

The Causal Ordering of Key Cross-Functional Relationship Dimensions: A Replication Study Using the Marketing/R&D Relationship

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Abstract

How do working relationships between functional managers develop, and how are they maintained? Does interpersonal trust drive communication, or is communication the building block of interpersonal trust? Massey and Dawes (2002) examined the causal ordering of three key behavioural constructs—*communication behaviours*, *interpersonal trust*, and *interpersonal conflict* in cross-functional relationships between Marketing Managers and Sales Managers. By using three competing models they found evidence that CFRs are built on a foundation of effective communication, specifically, bidirectional communication. This current paper is a replication of their study in the context of the Marketing/R&D relationship during 184 Australian new product development projects. It contributes to the literature by corroborating the causal ordering suggested by Massey and Dawes (2002). These findings have significant implications for the selection of strategies by senior management to better integrate the Marketing and R&D functions.

Key Words: causal ordering, cross functional relationships, trust, conflict

Introduction

Over the last two decades there has been an increasing focus on the organisation and implementation of the marketing function, and in particular the development and management of effective cross-functional relationships—CFRs (Houston *et al.* 2001; Sarin and Mahajan, 2000). Much of this research has focused on integrating Marketing and R&D during the new product development process (NPD) due to the importance of new products to many organisations (e.g., Gupta, Raj, and Wilemon, 1986; Song, Neely, and Zhao, 1996). This body of literature has clearly established that effective CFRs do produce superior NPD outcomes.

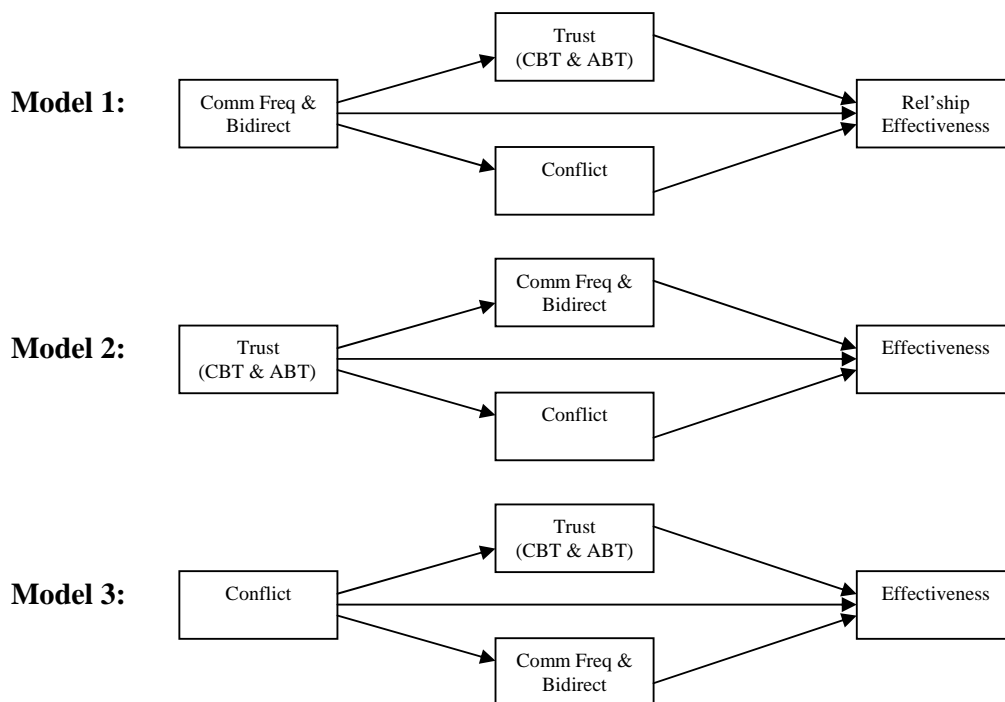
A key organisational issue remains unresolved, i.e., what is the causal ordering of key relationship dimensions? In other words, how are CFRs developed, and how are they maintained? Does communication lead to greater interpersonal trust and better CFRs, or does interpersonal trust precede effective communication, and then lead to effective CFRs? The answer to this question has major implications for organisations which require functional specialists to work together. No general consensus exists on the causal ordering of these dimensions, though Massey and Dawes (2002) provide some evidence on this issue in the context of the Marketing/Sales CFR. Further empirical research is required to identify the primary direction of these relationships, and the purpose of this research is to test Massey and Dawes' (2002) findings in the context of the Marketing/R&D CFR.

The Original Study: Massey and Dawes (2002)

Massey and Dawes (2002) address the issue of causality amongst the key CFR variables of: communication behaviours, interpersonal trust and interpersonal conflict, on the outcome variable of perceived relationship effectiveness between two functional managers. Their objective was to determine whether or not there is a clear pattern of causality amongst these key explanatory variables in the development of effective cross-functional CFRs. Examining the CFR literature, Massey and Dawes (2000) use theoretical bases drawn from organisational communication (e.g., Fisher, 1978), marketing (e.g., Ruekert and Walker, 1987), and organisational behaviour (e.g., McAllister, 1995). Specifically, they used 5 key constructs to analyse the Marketing/Sales CFR, namely: perceived relationship effectiveness, communication frequency and bidirectional communication, interpersonal conflict and interpersonal trust.

Dependent Variable. As was the case with the original study, the dependent variable for this current research is *perceived relationship effectiveness* (PRE) which is defined in terms of how worthwhile, equitable, productive, and satisfying that a Manager perceived their working relationship with the another functional manager to be during a specific cross-functional project (Van de Ven, 1976; Anderson and Narus, 1990; Ruekert and Walker, 1987).

Figure 1: Massey and Dawes (2002) Three Competing Models



Independent Variables. The independent variables are *communication frequency* which refers to the intensity of information flow through media, such as electronic mail, memos, and face-to-face meetings, and *bidirectional communication* which is defined as the degree to which communication is a two-way process (Fisher, Maltz, and Jaworski, 1997). In addition, two dimensions of interpersonal trust are investigated: *cognition-based trust* (CBT), and *affect-based trust* (ABT). CBT refers to a person's rational bases for trusting another person,

e.g., previous occasions in which that person has been competent and reliable in performing tasks affecting the other person. ABT refers to emotional bonds between individuals, where one individual exhibits genuine concern for the welfare of the other person (McAllister 1995). Lastly, *interpersonal conflict*, which is defined in the conventional sense—that it is unhealthy, and associated with dysfunctional behaviours, which reduce cross-functional performance (Dutton and Walton, 1966). Their tested models are presented in schematic form Figure 1.

Massey and Dawes (2002) Findings

Massey and Dawes (2002) provide evidence that effective CFRs are built on a foundation of effective communication patterns, in particular bidirectional communication rather than mere communication frequency. This corroborates a number of existing studies which find bidirectional communication has a strong relationship building effect (e.g., Fisher, Maltz, and Jaworski, 1997). Bidirectional communication assists the building of effective CFRs in a number of ways. Firstly it increases both CBT and ABT between the two managers, both of which have positive effects on PRE. Secondly, bidirectional communication reduces interpersonal conflict, which again leads to an improvement in PRE. Lastly, bidirectional communication has a direct, positive effect on PRE, above and beyond the indirect effects via interpersonal trust and conflict.

Method

As per the original study, cross-sectional data is used. We clearly acknowledge the inherent limitations of data of this kind when addressing working relationships and the concept of trust, both of which can be fluid over time. Longitudinal data would be preferable however data of this kind is very difficult to obtain and would limit severely the generalisability of any findings. Also as per the Massey and Dawes study, a “competing models” strategy is used which involved testing a set of truly different hypothetical structural relationships in order to identify the “best fitting” model (e.g., Hair, *et al*, 1998). Three models were tested and compared (see Figure 1 above). [Note that the individual hypotheses linking the constructs in these models are not discussed in this paper due to space limitations].

To keep the results as comparable as possible the exact operational measures and hypothesized paths used for their model development were replicated for this study. As in their study three models were tested and compared with Model 1 specifying communication behaviours as antecedent to interpersonal trust and conflict. In this model, 13 paths were tested, and these are incorporated into Table 1. Model 2 specified interpersonal trust as antecedent to communication behaviours and conflict, and Model 3 specifies conflict as antecedent to interpersonal trust, and communication behaviours.

The sampling unit for this current research were R&D Managers from Australia manufacturing companies with respondents typically being engineers or scientists. The respondents names were obtained from a commercially available mailing list (INCNET) and were contacted by telephone and asked to participate in the study. Respondents were asked to focus on a NPD project where they had significant involvement with the Marketing Manager (the person who was most responsible for the Marketing activities during the NPD project). The NPD project was to have been completed within the last 3 years. In total our sample included 184 firms, of which 175 (95.1%) were goods producing firms, and the 9 (3.8%) were

software producers. Consumer marketers accounted for 83 (45.1%), business-to-business marketers (78) 42.4.2%, and (13) 7.1% sold into both markets. Data was collected using an identical pretested, self-administered mailed questionnaire, and our net response rate was 51.4%. AMOS 4 structural equation modelling software (Arbuckle and Wothke, 1999), was used in this analysis. Recognition of the reliability of AMOS computations has been established by its increasing use in published studies in reputable journals over the last few years (e.g., Zuroff *et al*, 1999).

Results of the Replication Study

As Table 1 shows, the overall fit statistics for Rep Model 1 are excellent, and all but three of the path coefficients are significant, most at ≤ 0.01 . Rep Model 1 outperforms both Rep Model 2 and Rep Model 3. The two competing models in which the causal ordering of the constructs is changed. Rep Model 2 fit statistics are not as good as Rep Model 1 (Chi-square of 3.249, $df = 2$, GFI = .994, AGFI = .939, and RMSEA = .058). Similarly, Rep Model 3 has a poorer fit than Rep Model 1 (Chi-square of 8.292, $df = 3$, GFI = .985, AGFI = .898, and RMSEA = 0.098) suggesting that Rep Model 1 represents the best fitting model linking these constructs.

This research corroborates the findings of Massey and Dawes (2002) Model 1 which found that there is a best fitting causal ordering of the key relationship variables - communication behaviours, interpersonal trust and interpersonal conflict. Both the Massey and Dawes (2002) Model 1 and the Replication Model 1 indicate that communication behaviours precede interpersonal trust and interpersonal conflict when perceived relationship effectiveness is the outcome variable. A closer examination of Massey and Dawes (2002) Model 1 and Rep Model 1 (Table 2) also shows that there are similarities in the number of significant paths and their relative strengths. In particular, this study also finds that bidirectional communication has a strong causal effect on the other variables in the study. Communication frequency was found to have no causal effects on any variables in the replication study, though there was a negative effect on interpersonal conflict in the original study. CBT and ABT had the same effects on all variables as the original study, except that there was no significant path from ABT to interpersonal conflict in the Replication Study. Overall, the findings in both the Massey and Dawes (2002) study and the replication study are very consistent.

Table 1: A Comparison of Fits Statistics for Massey and Dawes (2002) and Replication Study Models 1, 2 & 3

Fit Statistics	Massey & Dawes Model 1	Rep Model 1 (2 d.f)	Rep Model 2 (2 d.f)	Rep Model 3 (3 d.f)
Chi Square	.647	2.825	3.249	8.292
P	(0.421)	(0.244)	(.197)	(0.040)
GFI	0.999	.995	.994	.985
AGFI	0.977	.947	.939	.898
RMSEA	0.000	0.047	0.058	0.098
Significant Paths	11 YES 2 NO	8 YES 5 NO	9 YES 4 NO	10 YES 2 NO

Table 2: Massey & Dawes Model 1 (2002) and Replication Study Model 1 Standardised Path Coefficients

Causal Relationship	M&D 2002 Model 1 Par. Est	Replication Model 1 Par. Est	M&D 2002 Model 1 t-value	Rep 2004 Model 1 t-value
Comm Freq → ABT	.023	.060	0.483	1.074
Comm Freq → CBT	.047	.008	0.771	0.126
Comm Freq → Conflict	.293	.046	4.458**	0.711
Comm Freq → PRE	.076	.055	1.781*	1.374
Bidirect → ABT	.255	.364	4.377**	6.538**
Bidirect → CBT	.568	.600	9.391**	9.373**
Bidirect → Conflict	-.293	-0.251	-3.667**	-2.990*
Bidirect → PRE	.463	.184	8.806**	3.416*
CBT → ABT	.576	.416	10.157**	Fixed**
CBT → PRE	.184	.319	3.147**	5.723*
ABT → Conflict	-.237	.057	-3.038**	0.674
ABT → PRE	.158	.299	2.632**	5.611*
Conflict → PRE	-.223	-0.226	-5.108**	-4.882*

** Sig. at ≤ 0.01 level (one-tailed test) * Sig. at ≤ 0.05 level (one-tailed test) ^a parameter fixed to identify model

Implications and Conclusions

Of major significance is the finding that communication frequency plays no role in maintaining and developing effective CFRs across two cross-functional contexts i.e., the Sales/Marketing Interface and the Marketing/R&D interface. In fact in Massey and Dawes (2002), they find it positively associated with interpersonal conflict. Much of the functional integration literature focuses on the need for management to increase communication between participants to develop effective CFRs. Kahn and Mentzer (1998) found that highly formalised “information exchanges” designed to improve functional integration are not as effective as collaborative practices where participants freely and volitionally exchanged information. This research adds further empirical support to this contention, that it is not the “volume” but rather the “nature” of the communication which leads to positive relationship outcomes. This paper makes a contribution to the literature by validating this causal ordering in another context, the R&D/Marketing CFR. Further weight is added to the proposition that bidirectional or “two way” communication does indeed lead to the development of both affective and cognitive trust, the two key components of interpersonal trust. Further, the research demonstrates that bidirectional communication has a strong effect in reducing conflict between functional managers.

This research raises a range of other issues for future research, in particular, the means by which management can stimulate bidirectional communication between two managers regardless of which cross-functional interface is under examination. A number of limitations are acknowledged in this research, our study was cross-sectional in nature, longitudinal data could be used in future research, thus better establishing internal validity. Also the findings here are only from one member of the dyad, the R&D manager, future research is required to establish whether the same patterns between the constructs are found when examined from the Marketing Manager’s perspective.

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