects of Nepal. *Journal of Steel Structure and Construction*, 4: 144. <https://doi.org/10.4172/2472-0437.1000144>
- Barwise, P. (1995). Overview. In S. Crainer (Ed.), *The Financial Times Handbook of Management* (pp. 568-580). London: Pitman Publishing.
- Bejou, D., Wray, B., & Ingram, T.N. (1996). Determinants of relationship quality: An artificial neural network analysis. *Journal of Business Research*, 36(2), 137-143. [https://doi.org/10.1016/0148-2963\(95\)00100-X](https://doi.org/10.1016/0148-2963(95)00100-X)
- Black, C., Akintoye, A., & Fitzgerald, E. (2000). An analysis of success factors and benefits of partnering in construction. *International Journal of Project Management*, 18(6), 423-434. [https://doi.org/10.1016/S0263-7863\(99\)00046-0](https://doi.org/10.1016/S0263-7863(99)00046-0)
- Brevis, T., Smit, P.J., Vrba, M.J., De Klerk, A., & de J. Cronje, G. J. (1998). *Management Principles: A Contemporary Edition for South Africa*: Juta.
- Bristow, D.J., & Vasilopoulos, R. (1995). The new CCDC 2: Facilitating dispute resolution of construction projects. *Construction Law Journal*, 11(2), 95-117.
- Charehzehi, A., Chai, C., Yusof, A.M., Chong, H., & Loo, S.C. (2017). Building information modeling in construction conflict management. *International Journal of Engineering Business Management*, 9, 1 -18. <https://doi.org/10.1177/1847979017746257>
- Charkhakan, H., & Heravi, G. (2019). Evaluating the preventability of conflicts arising from change occurrence in construction projects. *Engineering, Construction and Architectural Management*, 26(8), 1777-1800. <https://doi.org/10.1108/ECAM-09-2018-0361>
- Chaudhuri, A. (1997). Consumption emotion and perceived risk: A macro-analytic approach. *Journal of Business Research*, 39(2), 81-92. [https://doi.org/10.1016/S0148-2963\(96\)00144-0](https://doi.org/10.1016/S0148-2963(96)00144-0)

- Chaudhuri, A. (1998). Product class effects on perceived risk: The role of emotion. *International Journal of Research in Marketing*, 15(2), 157-168. [https://doi.org/10.1016/S0167-8116\(97\)00039-6](https://doi.org/10.1016/S0167-8116(97)00039-6)
- Chern, C., & Lowe, J. (2013). *Construction Economics*: John Wiley & Sons, Limited.
- Chen, Y., Zhang, Y., & Zhang, S. (2014). Impacts of different types of owner-contractor conflict on cost performance in construction projects. *Journal of Construction Engineering and Management*, 140(6), 04014017. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0000852](https://doi.org/10.1061/(ASCE)CO.1943-7862.0000852)
- Cheung, S.O., & Yiu, T.W. (2006). Are construction disputes inevitable? *IEEE Transactions on Engineering Management*, 53(3), 456-470. <https://doi.org/10.1109/TEM.2006.877445>
- Coetsee, L.D. (2002). *Peak Performance and Productivity: A Practical Guide for the Creation of a Motivating Climate*: Andcork Publishers. https://books.google.co.nz/books/about/Peak_Performance_and_Productivity.html?id=c_NcAAACAAAJ&redir_esc=y
- Construction Industry Institute (1991) In search of partnering excellence. Publication no. 17-1, Report CII, Austin, Texas.
- Crosby, L.A., Evans, K.R., & Cowles, D. (1990). Relationship quality in services selling: An interpersonal influence perspective. *The Journal of Marketing*, 54(3), 68-81. <https://doi.org/10.1177/002224299005400306>
- Davis, P.R., & Walker, D.H.T. (2009). Building capability in construction projects: A relationship-based approach. *Engineering, Construction and Architectural Management*, 16(5), 475-489. <https://doi.org/10.1108/09699980910988375>
- Dorsch, M.J., Swanson, S.R., & Kelley, S.W. (1998). The role of relationship quality in the stratification of vendors as perceived by customers. *Journal of the Academy of Marketing Science*, 26(2), 128-142. <https://doi.org/10.1177/0092070398262004>
- Dwyer, F.R., & Oh, S. (1987). Output sector munificence effects on the internal political economy of marketing channels. *Journal of Marketing Research*, 24(4), 347-358. <https://doi.org/10.1177/002224378702400402>
- Eadie, R., Browne, M., Odeyinka, H., McKeown, C., & McNiff, S. (2013). BIM implementation throughout the UK construction project lifecycle: An analysis. *Automation in Construction*, 36, 145-151. <https://doi.org/10.1016/j.autcon.2013.09.001>
- Gardiner, P.D., & Simmons, J.E.L. (1992). Analysis of conflict and change in construction projects. *Construction Management and Economics*, 10(6), 459-478. <https://doi.org/10.1080/01446199200000046>
- Hennig-Thurau, T. (2000). Relationship quality and customer retention through strategic communication of customer skills. *Journal of Marketing Management*, 16(1), 55-79. <https://doi.org/10.1362/026725700785100497>
- Hennig-Thurau, T., & Klee, A. (1997). The impact of customer satisfaction and relationship quality on customer retention: A critical reassessment and model development. *Psychology and Marketing*, 14(8), 737-764. [https://doi.org/10.1002/\(SICI\)1520-6793\(199712\)14:8<737::AID-MAR2>3.0.CO;2-F](https://doi.org/10.1002/(SICI)1520-6793(199712)14:8<737::AID-MAR2>3.0.CO;2-F)

- Jelodar, M.B., Yiu, T.W., & Wilkinson, S. (2016a). A conceptualisation of relationship quality in construction procurement. *International Journal of Project Management*, 34(6), 997-1011. <https://doi.org/10.1016/j.ijproman.2016.03.005>
- Jelodar, M.B., Yiu, T.W., & Wilkinson, S. (2016b). Dispute manifestation and relationship quality in practice. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, 8(1). [https://doi.org/10.1061/\(ASCE\)LA.1943-4170.0000171](https://doi.org/10.1061/(ASCE)LA.1943-4170.0000171)
- Jelodar, M.B., Yiu, T.W., & Wilkinson, S. (2016c). relationship-quality judgment model for construction project procurement: A conjoint measurement. *Journal of Construction Engineering and Management*, 142(7). [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0001104](https://doi.org/10.1061/(ASCE)CO.1943-7862.0001104)
- Jelodar, M.B., Yiu, T.W., & Wilkinson, S. (2017). Assessing contractual relationship quality: Study of judgment trends among construction industry participants. *Journal of Management in Engineering*, 33(1). [https://doi.org/10.1061/\(ASCE\)ME.1943-5479.0000461](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000461)
- Jones, M.L. (2007). Using Software to Analyse Qualitative Data. *Journal of Qualitative Research*, 1(1), 64-76. <https://ro.uow.edu.au/commpapers/429/>
- Kreitner, R., & Kinicki, A. (2010). *Organizational behavior* (9th ed ed.): McGraw-Hill/Irwin.
- Kumar, N., Scheer, L.K., & Steenkamp, J.-B.E.M. (1995). The effects of supplier fairness on vulnerable resellers. *Journal of Marketing Research*, 32(1), 54-65. <https://doi.org/10.1177/002224379503200107>
- Kumaraswamy, M.M. (1997). Conflicts, claims and disputes in construction. *Engineering, Construction and Architectural Management*, 4(2), 95-111. <https://doi.org/10.1108/eb021042>
- Lages, C., Lages, C.R., & Lages, L.F. (2005). The RELQUAL scale: A measure of relationship quality in export market ventures. *Journal of Business Research*, 58(8), 1040-1048. <https://doi.org/10.1016/j.jbusres.2004.03.001>
- Larson, E. (1997). Partnering on construction projects: a study of the relationship between partnering activities and project success. *IEEE Transactions on Engineering Management*, 44(2), 188-195. <https://doi.org/10.1109/17.584926>
- Leung, M., Yu, J., & Liang, Q. (2013). Analysis of the Relationships between Value Management Techniques, Conflict Management, and Workshop Satisfaction of Construction Participants. *Journal of Management in Engineering*, 30(3), 04014004. [https://doi.org/10.1061/\(ASCE\)ME.1943-5479.0000208](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000208)
- Love, P.E.D., Irani, Z., Cheng, E., & Li, H. (2002). A model for supporting inter-organizational relations in the supply chain. *Engineering Construction and Architectural Management*, 9(1), 2-15. Retrieved from <https://doi.org/10.1046/j.1365-232X.2002.00225.x>
- Low Sui, P. (1999). The extension of construction partnering for relationship marketing. *Marketing Intelligence & Planning*, 17(3), 155-162. Retrieved from <https://doi.org/10.1108/02634509910271614>
- Lyiola, K., & Rjoub, H. (2020). Using Conflict Management in Improving Owners and contractors Relationship Quality in the Construction Industry: The Mediation role of Trust. *SAGE Open*. journals.sagepub.com/home/sgo. January-March 2020: 1–14. <https://doi.org/10.1177/21582440198988>

- Maiti, S., & Choi, J.-h. (2018). Investigation and implementation of conflict management strategies to minimize conflicts in the construction industry. *International Journal of Construction Management*, 1-16. <https://doi.org/10.1080/15623599.2018.1536964>
- Mallen, B. (1963). A theory of retailer-supplier conflict, control and cooperation. *Journal of Retailing*, 39(Summer), 24-32, 51-22.
- McVeagh, R. (2018). Construction industry disputes rising, says. New Zealand Law Society. Retrieved from <https://www.lawsociety.org.nz/news-and-communications/latest-news/news/construction-industry-disputes-rising,-says-russell-mcveagh>
- Meng, X. (2010). Assessment framework for construction supply chain relationships: Development and evaluation. *International Journal of Project Management*, 28(7), 695-707. <https://doi.org/10.1016/j.ijproman.2009.12.006>
- Mersino, A. (2013). Emotional Intelligence for Project Managers: The People Skills You Need to Achieve Outstanding Results: AMACOM.
- Mitkus, S., & Mitkus, T. (2014). Causes of conflicts in a construction industry: A communicational approach. *Procedia - Social and Behavioral Sciences*, 110, 777-786. <https://doi.org/10.1016/j.sbspro.2013.12.922>
- Ng, S.T., Rose, T.M., Mak, M., & Chen, S.E. (2002). Problematic issues associated with project partnering -- the contractor perspective. *International Journal of Project Management*, 20(6), 437-449. [https://doi.org/10.1016/S0263-7863\(01\)00025-4](https://doi.org/10.1016/S0263-7863(01)00025-4)
- Olivier, A., & Rothmann, S. (2007). Antecedents of work engagement in a multinational oil company. *SA Journal of Industrial Psychology*, 33(3), 49-56. <https://doi.org/10.4102/sajip.v33i3.396>
- Pondy, L.R. (1967). Organizational conflict: Concepts and models. *Administrative Science Quarterly*, 12(2), 296-320. <https://doi.org/10.2307/2391553>
- Pulaski, M., & Horman, M. (2005). Continuous value enhancement process. *Journal of Construction Engineering and Management*, 131(12), 1274-1282. Retrieved from [https://doi.org/10.1061/\(ASCE\)0733-9364\(2005\)131:12\(1274\)](https://doi.org/10.1061/(ASCE)0733-9364(2005)131:12(1274))
- Rhys J.S. (1994). How constructive is construction law? *Construction Law Journal*, 10, 28-38.
- Roberts, K., Varki, S., & Brodie, R. (2003). Measuring the quality of relationships in consumer services: An empirical study. *European Journal of Marketing*, 37(1), 169-196. Retrieved from <https://doi.org/10.1108/03090560310454037>
- Schermerhorn, J.R. (2012). Organizational behavior. NY, USA: John Wiley & Sons, Inc.
- Sinding, K., Kinicki, A., & Kreitner, R. (2018). Organisational Behaviour. McGraw-Hill Education.
- Soni, S., Pandey, M., & Agrawal, S. (2017). Conflicts and Disputes in Construction Projects: An Overview. *Int. Journal of Engineering Research and Application*. ISSN : 2248-9622, Vol. 7, Issue 6, (Part -7) June 2017, pp.40-42. <https://doi.org/10.9790/9622-0706074042>
- Tabassi, A.A., Abdullah, A., & Bryde, D.J. (2018). Conflict management, team coordination, and performance within multicultural temporary projects: Evidence from the construction industry. *Project Management Journal*, 50(1), 101-114. <https://doi.org/10.1177/8756972818818257>

- Tang, L., Shen, Q., & Cheng, E.W.L. (2010). A review of studies on Public-Private Partnership projects in the construction industry. *International Journal of Project Management*, 28(7), 683-694. <https://doi.org/10.1016/j.ijproman.2009.11.009>
- Toms, L. (2004). The effect of conflict management strategies on manifest conflict and relationship quality in a buyer/seller environment. (D.B.A. dissertation). Louisiana Tech University, Louisiana.
- Walker, D.H.T. (2016). Reflecting on 10 years of focus on innovation, organisational learning and knowledge management literature in a construction project management context. *Construction Innovation*, 16(2), 114-126. <https://doi.org/10.1108/CI-12-2015-0066>
- Walter, A., Müller, T.A., Helfert, G., & Ritter, T. (2003). Functions of industrial supplier relationships and their impact on relationship quality. *Industrial Marketing Management*, 32(2), 159-169. [https://doi.org/10.1016/S0019-8501\(02\)00230-4](https://doi.org/10.1016/S0019-8501(02)00230-4)
- Xiaolong, X., Ruixue, Z., Rebecca, Y., & Jason, D. (2014). Innovation in construction: A critical review and future research. *International Journal of Innovation Science*, 6(2), 111-126. <https://doi.org/10.1260/1757-2223.6.2.111>
- Yiu, K.T.W., & Cheung, S.O. (2004). Significant dispute sources of construction mediation. Paper presented at the Proceedings of the 1st International Conference on the World of Construction Project Management, Toronto, Canada, 27-28 May.
- Zou, W., Kumaraswamy, M., Chung, J., & Wong, J. (2014). Identifying the critical success factors for relationship management in PPP projects. *International Journal of Project Management*, 32(2), 265-274. <https://doi.org/10.1016/j.ijproman.2013.05.004>