

# Top Management Signaling, Conflict Management and NPD Success

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## Abstract

This paper examines how effective top management are as a linkage mechanism during new product development (NPD) projects by examining their effect on conflict behaviors and new product success. The paper discusses the development and empiric testing a model (using PLS) with survey data from both sides of the interface (marketing managers, n=145, technically trained counterparts, n = 184). Top management are indeed an effective linkage mechanism driving positive conflict behaviors and reducing destructive working behaviors between the key NPD actors, highlighting that they indeed have a significant role in outlining the rules of engagement for their functional managers to follow among themselves when working on NPD projects. Interestingly, technically trained managers are more sensitive to top management signaling behaviors and project interest than their marketing counterparts. The paper shows how top management activity during NPD projects can impact conflict and eventual NPD success.

Keywords: Signaling, Conflict, Innovation, Linkage Mechanisms, Cross-Functional

JEL Classifications: L16, L80, L64

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## 1. Introduction

Top management in a firm implement structures, processes, and mechanisms that are designed to effectively integrate their functional units and manage the organization's NPD processes. It is the conflict between marketing managers and their technically trained (R&D, engineering, manufacturing) output managers which is of interest in this study due to the considerable literature examining the positive and negative effects of such conflict on R&D and marketing's cross-functional relationships during innovation activities. Top management are ultimately responsible for keeping the relationship between key innovation-actors co-operative, collaborative and free from destructive conflict by effectively integrating the various functional specialists to maximize their synergies and develop successful new products/services (Ruekert and Walker, 1997). Yadav et al (2007) argue that top management set the NPD direction of the firm and that their behaviors influence innovation partly through communication, their substantive acts and symbolic actions.

This paper discusses the development and empirical testing of a model of NPD success (Figure 1), where the antecedent variables are top management project interest, top management support, and counterpart manager project interest. The relationship of these variables with NPD success is hypothesized to be mediated by functional conflict and dysfunctional conflict. This model is tested using two samples of individuals involved in NPD projects; one consisting of marketing managers ( $n = 145$ ) and the other technically trained managers ( $n = 184$ ).

As the competitive environment is becoming more and more complex, "a firm's ability to quickly change directions and reconfigure strategically becomes crucial if it is to succeed and achieve sustainable competitive advantage" (Johnson et al., 2003, p. 74). Therefore, the traditional approach of emphasizing autonomy and independent operation may no longer fit effectively into the present industrial situation. Instead, an emphasis on cross-organizational collaboration and integration has begun to appear and plays an important role in modern industries. To attain mutual operational synergies, mutual symbiosis can be achieved by exerting core competencies to form a close and interactive relationship.

The remainder of this paper proceeds as follows. Next, a discussion of the extant literature concerning conflict in the NPD process is presented. Section 3 carefully develops all the hypotheses depicted in Figure 1. This is followed by a discussion of the measures used and the data collection. Then the results of empirical testing of the model using the two data sets mentioned above are presented. This is followed by a detailed discussion of the results and finally a section on conclusions, limitations and suggestions for additional research.

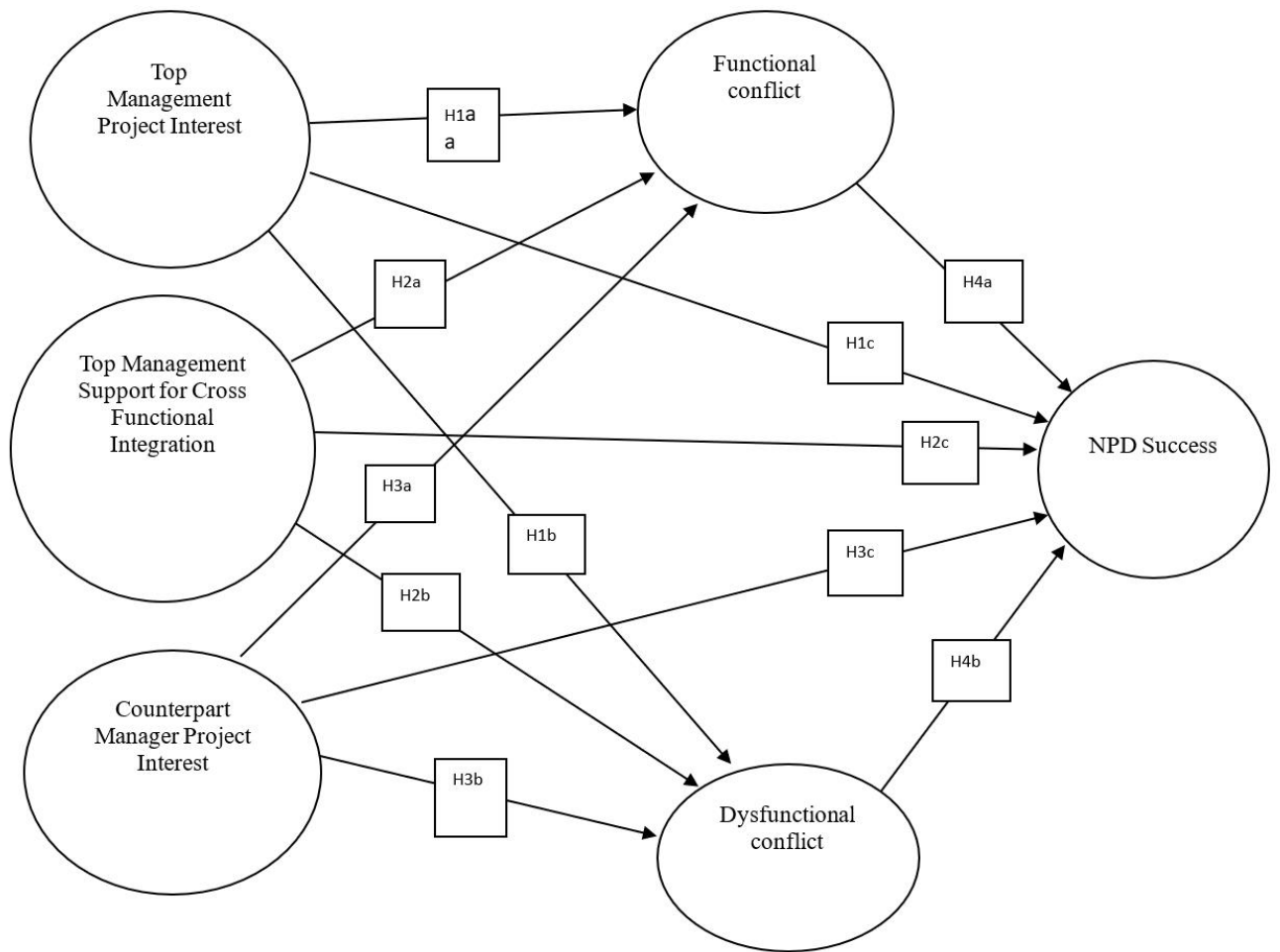


Figure 1. Hypothesized Model

## **2. Literature Review: Conflict in the NPD process**

While top management have a critical role to play in setting the innovation climate within organizations (Hunter, Perry and Currall, 2011) they also have a more direct leadership and support role for achieving cross-functional integration. This includes the choice of integration mechanisms that help promote positive functional interactions such as co-operation, communication and collaboration (Souder and Moenaert, 1992; Griffin and Hauser, 1996; Kahn, 1996; Maltz and Kohli, 1996, 2000; Kahn and Mentzer, 1998; Massey and Kyriazis, 2007; Leenders and Weirenga, 2002, 2008). To overcome this conflict challenge many cross-functional linkage mechanisms have been suggested as ways that top management can facilitate effective cross-functional integration with varying degrees of success (e.g., incentives and rewards, personnel movements, spatial proximity, formalized processes).

Unfortunately, there is no conclusive evidence that any of these are effective in all circumstances with many only working in specific contexts. However, this paper explores whether or not the presence of supportive top management may act as a more effective integrating mechanism with recent managerial literature suggesting that top management themselves may play a more profound role in guiding successful innovation outcomes than previously thought (Stock, Zacharias, and Schnellbaecher, 2017). While focusing on top management's potential integrating role in NPD projects remains a key research area, examining the corollary of whether or not top management actions may become an impediment to innovation at the project level is still very much an under-researched topic (Yadav, Prabhu and Chandy, 2007). For instance, at the project level, Bonner, Ruekert and Walker, (2002) argue that top management project involvement may actually impede group processes and have a detrimental effect on project success. While top management support for innovation can substantially influence an organization's innovation capabilities and their organization's future success (Barzack, Griffin and Kahn, 2009; Dayan, Di Benedetto and Colak, 2009; Blindenbach-Driessen and van den Ende, 2010, Aalbers, Dolsma and Leenders, 2016), few studies have examined their direct effect on NPD project success.

This paper specifically examines how top management project interest directly affects NPD project success, as well as its effects on marketing and their technically trained counterparts' perceptions of functional and dysfunctional conflict during their project interactions and whether this, in turn, affects NPD project success. This paper uses the common new product development (NPD) project situation where senior functional managers (e.g., R&D, engineering, manufacturing and marketing) find themselves not only interacting with their counterpart managers to complete their duties, but also have the monitoring, scrutiny or project interest from their supervisors, who we refer to as top management, to contend with as well. This circumstance does lay the foundation for a very sensitive and conflict-rich experience that has to be navigated through as part of their roles. While the integration literature has identified numerous integration mechanisms for top management to use depending on the particular circumstance at hand, relatively few studies have examined the role of

top management signaling behaviors as an effective conflict management integration mechanism in their own right. Fewer still have examined whether or not differing functional managers (e.g., R&D managers, engineering, manufacturing, marketing) interpret the innovation cues from top management the same way.

The focus here on cross-functional project level conflict responds to changing customer needs. It involves the cross-functional integration of marketing with other key functions in the firm's NPD process. This is emerging as a strategic imperative for top management in many organizations (Leenders and Weirenga, 2002, 2008; Calantone, Droge and Vickery, 2002; Hausman, Montgomery and Roth, 2002; O'Leary-Kelly and Flores, 2002; Swink and Song, 2007; Le Meunier-FitzHugh, Massey and Piercy, 2011). Top management are responsible for ensuring that effective cross-functional integration occurs to facilitate new product outcomes and facilitate knowledge sharing within organizations (Keveaney, 2008; Troy, Hirunyawipada, and Paswan, 2008; Garcia, Sanzo, and Trespalacios, 2008; Tsai and Hsu, 2014). The responsibility for guiding and managing the firm's NPD strategy and processes falls to them (Song, Kawakami and Stringfellow, 2010; Denti and Hemlin, 2012; Unger et al, 2012; Felekoglu and Moultrie, 2014).

To overcome this resistance to integration from the technical functions and reduce conflict, top management have had to decide upon the use of various integration mechanisms (e.g., cross-functional teams, spatial proximity, multi-functional training, job rotation, joint rewards and incentives, formalized NPD processes, co-location, information and communication technology) to overcome the particular problems of the day and help improve working relationships (Griffin and Hauser, 1996; Maltz and Kohli, 1996; Jones and Stevens, 1999). Unfortunately, subsequent research examining the effectiveness of these integration mechanisms has highlighted that they have limited effectiveness which is often contextually based and not easily generalizable (Maltz and Kohli, 2000; Lakemond and Berggren, 2006; Leenders and Weirenga, 2002, 2008; Fernández, Del Rio, Varela, and Bande, 2010) with the notable exception being cross-functional team use which is seen to break down many barriers by allowing interaction to occur in a more direct manner (Adler, 1995; Keveaney, 2008). Missing from the literature is whether or not top management NPD behavior can act as an umbrella integration mechanism covering the project.

This paper examines a more direct yet subtle approach to conflict management by capturing the effects of top management signaling behavior on NPD project level functional and dysfunctional conflict as an integration mechanism. Top management signaling behavior is defined as the inferences that are made by subordinates when interpreting the actions of their top management, be it in word or tangible resource support as they relate to strategy, processes, and structures affecting NPD project work (Podsakoff et al, 1990; Song, Xie and Dyer, 2000; Swink and Song, 2007).

Specifically, the paper examines whether two top management related constructs, support for cross-functional collaboration, which is defined as the extent to which top management provide the

opportunity for cross-functional co-operation and collaboration to occur (Song et al, 2000), and top management project interest which is defined as the extent to which top management followed the project progress, showed enthusiasm for it and made the organization's resources available for it, have an effect on cross-functional conflict at the functional manager level during NPD projects.

This paper focuses on project level task conflict between technically trained managers and their marketing counterparts as it relates to differences in opinions and viewpoints relating to group tasks (Jehn and Mannix, 2001; De Wit, Jehn and Greer, 2012). It is during NPD projects where functional specialists work together pursuing organizational outcomes (Lovelace, Shapiro, and Weingart, 2001; Keveaney, 2008; Hung, 2017). To capture the interactive nature of NPD working relationships (Kahn, 1998) and the dual role of conflict as having an either positive or negative effect on NPD tasks, Menon et al's (1996) definitions of conflict were used. Dysfunctional conflict is the unhealthy behaviors within an organization such as distortion and withholding information to hurt other decision makers, hostility and distrust during interactions. Functional conflict is defined as the healthy and vigorous challenge of ideas, beliefs and assumptions. So to fill the identified gap in the literature the following research problems were developed:

**Research problem 1:** Is top management NPD project involvement a good thing or a bad thing for functional working relationships and subsequent NPD success? Can there be such a thing as too much top management project interest in NPD?

**Research problem 2:** Do technically trained managers interpret top management NPD signaling behavior the same way as their marketing manager counterparts?

This research makes the following contributions. First, that the inferences that managers make about the extent of project interest from top management, and from their functional counterpart is an important explanatory variable in the context of NPD project level conflict and NPD project success. Second, there are additions to the cross-functional integration literature by reinforcing the need to approach the topic with a clear understanding that functional differences still exist, and that studies should avoid implying or assuming that managerial driven approaches to integration will have equal effects on differing functions.

### 3. Theory and hypothesis development

In Podsakoff et al's (1990, p.112) seminal work they identify six key behaviors associated with transformational leadership (1) identifying and articulating a vision, (2) providing an appropriate model, (3) fostering the acceptance of group goals, (4) higher performance expectations, (5) providing individual support, and (6) intellectual stimulation. This paper draws from transformational leadership theory to capture the phenomenon of interest in the conceptual model. Namely, that technically trained managers and their marketing counterparts do draw cues and inferences from the NPD actions of top management and their functional counterparts, with these in turn shaping their

own conflict behaviors at the NPD project level. Podsakoff et al (1990) identify facilitating acceptance of group goals to “top managers promoting co-operation among employees and getting them to work together towards a common goal” (p.112).

Elenkov and Manev (2005) identify three ways that transformational leadership influences organizational innovation performance, (1) through personal identification, (2) internalization and (3) encouraging divergent thinking in a safe environment. Aalbers et al, (2016 p.144) expand on these and argue that “when leaders values emphasize innovation in the form of relevance of a particular new business project, his or her idealized influence and inspirational motivation behaviors induce followers to accept these values as their own (internalization) and to imitate the leaders behaviors (personal identification)”. It is through the internalization process that followers adopt the leader’s values as theirs and act accordingly. It is this internalization process that is viewed as a potential integration mechanism and focused on project level conflict because of its mediating role in either facilitating or inhibiting the keys to successful cross-functional integration, namely effective co-operation, communication, and collaboration.

More recently, Kraft, and Bausch (2016) highlight that transformational leaders not only play a significant role in guiding the strategic orientations of innovative firms but that they also act as direct influencers on types of innovation undertaken and that their influence on innovation projects should not be underestimated. This paper therefore draws upon transformational leadership theory to explain how functional managers shape their own conflict behaviors in response to how they interpret their top managers’ innovation and NPD project work behaviors.

To explain the role of functional manager level interactions (marketing and their technically trained counterpart managers) on NPD projects draws on interaction theory where when people interact they make judgments about each other based on previous experience and other evidence at hand (Blau, 1964; Kahn, 1998; Massey and Kyriazis, 2007; Kyriazis, Couchman, and Johnson, 2012, 2015). The interaction approach is well suited to the study of interpersonal conflict. It mirrors the structural approach to conflict which posits that interdependence between parties and their incompatibility is the cause of conflict (Deutsch, 1958).

The current conceptual framework combines the transformational leadership literature and interpersonal conflict theory to explain how functional manager’s perceptions of the actions of top management and those of their functional manager counterparts during an NPD project affect their own functional and dysfunctional conflict behaviors. The hypothesized model (Figure 1) draws from the both the transformational leadership literature and the interaction approach to capture important interactions and interpretations of managerial action during NPD projects.

### **3.1. Outcome variable: NPD success**

With the considerable investment in resources required in organizations' NPD processes, measuring NPD success is an accepted practice when reviewing the effectiveness of such investments. Drawing from the literature, this paper conceptualizes new product success as being a multi-item construct captured by budget, time, sales, profit aspects and the overall performance perspective (Moorman, 1995; Griffin and Page, 1993; Song, Xie and Dyer, 2000). Due to its importance in an organizational context many studies have examined the antecedents of NPD success (Cooper and Kleinschmidt, 1995; Griffin & Page, 1993; Barzack et al, 2009; Nakata and Im, 2010).

### **3.2. Antecedent Variables: Top Management Project Interest**

Denti and Hemlin (2012) state that leadership in innovation has two important roles. First, it is integral in constructing the environment for creativity, where they encourage intrinsic motivation, facilitate problem solving, foster a positive team climate, and establish and maintain high quality work relationships with team members. Second, in a top down process, they manage the strategic innovation goals and activities while managing time, facilities, money and knowledge resources, setting individual and team goals, setting rewards, granting autonomy to individuals and teams. As there is no direct literature on top management project interest to support our hypotheses, we draw from the broader constructs of top management support for innovation and top management involvement which capture the role of top management on NPD projects. McDonough (2000) identifies that management support is an important factor in effective NPD teams as they enable, support, and motivate team members to overcome obstacles. Sethi, Smith and Park (2001) found that senior management support for a project has positive effects on NPD projects as it acts as an indicator of its importance to the organization, boosts motivation, facilitates resource allocation and garners support from others within the organization, and also found that managerial involvement in the project signaled the importance of the project and that it motivates new product teams to collaborate with other functions. More recently, Im and Nakata (2008) found that active top management involvement in terms of monitoring NPD project progress and emphasizing the importance of new products to firms success had a positive effect on cross functional integration. Meunier-FitzHugh, Massey and Piercy (2011) found that senior manager's support for cross-functional integration strongly reduced inter-functional conflict. The direct link between NPD project performance and top management support has been reported in the literature (Rubenstein et al, 1976; Zirger and Maidique, 1990; Gomes, Weerd-Nederhof, Pearson and Fisher, 2001; Swink, 2000) where they found a positive effect on project success. Swink (2003) found that top management support (TMS) for NPD projects in terms of vision, clear direction, enthusiasm, priority and access to resources had a strong positive effect on NPD success. Accordingly, the following hypothesis is proposed:

H1: The greater the top management interest in the project (a) the higher the level of functional conflict between the functional managers, (b) the lower the level of dysfunctional conflict between the functional managers, and (c) project the higher the level of NPD success

### **3.3. Top Management Support for Collaboration**



Song et al (2000) also provide empirical evidence for top management support for organizational linkages as an important factor in effective cross-functional integration, thus showing that they value effective cross-functional working relationships. Co-operation is often the first casualty of dysfunctional conflict, but on the other hand can be supported by functional conflict. Rodriguez (2008) also found that co-operation between functions opens the door to successful new product development and they recommend that if an organization does not have an NPD climate conducive to co-operation, it is the responsibility of top management to act and ensure that co-operation occurs. Eisenbeiss, Knippenberg, and Boerner, (2008) argue that transformational leaders make a point of highlighting collective interests during innovation activities to ensure that self-interest is minimized in cross-functional teams for the benefit of the organization. Le Meunier-FitzHugh, Massey and Piercy (2011) examined senior management support for co-ordination and its effects on inter-functional conflict between sales and marketing and found that it strongly reduced inter-functional conflict. Accordingly, the following hypothesis is proposed:

H2: The greater the top management support for cross-functional integration (a) the higher the level of functional conflict between the functional managers, (b) the lower the level of dysfunctional conflict between the functional managers, and (c) the higher the level of NPD success.

### **3.4. Counterpart Manager Project Interest**

The role of the project interest exhibited by functional counterparts is also of interest in this study. It serves as an integration mechanism as the principle of reciprocity suggests that people will respond in kind to positive behavior from others. This is seen as a foundation of many relationships, interpersonal and professional (Gouldner, 1960; Pervan, et al, 2009). Expanding this principle to interactions between functional managers is important as studies have shown that these specialists often focus on their own departmental issues and become reluctant to engage with others on NPD issues (Dougherty, 1992; Fisher, Maltz and Jaworski, 1997). In the case of one functional manager signaling their commitment to the project through their actions will help overcome many of the causes of inter-functional conflict (Shaw and Shaw, 1998) and be a positive factor in the working relationship. Accordingly, the following hypothesis is proposed:

H3: The greater the counterpart manager interest in the project the (a) higher the level of functional conflict between the functional managers, (b) the lower the level of dysfunctional conflict between the functional managers, and (c) the higher the level of NPD success.

### **3.5. Mediating variables: Functional and Dysfunctional Conflict**

Menon et al, (1996) found strong empirical support for functional conflict improving interdepartmental relations, communication quality, and esprit de corps. Functional conflict leads to consultative interaction, with useful give-and-take among organizational members, where opinions

and feelings are expressed freely, and where there is a willingness to consider new ideas and changes (Menon et al, 1996). Song, Dyer and Thieme (2006) provided empirical support for cross-functional relationships as having both positive and negative conflict dimensions. De Clerq, Thongpapani and Dimov (2009) found that positive or good conflict can be very beneficial in cross-functional relationships during NPD work. Accordingly, the following hypotheses are proposed:

H4a: The greater the level of functional conflict between the functional managers the higher the level of NPD success

H4b: The greater the level of dysfunctional conflict between the functional managers the lower the level of NPD success

#### **4. Method: sample and data collection**

To obtain key informants who worked in manufacturing organizations who (1) had developed new products in the last 3 years and (2) who employed both marketing managers and technically trained managers, a commercial mailing list supplier was approached. The supplier provided a list of 813 companies with annual turnover over AUD \$10 million and a minimum of 50 employees. Contacting the firms found that 337 firms met the eligibility criteria. Sample 1 gathered the technically trained manager perspective, and Sample 2 the marketing managers' perspective. The first sample examined was the technically trained manager view of the working relationship, where 184 responses were returned with a net response rate of 54.6%. In sample 2, a total of 145 marketing managers responded resulting in a net response rate of 49.3%.

##### **4.1. Measurement and Model Testing**

The model included five multi-item measures based on existing scales, and two new measures, top management project interest and counterpart-manager project interest, with a full description of the final measures shown in Appendix 5. The new scales were developed after it emerged from a few preliminary in-depth interviews with managers involved in the NPD process that the way people act is far more important than their words in terms of project involvement and that this could have important explanatory effects when examining NPD activity. We followed the approach to scale development as identified by Diamantopoulos and Winklehofer (2001). Data examination included exploratory factor analysis (EFA), scatter plots to ensure no violations of linearity, skewness or kurtosis (Kline, 1998), no skewness or kurtosis issues. Our item reliability analysis showed all items performed above the accepted limits for composite reliability and alpha coefficients (Nunally, 1978). Convergent validity was established using 2 methods, (1) examining the t-values of each item from the Partial Least Squares (PLS) output found them all statistically significant (Anderson and Gerbing, 1988), and the average variance extracted (AVE) for each of the reflective constructs to ensure that they exceeded 0.50 (Fornell and Larcker, 1981). Details for all scales used can be found in Appendix 1.

Discriminant validity was determined using two approaches, Fornell and Larcker's (1981) approach where discriminant validity is established if the squared multiple correlation of two variables is less than the average variance extracted (AVE). The second method was to use the Chin (1998) approach where the individual factor loadings of the items are examined to determine that all factors loaded cleanly on the construct of interest and that no other items had a higher cross-loading with them. All items loaded cleanly on their constructs with no cross-loading indicating that discriminant validity was obtained. All these empirical results are in the Appendices. To test the model, Partial Least Squares (PLS) was used as the estimation technique due to the exploratory nature of the focal constructs of the study and the limitations of the measurement. Such an exploratory approach necessitates the use of an estimation technique that allows the use of constructs that are lower in theoretical development and the examination of relationships that are more predictive in nature without as great a risk of model misspecification (Barclay, Thompson and Higgins, 1995; Chin, 1998; Hair et al, 2017).

## 5. Results and Discussion

Addressing the main research problem, whether or not top management signaling behavior does act as an effective integration mechanism, provides very mixed messages. Table 3 contains the PLS results for both the technically trained manager and marketing manager samples. Top management support for cross-functional collaboration does act as an effective integration mechanism for marketing and their functional counterparts in terms of increasing functional conflict and reducing dysfunctional conflict between functional managers. However, for the technically trained managers, being urged to collaborate with marketing had a negative effect on NPD success, possibly suggesting that there is still some natural resistance and residual silo effects in many manufacturing firms when it comes to having to work together with marketing on new product development projects.

Our second signaling mechanism, top management project interest, does not act as an effective integration mechanism at all. For marketing managers it had no effect at all on conflict, but for their technically trained counterparts it is the negative effect on functional conflict that is perplexing. Drawing from the findings of our qualitative interviews, we argued there would be a lesser likelihood for opportunistic, self-interested behavior to occur by functional managers if top management had that project on their radar, thus providing a subtle control mechanism. Not only was this hypothesis not supported, it had a negative path weight implying that technically trained managers may actually work in a more guarded manner towards their marketing counterpart and avoid any potential for blame of project failure being placed on them. The inference of this is that while the technically trained functions welcome the necessary resource support to complete their roles in NPD, having top management watching their interactions with marketing is not so welcome. However, if their marketing counterpart shows project interest, positive conflict behaviors increase and destructive ones are reduced, the inference being that when functional managers are actively engaged in a project. many of the barriers to effective integration break down allowing the focus to remain on task. The

best way for marketing and their counterparts to integrate is through the cues and conclusions that they draw from their counterparts in project actions. The implication for theory is that social exchange theory (Blau, 1964), with its emphasis on drawing inferences about a relationship's value through accumulated interactions, is still very relevant for the cross-functional managers in their NPD working relationships.

With the transformational leadership literature arguing that NPD leadership is becoming more important than ever in organizations' innovation activities, determining if top management signaling behaviors had direct effect on NPD project success was a key research objective. The results suggest that only top management project interest had a direct positive effect on NPD project success, but only from a technically trained managers' perspective. While this is understandable as they are heavily reliant on the financial resources that are released by top management, which usually involves significant investment (e.g., new equipment, new materials, re-tooling costs and manufacturing costs), marketing managers seem to be unconcerned, with a possible explanation being that many of their inputs are informational and require less capital resources to obtain.

Table 3. PLS Model Testing Results

			Sample 1	Sample 2
			TTMs	MMs
Hypotheses			Std. Beta (t-value)	Std. Beta (t-value)
Top Management Project Interest	→ Functional Conflict	H <sub>1a (+)</sub>	-.10 (2.7440)**	.04 (1.1193)
	→ Dysfunctional Conflict	H <sub>1b (-)</sub>	-.01 (0.2810)	.05 (1.3357)
	→ NPD Success	H <sub>1c (+)</sub>	.21 (6.2355)***	-.16 (1.0325)
Top Management Support for Cross- functional Collaboration	→ Functional Conflict	H <sub>2a (+)</sub>	.38 (10.6556)***	.30 (8.4505)***
	→ Dysfunctional Conflict	H <sub>2b (-)</sub>	-.12 (3.6529)***	-.22 (6.1618)***
	→ NPD Success	H <sub>2c (+)</sub>	-.09 (2.1858)*	.37 (1.0498) <sup>n.s</sup>
Counterpart Manager Project Interest	→ Functional Conflict	H <sub>3a (+)</sub>	.44 (15.7630)***	.41 (12.9941)***
	→Dysfunctional Conflict	H <sub>3b (-)</sub>	-.47 (16.4227)***	-.46 (13.5909)***
	→ NPD Success	H <sub>3c (+)</sub>	.20 (5.2288)***	.07 (0.5661) <sup>n.s</sup>
Functional Conflict	→NPD Success	H <sub>4b (+)</sub>	.24 (5.9090)***	-.27 (1.0427) <sup>n.s</sup>
Dysfunctional Conf	→NPD Success	H <sub>5b (-)</sub>	-.14 (1.6945)*	.15 (1.0723) <sup>n.s</sup>
<b>R<sup>2</sup></b>	<b>TTMs</b>	<b>MMs</b>		
Functional Conflict	.40	.44		
Dysfunctional conflict	.28	.36		
NPD success	.41	.11		

\*\*\*Sig. ≤ 0.001 (one-tailed); \*\*≤ 0.01; \*≤ 0.05; †≤ 0.10

Examining the effect of top management support for cross-functional collaboration on NPD success, results showed that it is a highly effective linkage mechanism with strong positive effects on functional conflict on all managers, and also driving down dysfunctional conflict. To answer the research question, top management signaling behavior does indeed help cross-functional working relationships. However, it is perplexing that in terms of NPD project success, it had a negative effect from the technically trained manager perspective, and no significant effect on marketing managers' perceptions of its importance for NPD success. This finding is counter-intuitive and seems to contradict the cross-functional literature arguing that collaboration leads to NPD success (Kahn, 1998; Jassawalla and Shashital, 1998).

Finally, for marketing managers, conflict of either type has no significant effect on perceptions of NPD project success, whereas for the technically trained managers functional conflict had positive effect on perceptions of NPD project success, and lower dysfunctional conflict had a positive effect on NPD project success. The results support prior research findings that suggest functional conflict is useful in developing successful new products. Interestingly, dysfunctional conflict is not as destructive as previously thought, suggesting that there has been an evolutionary effect in marketing's cross-functional relationships with their technically trained counterparts through formalized NPD processes such as Stage-Gate (Cooper, 2008; Barzack, Griffin and Kahn, 2009).

Theoretically, it seems that technically trained managers behave in accordance with accepted organizational behavior theory, where they watch and listen to the cues of top management and try to anticipate what top management want, with the  $R^2 = 0.41$  supporting this view. In contrast, the low  $R^2 = .11$  for marketing managers suggests that many other factors also come into play in determining NPD project success.

## **6. Managerial implications**

There are two distinct managerial implications, the first being that top management support for collaboration is a positive factor in the working relationship between marketing and their functional counterparts. The study provides empirical support for Kleinschmidt et al's, (2007) call for a more visible pro-active approach to inter-functional management, which provides a safe NPD climate and the opportunity for positive task-based conflict to occur during NPD projects. However, there is a caveat that too much managerial attention can actually reduce functional conflict. Top management attention should move beyond the reliance on traditional integration approaches (e.g., formalization, centralization, QFD) designed to ensure a minimum threshold of integration is achieved, to a focus on project level issues instead. Specifically, the project specification stage, where ensuring that all functions are committed to the project and adequately resourced, becomes a priority. Similarly, they should focus on eliminating any sources of mistrust or doubt that may exist between functional managers over differing reward systems and competing research priorities. Top management time invested at this point of the project process is likely to be very beneficial in the long term.

At the functional manager level, the implications for marketing managers trying to integrate with the technical functions is that they need to be aware of the need to show genuine interest in the project. This works both ways as all of the senior managers involved in NPD projects are experienced and respond to what they consider real engagement from their counterparts. With the strongest effects in the model due to project interest at the functional level, the conclusion to be drawn is that NPD is still very much driven by marketing and technically trained managers when they interact with each other directly.

## Appendix

Appendix 1. Technically Trained Managers View of Marketing (Means, standard deviations, correlations, and internal consistencies of constructs)

Constructs	Mean	Stand Dev.	Cronbah. Alpha	Comp. Rel.	AVE
Top Management Support for Collaboration	4.0	1.82	.76	.89	.69
Top Management Project Interest <sup>a</sup>	2.1	1.48	n.a	n.a	n.a
Mark Manager Project Interest	4.7	1.47	n.a	n.a	n.a
Functional Conflict	5.1	1.49	.79	.88	.59
Dysfunct Conflict	4.9	1.28	n.a	n.a	n.a
NPD Success <sup>a</sup>	4.9	1.71	n.a	n.a	n.a



Appendix 2. Marketing Managers View of Technically Trained Managers (standard deviations, correlations, and internal consistencies of constructs)

<b>Constructs</b>	<b>Mean</b>	<b>Stand Dev.</b>	<b>Cronbach. Alpha</b>	<b>Comp. Rel.</b>	<b>AVE</b>
Top Man Support for Collab	5.0	1.46	.80	.88	.72
Top Man Project Interest <sup>a</sup>	5.5	1.56	n.a	n.a	n.a
Technically Trained Manager Project Interest	5.5	1.44	n.a	n.a	n.a
Functional Conflict	5.3	1.24	.83	.88	.59
Dysfunct Conflict	1.8	1.44	0.71	.84	.63
NPD Success <sup>a</sup>	5.0	1.56	n.a	n.a	n.a

## Appendix 3. Correlations of key constructs (Technical manager viewpoint)

Constructs	Top Manag Support for Collab	Top Manag Proj. Interest	Mark Manag Project Interest	Funct Conflict	Dysfun Conflict	NPD Success
Top Management Support for Collaboration	1					
Top Man Project Interest <sup>a</sup>	.45**	1				
Marketing Manager Project Interest	.34*	.36	1			
Functional Conflict	.49**	.24**	.54	1		
Dysfunctional Conflict	-.29**	-.23**	-.52**	-.54**	1	
NPD Success <sup>a</sup>	.41*	.41*	.51**	.51**	.45**	1

## Appendix 4. Correlations of key constructs (Marketing manager viewpoint)

Constructs	Top Man Supp for Collab	Top Man Proj. Interest	Tech Train Man Project Interest	Funct Conf	Dysf Conf	NPD Succ
Top Man Support for Collab	1					
Top Man Project Interest <sup>a</sup>	.57**	1				
Tech Trained Manag. Project Interest	.62**	.51**	1			
Functional Conflict	.58**	.42**	.62**	1		
Dysfunct Conflict	-.48**	-.31**	-.57**	-.53**	1	
NPD Success <sup>a</sup>	.08	-.08	-0.05	-.17	.13	1

## Appendix 5. Operational Measures

Construct	Items	Adapted from
Top Management Project Interest	<p>Seven-point scale anchored by 1 “Completely Disagree” and 7 “Completely Agree.”</p> <p>Top management (1) showed great enthusiasm for our NPD activities, (2) closely followed the progress of this project (3) made all of the firms resources available for the project</p>	New Scale
Top Management Support for Cross-functional Collaboration	<p>Seven-point scale anchored by 1 “Completely Disagree” and 7 “Completely Agree.”</p> <p>Our organisational structure facilitated cross-functional cooperation and collaboration, (2) our top management formally promoted and encouraged cross-functional teamwork (3) our top management provided enough opportunities for Marketing and R&amp;D to socialise together</p>	Song et al (2000)
Counterpart Project Interest	<p>Seven-point scale anchored by 1 “Completely Disagree” and 7 “Completely Agree.”</p> <p>The Marketing Manager (1) showed great enthusiasm for this project (2) closely followed the progress of this project (3) made all of the resources for which he was responsible available for the project</p>	New Scale
Functional Conflict	<p>Seven-point scale anchored by 1 “Completely Disagree” and 7 “Completely Agree.”(1) During this project there was consultative interaction and useful give-and-take (2) There was constructive challenge of ideas, beliefs and assumptions (3) Members were comfortable about raising dissenting viewpoints (4) Different opinions or views focused on issues rather than on individuals(5) Even people who disagreed, respected each others’ viewpoints</p>	Menon, Bharadwaj and Howell (1996)

Construct	Items	Adapted from
Dysfunctional Conflict	<p>Seven-point scale anchored by 1 “Completely Disagree” and 7 “Completely Agree.”</p> <p>When the two of us got together in group meetings, tensions between the two of us frequently ran high (2)</p> <p>I generally disliked having to work with him/her (3)</p> <p>Throughout the project, there was little interpersonal conflict between myself and the Marketing Manager (reverse coded)</p>	Menon, Bharadwaj and Howell (1996)
New Product Success	<p>Seven-point scale anchored by 1 “Completely Disagree” and 7 “Completely Agree.”</p> <p>Respondents were asked; (1) The NPD project achieved its budget objectives, (2) The NPD met its time schedule objectives, (3) In terms of contribution to sales, the new project was successful, (4) In terms of contribution to profit, the new project was successful, (5) The overall performance of this NPD project met our objectives.</p>	Griffin and Page (1993)

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