

# The role of trustworthiness in the formation and governance of construction alliances

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Received 27 July 2005; received in revised form 14 December 2005; accepted 23 February 2006

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## Abstract

The ensuing globalization of the construction industry as well as the highly fragmented and divisive nature of the industry are among the forces that are influencing it to seek management approaches such as strategic alliances that could leverage the capabilities of the various participants. This paper reports on a study that investigated the factors considered by firms when selecting alliance partners, and the influence of trustworthiness in deciding the governance structures of the alliances. A study of key partners in existing and potential construction alliances in Botswana that was carried out using a postal questionnaire and structured interviews determined that firms consider complementarity, similar status, indirect prior alliance experience and reputation before they make a selection of an alliance partner. The study also determined that partner trustworthiness eliminates the need of contractual clauses in the operation of the alliances. The paper concludes that trustworthiness of a partner is an influencing factor in all stages of the alliance development.

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*Keywords:* Strategic alliances; Partnering; Joint ventures; Trustworthiness; Construction industry

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## 1. Introduction

Partnering between a client and a contractor is one form of alliance between parties that are not in direct competition with one another. Several studies suggest that such an approach leads to more successful procurement of projects than other traditional management approaches [1–3]. As a way of enhancing construction project delivery and improving their construction supply chains, many countries are encouraging their construction industries to embrace partnering [4–6]. Some construction projects, such as facilities for oil or natural gas extraction in the middle of a sea are so large and sophisticated that no one firm can undertake them alone. Similarly, construction firms in most developing countries are too small to carry out large construction projects alone. Thus, besides partnering between a client and a contractor, there is an incentive for forming alliances between contractors so that the

emerging entities can handle large and sophisticated projects that they cannot do individually.

However, alliance between firms that are engaged in similar activities has both cooperative and competitive aspects. While the former enables the firms to leverage their complementary capabilities for common benefits, the latter tend to push the allied firms to engage in competitive racing in learning the capability of the partner(s) for private benefits [7]. Often, when the learning is complete the incentive to continue the alliance ceases and this may lead to its break up [8].

The purpose of this paper is to report on a study that was carried out in Botswana to determine the factors that firms use to select alliance partners, and establish the role of trustworthiness in deciding the governance structure of the alliances. The paper begins by describing alliances in the construction industry. It then defines trust and related concepts of trustworthiness and opportunism. Next it describes the role of trust in alliances, after which a study in Botswana is reported and discussed.

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## 2. Alliances in the construction industry

The globalization of the construction industry is rendering the familiar model of a single company doing all things in-house outdated. The technological, political, financial and competitive capabilities that are required to operate in the global construction market means that companies need to establish alliances with other participants in order to survive. Alliances are defined as voluntary arrangements between firms involving exchange, sharing or co-development of products, technologies or services [9]. They can occur as a result of a wide range of motives and goals, take a variety of forms and occur across vertical and horizontal boundaries. There is a distinction among alliance structures in terms of the degree of hierarchical elements they embody and the extent to which they replicate the control and coordination features associated with organizations, which are considered to be the hierarchical end of the spectrum [10,11]. At one end are joint ventures, which involve partners creating new entity in which they share equity and which most closely replicate the hierarchical control features of organizations. At the other end are alliances such as partnering with no sharing of equity and having few hierarchical controls built in them [11].

In the construction industry, joint ventures are employed when parties that are involved in similar activities, such as contractors joining forces to leverage their complimentary capabilities to carry out work. This occurs in situations where risks are too high for subcontracting to be viable. However, joint ventures are simultaneously cooperative and competitive enterprises. The cooperative aspect arises from the fact that each firm needs access to the other firm's know-how and that the firms can collectively use their knowledge to produce something that is beneficial to them all (common benefits). The competitive aspect is a consequence of each firm's attempt to also use its partner's know-how for private gains, and of the possibility that significantly greater benefits might accrue to the firm that finishes learning from its partner before the latter can do the same [7]. As a result of this, the choice of a partner is carried out carefully and as stated by various scholars (e.g. [12–14]) partners will consider the following factors in determining how to establish the alliances: complementarity, status similarity and social capital.

Partnering on the other hand, is essentially the establishment of an informal group among construction partners such as a client and a contractor to create "permanent" relationship. It has been increasingly applied in the North American construction industry [1], and has also been widely adopted in other places [15]. The construction literature contains numerous definitions of partnering (e.g. [16–19]). Crowley and Karim [20] define partnering as "...an organization that implements a cooperative strategy modifying and supplementing the traditional boundaries that separate companies in a competitive climate. In this way, partnering wraps the major project participants into

an alliance that creates a cohesive atmosphere for the project team members to openly interact and perform". The literature distinguishes two types of partnering: project partnering (relationship established for a single project) and strategic partnering (a long-term commitment beyond a discrete project). Strategic partnering can secure long-term benefits whereas project partnering fits for a single project. Whether it is project or strategic partnering, Saad and Hancher [21] view partnering as an effective management tool to navigate the project management process from the planning phase to the commissioning/start-up phase, via the design, procurement and construction phases since it can be incorporated into each of the five phases.

During the life of alliances, the internal and external circumstances may change, often in unexpected ways (in the construction industry circumstances continuously change). How partners adapt to these changing circumstances determines whether an alliance prospers or flounders [22]. Successful adaptation of these changes calls for a delicate balance between the twin virtues of reliability and flexibility. Flexibility is necessary for partners to have a viable relationship in the face of changing circumstances, yet unlimited flexibility affords companies the opportunity and incentive to cheat, reducing the reliance partners can place on each other [23]. There are thus two types of uncertainties in alliances: uncertainty regarding unknown future events, and uncertainty regarding partner's response to those future events. It is in this environment of double uncertainty that trust emerges as a central organizing principle in alliances [24].

### 2.1. Trust defined

Coleman [13] defines trust as "committing to an exchange before you know how the other person will reciprocate". Sabel [25] puts it more succinctly "trust is the mutual confidence that no party to an exchange will exploit another's vulnerabilities". Parties to an exchange can be vulnerable when they find it very costly to evaluate accurately the quality of the resources or assets others assert they will bring to an exchange [26], or to evaluate accurately the quality of resources or assets others are actually offering in exchange [27]. Also when parties to an exchange make large asymmetric transaction, they are subject to hold-up vulnerabilities [28]. To put in other words, trust has the following main attributes:

- (i) it inherently involves uncertainty about the future;
- (ii) it implies vulnerability, that is, the risk of losing something of value. The magnitude of this potential loss from untrustworthy behaviour is typically much greater than the anticipated gains from trustworthy behaviour; and
- (iii) it is placed in another whose behaviour is not under one's control, so each partner exercises duly partial influence over alliance outcomes.

The literature on trust contains various insight regarding cooperative relationships and the role of trust (e.g. [29–32]). Some researchers (e.g. [33–37]) have observed that, while trust is the mutual confidence that one's vulnerabilities will not be exploited in an exchange, different types of trust can exist in different economic exchanges. Accordingly, three types of trust can be identified: weak form trust, semi-strong trust, and strong trust. Weak form trust emerges because there are limited opportunities for opportunism. Semi-strong form trust depends on governance devices such as a market for reputation and contracts to safeguard against threat of opportunism. Strong form trust emerges in response to a set of internalized norms and principles that guide the behaviour of exchange partners, and is independent of whether or not specific governance mechanism exists.

Trust also hinges on expectation held by an agent that its exchange partner will behave in a mutually acceptable manner (including an expectation that neither party will exploit the other's vulnerabilities). This expectation narrows the set of possible actions, thus reducing the uncertainty surrounding the partner's actions. Sako [36] categorized reasons for predictability in behaviour to distinguish between three types of trust: contractual trust (will the other party carry out its contractual agreements?); competence trust (is the other party capable of doing what it says it will do?); and goodwill trust (will the other party make an open-ended commitment to take initiatives for mutual benefit while refraining from unfair advantage taking?).

### 3. Trust in alliances

As cooperation and competition coexist between alliance partners, cooperative relationship evolves over time as partners learn more about each other's motives, capabilities and attitudes toward control, conflict, cooperation and competition. During this period, and the entire life of the alliance the partners are vulnerable in the various ways mentioned earlier. Thus, in successful alliances, trust is often touted as a prerequisite, a necessity, an absolute must [38]. The converse is also true: a major contributor to failed alliances is lack of trust [39].

Trust is central for strategic alliances for three main reasons: Firstly, no contract or agreement, no matter how complete or detailed, can account for every issue or every contingency that might arise. Formal contracts, for instance, can never anticipate and identify all the events and changes that occur over the lifetime of the strategic alliance. Secondly, the alliance of two or more creates a strong potential for dysfunctional conflict and mistrust as the partners differ in organizational cultures and management philosophies, among others. Thirdly, learning that is often cited as one of the major benefits and motivations for strategic alliances may suffer if the partners do not trust each other.

Table 1  
Categories of construction companies in Botswana

Category	Contractor's ceiling in Pula <sup>a</sup>	Number of registered firms
OC	300,000	385
A	900,000	139
B	1,800,000	82
C	4,000,000	117
D	8,000,000	29
E	Unlimited	16

<sup>a</sup>1 Pula = 0.21US\$ (September, 2004).

## 4. A study in Botswana

### 4.1. Background

With a total area of 582,000 km<sup>2</sup> and a population of 1.7 million people [40], Botswana has experienced rapid growth since the time of independence in 1966. The construction industry has constituted 7.5–10 percent of the Gross Domestic Product (GDP) and during the current five-year development plan (NDP9) spanning between 2003–2009 Botswana will invest a total of P 25 billion (US\$5.5 billion) in infrastructure development.

Construction firms that intend to undertake public works are required to register with the Public Procurement and Asset Disposal Board (PPADB) that was established in 2002 to take over the functions of the former Central Tender Board. The PPADB has six categories of building and civil engineering contractors as shown on Table 1. Categories OC, A and B are reserved for citizen contractors while in categories C, D, and E foreign firms are allowed to register.

Over the years, the Government of Botswana has realized that to maintain the pace envisioned for her economic and infrastructure development, the active involvement of foreign capital, technology and management know-how should be encouraged. To ensure that foreign contractors that operate in the local construction market participate in raising the capabilities of local contractors, the government has encouraged formation of joint ventures and has provided preferential schemes where there is equity majority by local partners.

At the same time, the government has encouraged local construction firms that are small compared to their foreign counterparts to form alliances among themselves so that the emerging entities can handle large and sophisticated projects. As a response to this encouragement, a number of strategic alliances have been established beginning from early 1980s [41].

### 4.2. Objectives of the study

The objectives of the study were:

- To assess the factors that are used in selecting alliance partners; and

- To establish the role of trustworthiness in deciding the governance structure of the alliances.

A two-part study involving firms that have formed or were contemplating to form construction alliances was carried out in Gaborone, the capital city of Botswana.

Part 1 of the study involved a questionnaire survey. The survey asked respondents to evaluate the factors that influenced them to select their partners. The respondents were identified at an earlier seminar that was organized by the Ministry of Works and Transport to discuss the implementation of Public and Private Partnership (PPP) in Botswana. At this seminar, which was attended by 97 people, the details of the participants who have formed or were in the process of forming construction alliances in response to government encouragement were taken. A total of 21 participants were identified and their particulars were confirmed at the PPADB registration department, where additional 7 firms were found to have registered as being in the process of forming alliances. Out of these firms, 6 have existing alliances and the remaining 22 have initiated the process of forming alliances having identified potential partners. Two (2) of the firms are registered in category A, 16 in category B and 10 in category C. Questionnaires were sent to all 28 firms.

The addressees were reminded about the return of the questionnaires by telephone and the researcher offered to collect the ones that had not been returned by the set deadline. This ensured a 100% return rate. The factors that are considered in selecting an alliance partner are shown in Table 2.

The factor of complementarity was operationalized by the statement “We create excess value by pooling our resources relative to their value before pooling”. There was strong agreement with this statement: agree strongly (94%) and agree (3%); and this concurs with observation by many researchers (e.g. [10,42]) that by pooling their resources and capabilities with those of their partners, firms can initiate projects that they could not have successfully done alone. For a firm attempting such a project, the consideration of the resource complementarity becomes an important issue [10,42]. Similarly, Doz [43]

observes that the complementarity of strengths and assets between firms is often clear even prior to negotiations on the terms of alliances because it is what brings the partners together in the first place.

The factor of similar status was operationalized by the statement “Our similar status will promote social interaction”. There was a strong agreement to the statement: strongly agree (36%) and agree (50%) and this is consistent with observation by researchers (e.g. [44–46]). Often, firms considering alliances assess both the complementary capabilities and the status of their potential partners. Firms of similar status are likely to ally with each other for three possible reasons: Firstly, as is the case with individuals firms of similar status are more likely to collaborate with each other because of the signaling role of social interaction [44]; Secondly, the process of competitive isomorphism is likely to result in firms of similar status having similar or compatible operating systems and practices [45]. When firms compete with each other on the basis of their status, firms of similar status will be in a similar competitive environment. Therefore, competitive isomorphism will lead firms of similar status to have similar or compatible operating systems and practices, which is a catalyst in helping partner firms to cooperate more effectively with each other [46]; Thirdly, a firm also tends to seek a partner of similar status because doing so makes it more likely that both parties will exhibit increased levels of fairness and commitment to sharing both the costs and benefits of an alliance.

The factor of direct prior alliance experience was operationalized by the statement “We prefer to deal with a partner with whom we have prior experience”. The responses indicate a disagreement: strongly disagree (18%), disagree (57%) and not sure (14%). This is contrary to observations by researchers (e.g. [34]) that in forming strategic alliances, a natural solution for a firm is to first consider previous partners with which it has direct prior alliance experiences. Moreover, in establishing a long-time relationship each partner has to invest a substantial amount of time and energy [47] and this investment is a fixed or sunk cost, which is impossible to recover when switching transaction partners. The explanation for these

Table 2  
Factors that are considered in selecting an alliance partner

	Strongly disagree	Disagree	Not sure	Agree	Strongly agree	Total
Complementarity (We create excess value by pooling our resources relative to their value before pooling)	0 (0%)	1 (3%)	0 (0%)	1 (3%)	27 (97%)	28
Status similarity (Our similar status will promote social interaction)	0 (0%)	0 (0%)	2 (0%)	14 (50)	12 (43%)	28
Direct prior alliance experience (We prefer to deal with a partner with whom we have prior experience)	5 (17%)	16 (56%)	4 (14%)	3 (10%)	1 (3%)	28
Indirect prior alliance experience (We can rely on a referee to prevent our partner from taking unfair advantage of our firm)	0 (0%)	3 (11%)	5 (18%)	14 (50%)	6 (21%)	28
Reputation (We prefer to deal with a partner whose reputation is above board)	0 (0%)	0 (0%)	2 (7%)	20 (72%)	6 (21%)	28

contradicting responses is that construction firms in Botswana have often interacted with one another in such ways as subcontracting or plant/material supplying in response to government encouragement. Most of these interactions have ended bitterly, through arbitration or other legal recourses. Either the respondents have been victims in these conflicts or they know firms that have been victims.

The factor of indirect prior alliance experience was operationalized by the statement "We can rely on a referee to prevent our partner from taking unfair advantage of our firm". The responses to this factor are in agreement with the statement: strongly agree (21%) and agree (50%). Indirect ties between two firms through a third party may enhance the chances that the two firms will form a strategic alliance because the indirect ties can function as an information conduit and because a common actor can play the role of a reference and become a mechanism for deterring opportunistic behaviours. According to Uzzi [48] when a common actor has built a trustworthy relationship with two other actors, it will refer each party favourably to the other party in need of alliance partners. Social relations make information transferred through those relations credible and interpretable because the identity of actors and the intensity of their social ties are important as the information itself.

The factor of reputation was operationalized by the statement "We prefer to deal with a partner whose reputation is above board". The responses are in agreement with the statement: agree strongly (21%), agree (71%) and not sure (8%). This should be expected given the number of complaints that have been lodged by various parties in Botswana that most contractors have poor credibility. It, therefore, follows that before any firm decides to deal with another, it has to seek information regarding the reputation of the potential partner. Gaining a reputation as a trustworthy exchange partner occurs over time as the exchange partner confronts situations where opportunistic behaviour is possible, but chooses not to engage in opportunistic activities. There is no opportunity cost associated with a trustworthy firm not behaving opportunistically, since such behaviour is not in this kind of exchange partner's opportunity set. On the other hand, a

non-trustworthy exchange partner will have to absorb opportunity costs each time they decide not to behave in an opportunistic way.

Part 2 of the study involved structured interviews with the CEOs of the 6 firms that have existing alliances. Face to face interviews based on how much trust they could place on their partners were held with each CEO in their offices for 45 min. The questions were based on the three-way categorization of trust developed by Sako [36]. The characteristics of these alliances are shown in Table 3. Note that the firms are coded for reasons of anonymity, which was their precondition for participating in the study.

The following are the interview questions, summary of responses and discussions.

*What type of governance structures are employed in your alliance?*

The responses to this question determined that the two sustained alliances, i.e. A and B have employed different types of governance structures at different times. At the inception of the alliances it was felt necessary that all the contractual clauses should be clarified and written down. However, after successfully carrying out more than two projects, the partners got to know each other better and hence the need for strict contractual procedures was found unnecessary. The use of contractual clauses indicates that the partners were maintaining contractual trust at the inception of the alliances and as soon as they found out that the other party would carry out its contractual agreements, the trust level started to shift. The partners in alliance C had known and worked with each other prior to the formation of the alliance and they responded by saying that they did not need any contractual clauses to work together. However, during the formation of alliance C a contract of operational procedures was signed by the two partners. On a follow-up question on how long the partners maintain contractual trust before it shifts to another type, all respondents stated that the speed of moving from contractual to goodwill trust depends on the length of interaction, which is often determined by the number of projects the alliance has successfully carried out. This concurs with observation by Sako [36] that a move from contractual trust to goodwill trust involves a gradual expansion in the congruence in beliefs about what is

Table 3  
Construction alliances operating in Botswana between 1980 and 2005

Alliance	Origins of the firms	Year of registration in Botswana	Projects executed	Approximate value (Mil. Pula*)	Status of the alliance
A	a <sub>1</sub> -Kuwait a <sub>2</sub> -South Africa	1978 1971	5	598	Sustained
B	b <sub>1</sub> -Botswana b <sub>2</sub> -South Africa	1970 1980	8	477	Sustained
C	X-Botswana Y-Botswana	1984 1994	2	31.2	Recently formed

\*1 Pula = 0.21US\$ (September, 2004).

acceptable behaviour. This can only happen when partners in an alliance get opportunity to interact with each other.

*Do you always follow the advice given by your partner?*

This question intended to establish whether the partners in the alliance trusted that the counterpart was capable of doing what it says it will do. Although there was a unanimous response that the advice was always followed, the respondents indicated that at the formation of the alliances each partner was cautious about such advice. It was only after working together on a number of projects and observing that the other party was conducting itself professionally, and was conversant with the relevant technical and managerial standards that the partners were convinced that the other party was capable of delivering what it promised. Once this stage was reached, each party in the alliance allowed the other to make decisions without prior consultations. The responses are consistent with observations by Sako [36] that competence trust requires a shared understanding of professional conduct and relevant standards.

*Have you ever made investments into the alliance that are not stipulated in the agreement?*

This question intended to establish whether the partners in the alliances trust each other enough to make unilateral investments without fear of loss due to opportunistic action of the counterpart. All respondents indicated that they have made unilateral investments in favour of the alliances, which were not stipulated in the agreements. For instance, the CEO of firm  $b_2$  indicated that he let his land on the outskirts of Gaborone to be used as plant and material

storage yard instead of hiring the same from the market. He also paid to join a consortium that developed a quarry pit with associated crusher plant so that the alliance could get easy access to fine and course aggregates. The other CEOs gave similar examples, but they varied in type and value. These responses are consistent with findings by researchers (e.g. [36,37]). According to Sako [36] goodwill trust is reached when partners in an alliance make an open-ended commitment to take initiative for mutual benefit while refraining from unfair advantage taking. Similarly, Barney and Hansen [37] observe that strong form trust emerges in response to a set of internalized norms and principles that guide the behaviour of exchange partners, and is independent of whether or not specific governance mechanisms exist.

*Given the chance, do you think your partner may take an unfair advantage on your business?*

This question intended to determine whether the partners had any suspicions that the other party might act opportunistically. The notion of trust implies that the partner has freedom of choice to take alternative courses of action. Thus, predictability in behaviour arises not because of constraints that force the other side to stick to a single possible course of action. All respondents indicated that they do not think that the other party would act opportunistically given the opportunity. The CEOs of firms in alliance A (i.e.  $a_1$  and  $a_2$ ), for instance, indicated situations that the other party could have taken advantage, but did not. As it was observed earlier, gaining a reputation as a trustworthy partner occurs over time, and once it is

Table 4  
A framework for building and maintaining trust in construction alliances [49]

Stage	Activity/action	Important activities	Expected outcome
1	Formation of alliance	Information about the market and the various alternatives for cooperation Specifically: 1. Seek a partner(s) with complimentary capability and where possible same culture 2. Set clear mutual goals and objectives 3. Appoint staff with interpersonal skills 4. Define roles and responsibilities 5. Establish communication procedures	Choice of alliance as the best method for cooperation
2	Operations	Provide adequate manpower, equipment, and finance Specifically: 1. Enlist the support of top management 2. Agree on operation procedures 3. Adopt progress evaluation system 4. Adopt joint problem solving philosophy 5. Adhere to mutual goals and objectives 6. Adhere to roles and responsibilities	Establishment of a separate governance structure for the alliance
3	Growth	1. Provide more comprehensive information about the partners 2. Seek information about market demands jointly 3. Carry out joint strategic planning 4. Identify and analyze feedback on operations 5. Identify specific learning requirements for the alliance team	More resources dedicated to the alliance for growth and efficient operation

gained the firm would not like to lose it through opportunistic activities.

*Looking at the framework for establishing and maintaining trust in construction alliances, how far does the process apply to your alliance?*

The respondents were shown the framework for building and maintaining trust in construction alliances (Table 4) and taken through the three stages.

The responses indicated that they were in agreement with the three stages and that their alliances went through them. However, they indicated that the trustworthiness of the partner plays a role in all three states. In the formation stage (stage 1), for instance, the respondents in alliances A and B indicated that they carefully studied signals of trustworthiness on their potential partners before they decided to form alliances with each other. They indicated that they carefully checked the reputation, compliance with taxation regime and construction related investments of the potential partner. As partners in alliance C had known each other for a long time, they were aware of each other's trustworthiness.

At the operation stage (stage 2) all respondents indicated that they judged trustworthiness of their partners through their openness to outside auditing of their activities. Firm  $a_1$ , for instance, indicated that it asked the partner  $a_2$  to provide an auditor for their operations, while it provided an accountant to ensure that their operations were always above board. This may appear contradictory to the spirit of trust, but willingness to be open to outside auditing was said to reinforce trustworthiness.

At the growth stage (stage 3) all respondents indicated that they judged the trustworthiness of their partners through the unilateral transaction-specific investments they made in the partnership beyond what was prescribed in their agreements.

## 5. Conclusions

Strategic alliances can be formed by firms that are not in direct competition with one another or by firms that are engaged in similar activities, hence in direct competition. This study intended to determine the factors that firms use in selecting partners when forming alliances, and the influence of trustworthiness of alliance partners in deciding governance structures of the alliances.

Literature review established that various forms of strategic alliances exist in a spectrum ranging from joint ventures to partnering. As there exists uncertainties regarding unknown future events on the one hand, and regarding partner's response to those events on the other hand, trust has emerged as a central organizing principle in alliances.

This study established that in Botswana potential alliance partners consider complementarity, similar status, indirect prior alliance experience and reputation when selecting a counterpart. Within the limitations of the available data, the study established that alliance partners

start with contractual trust, which develops to goodwill trust based on the number of projects executed by the alliance. The study also determined that partners' trustworthiness influence the conduct of the partners in all stages of alliance development.

The study verified that the three stages of the framework for building and maintaining trust in construction alliances [49] are valid for the existing alliances, and they could be a valuable lesson for the firms that are in the process of forming alliances.

As this study was based on only three known alliances and 22 firms that are in the process of forming alliances, it is recommended to monitor the development of the alliances that are currently at the formation stage with the aim of passing on to them the experiences learned by the three existing alliances. It is also recommended to extend the study to a wider market, such as South African Development Community (SADC) to determine whether there are findings that can improve the alliances based in Botswana and vice versa.

## References

- [1] Larson EW. Project partnering: results of study of 280 construction projects. *Journal of Management in Engineering* 1995;11(2):30–5.
- [2] Gransberg DD, Dillon WD, Reynolds L, Boyd J. Quantitative analysis of partnered project performance. *Journal of Construction Engineering and Management* 1999;125(3):161–6.
- [3] Bresnen M, Marshall N. Partnering in construction: a critical review of issues, problems and dilemmas. *Journal of Construction Management and Economics* 2000;18(2):819–32.
- [4] Construction Industry Institute of Australia. Partnering: models for success. Research Report 8. Construction Industry Institute of Australia, 1996.
- [5] Black C, Akintoye A, Fitzgerald E. An analysis of success factors and benefits of partnering in construction. *International Journal of Project Management* 2000;18(6):423–34.
- [6] Construction Industry Review Committee of Hong Kong. Construct for excellence: report of the construction industry review committee, 2001. p. 52–85.
- [7] Khanna T, Gulati R, Nohria N. The dynamics of learning alliances: competition, cooperation, and relative scope. *Strategic Management Journal* 1998;19:193–210.
- [8] Hamel G. Competition for competence and inter-partner learning within international strategic alliances. *Strategic Management Journal* 1991;12:83–103.
- [9] Gulati R. Alliances and networks. *Strategic Management Journal* 1998;19:293–317.
- [10] Harrigan KR. Strategies for joint ventures. Lexington, MA: Lexington Books; 1985.
- [11] Teece DJ. Competition, cooperation and innovation. *Journal of Economic Behaviour and Organisation* 1992;19:1–25.
- [12] Richardson GB. The organization of industry. *Economic Journal* 1972;82:883–97.
- [13] Coleman JS. The foundations of social theory. Cambridge, MA: Harvard University Press; 1990.
- [14] Gulati R. Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Academy of Management Journal* 1995;38:85–112.
- [15] Hsieh T. Impact of subcontracting on site productivity: lessons learned in Taiwan. *Journal of Construction Engineering and Management ASCE* 1998;124(2):91–100.

- [16] Cowan CE. A strategy for partnering in the public. In: Chang CC, editor. *Preparing for construction in the 21st century*. New York: ASCE; 1991. p. 721–6.
- [17] Associated General Contractors of America. *Partnering: a concept for success*. Associated General Contractors of America, 1991.
- [18] Abudayyeh O. Partnering: a team building approach to quality construction management. *ASCE Journal of Management in Engineering* 1994;10(6):26–9.
- [19] Matthews J, Tyler A, Thorpe A. Pre-construction project partnering developing the process. *Engineering, Construction and Architectural Management* 1996;3(1/2):117–31.
- [20] Crowley LG, Karim A. Conceptual model of partnering. *Journal of Management in Engineering ASCE* 1995;11(5):33–9.
- [21] Saad MH, Hancher DE. Multimedia for construction management: project navigator. *Journal of Construction Engineering and Management ASCE* 1998;124(1):82–9.
- [22] Kraar L. Your rivals can be your allies. *Fortune* 1989;27:66–76.
- [23] Heide JB, Milner AS. The shadow of the future: effects of anticipated interaction and frequency of contact on buyer–seller cooperation. *Academy of Management Journal* 1992;35:265–91.
- [24] Powell WW. Neither market nor hierarchy: network forms of organization. In: Staw B, Cummings LL, editors. *Research in organisational behaviour*, vol. 12. Greenwich, CT: SAI Press; 1990. p. 295–336.
- [25] Sabel CF. Studied trust: building new forms of cooperation in a volatile economy. *Human Relations* 1993;46:1133–70.
- [26] Akerlof GA. The market for “lemons” quality uncertainty and the market mechanism. *Quarterly Journal of Economics* 1970;84:488–500.
- [27] Holmstrom B. Moral hazard and observability. *Bell Journal of Economics* 1979;10:74–91.
- [28] Klein B, Crawford RA, Alchian AA. Vertical integration, appropriate rents, and the competitive contracting process. *Journal of Law and Economics* 1978;21:297–326.
- [29] Zucker LG. Production of trust: institutional source of economic structure, 1840–1920. *Research in Organizational Behaviour* 1986;8:53–111.
- [30] Smith KG, Carroll SJ, Ashford SJ. Intra- and international cooperation: towards a research agenda. *Academy of Management Journal* 1995;38:7–23.
- [31] Lewicki RJ, Bunker BB. Developing and maintaining trust in work relationships. In: Kramer, Tyler., editor. *Trust in Organizations*, 1996. p. 114–39.
- [32] Lane C. Introduction. In: Lane C, Bachmann R, editors. *Trust within and between organizations*. Oxford: Oxford University Press; 1998.
- [33] Williamson OE. *Markets and hierarchies: analysis and antitrust implications*. New York: Free Press; 1975.
- [34] Granovetter M. Economic action and social structure: a theory of embeddedness. *American Journal of Sociology* 1985;91:481–510.
- [35] Hill CWL. Cooperation, opportunism, and the invisible hand. Implications for transaction cost theory. *Academy of Management Review* 1990;15(3):500–13.
- [36] Sako M. *Prices, quality and trust: inter-firm relations in Britain and Japan*. Cambridge: Cambridge University Press; 1992.
- [37] Barney JB, Hansen MH. Trustworthiness as a source of competitiveness advantage. *Strategic Management Journal* 1994;15: 175–90.
- [38] Byrne JA. The virtual corporation. *Business Week* 1993;8:98–103.
- [39] Peng MW, Shenkar O. The meltdown of trust: a process model of strategic alliance dissolution. *Academy of Management Annual Meeting*, 1997. p. 32–39.
- [40] Central Statistics Organization (CSO) Draft Results of the 2001 National Census, Government Printer, Gaborone, 2001.
- [41] Ngowi AB. The competition aspect of strategic alliances. *Logistics Information Management* 2001;12(4):242–9.
- [42] Burgers WP, Hill CWL, Kim WC. A theory of global strategic alliances: the case of the global auto industry. *Strategic Management Journal* 1993;14(6):419–32.
- [43] Doz YL. Technology partnerships between larger and smaller firms: some critical issues. In: Contractor FJ, Lorange P, editors. *Cooperative strategies in international business*. Lexington, MA: Lexington Books; 1988. p. 317–88.
- [44] Camic C. Reputation and the predecessor selection: parsons and the institutionalists. *American Sociological Review* 1992;57: 421–45.
- [45] Hannan M, Freeman J. The population ecology of organizations. *American Journal of Sociology* 1977;83:929–84.
- [46] Lorange P, Roos J. *Strategic alliances*. Cambridge, MA: Blackwell; 1992.
- [47] Burt RS. *Structural holes*. Cambridge, MA: Harvard University Press; 1992.
- [48] Uzzi B. The sources and consequences of embeddedness for the economic performance of organizations: the network effect. *American Sociological Review* 1996;61:674–98.
- [49] Ngowi AB, Pienaar E. The trust factor in construction alliances. *Building Research and Information* 2005;33(3):267–78.