

An Empirical Evaluation of Conflict in MNC Matrix Structure Firms

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Abstract

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MNCs with matrix structures are supposed to have more organizational conflict than non-matrix firms. The present study uses a sample of 82 German MNCs to evaluate this hypothesis. Only MNCs with the well-known product division by geographical region matrix structure support this hypothesis. Other types of matrix structure which contain a functional division dimension fail to support it. The paper discusses an explanation for the mixed findings and outlines future research to clarify the issue. This subject is important, since it is believed MNCs are showing increased interest in using matrix structures.

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In the 1970s matrix structures were generally embraced as the best way to organize MNCs to deal with increasingly complex international strategies (Stopford and Wells, 1972; Davis and Lawrence, 1977; Galbraith and Nathanson, 1978). During the 1980s, however, many U.S. MNCs abandoned their matrix structures when they experienced difficulties managing them (Pitts and Daniels, 1984). One of the most frequently reported problems was higher levels of interpersonal and inter-unit conflict than existed in non-matrix structures. While all MNC scholars seem to see increased conflict as an inevitable outcome of using formal matrix structures, there has been no systematic or large sample empirical investigation of this issue. Are matrix structures consistently associated with higher levels of conflict than non-matrix structures? Are all types of matrix structure equally prone to increased conflict? And does the level of conflict change with the issue underlying the conflict? These are questions the present study attempts to address. Based on recent experience, Galbraith (2009) reports increasing manager interest in understanding how to use matrix structures. If this is true, it is important to better understand intra-organizational conflict in MNCs with matrix structures.

LITERATURE REVIEW

Matrix structures are an overlaying of two or more elementary structures. The elementary structures available to MNCs include worldwide functional divisions, international divisions, geographical regions, and worldwide product divisions (Stopford and Wells, 1972). Under an elementary structure, authority and communications tend to

flow along a single primary hierarchy or structural dimension. Under the typical two-dimensional matrix structure, a foreign subsidiary simultaneously reports to the parent along two of the elementary dimensions. For example, it might report to a geographical region HQ and to a number of product division HQs. Using Davis and Lawrence's terminology, this is a "multiple command" or "two-boss" structure.

The empirical research on matrix structures tends to be clinical research and case studies. Most researchers who have studied matrix structures report that they are associated with high levels of intra-organizational conflict. But, there is only limited conceptualization of the conflict issue in the matrix literature. Davis and Lawrence (1977) state that the large number of interdependencies in a matrix structure leads to more contacts and more communications between parties, and this increases the chances for conflicts to develop. In addition to the increased frequency of contact, they further point out that in a matrix structure conflicts are more likely to occur between "people from different functions who often have different attitudes and orientations (Davis and Lawrence, 1977: 104). In a subsequent conceptual article, Chi and Nystrom link conflict in an MNC matrix structure to the fact "that the managers of two units organized along different dimensions of the organization have overlapping jurisdictions and are both evaluated partly on the economic outcomes of their respective units that partially coincide." (Chi and Nystrom, 1998: 147). Thus, the overlapping responsibilities in a matrix organization muddy the relationship between an individual's performance and the individual's evaluation and reward, leading to potential conflict between the interdependent parties with the overlapping responsibilities.

Galbraith (2009) takes a somewhat different view of matrix conflict, which he sees as normal and natural in matrix firms: “When conflict arises, it indicates that the structure is working. It should surface differences between the two or three sides of the matrix.... Absence means that the natural conflicts are being hidden and acted out in dysfunctional ways.” (Galbraith, 2009: 202). Galbraith then focuses on resolving matrix conflicts through participative problem solving. He seems to view conflict resolution as an integral part of the coordination that matrix structures provide.

There is also some discussion of matrix conflict in the project management matrix literature (Barker, Tjosvold, and Andrews, 1988; Ford and Randolph, 1992; Burns and Wholey, 1993; Laslo and Goldberg, 2001; Kuprenas, 2003). Project matrix structures are widely used in aerospace companies, R&D labs, CPA and consulting firms, and other organizations where work needs to be organized under large, temporary projects. This literature largely views conflict as an inevitable consequence of a matrix structure that needs to be managed through the organizational culture and deliberate training of employees on how to work in matrix structures (Joyce, 1986; Bernasco, de Weerd-Nederhof, Tillema and Boer, 1999). Our view is that the project matrix literature is not directly relevant to the issue of conflict in MNC matrix structures. The project matrix structure is always a functional division x product division (FDxPD) structure, while the organizational dimensions in an MNC matrix structure vary, and frequently include a geographical region (GR) dimension. Also, the project matrix structure manages temporary projects, while the MNC matrix structure manages the long-run strategies of

businesses. So the organizational dimensions in a matrix structure and the purpose of the structure tend to differ for project management and MNC matrix structures.

Hypothesis Development

The literature review reveals that researchers tend to have different perspectives of matrix conflict. Chi and Nystrom (1998) see conflict as one of the “demerits” of a matrix structure, to be balanced by its “merits.” Galbraith (2009) sees the surfacing of conflict followed by its resolution as a very positive experience, part of the coordinating of divergent goals within the firm. Davis and Lawrence (1977) assume a more neutral stance that falls in the middle. They neither fear nor encourage the surfacing of matrix conflict, but like Galbraith focus most of their concern on preparing the organization to resolve it in an open and participative manner. Despite these differences, all three perspectives agree that matrix structures involve higher levels of conflict than non-matrix structures.

An earlier empirical study conducted in German companies with matrix structures found that conflict between the two matrix managers was one of the most important problems associated with using a matrix structure (Brings, 1976). Studies have also found that most matrix structures are not balanced matrix structures, but that one organizational dimension has more power and influence than the other (Wagner, 1978; Buehner, 1993). This imbalance is generally regarded as a potential source of conflict between the two dimensions. The above observations support the following general hypothesis:

Hypothesis 1: Matrix structure MNCs will tend to be associated with higher levels of intra-organizational conflict than non-matrix structure MNCs.

Missing from the existing literature is a more detailed conceptual framework that would support a more fine-grained empirical investigation of matrix conflict. To facilitate this, we focused on further elaborating (1) the issues underlying conflict and (2) the location of conflict in matrix MNCs. Regarding the issues underlying matrix conflict, the case studies and clinical research on matrix firms identify the differing goals of the organizational dimensions as a frequent source of conflict (Davis and Lawrence, 1977; Janger, 1983; Galbraith, 2009). This is a logical finding, since one of the reasons for adopting a matrix structure is to give equal priority to multiple goals. The same studies also report frequent squabbles between the organizational dimensions over which manager or subunit has authority over specific decisions. Drumm (1974) argues that it is not possible to clearly assign authority to the two hierarchies that comprise a matrix structure. Instead, it is likely that authority will tend to shift between the two hierarchies. Peters and Waterman (1982) also see conflict over authority as a frequent problem for matrix structures, since authority is shared and neither dimension has primacy.

In addition to goal conflict and authority conflict, we also chose to measure a third type of conflict, which we label evaluation conflict. It measures the conflict which can develop when individuals use different perspectives or approaches to evaluate a situation. This is likely to exist when individuals from different organizational dimensions interact over a problem or decision. Since the organizational dimensions represent different backgrounds and experiences, their members are likely to use different perspectives and

conceptual frameworks. While we have distinguished among three different issues underlying matrix conflict, there is no basis for hypothesizing which will be most prevalent or powerful in a matrix structure firm. So observing the influence of the underlying conflict issue on level of conflict is largely an exploratory part of the study.

Regarding the location of conflict, what one can infer from the case studies discussed in Davis and Lawrence (1977) and Galbraith (2009), is that matrix conflict seems to largely occur at the interface of the two organizational dimensions that are included in the matrix structure. This view is confirmed by the discussion of matrix structures in Janger, 1983. If the structure is a product division x geographical region matrix (PDxGR), the interface occurs at the second level of an MNC's hierarchy, where managers in worldwide product division HQs and managers in geographical region HQs share responsibility and authority over managers in foreign subsidiaries. This is shown in Figure 1. The matrix roles are consistent with the Davis and Lawrence (1977) framework. Here the French

(Insert Figure 1 about here)

subsidiary for Business B reports to both a product division HQ and a geographical region HQ. Both of these HQs share level two in the MNC's hierarchy. Since they have different goals and missions, which have to be realized through the same French subsidiary, there will be significant opportunity for conflict to occur between the product division managers and the geographical region managers at level two.

In the related elementary or non-matrix structures – the worldwide product division structure and the geographical region structure – the potential for conflict between

product division managers and geographical region managers should be reduced, since they do not occupy the same hierarchical level. Since one dimension will always be under the other in the MNC hierarchy, its goals and authority will tend to be more consistent with the goals and authority of the superior dimension, and there should be less opportunity for conflict to occur. This logic leads to the following hypothesis:

Hypothesis 2a: A PDxGR matrix structure will tend to be associated with higher levels of conflict between PD and GR managers than an elementary product division (PD) or geographical region (GR) structure.

The other potential two-way matrix structures that can exist in an MNC are a functional division x product division matrix (FDxPD) and a functional division x geographical region matrix (FDxGR). The above logic can be extended to these:

Hypothesis 2b: A FDxPD matrix structure will tend to be associated with higher levels of conflict between FD and PD managers than an elementary functional division (FD) or product division (PD) structure.

Hypothesis 2c: A FDxGR matrix structure will tend to be associated with higher levels of conflict between FD and GR managers than an elementary functional division (FD) or geographical region (GR) structure.

Our empirical study of German MNCs also included a three-way matrix structure (FDxPDxGR), which in German is referred to as a “tensor” structure. The above logic can also be used to develop a more specified hypothesis for evaluating the levels of conflict associated with this structure:

Hypothesis 3: A FDxPDxGR matrix structure will tend to be associated with higher levels of conflict between:

1. PD and GR managers than an elementary PD or GR structure,
2. FD and PD managers than an elementary FD or PD structure,
3. FD and GR managers than an elementary FD or GR structure.

Empirically testing the above hypotheses should provide a more specified evaluation and understanding of conflict in matrix structures than presently exists. The hypotheses tend to be consistent with the relationships that we generally assume.

METHOD

Sample

The research sample consists of 82 German manufacturing and service firms, each with foreign sales of 10 percent or more. There are 42 firms with a matrix structure and 40 firms with an elementary structure. Industries included in the sample are: chemical, steel and nonferrous metals, machinery, automotive and transportation, electrical equipment, textile, food products, construction, publishing, and retailing. Firm size varies from 110 million to 83 billion Euros in annual sales, with a mean of 7.4 billion Euros. The sample was collected in 2005. The sample was chosen to represent German firms in the above industries that have significant international business. By including both relatively large and small firms, the sample differs from most MNC strategy-structure studies. The latter have typically focused on large Fortune 500 firms. In Germany a large amount of international business is conducted by relatively small firms.

Data

Data was collected by mailing a questionnaire to a high level manager responsible for international operations. In some cases telephone calls to the firm were used to identify

this person. Measurement of the variables is described in the Appendix. Table 1 shows the means, standard deviations, and correlations among the conflict variables. While

(Insert Table 1 about here)

there are some significant correlations among the variables, the levels are sufficiently low that each variable can be viewed as representing a different measure of intra-organizational conflict. Four different types of matrix structure appear in the sample. Fifteen firms have a product division by geographical region matrix (PDxGR), 11 a functional division by product division matrix (FDxPD), nine a functional division by geographical region matrix (FDxGR), and seven a tensor matrix structure. The elementary structures are represented by 12 functional division (FD), 26 product division (PD), and two geographical region (GR) firms. The latter subsample is unfortunately very small, but understandable. The elementary geographical region structure is extremely rare among German MNCs. The geographic dimension comparisons included in the hypotheses will obviously have to be further tested in a different national sample.

Analyses

When all of the conflict variables used in the study are entered in a factor analysis, no single dominant factor emerges. Thus, there is no evidence of any common methods variance. Two types of analyses are used to examine the hypothesized relationships between structure and level of conflict. First, t-tests are used to test the hypothesized differences between matrix and elementary structure firms expressed by Hypotheses 1. Second, bivariate ANOVA contrasts are used to test separately each relationship expressed by Hypotheses 2 and 3.

RESULTS

Testing the hypotheses

Table 2 shows the results of the t-tests used to test Hypothesis 1, which hypothesized that all types of conflict would be greater in matrix structures than in elementary structures.

(Insert Table 2 about here)

While seven of the nine types of conflict are greater in matrix structure MNCs, only three of the differences are statistically significant. Interestingly, all three significant differences are between PD and GR managers. Conflict between FD and PD and between FD and GR managers appears to be relatively similar in matrix structure and elementary structure firms. Thus, Hypothesis 1 is only supported for conflict between PD and GR managers. It is interesting to further observe that within the elementary structure firms, relationships involving FD managers have higher levels of conflict than the relationship between PD and GR managers (where there are no FD managers).

Table 3 shows the ANOVA contrasts used to conduct a more detailed comparison of conflict in a specific type of matrix structure against conflict in the two relevant elementary structures. Hypothesis 2a is supported. The PDxGR matrix structure tends to

(Insert Table 3 about here)

have significantly higher levels of conflict than the elementary PD and GR structures. Neither of the remaining two types of matrix structure satisfies its respective hypothesis, 2b and 2c. It is interesting that both of these matrix structures contain an FD dimension, and in most cases the elementary FD structure has slightly more conflict than the

associated matrix structure. Consistent with our observation in Table 2, the elementary FD structure tends to have relatively high conflict between FD and PD managers and FD and GR managers.

Table 4 shows the nine types of conflict that can occur in a tensor structure compared to the levels of conflict in the relevant elementary structures. The tensor structure has significantly higher levels of conflict between PD and GR managers than the elementary PD structure. This supports Hypothesis 3. But the levels of conflict between FD and PD, and FD and GR managers are not significantly greater in the tensor structure than they are in the relevant FD and PD elementary structures. This finding is similar to the previous one for two-way matrix structures.

So a consistent pattern emerges from the detailed comparisons evaluated in Tables 3 and 4. Conflict between PD and GR managers follows the hypothesized relationship and tends to be greater in the two-dimensional and three-dimensional matrix structures than in the relevant elementary structures. But conflict between FD and PD managers, and between FD and GR managers fails to support the hypothesized relationship. Here conflict tends to be similar or not significantly different between matrix structures and the relevant elementary structures. It is important to remember that we can't adequately represent or test conflict in the elementary GR structure.

DISCUSSION AND CONCLUSION

The present study contains a number of limitations: the absence of an adequate number of elementary GR structures, the use of a single respondent in each firm, and single measures of the types of conflict. While these deficiencies might make the study unsuitable for testing a well-developed theory, there is little existing theory about the relationship of type of matrix structure and level of matrix conflict in MNCs. This makes the study quite exploratory. We believe the study represents the first attempt to systematically test some common assumptions about conflict in MNC matrix structures. If there is a renewed interest in using matrix structures in MNCs, as Galbraith (2009) believes, this is a timely subject. Our study explores a subject that is both poorly understood (largely assumed) and important to the design and use of matrix structures.

The empirical results highlight a primary issue for further discussion. They reveal that all of the hypotheses are only supported for the PD – GR relationship. As hypothesized, conflict between PD and GR managers is significantly higher in the PDxGR and tensor matrix structures than in the PD and GR elementary structures. This is the relationship most frequently associated with MNC matrix structures (Stopford and Wells, 1972; Davis and Lawrence, 1977; Galbraith, 2009). But our sample shows that for German MNCs, the FDxPD and FDxGR forms of matrix structure are also widely used. And for these types of matrix structure, conflict between the matrixed dimensions tends to be similar to the levels of conflict found in the elementary FD and PD structures (the elementary GR structure could not be adequately tested). This contradicts the hypotheses and common assumptions about conflict in MNCs with matrix structures.

As already discussed, the existing conceptualization of conflict in matrix structure MNCs is quite simple, based largely on case studies and clinical research, and not explicitly related to type of matrix structure. It provides no explanation for the mixed findings of the study. The present study attempted to measure three different types of conflict across each relationship. But with regard to the hypotheses, all three conflict issues tend to reflect similar relationships. So this attempt to further specify type of conflict provides no real insight into the divided support for the hypotheses.

One important difference between the PD – GR relationship and the other relationships is that both the PD dimension and the GR dimension tend to organize their subunits as profit centers. The HQ of a worldwide product division attempts to optimize worldwide profits for the product area, while the geographical region HQ for Europe attempts to optimize profits within the region. It is easy to see how conflict between the two HQs might increase as they both attempt to manage foreign subsidiaries in Europe to realize their respective goals. This increase in fact is clearly reflected in our empirical findings.

But if one of the dimensions in the MNC matrix is a series of worldwide functional division HQs (a worldwide R&D division HQ, a worldwide manufacturing division HQ, a worldwide marketing division HQ), it is unlikely that any of these will be profit centers, attempting to optimize the profits of some segment or activity. (Functional subunits are typically cost centers rather than profit centers, since none can independently provide a product or generate outside revenue.) So conflict between the FD dimension and either the PD or GR dimension will not be over profits, but some other issues. Whatever these

non-profit issues are, they seem to cause similar levels of conflict between FD managers and PD or GR managers when the interface occurs horizontally in a matrix and when it occurs vertically in an elementary structure. In contrast, when the interface between PD and GR managers occurs vertically in an elementary structure, where one dimension is subordinate to the other, there is significantly less conflict than when the interface occurs horizontally at the same level in a matrix. Our tentative conclusion and suggestion is that profit issues are probably easy to reconcile vertically (low conflict), but difficult to reconcile horizontally (high conflict), while non-profit issues are more equally difficult to reconcile under a horizontal or a vertical relationship (similar levels of conflict).

The above interpretation of the empirical results is admittedly speculative, but an intriguing alternative for subsequent research to pursue. While this could be pursued through additional survey study, our preference would be to initially pursue it with several case studies. Since the idea is speculative, it may require substantial modification. A survey study probably won't be able to do this, while case studies can explore the core issues along with more tangential issues, leading to a more complete conceptualization of the research issue and a more sharply defined research question. While existing case studies and clinical research on matrix structures in MNCs provide considerable detail on management practices inside matrix structures, they don't provide a picture of how profit and non-profit issues are debated and reconciled between different types of organizational dimension. Given the findings of the present study, we believe this is an attractive subject for future research to pursue.

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Appendix: measurement of Variables

(The questionnaire was in German)

1. Organizational structure was measured by presenting respondents with descriptions and simplified organization charts of the various types of structure and asking them to select that which best described their organization. This variable represents the operating structure, which can be different from the legal structure of MNCs.
2. Nine types of conflict were measured between managers at the second hierarchical level:
 - 1) Goal conflict between PD and GR managers
 - 2) Goal conflict between FD and PD managers
 - 3) Goal conflict between FD and GR managers
 - 4) Authority conflict between PD and GR managers
 - 5) Authority conflict between FD and PD managers
 - 6) Authority conflict between FD and GR managers
 - 7) Evaluation conflict between PD and GR managers
 - 8) Evaluation conflict between FD and PD managers
 - 9) Evaluation conflict between FD and GR managers

The different types of conflict were introduced and explained to provide the respondents with a clear understanding of each:

Goal conflict: Manager A pursues interests or goals that do not correspond to the interests or goals of manager B

Authority conflict: Manager A and Manager B have different views regarding their authorities

Evaluation conflict: Manager A assesses a solution (a means to an end) subjectively different than manager B

The respondents were asked to assess the frequency of each of the nine types of conflict on 5-point scales, where 1 = very seldom, 2 = seldom, 3 = from time to time, 4 = frequent, 5 = very frequent.

The respondents were also asked to assess the strength of each of the nine types of conflict on 5-point scales, where 1 = very weak, 2 = weak, 3 = middle, 4 = strong, 5 = very strong. Conflicts with strength scores below 2 were omitted from the analyses, to ensure the focus was on serious or meaningful conflict.

Figure 1A Two-dimensional PD x GR Matrix StructureMatrix Roles

Top
Leadership

Matrix
Managers

Two- boss
Manager

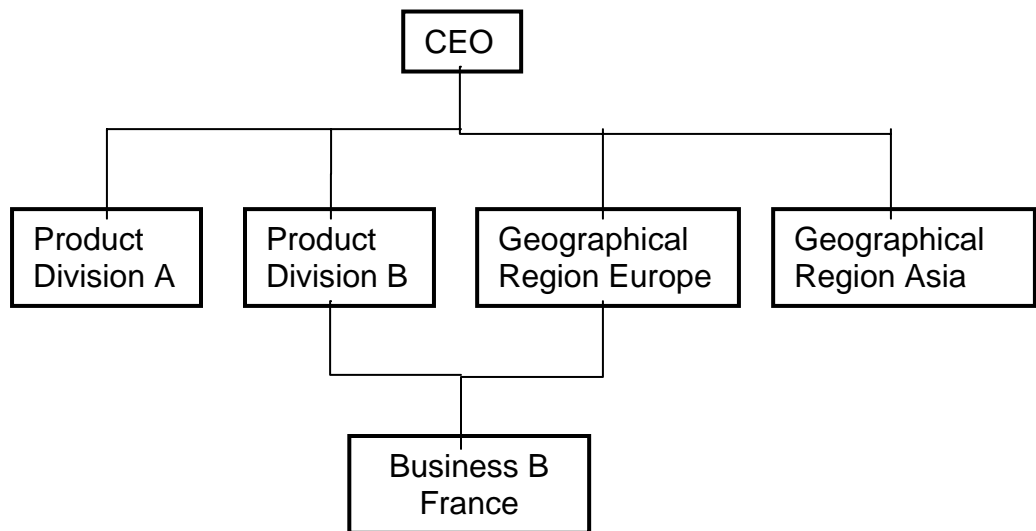


Table 1

. Means, Standard Deviations and Correlations of Elements of Strategy

Variable	Means	SD	1	2	3	4	5	6	7	8
1. Goal conflict between PD and GR	2.93	1.00								
2. Goal conflict between FD and PD	3.08	.85	.44**							
3. Goal conflict between FD and GR	2.80	1.05	.56***	.45**						
4. Authority conflict between PD and GR	2.74	1.04	.53**	.19	.60***					
5. Authority conflict between FD and PD	2.50	1.03	.30	.39**	.44*	.48**				
6. Authority conflict between FD and GR	2.52	.81	.30	.34	.30	.44*	.14			
7. Evaluation conflict between PD and GR	2.79	.96	.66***	.21	.68***	.60***	.42*	.25		
8. Evaluation conflict between FD and PD	2.72	.83	.40*	.44**	.71***	.36	.46**	.03	.67***	
9. Evaluation conflict between FD and GR	2.85	.91	.59***	.25	.58***	.62***	.21	.43*	.75***	.57***

*** $p < .001$, ** $p < .01$, * $p < .05$ (n = 26 - 46)

Table 2

T-tests between Mean Levels of Conflict in Matrix and Elementary Structure MNCs

	<u>Matrix structures</u>	<u>Elementary structures</u>	<u>t-value</u>
Conflict between PD and GR managers			
Goal conflict	<u>3.30</u>	2.15	-4.0***
Authority conflict	<u>2.96</u>	2.33	-1.7*
Evaluation conflict	<u>3.04</u>	2.40	-2.1*

n = 35 - 40

Conflict between FD and PD managers

Goal conflict	<u>3.21</u>	2.92	-1.2
Authority conflict	2.46	<u>2.55</u>	.3
Evaluation conflict	<u>2.73</u>	2.71	0

n = 43 - 53

Conflict between FD and GR managers

Goal conflict	<u>2.85</u>	2.73	- .3
Authority conflict	2.47	<u>2.57</u>	.3
Evaluation conflict	<u>2.89</u>	2.80	- .3

n = 31 - 35

*** p < .001, * p < .05 (one-tail test)

Table 4

ANOVA Contrasts of Levels of Conflict Associated with a Tensor Matrix Structure
and Relevant Elementary Structures

Type of conflict	Type of structure			
Mean levels of conflict between PD and GR managers (Hypothesis 3)				
	<u>PDxGRxFD</u> <u>matrix</u>	<u>PD</u>	<u>GR</u>	<u>Differences</u>
Goal conflict	<u>3.60*</u>	2.00	2.00	* Different from PD at p < .05
Authority conflict	<u>3.50*</u>	2.14	2.00	* Different from PD at p < .05
Evaluation conflict	<u>3.60*</u>	2.22	2.00	* Different from PD at p < .05

n = 12 – 15 (only 1 firm with GR structure) (one-tail test)

Mean levels of conflict between FD and PD managers (Hypothesis 3)

	<u>PDxGRxFD matrix</u>	<u>FD</u>	<u>PD</u>	<u>Differences</u>
Goal conflict	<u>3.17</u>	3.11	2.86	NS
Authority conflict	<u>2.80</u>	2.75	2.46	NS
Evaluation conflict	3.00	3.00	2.54	NS

n = 26 – 29

Mean levels of conflict between FD and GR managers (Hypotheses 3)

	<u>PDxGRxFD matrix</u>	<u>FD</u>	<u>GR</u>	<u>Differences</u>
Goal conflict	3.00	<u>3.67</u>	2.00	NS
Authority conflict	2.75	<u>2.83</u>	2.00	NS
Evaluation conflict	<u>3.20</u>	3.17	3.00	NS

n = 11 – 12 (only 1 firm with GR structure)