

Special Forms of Bias: Endowment Effect and Reactive Devaluation



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Introduction

In the preceding three chapters, four forms of bias that would affect dispute decisions have been identified. In this chapter two special forms of bias, endowment effect and reactive devaluation are discussed. It is very common for one to value one's belongings more than what one is willing to pay for the same. This phenomenon is called endowment effect (EE) [88, 103]. Another concept akin to endowment effect is reactive devaluation (RD) that describes the habitual under-valuing of proposal raised by a bargaining counterpart. Both forms of bias are considered as psychological barriers and would impede dispute settlement [74, 76, 96, 119, 121].

Endowment Effect

EE was coined by Professor Richard Thaler, the 2017 Nobel laureate in economics science. EE describes the phenomenon of one usually require more to relinquish their own items than they are willing to pay for the identical items [138]. This is caused by the psychological attachment on one's own item [10]. In more technical terms, people demand more to forgo their belongings as they overvalue the loss in losing them [63, 128]. EE is considered as a kind of cognitive biases that are intuitive in nature [9, 11, 23, 67]. The manifestation of EE in economic exchanges is expressed

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that the amount of money one is willing to pay (WTP) to acquire the good is notably lower than the amount of money one is willing to accept (WTA) to forfeit it [16, 56]. People attribute higher value to their ownings than other people would do [4, 132]. Notwithstanding that happening of EE is often related to physical objects, EE also applies to entitlements, beliefs and ideas [102]. It is proposed that EE also happens in decision making and as a result one would attribute more value and defend their own positions [33]. Liedtka [85] also suggested that EE would lead to attachment to first solution and overlooking alternative options. Extending these propositions to construction dispute negotiations, EE can be a form of psychological barrier against negotiated settlement [88, 102, 138, 142].

Sources of EE

Four sources have been identified from the relevant literature. These are ownership, loss aversion, status quo bias and strategic bargaining habit.

Ownership

Beggan [10] and Morewedge et al. [103] found that ownership would increase the perceived value of a self-owned object that can be physical, values of opinions and positions [33]. It can be explained that one would naturally develop association and attachment with objects that they own. Belongings are considered as part of oneself [4, 132]. Inevitably people would unconsciously ask for more compensation if they were asked to forsake “part of themselves” [144]. Moreover, legal ownership is different from psychological one [132]. Legal ownership starts with the receipt of the object and will be strengthened with time [117, 136]. Psychological ownership on the other hand could develop even without legal possession of the object. One could perceive ownership through imagination or affection [5, 42]. Nevertheless, both legal ownership and psychological ownership fuel unwillingness to forgo. The potential loss of an endowed object is a threat to one’s self-image [21, 32]. Besides, ownership would activate and elevate one’s recognition of the positive features of the object resulting in attesting higher value [16].

Loss Aversion

Loss aversion also drives endowment effect [62, 132, 138]. Prospect theory explains loss aversion as the human tendency of overvaluing losses and undervaluing gains [63, 125]. In short, there is an asymmetry that losses resonate more than gains of equal magnitude [4, 78]. From psychology point of view, one tends to consider

the discomfort provoked by losses more significant than the pleasure brought by gains of equal size [128, 142]. The reference-dependent theory also explains that receiving an item will move an individual from “not-owning” to “owning”, whereas giving up an item works the other way [111]. The WTA for giving up an item is perceived to be higher than the WTP to acquire the same [62]. In making decisions, the greater extent people are getting involved, the higher the loss aversion [128]. Furthermore, for a decision that involved much energy and commitment, it is even more difficult to relinquish it [108, 128]. Therefore, loss aversion hampers desire to dispute settlement as negotiating parties are likely averse to concessions because compromises are perceived as losses [25, 62].

Status Quo Bias

Samuelson and Zeckhauser [126] described status quo bias as one’s stay put tendency. Humans are change-averse. Status quo bias would lead to EE because the preference to remain status quo would induce them to attribute a higher value to the entitlement they are endowed with, causing a disposition to maintain the ownership [75, 78]. Moreover, status quo bias is triggered by loss aversion [63], because of the inclination to avoid losses. No action is taken as not taking any risk in losing [78]. The disadvantages of abandoning status quo are therefore far more tangible than the prospective gains [59, 62].

Strategic Bargaining Habit

Different strategic bargaining habits of negotiators could also result in variation in the estimated prices [27, 102]. Influenced by strategic bargaining habits, people would unconsciously underestimate their WTP when they are buyers and overestimate their WTA when they are owners [73]. Out of strategic reason, owners usually attribute a higher value to an object with the expectation that the buyers would offer a similar price. Likewise, when buyers value an object with a lower price, they would anticipate the owner would value similarly. Not only will one mis-judge the valuations of others, Van Boven et al. [14] further proposed that people would have unrealistic predictions of what they would offer if they were in the opposite role.

Manifestations of EE in CDN

The possible manifestations of EE in CDN derived from the relevant literature are listed in Table 1.

Questionnaire Survey

Possible manifestations of EE in CDN as listed in Table 1 were included in a questionnaire survey and sent to CDN practitioners. Respondents were asked to rate their agreement of having the listed EE manifestations in a Likert scale of “1 = Strongly Disagree” to “6 = Strongly Agree”. Both paper-based and online questionnaire were used. Online questionnaires together with a covering letter introducing the background the study were sent via the survey tool of eSurv. The targeted professionals include architects, building services engineers, building surveyors, project managers, quantity surveyors and structural/civil Engineers. Their contacts were collected from research networks; websites of learned societies, including Hong Kong Institution of Engineers (HKIE), The Hong Kong Institute of Architects (HKIA), Hong Kong Institute of Surveyors (HKIS) and Hong Kong Institute of Construction Managers (HKICM) and HKSAR government department websites, including Buildings Department and Housing Authority and Housing Department. Paper-based questionnaires were distributed at learned society workshops and seminars. A total of 207 questionnaires were distributed, and 112 effective responses were received and used in the data analysis. The response rate is 54%. The demographic information of the respondents, including professional background, nature of their organization, years of experience and the type of dispute are represented in Figs. 1, 2, 3 and 4.

Table 1 Measurement statements of EE in CDN

Sources of EE	Manifestations	References
Ownership	I develop ownership of arguments and positions I use in negotiations	[33]
	I consider my arguments and positions as part of my self-concept	[4, 132, 144]
	I feel good about myself when endorsing my own decision	[16, 132, 144]
	I feel opposition and counter-argumentation from the counterpart as a threat to my self-esteem	[2, 4, 17, 32]
Loss aversion	I consider accepting the offers from the counterpart means losing interests	[62, 102, 111]
	When making trade-offs, I focus on the benefits forgone	[4, 63, 128]
	I don't want to lose my position because I believe it is the best solution	[63, 102, 111]
	Before starting negotiation, I assume my decisions would be accepted by the counterpart	[62, 102, 111]
	In negotiation, I consider making compromise means accepting a less practical solution	[102, 111]

(continued)

Table 1 (continued)

Sources of EE	Manifestations	References
Status Quo Bias	I want to maintain my decisions therefore I am uninterested in negotiating	[59, 62, 78, 75]
	When rethink about my decision, I unconsciously recall reasons why my decisions hold	[78, 75, 126]
	When disagreements occur, I first recall reasons to support my position	[78, 75, 126]
	I believe the counterpart provides premature decisions	[75, 126]
	I believe the counterpart will agree with us if they put more effort in decision making	[59, 62, 78, 75]
	After obtaining much supporting information for my decision, my information searching process terminates	[59, 63]
	I search less information about the counterpart's proposal	[59, 62, 75]
	After forming a reasonable decision, I am immune to other alternatives	[126]
Strategic bargaining habit	When negotiating, I think overvaluing my decision is a strategy to gain more benefits	[14, 73, 120, 122]
	I over-claim the compensation when I have to put up with something negative, such as project overrun due to the fault of the counterpart	[14, 73, 120, 122]
	After forming a decision, I tend to pay more attention to the information that supports my decision	[113]
	I interpret supplementary information as evidence to support my decision	[53]
	I endorse information that supports my decisions	[113]

Findings

Ratings on each of the statements were calculated and summarized according to the categorization of professional background, years of experience and gender of the respondents. Under each category, EE manifestations were ranked according to the level of agreement rated by the respondents. Rating scores and ranks of these EE manifestations are presented in Table 2. It can be seen that most of the statements have average scores more than 3.5, which is higher than the mid-point of the scale. Therefore, the respondents as a whole agreed the happening of EE during construction dispute negotiation. With reference to Table 2, the rankings of the EE manifestations differ across groups of professional background, years of experience

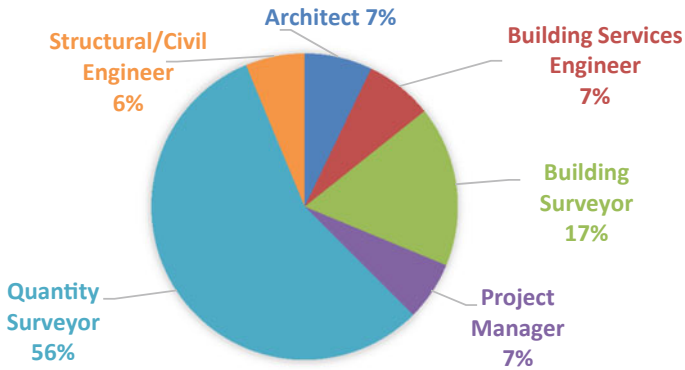


Fig. 1 Professional background of the respondents

Fig. 2 Organisation of the respondents

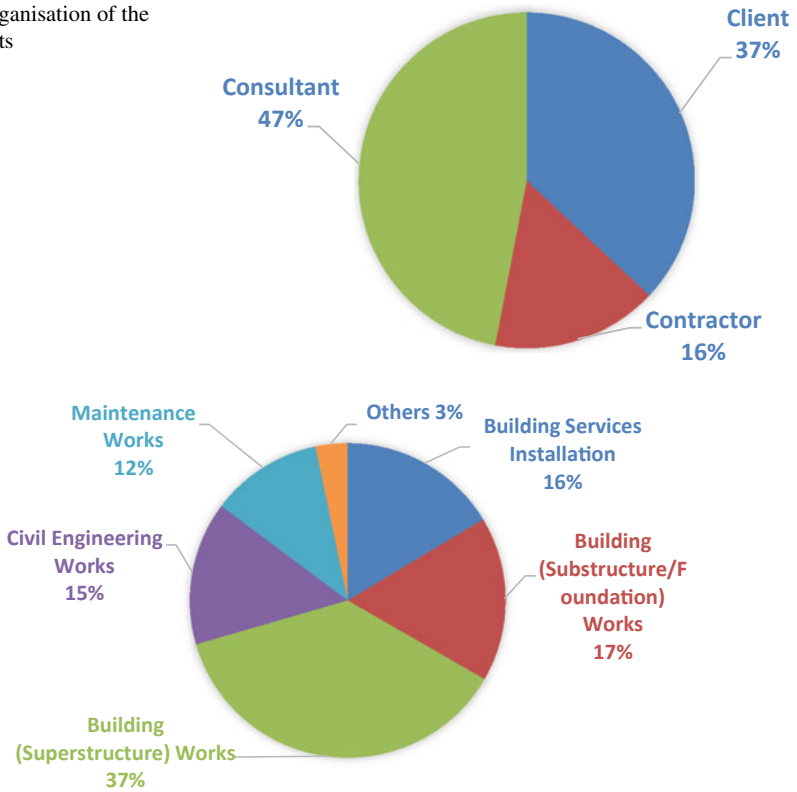


Fig. 3 Dispute type the respondents involved

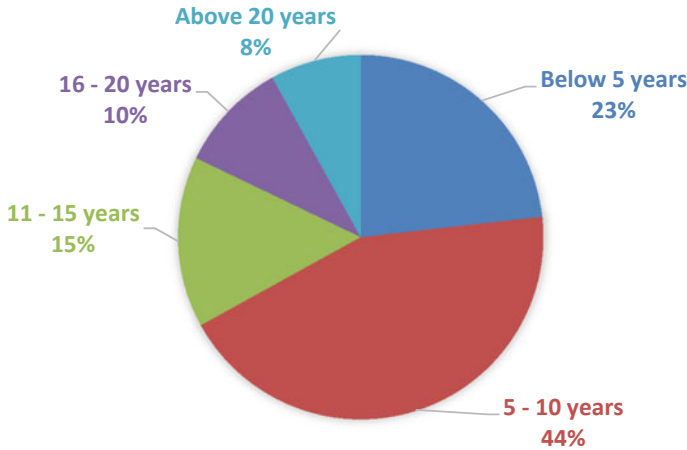


Fig. 4 Years of experience of the respondents

and genders. In order to further explore the influence of age, professional background and gender on the extent of people having EE behaviours, one-way analysis of variance (ANOVA) was conducted. One-way analysis of variance (ANOVA) is used to examine the differences between mean values of different sample groups [8, 57]. The null hypothesis is that there is no significant difference among the mean values of the samples in different groups. A significant p value would reject the null hypothesis and indicate significant differences among the groups. In this study, ANOVA was performed to explore the potency of EE with organizational groups (contractor, consultant and client), years of experience group (below 5 years, 5 to 10 years, above 10 years) and gender group (male and female). The ANOVA results are presented in Tables 3, 4, 5 and 6. From Tables 3, 4, 5 and 6, it shows that under each source of EE, the between groups p values of organizational groups, years of experience groups and gender groups were all non-significant of values larger than 0.05 (alpha = 0.05). Therefore, no significant differences were found. Accordingly, the potency of EE on dispute negotiators are not affected by organizational perspectives, working experience and genders.

Discussions

The happenings of EE run against rational economic assumptions [138]. The study reported in this chapter examines EE in CDN. Four sources of EE were identified from literature: ownership, loss aversion, status quo bias and strategic bargaining habit. Manifestations of EE in CDN were further operationalized. The opinions from construction practitioners confirmed the happenings of these EE manifestations in practice. The influences of EE in CDN are as follow.

Table 2 Sources of EE

Source of EE	Years of experience (N = 112)						Organization (N = 112)						Gender (N = 112)			
	Below 5 years (N = 26, 23%)		5–10 years (N = 49, 44%)		Above 10 years (N = 37, 33%)		Contractor (N = 18, 16%)		Client (N = 43, 38%)		Consultant (N = 51, 46%)		Male (N = 64, 57%)		Female (N = 48, 43%)	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Ownership	4.08	1	4.17	2	3.99	3	3.99	3	4.20	1	4.04	3	4.06	2	4.14	2
I develop ownership of arguments and positions I use in negotiations	3.81	16	4.29	22	4.27	3	3.94	20	4.51	1	3.96	13	4.11	10	4.25	7
I consider my arguments and positions as part of my self-concept	4.31	3	4.24	13	4.16	9	4.28	14	4.21	8	4.24	6	4.28	6	4.17	10
I feel good about myself when endorsing my own decision	4.12	8	4.18	5	3.97	12	4.17	11	4.14	12	4.04	9	4.13	9	4.06	12
I feel opposition and counter-argumentation from the counterpart as a threat to my self-esteem	4.08	9	3.98	6	3.54	21	3.56	2	3.93	15	3.90	17	3.70	19	4.06	13
Loss aversion	3.95	2	4.17	2	4.11	1	4.09	2	4.15	2	4.06	2	4.06	2	4.15	1

(continued)

Table 2 (continued)

Source of EE	Years of experience (N = 112)						Organization (N = 112)						Gender (N = 112)			
	Below 5 years (N = 26, 23%)		5-10 years (N = 49, 44%)		Above 10 years (N = 37, 33%)		Contractor (N = 18, 16%)		Client (N = 43, 38%)		Consultant (N = 51, 46%)		Male (N = 64, 57%)		Female (N = 48, 43%)	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
I consider accepting the offers from the counterpart means losing interests	3.73	17	3.78	21	3.76	16	3.83	7	3.79	18	3.71	19	3.63	20	3.94	15
When making trade-offs, I focus on the benefits forgone	4.19	7	4.22	12	4.19	8	4.33	15	4.21	9	4.16	7	4.16	8	4.27	6
I believe my proposal is the best solution to the project dispute	3.88	13	4.20	19	4.24	6	4.06	17	4.19	11	4.14	8	4.20	7	4.06	14
Before starting negotiation, I believe my decisions would be accepted by the counterpart	4.35	2	4.35	8	4.11	10	4.22	13	4.30	5	4.25	5	4.31	5	4.21	8

(continued)

Table 2 (continued)

	Years of experience (N = 112)						Organization (N = 112)						Gender (N = 112)			
	Below 5 years (N = 26, 23%)		5-10 years (N = 49, 44%)		Above 10 years (N = 37, 33%)		Contractor (N = 18, 16%)		Client (N = 43, 38%)		Consultant (N = 51, 46%)		Male (N = 64, 57%)		Female (N = 48, 43%)	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
In negotiation, I am confident that my decisions are more practical than the counterpart's	3.58	20	4.31	4	4.27	4	4.00	19	4.28	7	4.04	10	4.00	12	4.29	4
Status Quo Bias	3.81	4	3.91	4	3.81	4	3.86	4	3.85	4	3.87	4	3.85	4	3.87	4
I want to maintain my decisions therefore I am uninterested in negotiating	3.19	22	3.71	2	3.68	19	3.67	4	3.53	20	3.59	21	3.38	21	3.85	18
When rethink about my decision, I unconsciously recall reasons why my decisions hold	3.85	15	4.04	9	3.89	14	3.83	9	3.91	16	4.02	12	3.98	13	3.90	16

(continued)

Table 2 (continued)

Source of EE	Years of experience (N = 112)						Organization (N = 112)						Gender (N = 112)			
	Below 5 years (N = 26, 23%)		5-10 years (N = 49, 44%)		Above 10 years (N = 37, 33%)		Contractor (N = 18, 16%)		Client (N = 43, 38%)		Consultant (N = 51, 46%)		Male (N = 64, 57%)		Female (N = 48, 43%)	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
When disagreements occur, I first recall reasons to support my position	4.58	1	4.51	7	4.32	2	4.44	21	4.49	2	4.45	2	4.56	1	4.33	2
I believe the counterpart provides premature decisions	3.88	14	3.73	10	3.92	13	3.72	10	4.07	13	3.67	20	3.88	16	3.77	19
I believe the counterpart will agree with us if they put more effort in decision making	3.96	11	4.24	15	4.03	11	4.06	12	4.21	10	4.04	11	3.97	14	4.29	5
After obtaining much supporting information for my decision, my information searching process terminates	4.00	10	4.24	20	3.62	20	3.94	3	4.05	14	3.94	14	3.89	15	4.10	11

(continued)

Table 2 (continued)

	Years of experience (N = 112)						Organization (N = 112)						Gender (N = 112)			
	Below 5 years (N = 26, 23%)		5–10 years (N = 49, 44%)		Above 10 years (N = 37, 33%)		Contractor (N = 18, 16%)		Client (N = 43, 38%)		Consultant (N = 51, 46%)		Male (N = 64, 57%)	Female (N = 48, 43%)		
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank		
I search less information about the counterpart's proposal	3.38	21	3.29	1	3.27	22	3.39	1	3.30	21	3.27	22	3.34	22	3.25	22
After forming a reasonable decision, I am immune to other alternatives	3.65	19	3.55	17	3.78	15	3.83	8	3.23	22	3.94	15	3.81	18	3.44	21
Strategic bargaining habit	4.08	1	4.29	1	4.08	2	4.17	1	4.14	3	4.20	1	4.22	1	4.11	3
When negotiating, I think overvaluing my decision is a strategy to gain more benefits	3.69	18	4.10	14	3.76	17	4.22	6	3.81	17	3.84	18	4.06	11	3.67	20

(continued)

Table 2 (continued)

Source of EE	Years of experience (N = 112)						Organization (N = 112)						Gender (N = 112)			
	Below 5 years (N = 26, 23%)		5-10 years (N = 49, 44%)		Above 10 years (N = 37, 33%)		Contractor (N = 18, 16%)		Client (N = 43, 38%)		Consultant (N = 51, 46%)		Male (N = 64, 57%)		Female (N = 48, 43%)	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
I over-claim the compensation when I have to put up with something negative, such as project overrun due to the fault of the counterpart	3.96	12	3.94	3	3.73	18	3.94	5	3.79	19	3.92	16	3.88	17	3.88	17
After forming a decision, I tend to pay more attention to the information that supports my decision	4.23	6	4.37	11	4.27	5	4.17	18	4.30	6	4.35	4	4.38	3	4.21	9
I interpret supplementary information as evidence to support my decision	4.27	4	4.53	16	4.38	1	4.44	22	4.42	3	4.41	3	4.38	4	4.48	1

(continued)

Table 2 (continued)

Source of EE	Years of experience (N = 112)						Organization (N = 112)						Gender (N = 112)			
	Below 5 years (N = 26, 23%)		5–10 years (N = 49, 44%)		Above 10 years (N = 37, 33%)		Contractor (N = 18, 16%)		Client (N = 43, 38%)		Consultant (N = 51, 46%)		Male (N = 64, 57%)		Female (N = 48, 43%)	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
I endorse information that supports my decisions	4.27	5	4.51	18	4.24	7	4.06	16	4.37	4	4.47	1	4.41	2	4.31	3

Table 3 Ownership ANOVA results

Organizational groups	Source	Sum of squares	df	Mean square	F	Sig.
	Between groups	0.851	2	0.425	1.438	0.242
Within groups	32.256	109	0.296			
Total	33.107	111				
Years of experience groups	Source	Sum of squares	df	Mean square	F	Sig.
	Between groups	0.742	2	0.371	1.250	0.291
Within groups	32.365	109	0.297			
Total	33.107	111				
Gender groups	Source	Sum of squares	df	Mean square	F	Sig.
	Between groups	0.179	1	0.179	0.597	0.441
Within groups	32.928	110	0.299			
Total	33.107	111				

df degree of freedom; *Sig.* significance value

Table 4 Loss aversion ANOVA results

Organizational groups	Source	Sum of squares	df	Mean square	F	Sig.
	Between groups	0.212	2	0.106	0.526	0.593
Within groups	21.948	109	0.201			
Total	22.160	111				
Years of experience groups	Source	Sum of squares	df	Mean square	F	Sig.
	Between groups	0.872	2	0.436	2.233	0.112
Within groups	21.288	109	0.195			
Total	22.160	111				
Gender groups	Source	Sum of squares	df	Mean square	F	Sig.
	Between groups	0.246	1	0.246	1.237	0.268
Within groups	21.914	110	0.199			
Total	22.160	111				

df degree of freedom; *Sig.* significance value

Under the influence of ownership, dispute negotiators would take their positions as personal belongings. As such, they are reluctant to make compromises because these are threats to their self-identity. Their positions are therefore endowed. This would further hinder the negotiator from exploring alternative options and making attempt to understand the standpoints of the counterpart [146]. Loss aversion makes dispute negotiators more sensible to the downsides of a compromise than their prospective gains from a prospective settlement. Construction disputes mostly involve monetary disagreement between parties, if negotiators are buried with potential losses, any breakthrough decisions like accepting the offer by the counterpart would require

Table 5 Status quo bias ANOVA results

Organizational groups	Source	Sum of squares	df	Mean square	F	Sig.
	Between groups	0.007	2	0.003	0.016	0.984
	Within groups	23.022	109	0.211		
	Total	23.029	111			
Years of experience groups	Source	Sum of squares	df	Mean square	F	Sig.
	Between groups	0.289	2	0.144	0.691	0.503
	Within groups	22.758	109	0.209		
	Total	23.047	111			
Gender groups	Source	Sum of squares	df	Mean square	F	Sig.
	Between groups	0.007	1	0.007	0.032	0.858
	Within groups	23.040	110	0.209		
	Total	23.047	111			

df degree of freedom; *Sig.* significance value

Table 6 Strategic bargaining habit ANOVA results

Organizational groups	Source	Sum of squares	df	Mean square	F	Sig.
	Between groups	0.086	2	0.043	0.164	0.849
	Within groups	28.463	109	0.261		
	Total	28.549	111			
Years of experience groups	Source	Sum of squares	df	Mean square	F	Sig.
	Between groups	1.222	2	0.611	2.437	0.092
	Within groups	27.327	109	0.251		
	Total	28.549	111			
Gender groups	Source	Sum of squares	df	Mean square	F	Sig.
	Between groups	0.334	1	0.334	1.304	0.256
	Within groups	28.214	110	0.256		
	Total	28.549	111			

df degree of freedom; *Sig.* significance value

bold efforts. This seems very unlikely for EE influenced negotiators. The occurrence of status quo bias would make the situation worse. Due to the complex nature of construction project and the current mainstream multi-tiered dispute resolution approach makes CDN fairly convoluted. Protracted negotiations may make the situation worse as the positions of the negotiators might have become holdfast. EE affected negotiators would stick with their assessments and even attach greater weights, resulting in negotiation impasse. Besides, strategically misrepresenting one’s positions about the dispute matter, either over-valuing it or under-valuing it, adds difficulty in reaching an agreement. Disputing parties would strategically overclaim their bottom line of bargaining and under-estimate their willingness to accept the offers

provided by the counterpart. This inflexible bargaining habit would destroy mutual trust and channel of communication. These effects of EE would no doubt make settlement remote.

From the ANOVA results summarized in Tables 3, 4, 5 and 6, it can be said that the tendency to practise EE is not related to one's organizational background, working experience and gender. Both male and female respondents, no matter they work for consultants, contractors or clients and their years of experience, they would likely all influenced by EE. This is consistent with previous reported studies that, repetitions of trade-offs and opportunities to learn would not eliminate the impact of EE [51, 72].

Managing EE

Dispute negotiators should be made aware of the psychological barriers they may have in handling disputes. Endowment effect is anchored on ownership and self-enhancement tendency of the negotiator. Enhanced objectivity would help disputing parties to refrain from psychological effect like endowment. With rational analysis, the positions taken by the negotiators can be reviewed and adjusted if necessary. There is no substitute to recognise that maximizing mutual benefits make the most commercial sense. When negotiators are focusing on mutual benefits, they would be more prepared to move away from the status quo. It is anticipated that better attention would then be placed on evidence and facts rather than emotional feelings. Negotiators would need external help at times to evaluate the relevancy of the available information, including those put forward by the counterpart. Moreover, there are caveats like opportunism and exploitation of one's good faith. To this end, appropriate intervention from neutral advisors can be useful. It has been suggested that advice from a third party neutral may be sensible than purely technical experts [35, 120, 122]. Practising meditators, facilitators and dispute resolution advisors are recognized groups of third-party neutrals who can facilitate the negotiation process by enhancing communication among the disputing parties [1]. Instead of the typical use of third-party neutral advisor after a dispute has arisen, his services can be standing throughout the project period. The standing arrangement would allow them to keep abreast with the knowledge and progress of the project so that they could provide impartial suggestions. Third party neutral advisors are in the suitable positions to give timely reminders. It is thus important that third party neutral advisors could participate throughout the construction project to remind the disputing parties about their EE tendencies. Reality checks could also be conducted with the assistance of third-party neutral advisor to help the disputing parties objectively review their assessments, their expectation and their attitudes about the dispute. One example in Hong Kong is the use of dispute resolution and avoidance advisor. Apart from disputing parties' irrational evaluation of their positions, it is also suggested that disputing parties' self-perception and emotions before entering the dispute resolution would moderate the extent of EE during CDN [80, 87]. If disputing parties are threatened or having a relatively negative emotion, they would attribute a lower

value to their later assessments and present a lower level of EE in the coming resolution process. With regard to construction dispute resolution training, psychological barriers are not yet standard component. In the light of the actual happening of biased behaviours, this omission should be addressed without delay.

Reactive Devaluation

Professor Lee Ross and his colleagues pioneered the study of reactive devaluation (RD) [119] and offered three major RD manifestations: (i) a proposal raised by the counterpart is rated less positively than the one raised by themselves; (ii) a proposal is rated less positively than those yet to be offered, the prospect of further proposals leads to dissatisfaction with the current offer; and (iii) a proposal raised unilaterally is rated less positively than one that was brainstormed by the parties together [101, 119, 120, 122].

Theoretical Explanation of Reactive Devaluation

Loss aversion, attitude polarization and naïve realism are the three theoretical explanation of reactive devaluation. These are discussed seriatim.

Loss Aversion

Loss aversion is a source to not only endowment effect (as discussed in the prior section of this chapter) but also to reactive devaluation. During negotiation, once an assessment of the dispute was made, changing one's position to accept a proposal by the counterpart is often treated as making a loss. A loss-averse offeree will delay or even avoid deciding on proposals on offer. Loss aversion effect would motivate a negotiator to devalue and reject suggestions made by the counterpart, resulting in an impasse [25, 60, 62, 128].

Attitude Polarization

People have the tendency to selectively pay attention to information that supports their views and dismiss those otherwise [70, 89, 110]. This inclination will get more and more entrenched and even polarized when more supporting information/evidence become available [15, 95, 137]. Cheung and Li [23] described this as self-affirmation bias that makes one firmly believe that his proposal is the most appropriate [37, 118, 123]. Hence, biased information processing strengthens one's already held opinions and polarizes their positions. It is therefore not difficult to find negotiators overvaluing

their own assessment about the dispute and at the same time devaluating those of their counterpart [61, 150]. Attitude polarization is a major barrier against effective communication [89, 102].

Naïve Realism

Naïve Realism (NR) is the third source of RD [84, 107, 123, 124] and make negotiators defying objectivity and fairness [114, 120, 122]. NR makes one believe that he knows the real issues underpinning a dispute and his belief is the most sensible [134, 135]. Negotiators having NR would rate their proposals as the most practical [112, 114]. As a result, they would discredit any other views [13, 119, 120, 122]. Besides, negotiators having NR expect his counterpart should share the same conclusion [104, 123]. Thus, his counterpart should agree with him [97, 118]. If this is not the case, it must be that his counterpart is not working hard enough or lacking the ability to do so.

Manifestations of RD in CDN

To operationalize the concept of RD in CDN, 25 manifestations of RD are developed with due reference to the literature. Table 7 summarizes these manifestations and the corresponding references.

Taxonomies of RD Behaviors in CDN

RD behaviors in CDN are conceptualized by developing taxonomies. Furthermore, examining taxonomies of RD in CDN would enlist ways to mitigate RD effects. A data collection questionnaire was designed to collect the opinion of construction dispute resolution practitioners about their practice of RD behaviours. The respondents were asked to indicate their extent of practice of the RD behaviours as listed in Table 7 on a 6-point Likert scale from “1 = Strongly Disagree” to “6 = Strongly Agree”.

The questionnaire was distributed to potential respondents who members the Hong Kong Institution of Engineers (HKIE), the Hong Kong Institution of Architects (HKIA), the Hong Kong Institute of Surveyors (HKIS). In total, 115 valid responses were received out of 350 questionnaires distributed, representing a response rate of 32.9%. The profile of the respondents is shown in Figs. 5, 6, 7 and 8.

To identify the underlying dimensions of RD behaviours in CDN, principal component factor analysis (PCFA) was used. PCFA was performed using IBM SPSS version 25.0. Varimax rotation was used to obtain a simplified factor structure [47]. KMO value of 0.80 and significant result of Bartlett’s test of sphericity supported

Table 7 Manifestations of RD in CDN

Manifestations of RD in CDN	Sources			References
	LA	AP	NR	
(1) I want to maintain my decisions therefore I am uninterested in negotiation	✓	✓		[61, 63, 76]
(2) Before negotiation, I believe my proposal will be accepted			✓	[112, 114, 120, 122]
(3) After forming a reasonable opinion, I tend to devalue other possibilities	✓	✓	✓	[13, 119, 120, 122]
(4) When rethink about my decision, I unconsciously recall reasons why my decision should be upheld	✓	✓		[70, 89, 110]
(5) I think the resolution proposal raised by the counterpart is based on incomplete information			✓	[13, 119, 120, 122]
(6) I think the proposal from the counterpart cannot resolve the project dispute	✓		✓	[13, 119, 120, 122]
(7) I think the counterpart is biased			✓	[13, 119, 120, 122]
(8) I doubt the capability of the counterpart			✓	[114, 119, 122]
(9) I doubt the effectiveness of the suggestions raised by the counterpart			✓	[107, 114, 122, 120]
(10) I think the counterpart provides premature decisions			✓	[107, 114, 122, 120]
(11) I think my proposal is more practical		✓	✓	[134, 135]
(12) I think my proposal is the best solution to the project dispute			✓	[118, 119, 131, 132]
(13) I believe the counterpart will agree with us if they put more effort in decision making		✓	✓	[97, 118]
(14) I always think there is still room for bargaining with the proposal from the counterpart			✓	[104, 123]
(15) I think only my proposal can tackle the project dispute			✓	[114, 120, 122]
(16) I endorse information that supports my decisions		✓		[70, 89]
(17) I search for information that confirms my assessment		✓		[70, 110]
(18) After forming a decision, I tend to pay more attention to the information that supports my decision	✓	✓		[70, 89, 110]

(continued)

Table 7 (continued)

Manifestations of RD in CDN	Sources			References
	LA	AP	NR	
(19) My information searching process terminates after I consider I have found enough supporting information for my decision		✓	✓	[70, 110, 120, 122]
(20) I tend to think the choices provided by the counterpart are disadvantageous to my side	✓		✓	[63, 114, 120, 122]
(21) I tend to believe the choices not provided by the counterpart are more advantageous to my side	✓			[63, 76]
(22) I tend to think the counterpart wants to gain interests from me with his offer	✓			[60, 128]
(23) I think the compromise of the counterpart is just their negotiation strategy	✓			[60, 76, 128]
(24) I tend to think the counterpart is behaving opportunistically	✓		✓	[25, 60, 62, 128]
(25) I tend to devalue the proposal if I know that it was based on information out of my knowledge	✓			[60, 76, 128]

LA loss aversion; AP attitude polarization; NR Naïve realism

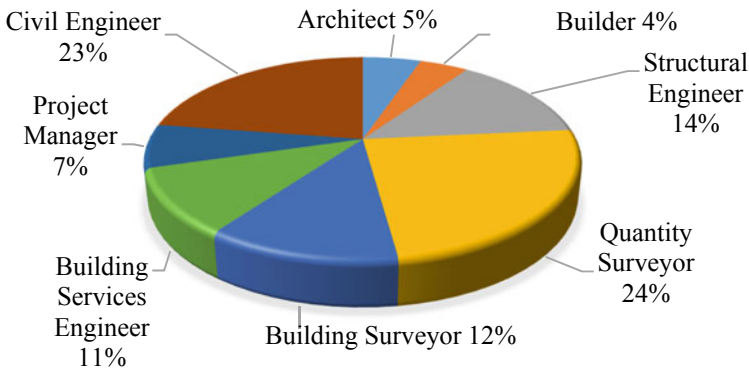


Fig. 5 Professional background of the respondents

the adequacy and suitability of the data [19, 64]. Eigenvalue larger than one was used as the factor extraction baseline [47]. Factor loadings larger than 0.5 were kept [65, 98]. As a result, a structure with five factors without cross loading was obtained and presented in Table 8. The five factors extracted in this study can explain 60% of

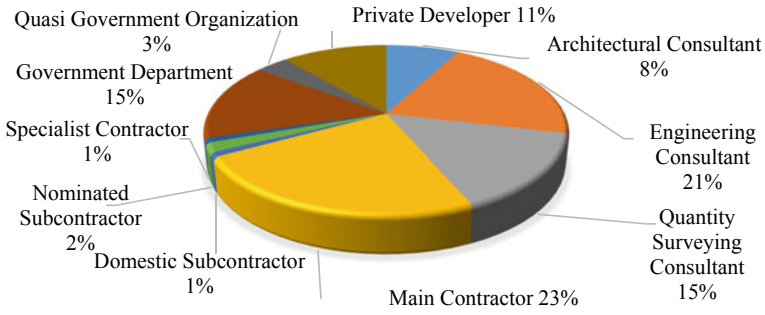


Fig. 6 Organization background of the respondents

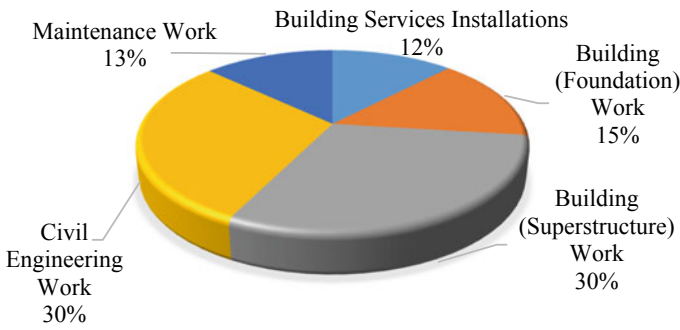


Fig. 7 Major dispute type involved by the respondents

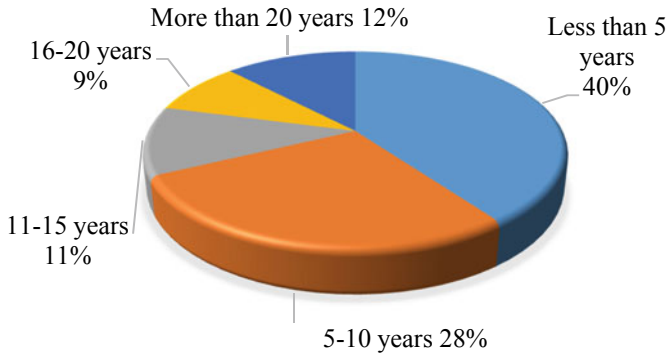


Fig. 8 Years of working experience of the respondents

the total variance. Based on the PCFA results, five taxonomies of RD behaviours in CDN are proposed.

Table 8 Taxonomies of RD manifestations in CDN

Manifestations of RD in CDN	Factor 1 (1.360)	Factor 2 (2.414)	Factor 3 (1.401)	Factor 4 (1.977)	Factor 5 (7.835)
<i>Reluctance to change</i>					
I want to maintain my decisions therefore I am uninterested in negotiation	0.641				
Before negotiation, I believe my proposal will be accepted	0.718				
After forming a reasonable opinion, I tend to devaluate other possibilities	0.696				
When rethink about my decision, I unconsciously recall reasons why my decision should be upheld	0.631				
<i>Doubts about counterpart's ability</i>					
I think the resolution proposal raised by the counterpart is based on incomplete information		0.747			
I think the proposal from the counterpart cannot resolve the project dispute		0.758			
I think the counterpart is biased		0.585			
I doubt the capability of the counterpart		0.793			
I doubt the effectiveness of the suggestions raised by the counterpart		0.708			
I think the counterpart provides premature decisions		0.580			
<i>Overconfidence</i>					
I think my proposal is more practical			0.524		
I think my proposal is the best solution to the project dispute			0.660		
I believe the counterpart will agree with us if they put more effort in decision making			0.708		
I always think there is still room for bargaining with the proposal from the counterpart			0.583		
I think only my proposal can tackle the project dispute			0.643		
<i>Biased information processing</i>					
I endorse information that supports my decisions				0.631	
I search for information that confirms my assessment				0.726	

(continued)

Table 8 (continued)

Manifestations of RD in CDN	Factor 1 (1.360)	Factor 2 (2.414)	Factor 3 (1.401)	Factor 4 (1.977)	Factor 5 (7.835)
After forming a decision, I tend to pay more attention to the information that supports my decision				0.737	
My information searching process terminates after I consider I have found enough supporting information for my decision				0.663	
<i>Mistrust towards the counterpart</i>					
I tend to think the choices provided by the counterpart are disadvantageous to my side					0.776
I tend to believe the choices not provided by the counterpart are more advantageous to my side					0.691
I tend to think the counterpart wants to gain interests from me with his offer					0.722
I think the compromise of the counterpart is just their negotiation strategy					0.605
I tend to think the counterpart is behaving opportunistically					0.559
I tend to devalue the proposal if I know that it was based on information out of my knowledge					0.697

Note Eigenvalues of the factors were presented in the parenthesis

Validation of the Taxonomies

Confirmatory factor analysis (CFA) was then conducted to validate the five RD taxonomies. Goodness-of-fit (GOF) measures were used to evaluate the fitness and parsimony of the proposed CFA model [81, 99, 149]. The baseline and results of GOF indices are summarised in Table 9. The regression weights of the CFA model are presented (Table 10), it can be seen that all of the regression weights have p

Table 9 GOF indices results

Fit index	Threshold	Model result
χ^2/df	≤ 2.00	1.54
GFI	≥ 0.80	0.80
RMSEA	≤ 0.08	0.07
CFI	≥ 0.80	0.87
TLI	≥ 0.80	0.85
PNFI	≥ 0.50	0.63
PCFI	≥ 0.50	0.78

Table 10 Regression Weights of CFA model

Parameter	Regression eights	Regression weights (Standardized)	S.E	C.R	P
Reluctance ← Reactive devaluation	1.000	0.700			
Doubts ← Reactive devaluation	0.975	0.642	0.273	3.576	***
Overconfidence ← Reactive devaluation	1.498	0.826	0.366	4.097	***
Bias ← Reactive devaluation	0.990	0.777	0.267	3.704	***
Mistrust ← Reactive devaluation	1.107	0.768	0.289	3.833	***
Item 1 ← Reluctance	1.000	0.535			
Item 2 ← Reluctance	0.881	0.661	0.193	4.558	***
Item 3 ← Reluctance	1.168	0.731	0.247	4.732	***
Item 4 ← Reluctance	0.826	0.527	0.206	4.008	***
Item 5 ← Doubts	1.000	0.686			
Item 6 ← Doubts	0.999	0.750	0.141	7.060	***
Item 7 ← Doubts	1.121	0.647	0.181	6.194	***
Item 8 ← Doubts	1.031	0.749	0.146	7.057	***
Item 9 ← Doubts	1.256	0.813	0.167	7.538	***
Item 10 ← Doubts	0.676	0.570	0.123	5.513	***
Item 11 ← Overconfidence	1.000	0.863			
Item 12 ← Overconfidence	0.785	0.671	0.108	7.233	***
Item 13 ← Overconfidence	0.604	0.570	0.100	6.025	***
Item 14 ← Overconfidence	0.550	0.541	0.097	5.675	***
Item 15 ← Overconfidence	0.502	0.473	0.102	4.898	***
Item 16 ← Bias	1.000	0.660			
Item 17 ← Bias	1.160	0.716	0.189	6.145	***
Item 18 ← Bias	1.237	0.779	0.191	6.471	***
Item 19 ← Bias	0.929	0.566	0.182	5.099	***
Item 20 ← Mistrust	1.000	0.716			
Item 21 ← Mistrust	0.984	0.728	0.139	7.106	***

(continued)

Table 10 (continued)

Parameter	Regression eights	Regression weights (Standardized)	S.E	C.R	P
Item 22 ← Mistrust	1.160	0.734	0.162	7.160	***
Item 23 ← Mistrust	0.963	0.704	0.140	6.888	***
Item 24 ← Mistrust	0.820	0.612	0.136	6.024	***
Item 25 ← Mistrust	1.040	0.670	0.158	6.567	***

S.E. Approximate standard error; *C.R.* Critical ratio; *** mean that the *p*-value is less than 0.001

values less than 0.001, indicating their statistical significance [55]. CFA model of RD in CDN is presented in Fig. 9. Construct validity in the CFA model was assessed by average of variance extracted (AVE) and composite reliability (CR). From Table 11, it can be seen that all the constructs have AVE values larger than acceptable level of 0.4, given that in this study CR values are larger than satisfactory standard of 0.7 [40, 41, 148]. Besides, square root of the AVE (numbers at diagonal in Table 11) for each construct is greater than the correlations with other constructs. These results support good convergent validity and discriminant validity of CFA model.

Discussion

Five taxonomies of RD in CDN are proposed: reluctance to change; doubts about counterpart's ability; overconfidence; biased information processing and mistrust towards the counterpart. As seen in Fig. 9 and Table 10, overconfidence has the highest standardized regression weight of 0.826 and is therefore the most important motivator of RD behaviour in CDN. Unrealistic expectations are germinated by overconfidence [38, 71, 140]. Overconfident negotiators are also over-optimistic about the outcome. When they only see their version of the solution is the best, compromise is no longer an acceptable option [118, 119, 131, 132]. Optimistic negotiators believe that the proposal of the counterpart can be much improved with better effort [104, 123]. Hence, overconfident negotiators always respond negatively towards offers proposed by the counterpart. Biased information processing has the second highest standardized regression weight of 0.777. Negotiators having self-affirming tendency will only attend to evidences that support their own positions [70, 83, 110]. Unjustified weightings are attached to those information that supports their perspective [70, 89]. Mistrust towards the counterpart is also an indicator of the presence of RD in CDN with a standardized regression weight of 0.768. Lack of mutual trust is a common problem in construction dispute resolution industry. Mistrust destroys collaboration and partnership between the contracting parties [145, 147]. Under a mistrust condition, negotiators would view even good faith behavior from the counterpart as opportunistic. This skepticism makes settlement almost impossible [25, 62, 128]. With the standardized regression weight of 0.700, reluctance to change

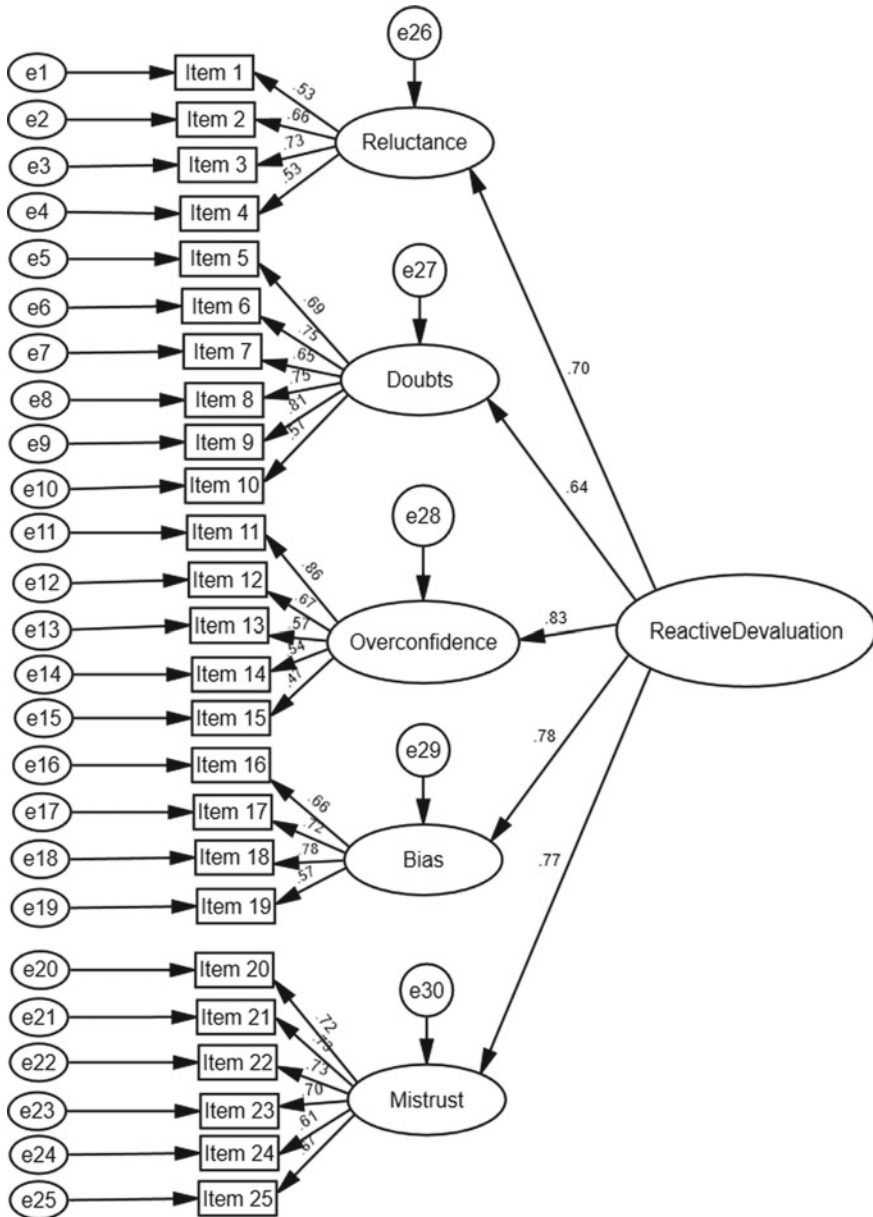


Fig. 9 CFA model of RD in CDN

Table 11 Construct validity of CFA model and inter-construct correlations

	AVE	CR	Reluctance	Doubts	Overconfidence	Bias	Mistrust
Reluctance	0.4	0.7	0.6				
Doubts	0.5	0.9	0.4	0.7			
Overconfidence	0.4	0.8	0.5	0.4	0.6		
Bias	0.5	0.8	0.3	0.3	0.5	0.7	
Mistrust	0.5	0.8	0.3	0.5	0.4	0.5	0.7

AVE average of variance extracted; CR composite reliability; The numbers at diagonal are square roots of AVE

is a good representation of RD. This is the other side of the same coin of status quo [59, 126]. Strengthened by attitude polarization effect, negotiators' assessment would be hardened [89, 120, 122]. Being influenced by naïve realism, negotiators consider the proposals made by the counterpart are premature and developed based on inadequate information [114, 120, 122]. Due to their strong faith in their own assessment, the proposals from their counterparts are downplayed. Framing effects also explain disputing parties' tendency to devalue and reject counterpart's offers [46, 69, 141, 143].

In CDN, sticking with one's assessment is considered a risk-free option while accepting the offers from the counterpart is risky. Having RD inclination, adopting a risk averse attitude is very likely [58, 82, 109]. Hence, negotiators are unwilling to make tradeoffs and turning down the offers from their counterpart is a safe option to him. Worse still, doubting the counterpart's ability and mistrust so created will frame the counterpart as a 'bad' negotiating partner. This frame results in negative evaluations on the practicality of all things proposed by the counterpart [22, 82].

Managing RD in CDN

To alleviate reactive devaluation and improve dispute management, the psychological barrier of mistrust towards the counterpart needs to be cleared. Building relationship between the disputing parties would be instrumental in fostering bona fide exchanges during dispute negotiations [24, 133, 147]. Measures that would mitigate the effect of RD were identified from literature and are presented with their respective references in Table 12.

Summary

Endowment effect (EE) describes the phenomenon that people would demand more to relinquish items that they own than they would be willing to pay for the same. This

Table 12 RD mitigation measures

Taxonomies of RD in CDN	Mitigation measures	References
<i>Reluctance to change</i>	Resolving misunderstandings	[90, 93, 116]
	Negotiation	[34, 77, 116, 129]
	Participation	[30, 77, 91, 129]
<i>Doubts about counterpart’s ability</i>	Opening to the counterpart’s narrative	[49, 48, 68, 107]
	Awareness and identification of bias	[86, 107, 115]
	Perspective taking	[29, 43, 44, 68, 131]
<i>Overconfidence</i>	Playing devil’s advocate	[26, 92, 94, 130]
	Considering the opposite	[45, 79, 89, 105]
	Warnings and reminders	[7, 66, 100]
	Considering possible failures	[6, 54, 79, 127]
<i>Biased information processing</i>	Considering the alternatives	[3, 12, 50, 52]
	Allowing adequate time and effort in making decisions	[20, 28, 36, 106]
	Group discussion	[18, 79, 139]
	Training and Education	[66, 79, 139]
<i>Mistrust towards the counterpart</i>	Encouraging communication	[133, 139, 147]
	Relationship building	[24, 39, 139, 145]
	Encouraging goodwill and benevolence	[31, 39, 77, 91]

can be explained by the tendency of people over-valuing their belongings, properties, opinions and decisions. Thus, the happening of EE undermine rational choices. Four sources of EE were identified from literature: ownership, loss aversion, status quo bias and strategic bargaining habit. With data collected from construction practitioners, the occurrence of these manifestations was found to be real. It was further unveiled that construction disputing parties from different construction sectors displayed a similar extent of EE behaviours in CDN. It is suggested that by utilising the skills of third-party neutrals as standing advisors. The effects of EE can be minimized through appropriate intervention of the standing neutrals as deemed appropriate.

Reactive devaluation (RD) is another well-recognized psychological barrier against dispute settlement. Twenty-five RD manifestations in CDN were developed from literature. Through a principal component factor analysis, five taxonomies of RD behaviours in CDN were extracted: reluctance to change; doubts about counterpart’s ability; overconfidence; biased information processing and mistrust towards the counterpart. The potency of these taxonomies was validated with confirmatory factor analysis (CFA). Overconfidence was identified as the most important indicator of RD with the highest standardized regression weight. The findings timely remind dispute negotiators that RD would stifle proposal exchanges and lead to rejection

of constructive proposals. Correspondingly, measures to curb RD behaviours were recommended.

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