Development and Validation of the Alliance Psychological Contract (APC)™ Model and Instrument

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Abstract

Healthy working relationships are critical to the success of any form of industry collaboration such as relationship contracting and project alliances, in particular. Yet, to date, there has been a lack instruments that adequately measure and diagnose such relationships, or industry norms to make best practice comparisons. This paper reports the development and validation of a new model and instrument, the Alliance Psychological Contract (APC), designed to measure and diagnose the health of alliance relationships. A sequential mixed method design (qualitative/quantitative) approach was conducted. This included twenty four semi-structured interviews with industry experts across Australia. The psychometric properties of the APC survey were examined using a sample of 16 alliances across industries (N = 700) in Australia and New Zealand. The APC appears to be a valid and reliable a generic instrument for diagnosing the health of alliance relationships, and offers a research-based model for high performance teams in infrastructure industry projects. This is the first empirical study to propose an alliance relationship research-based model aimed at predicting performance. This research has an Australian and NZ alliance focus and findings may not be generalisable to other countries.

The past decade has witness a dramatic increase towards more collaborative approaches of working in infrastructure projects (Dainty, Bryman, Price, Greasley, Soetanto and King, 2005; Yeung, Chan and Chan, 2008). Collaboration among owner organisations, designers and builders have increased attention on individual's behaviour and the ways in which groups can be transformed into high performance teams. Not surprisingly, a focus on 'softer' issues of relationship building and relationship maintenance appears to support the notion that collaboration and value creation are beneficial to construction and other infrastructure project success.

Project alliances

Project alliances (henceforth, alliances) is a form of relationship contracting that is a good example of integrating 'hard' and 'soft' perspectives into a collaborative approach to procurement. An alliance is commercial/legal framework between a government organisation, acting as an 'owner-participant' (OP), and one or more private sector service providers, acting as 'non-owner participants' (NOPs), for delivering one or more capital works projects. In an alliance approach, nearly all project risks are collectively shared by participants. A typical alliance structure has three levels: an Alliance Leadership Team (ALT), an Alliance Management Team (AMT), and an Integrated Team (IT) or Wider Project Team (WPT) (Victorian Government, 2006). This type of relationship contracting is now becoming widely accepted as an alternative to more traditional transactional procurement methods in Australia. In Australia, alliances have grown exponentially during the last decade, extending from the oil industry to construction, road, rail, water, power and defence. In fact, it has been said that Australia is "leading the world in alliances" (Ross, 2008).

Researchers are increasingly investigating the impact human, relational, social and behavioural issues have on construction procurement management (Akintoye, Macintosh and Fitzgerlad, 2000; Dainty *et* al. 2005; Nicolini, 2002). Not surprisingly, procurement is now seen as a social science that draws from various disciplines such as history, sociology and psychology (McDermott, 1999). At the heart of understanding these new ways of working collaboratively lays the contribution of psychology. Rowlinson, Cheung, Simons and Rafferty (2006), for example, note that an alliance psychologist is a pre-requisite for maintaining positive alliance relationships. The overall contribution that psychologists can make to alliance procurement has also been documented (Salicru, 2008).

Walker and Hampson (2003) propose investigating the effects of trust and commitment within various procurement systems, but particularly in alliances. Davis (2003; 2004; 2005; 2008), taking a relationship marketing (RM) theoretical approach, identifies commitment and trust as possible predictors of successful relational contracting. Other authors (Karlsen, Graee, and Massaoud, 2008; Kumaraswamy, Ling, Rahman and Phng, 2005; Rowlinson *et* al., 2006) also identify trust as a key variable in this context. Davis (2005) identifies trust maintenance as important areas for future research in alliances.

Despite the recommendations made by the literature thus far, it appears that no attempt has been made to address them. There has been little effort to standardise measurable relation variables of alliance effectiveness. This study takes a first step

towards addressing this deficiency by investigating the type of measures required to assess the health of alliance relationships. To this end, this paper argues that currently alliances in Australia are sufficiently mature to be the subject of research underpinned by theory, and draws on the empirical body of research of the psychological contract (PC).

The psychological contract

The literature on the psychological contract (PC) is extensive and growing. In fact, the PC has been identified as the most emergent area in organisational research (DelCampo, 2007).

The term 'psychological work contract' was first used by Argyris (1960) to refer to an implicit agreement between employers and employees' mutual obligations, values, expectations, and aspirations that transcend the stipulations of a formal written employment contract. Historically, the notion of a 'psychological contract' evolved from an implicit understanding of 'social contract theory' (Roehling, 1997). According to Makin *et* al. (1996, p. 4), Schein (1980) a PC is "unwritten set of expectations operating at all times between every member of an organization and the various managers and others in that organization." More recently, Rousseau (1989, p. 121) defines the PC as a set of "individual beliefs in a reciprocal obligation between the individual and the organisation." A PC thus incorporates the unexpressed beliefs, promises, expectations, responsibilities and obligations of employees with regard to a fair employment relationship. Although some of these elements can be stated explicitly in formal written contracts of employment, it is more common for them to be tacitly implied and not discussed openly (Anderson and Schalk, 1998).

The PC has emerged as a topic of considerable interest in organisational research (DelCampo, 2007) at a time when a variety of contemporary factors - such as globalisation, organisational restructuring, and downsizing - have had profound effects on employment relations (Coyle-Shapiro and Kessler, 2000). In this regard, it is interesting to note that Rooney (2008) attributes the emergence of alliances to some of these factors.

The PC in its present form of understanding has been subsequently investigated, in intra-organisational settings. However, given the fact that that the PC underpins key aspects of relationships, it has also been applied inter-organisationally. This makes the PC a good, versatile and portable theoretical framework for investigating other organisational settings, even beyond the organisation itself (Blancero and Ellram, 1997). As a result, the PC has already been used as a theoretical framework for understanding relational aspects of phenomenon in other areas, such as strategic supplier partnering (Blancero and Ellram 1997), buyer-supplier relationships (Hill *et* al., 2009), supplier-distribution relationships (Kingshott and Pecotich, 2007), customer service relations strategy (Cutcher, 2008), performance management (Stiles *et* al., 1997), and workplace safety (Walker and Hutton 2006).

According to Hill *et* al. (2009), despite the fact that most of the PC research has focused on employee - employer relationships, it is reasonable and even desirable to extend evaluation of this theory to other fields and relationships. This study endorses this position and proposes the PC as an explanatory framework for understanding and managing effective alliance relationships. In doing so, a first step to investigating the effects of the PC in alliances is to define it within the alliance context.

Alliances and the psychological contract

The fact that entering into alliances requires the creation of "the right psychological foundation", and a different "psychological bargain", as opposed to more traditional forms of contracting, has already been recognised (Victorian Government, 2006, p. 10). This entails the participants understanding the critical role the human dimension plays in the success of alliances. However, a clear definition of the actual alliance PC is required in order for empirical measurements to be effected.

The Alliance Relationship Health Indicator (ARHI)

Measuring something as intangible as the PC is challenging, but possible. In fact, the PC has already been defined and measured by various researchers around the world in various contexts, as mentioned previously. Within the alliance context, the only documented attempt to measure the PC is provided by Beames' (2008) Alliance Relationship Health Indicator (ARHI).

The ARHI is an adapted version of the Workplace Relationship Development Indicator (WRDI) into the alliances context. The WRDI is a multi-purpose survey based on Guest's (1998) causal model of the PC. The WRDI survey measures the health of workplace relationships and predicts their consequences. It was developed in conjunction with a number of Australian organisations across a variety of industry sectors, including state government, contracting and mining, recruitment, IT, heavy manufacturing, agricultural export, services and biotechnology. The instrument has rigorous psychometric properties, uses Likert scales, and comprises a minimum of 4 items per scale. The WRDI technical manual reports acceptable scores of internal construct consistency.

The ARHI was developed and used in a pilot study to measure alliance relationships (Beames, 2008). This pilot was implemented on one of the alliances within a large construction contractor following their need to implement a standardize measurement and reporting system to more effectively manage their alliance relationship contracts, and produce better relationship contract outcomes. More specifically, the aim of the pilot was to develop a diagnostic survey instrument able to produce valid and reliable data, presented in an easily interpretable reporting format.

To this end, three versions of the ARHI (Leadership Team, Management Team and Project Team) were generated. Return rates were relatively low, with 5 from the Leadership Team, 4 from the Management Team, and 26 from the Project Teams completing the survey. The patterns of scores was consistent with other typical workplace survey findings, where higher levels of management tend to report higher scores. The pattern of alliance health factors appeared to be consistent with consequences factors for the various alliance segments, with lower health scores predicting lower consequences scores. The magnitude of scores (i.e., %), of the ARHI scales were of a similar order of magnitude to that of the WRDI instrument, for equivalent scales and items. There was a consistent pattern of item scores within each scale indicating that the items are related.

At a first glance, the data collected from the ARHI appears to be valid and reliable, with the model and associated survey tool providing a conceptual approach to the measurement and reporting of alliance relationships. However, the sample size was

insufficient to conduct a more extensive psychometric analysis and assessment. Further, the key constructs used and the segmentation approach to reporting (i.e., Leadership Team, Management Team, Project Teams) would need to be validated by collecting more data. It is therefore recommended that the model be validated using industry experts, the constructs and items revised, and a second more extensive pilot be conducted on other alliances. This would entail conducting a comprehensive evaluation of the utility of the ARHI. In conclusion, the model lacks validity and it has been only been developed to a rudimentary stage. This deficiency is addressed directly. This deficiency is addressed directly.

It is deemed necessary to explore the nature and dynamics of alliance relationships in more depth and from a phenomenological perspective. This is important in order to capture the unique elements of alliance relationships from an industry perspective.

Study 1: Validation of key variables and conceptual model

Method
A qualitative approach was chosen to validate the construct variables, as it is the most suited to answering the research question of this study: that is, to understand the relational aspects of an alliance in great depth and detail. This includes understanding how relationships actually occur, the relationships that are of major importance, and the variables that are critical to their success throughout the life of the alliance. The qualitative approach is ideally suited to obtaining this type of information, at it starts with a *what* or *how,* so that initial forays into the topic describe what is occurring (Cresswell, 1998).

Another reason for choosing a qualitative approach was the lack of previous research in this area, and the need to develop clear and detailed understanding of the complexity of alliances relationships. Moreover, in this study there is the need to capture data from a phenomenological perspective, including a detailed view of the relationship of the subjects under study in their context. The qualitative approach is more suited to fulfilling this purpose. Finally, participants in this study had to be carefully selected; only individuals with first-hand and extensive experience (industry experts) of the phenomenon under investigation were sought.

Semi-structured interviews were conducted, as they allow probing (Fellows and Liu, 2003). Similarly, they allow respondents' attitudes and motivations to emerge freely, as opposed to being too constrained by a structured question format (Dainty *et* al., 2005). The interviews captured both qualitative feedback and ratings of the constructs of the model to be tested.

In addition to the interviews, publications by some of the experts interviewed were also analyzed. Analysis of texts and documents is another primary method of qualitative research (Silverman, 1993). Such publications were carefully read and analysed by the researcher prior to the interviews, as recommended by Dilley (2000). This provided greater insights for the researcher and useful probing material for the interviews.

Sample

Twenty four interviews were conducted with industry experts. They differed in their roles within the alliance context, industries and were from various geographical regions throughout Australia. The mix of respondents ensured the elicitation of a range of different perspectives on the same issues. This was particularly important given that the aim of the study is to develop a generic relational model for alliances.

Data collection and analysis

The interviews consisted of two sets of questions, which were intended to generate two distinct data sets. Section one was designed to fully understand the alliance structure and the complex web of alliance relationships, uncover the relationships respondents see as most critical and conducive to alliance success. Section two was design to validate the constructs of the model to be tested, and ascertain opinions on the usefulness of the model. The researcher was aware of the need to keep questions open-ended in order to avoid bias responses.

The use of qualitative approaches to validate constructs, such as commitment in order to transcend the superficiality of surveys has already been documented (Ashman, 2007; Ashman and Winstanley, 2006). This is in recognition that construct validity is based upon inference, judgment and subjectivity (Kline, 2000).

Interviews were digitally recorded to ensure their content was exactly retained, as recommended by Silverman (2000). Recordings were transcribed and transcripts entered into QSR NVivo 8 qualitative analysis package. Next, all transcripts were carefully read and coded. The benefit of using computer-aided analysis of qualitative data in construction management research has been documented (Dainty *et* al. 2005).

Data analysis was conducted using a hybrid approach to content analysis (Fereday and Muir-Cochrane, 2006), driven by both the research questions and objectives of the study. The first data set comprised an inductive process of reading and interpreting the raw data. The second data set comprised a more deductive approach of assessing data against theory, with the aim of testing the face validity of the constructs and the model. Data collection and analysis were undertaken concurrently. Essentially, the data analysis process was iterative and reflexive.

Results

Trust
All participants identified trust as the key ingredient for alliance success. It is *fundamental, critical* in contributing to the health of alliance relationships at all levels. Breakdown of trust, communication and respect for each other are the most common sources of conflict in alliances. The benefits of trust are: allowing team members to understand each other; providing alignment; reducing risk and uncertainty; maximising flexibility; enabling successful execution of work; and saving time and money. Generating trust is hard. It takes awareness and conscious effort. Respondents indicated "Trust is essential: hard to gain, easy to lose.", "Trust is not a commodity that you just pick up from the shelf".

Fulfilment of expectations
Expectations are based largely on a set of generic governing principles (behavioural commitments) in relation to the functioning of the alliance. Alliance members' perceptions of whether or not these expectations are fulfilled are perceived by the interviewees as very important. Participants emphasised the importance of discussing expectations from the start. For example one respondent indicated; "Expectations set standards for the relationship." Fulfillment of expectations was linked to enduring relationships and reputation. Failure to fulfil alliance member expectations in relation to alliance principles leads to 'business as usual'.

Fairness
Fairness refers to members' perceptions of being treated equitably, impartially and in a just manner, including their ability to make judgments free from prejudice, discrimination or dishonesty. Fairness is seen as a *fundamental ingredient* and intimately related to trust. Some participants associated fairness with *consistency* of decisions within the alliance. The importance and impact of fairness was reported as relating to the dynamics occurring during the early stages of the alliance. Demonstrating behaviour consistent with a commitment to fairness during the early stage of the alliance yields extraordinary behaviour and establishes an entirely new relationship as is attested to the following comment from one of the participants. Respondents spoke about o*penness and fairness,* of *having an equal opportunity to comment and make a contribution* within their particular work groups. Lack of fairness was linked to leadership failure.

Commitment
Commitment refers to members' positive emotional attachment to the alliance. That is, they commit to the alliance because they want to, rather than have to. A member who is strongly committed identifies with the goals of the alliance and actively desires to remain part of it. It was linked to principles and objectives. By and large, commitment was mentioned in relation to the alliance principles and objectives. Commitment to the project was also linked to enthusiasm. Commitment is an opportunity to unleash people's creative thinking, leading to *sustained levels of energy above what is normally expected.*

Satisfaction
Satisfaction refers to the extent to which alliance members feel positive or negative about working in the alliance. Some participants attributed satisfaction to the unique alliance working environment and sense of achievement derived from it. It was described as an outcome and motivator.

Discretionary effort
Discretionary effort is an outcome variable of a healthy alliance relationships that most participants considered to be very important. It refers to the members' willingness to voluntarily put extra or additional effort into the alliance (beyond that expected or required as part of their jobs). It can be likened to a personal deal. In this context, effort is not restricted to the physical; it includes any behaviour related to seeking ways to do the job better. This includes a willingness to go above and beyond the call of duty. Examples

include helping others with workloads, volunteering for additional duties, looking for ways to perform jobs more effectively, sharing information with other alliance members or stakeholders, and voluntarily allocating thinking time for work-related problems or challenges outside working hours. Discretionary effort can also be thought of as the gap between a person's actual performance and their performance. Discretionary effort adds value to the alliance and is crucial to its success. For some respondents, it is the whole reason for an alliance arrangement.

Innovation

Innovation relates to an individuals' orientation towards change, and is associated with the likelihood of alliance members coming up with and/or adopting new ideas and/or practices. Innovation is also related to individuals' perseverance with the implementation of new and promising ideas and higher levels of thinking; Innovation is encouraged and promoted by giving people the time and freedom (permission) to think and approach tasks and challenges their way, as opposed to telling them how to do it. In effect liberation (permission) leads to innovation.

The Alliance Psychological Contract (APC) Model ™
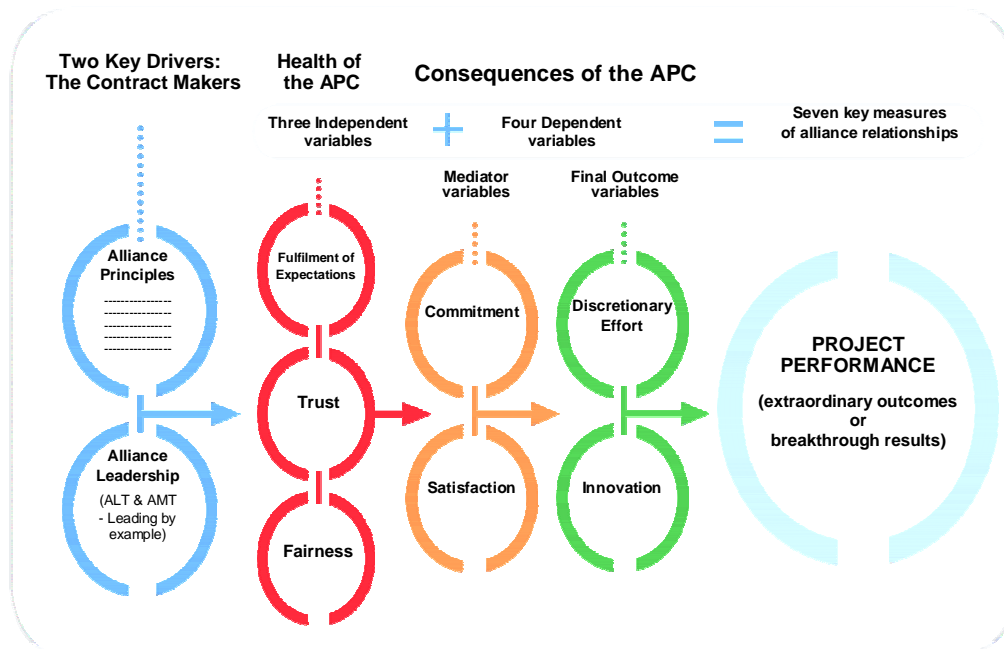
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The APC diagnostic model comprises two drivers and seven measures which account for the key elements that can mean the difference between business as usual and the achievement of extraordinary outcomes, as depicted in the figure below.

The two drivers are *alliance principles* and *leadership*. These are the contract "makers and shapers" of the APC which strongly influence alliance behaviours.

The first three relationship measures reflect the health of the APC: *fulfilment of expectations, trust* and *fairness*. These in turn lead to two initial outcome measures – *commitment* and *satisfaction* – which impact on the final two measures, *discretionary effort* (going that extra mile) and *innovation*.

There are three versions of the APC survey, each aimed at a different group within an alliance:
- Alliance Leadership Team (ALT);
- Alliance Management Team (AMT); and
- Wider Project Team (WPT).

Subtle differences between the versions reflect the structural differences within an alliance.

Study 2: Validation of the Alliance Psychological Contract (APC) instrument

Method
A quantitative approach to data collection was used to validate the APC instrument. More specifically, a correctional field study (or survey) was used as a suitable method of measuring the independent and dependent variables (Tharenou *et* al. 2007).

Sample
Sixteen alliances across water, rail, road and planning sectors in Australia and New Zealand were surveyed (N = 700). This included 483 respondents (357 from program and 126 from project alliances), at the Wider Project Team (WPT) level. Concurrently, data was also collected from Alliance Leadership Team (ALT) members (N= 98 – 75 program and 23 project alliances), and Alliance Management Team (AMT) members (N = 107 – 88 program and 19 project alliances).

Characteristics of the sample were as follows:

	ALT Program	AMT Program	WPT Program
Gender	69 M; 6 F	71 M; 17 F	266 M; 91 F
Average age (years)	49.1	44.1	40.6
Length of time in alliance (months)	18	20	14

Data collection and analysis

Data was collected via an online web-based survey. Participants were provided with access to information to enter the survey website. After completing the form online, they were asked to click on a 'submit' button. Data entry was automatically configured to be sent to a secured database or spreadsheet. This eliminated manual data entry and potential errors in re-keying data. There is strong evidence that the internet has become a highly acceptable means for collecting data (Dillman, 2000).

Other advantages of using web-based surveys include lower costs, ease of data entry, flexibility in format, and the ability to capture additional information response-sets (Granello & Wheaton, 2004). SPPS was used to analyse the data.

Measures
A summary table of survey measures is provided in the appendix section.

Results

Psychometric Properties

Reliability
Reliability refers to the measurement consistency of the survey instrument (i.e., the accuracy and consistency of respondents' scores). Reliability can be assessed by two methods:
- Internal consistency; and
- Test-retest reliability.

(a) Internal consistency (Cronbach alpha) coefficients for the scales
Refers to how well the scale items measure the scale they are supposed to measure (i.e., the consistency of respondents' scores on each item for each scale).

	Cronbach alpha coefficient ALT Pgm	Cronbach alpha coefficient AMT Pgm	Cronbach alpha coefficient WPT Pgm
Trust within team	.92	.94	.92
Trust with the AMT	--	--	.94
Trust with the AM	--	.94	.96
Trust with the ALT	--	.96	.95
Fairness	.94	.91	.92

Commitment	.89	.93	.91
Satisfaction	.72	.79	.79
Effort	.86	.92	.86
Innovation	.89	.88	.89

Comments:
- There is some redundancy of items. Hence, selected items may be eliminated in due course but nevertheless, these items have meaning and significance in terms of consultancy utility;
- The Satisfaction scale initially contained a reversed item. Most likely, this may have contributed to a lower reliability score, as some participants may have misread this item.

Validity

(a) Content validity

Refers to the extent to which the content of the scales address the focus of the survey (i.e., whether the content covers a representative sample of the domain to be measured).

Comments:
- Item content for each scale is homogeneous and focuses on a single topic;
- The interpretation of each scale is straightforward;
- Items have been considered for simplicity, ambiguity, and transparency of meaning;
- Subsequent field testing has resulted in the selection of relevant items and the elimination or revision of other items.

(b) Face validity

Refers to whether the survey seems reasonable on face value (i.e., whether it appears to be measuring what it says it is measuring).

Comments:
- Items are written to be face valid;
- There are no unobtrusive measures;
- There are no hidden agendas or trick questions.

(c) Construct validity

Refers to the attachment of psychological meaning to the survey scores and results (i.e., whether it can be said to measure a theoretical construct or trait).

Comments:
- Group comparisons of means (i.e., comparing ALT with AMT with WPT), are intuitively logical and are consistent with organisational hierarchy (e.g., people in higher level jobs have higher levels of commitment, satisfaction, discretionary effort and innovation), demonstrating theory consistent group difference validity.

(d) Criterion related validity

Refers to how accurately scores obtained on an assessment instrument predict, or are associated with, an individual's behaviour in situations that should be related to the construct being measured. Criterion related validity can be separated into:
- Concurrent validity; and
- Predictive validity.

    Concurrent validity

    Concurrent validity refers to how well scores obtained on an assessment instrument predict current performance on another criterion.

Comments:
- Comparisons across the alliances surveyed indicated lower means for those alliances which were reported to be underperforming.

Predictive validity

Predictive validity refers to how well scores obtained on an assessment instrument predict future performance on another criterion.

The AB™ is a new instrument and predictive studies have yet to be conducted. However, anecdotal evidence suggests that lower scores on the AB™ survey are associated with poorer performing alliances.

Multiple Regression Analysis (for WPT program only)

(a) Satisfaction (S) and Commitment (C), predicting Discretionary Effort (DE)

	Variance
Satisfaction and Commitment	DE 14%

(b) Satisfaction (S) and Commitment (C), predicting Innovation (In)

	Variance
Satisfaction and Commitment	In 17%

(c) Alliance Psychological Contract Health Variables (APCHV), predicting Commitment **(C)**

	Variance
Alliance Psychological Contract Health Variables	C 58%

(d) Alliance Psychological Contract Health Variables (APCHV), predicting Satisfaction (S)

	Variance
Alliance Psychological Contract Health Variables	S 57%

(e) Stepwise Regression: Health Variables predicting Commitment (C)

	Variance
Expectations Fulfilment	C 42%

Fairness	14%

(f) Stepwise Regression: Health Variables predicting Satisfaction (S)

	Variance
	S
Expectations Fulfilment	49%
Fairness	7%

Note:

Alliance Psychological contract health variables (APCHV) include:
- Fulfillment of alliance expectations (EFI)
- Trust within the immediate team
- Trust with the ALT
- Trust with the AM
- Trust with the ALT
- Fairness

EFI is an index measure of the overall fulfillment of expectations across the 12 items comprising the alliance psychological contract.

(e) 12 Expectations Predicting Commitment (C):

Refer table below or the respective contributions of the 12 expectations items loading on commitment.

	Expectation	**Standardised regression coefficient: Commitment**	**Ranking**	**Relative contribution (%)**
1	Decisions made best for project	.052	9	5.2
2	Commitment to drive innovation	.171	1	17.1
3	Risk managed collectively	.148	2	14.8
4	Clarity concerning project scope, goals, & deliverables	-.056	12	-5.6
5	Responsibilities accepted & acted out	.133	3	13.3
6	Collaboration & productivity	.093	7	9.3
7	Accountability of members to each other	.120	6	12.0
8	Effectiveness of processes & systems	.011	11	1.1
9	Responsiveness – no red tape	.014	10	1.4
10	Flexibility	.122	5	12.2
11	Access to 1st class resources	.133	4	13.3
12	Disagreements, conflicts or disputes addressed	.057	8	5.7

(f) Conclusions from the above analysis:
The APC™ model of the alliance psychological contract, and the AB™ survey, is strongly predictive of commitment and satisfaction, which in turn are moderately predictive of discretionary effort and innovation.

Correlations
Refer attached spread sheet showing scale intercorrelations. Item intercorrelations for each scale are available.
The alliance psychological contract relationship scales intercorrelations were highly positive, and intercorrelations between the alliance psychological contract consequences scales were highly positive.

Factor Analysis
The items for each scale were subjected to factor analysis to test their dimensionality. Principal component analysis confirmed that for most scales, all items loaded on one factor.

Other Analysis
Means, Standard Deviations
Means and standard deviations were calculated for the scales for the sample for both program and project alliances at each of the three (3) levels – ALT, AMT and WPT.

Limitations
Two limitations are identified in this study. This research has an Australian alliances focus. As a result, it might not be generalise to other forms of relationships contracting in other countries. Further, the author acknowledges that might be other mediating variables between affective commitment/satisfaction and the final outcome variables (discretionary effort and innovation), as this is a 'closed systems' model.

Conclusion and directions for future research

This paper has fulfilled the need to empirically investigate alliance relationships in a new a context created by a dramatic increase of collaborative approaches of working in the construction industry. This study contents that Australian alliances are sufficiently mature to be the subject of research underpinned by theory and theory testing. Accordingly, and drawing on the empirical body of research of the psychological contract (PC), this research comprised a sequential mixed method design (qualitative/quantitative) approach. The first qualitative study documented industry insights from twenty four interviews conducted with experts provided a deeper understanding of the key relational and behavioural aspects within the complex web of alliance relationships, and assisted in defining the alliance psychological contract (APC). Interview data also assisted in determining the face validity of the constructs pertaining to the proposed new model for measuring and diagnosing the health of alliance relationships. In doing so, this research has evaluated and revised a pre-existing rudimentary PC-based alliance relationships framework – the Alliance Relationship Health Indicator (ARHI), which is based on Guest's (1998) model of the PC. This resulted in a new, more comprehensive, robust, integrated and testable model - the Alliance Psychological Contract (APC). The APC includes a generic instrument for measuring and diagnosing the health of alliance relationships. The second quantitative study comprised developing the psychometric properties of the APC survey, which were examined using a sample of 16 alliances across industries (N = 700) in Australia and New Zealand. The APC appears to be a valid and reliable a generic instrument for diagnosing the health of alliance relationships, and offers a research-based model for high performance teams in infrastructure industry projects. This is the first empirical study to propose an alliance relationship research-based model aimed at predicting performance. This research has an Australian and NZ alliance focus and findings may not be generalisable to other countries. Future research includes growing the existing data based in order to develop benchmarks for each alliance type and industry, and collecting data using the APC model in other countries in order to draw comparisons.

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Appendix

Summary of Survey Measures

Profile A: Fulfilment of Expectations Scale

- Decisions made on a best for project basis
- Commitment to drive innovation
- Risks managed collectively
- Clarity concerning project goals, scope and deliverables
- Responsibilities accepted and acted out for various roles
- Collaboration and productivity (high performance team)
- Accountability of members to each other
- Effectiveness of processes and systems
- Responsiveness – no red tape
- Flexibility
- Access to first class resources
- Disagreements, conflicts or disputes addressed promptly and effectively

Profile B: Alliance Health

Expectations Fulfillment Index (EFI):

Overall fulfilment or delivery of expectations calculated by aggregating the scores on the 12 items from Profile A

Profile B: Alliance Health

 Trust:

- No blame when things go wrong
- Communicate openly, honestly and respect each other
- Competent
- Demonstrate good judgment
- Can rely on each other
- Deliver on what they say/promise
- Share important information, openly and transparently

 Fairness:

- Opportunity to express views
- Consistency in decision making
- No favoritism
- No bullying, abuse of power, discrimination
- Disputes/issues resolved fairly and reasonably
- Appropriate sharing of influence and power
- Equal say in relation to project decisions*
- Share risks collectively*
- Successfully aligned interests*

 * *Additional ALT items*

Profile B: Alliance Consequences

 Commitment:

- Proud to tell others
- Great deal of personal meaning
- Care about the success
- Similar values

 Satisfaction:

- Like working in the alliance
- Pleased with progress
- Frustrated

 Discretionary Effort:

- Exert to the fullest
- Make sacrifices to finish the job
- Volunteer extra time to achieve results faster
- Persist in overcoming obstacles to complete tasks

 Innovation:

- Search new technologies, processes, techniques, concepts/ideas
- Generate creative ideas
- Promote and champion ideas to others
- Implement new useful ideas
- Develop adequate plans and schedules for implementation of new ideas