

RESOLVING CONFLICT BETWEEN MARKETING AND ENGINEERING: A QUEST FOR EFFECTIVE INTEGRATION

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ABSTRACT

Inability to respond promptly to the changes in the market place is one of the main issues that must be tackled by the firms. In order bring customer “inside” the company, the conflict that exists between engineering and marketing must be resolved and effective integration must be achieved in order to successfully develop and commercialize new products and improve existing ones. Therefore, the aim of this study is to explore a) the relationship between marketing and engineering in Turkish companies b) to determine the degree of conflict between marketing and manufacturing c) to identify sources of conflict and to determine how this conflict can be reduced and contribute to the integration of two functions. As barriers to effective integration, previous studies cite factors such as a) poor communication b) insensitivity toward each other c) lack of senior management support for an integrated approach to product development d) differences in personality and cultures between marketing and manufacturing personnel e) lack of marketing knowledge of engineers. Therefore, a questionnaire was prepared and send to engineering and marketing personnel of selected Turkish manufacturing companies. In order to be able to specify the degree and the sources of conflict both structured and open end questions was used. The results showed that cross – functional education and training is vital to promote interdepartmental connectedness.

Introduction

More than two decades, much research has been focused on the interface between marketing and engineering, especially on marketing and R&D. Effective integration of marketing, product engineering and manufacturing is vital for the successful launching of new products and continuous success on the market. The objective of this study is to disclose. The relationship between marketing and engineering departments of Turkish manufacturing firms and to specify the agree and sources of conflict and to propose remedies to resolve the conflict so as to promote interdepartmental connectedness and integration. This is done by a questionnaire asking questions to the marketing departments at all levels of management. Therefore, this study departs from most of the previous studies in its sample space.

Respondents are engineers and marketers in the engineering and marketing departments at different hierarchical levels in order to be able to observe the effect of departmentalization as well as backgrounds of education on interdepartmental connectedness and conflict.

Background

The need to increase consumer orientation of the firm, has necessitated the integration of marketing and operations. Unfortunately, the relationship between these two functions has often been uncomfortable, if not adversarial (Karmakar, 1996, p. 125). One of the early investigation of the issue was made by Shapiro (1977). Jaworski and Kohli (1993), in their study, suggest that “market orientation appears to be facilitated by the amount of emphasis top managers place on market orientation through continual reminders to employees that is critical for them to be sensitive and responsive to market developments”. Top management commitment is necessary but not sufficient. Interdepartmental dynamics also play a vital role in determining the level of marketing orientation (Ogbuehi et. al., 1995). For example, while interdepartmental conflict tend to reduce market orientation while interdepartmental connectedness contribute to market orientation. Interdepartmental connectedness has been described by Jaworski and Kohli (1993) to include physical proximity and communication between departmental through telephone, e-mail and the like.

Marketing orientation is vital for all departments including R&D. Pioneering and related work on this issue has been done by Souder (1977, 1988). Souder (1981) found that good communications and harmonious relations are more likely to lead to product success. Others (e.g. Parry and Song, 1993, Hise et. al., 1990) suggested that good relations between R&D and marketing functions are essential for effective new product development. Gupta et. al. (1985, 1986) and Song and Parry (1992) reported findings of studies that examined R&D – marketing integration in US and Japanese firms. In both studies it was found that significant disagreements exist between marketing and R&D regarding ideal level of integration. It was also found that significant levels of dissatisfaction with current levels of integration exists. Gupta et. al. (1985, 1986) have investigated the barriers to integration of marketing and engineering personnel. They mention main barriers as: (1) poor communications (2) insensitivity towards each other (3) lack of senior management support for an integrated approach to new product development (4) differences in personality and culture between engineers and marketers (5) a lack of market knowledge on part of the R&D personnel. Griffin and Hauser (1996), have found that common barriers between the two functions are differences in personality, culture and language, differences in organizational responsibilities and the physical barriers, created by organizations, between the functions.

Several studies have found that lack of integration between engineering and marketing leads to conflict (Weinrauch and Anderson, 1982, Crittenden et. al., 1993). Crittenden et. al. (1993) found that conflict between marketing and engineering arises from the need to manage diversity in such things as the number and breadth of products, customization of product and product quality. They also suggest ways in which this diversity can be managed to reduce conflict with improved communications between engineers and marketers.

Recent research pursue the issue of interdepartmental integration. For example Kahn and Mc Donough (1997) examined the integration of marketing with R&D and manufacturing departments across global regions. Morgan and Piercy (1998) focused on interdepartmental connectedness, communication and conflict between marketing and quality. Shaw and Shaw (1998) studied the conflict between engineers and marketers within United Kingdom based companies from the engineer’s perspective and tried to assess the affect of marketing training

on the relationship between engineers and marketers. They found that generally, engineers view their relationship with their marketing colleagues in a favorable way and highlighted the importance of marketing training for engineers as a means of improving their relationship with marketers. As means of reducing conflict they recommended (1) better communications, (2) developing teamwork (3) increasing training and team building exercises.

Methodology

This study, examines the issue of interdepartmental integration between engineering and marketing departments with questioning engineers and marketing personnel in Turkish companies. With the aim to compare the responses of the two groups, the questionnaire was directed to both engineering and marketing people. Of the 200 questionnaires that were sent to various industrial firms in İzmir and Manisa, 82 were returned. The first part of the questionnaire collected information on age, education, company, department and job description.

The industrial sectors in which respondents work are shown in Table 1. Pursuing the study of Shaw and Shaw (1998), the questionnaire attempted to determine the relationship between engineering and marketing people with series of statements about the relationship based on the work of Parry and Song (1993) and Gupta and Wilemon (1990), Jaworski and Kohli (1993) and Morgan and Piercy (1998). Respondents were asked to agree or disagree with the statements on a 5 – point scale. Further; open – ended questions were presented to find out what both groups can learn from each other and to identify possible sources of conflict. They were also asked to offer suggestions to improve their relationships.

Table 1.

Sector	n	%
Food Processing	17	23,61
Automotive	16	22,22
Construction	5	6,95
White durables	6	8,33
Paint and Chemical	6	8,33
Electronics	5	6,95
Fertilizer	14	19,44
Other	3	4,20
Total	72	100,00

Findings

Respondents Profile

Table 2.

Department	n	%
Marketing	34	41.46
Engineering	48	58.54
Total	82	100.00

It was surprising to find out that 56 % of the marketing department personnel (n = 19) is of engineering origin (Table 2). This fact, enabled us to perform various comparative analysis. The job titles revealed that the respondents ranged from vice president to chief - of - sales, planning and R&D engineer, maintenance engineer. Respondents are relatively young (Table 3) with 80 % of them 34 year – old or younger. 82 % of the respondents are engineers (n = 67) while 16 % have economics or business major (Table 4). Engineering backgrounds of the respondent are varied (Table 5). 29 of the 67 engineers received some type of marketing training.

Table 3. Age of Respondents

Age	n	%
20 – 24	3	3,66
25 – 29	35	42,68
30 – 34	28	34,12
35 – 39	8	9,76
40 – 44	3	3,66
45 – 49	4	4,88
50 and over	1	1,21
Total	82	100,00

Table 4. Education of Respondents

Education	n	%
Engineering	67	81,71
Economics & Business	13	15,85
Other	2	2,44
Total	82	100,00

Table 5. Engineering Backgrounds of Respondents

Engineering	n	%
Mechanical	16	23.88
Food Processing	16	23.88
Chemical	10	14.92
Electric & Electronic	8	11.94
Agricultural Eng.	6	8.96
Industrial	5	7.46
Metallurgical	4	5.97
Other	2	2,99
Total	67	100.00

Relationship between Engineering and Marketing Departments

The weighted averages of the answers to the 14 structured questions that were asked on a 5 point – scale are shown in Table 6. The weighted average for the total sample without any sub-division is shown in column 1. Then, in order to measure the effects of (a) departmentalization on the total sample (b) departmentalization on the engineers (c) effect of marketing training on engineers and (d) effect of educational background in marketing department, separate comparisons for these sub-divisions of the sample were made (Table 6).

By examining the table closely, it can be seen that everybody agree that every engineering and marketing person should know something about each other. Further; for statements 7-14; across all sub-divisions, it can be observed that there is no reason to think that the difference in answers are significant with the exception of statement 9. Weighted averages for statement 9 reading “Engineering people are more important to a company than marketing people” has significant dispersion between two departments.

All of the respondents tend to be indifferent to statements 10-14. That is mostly they are indifferent to “tensions frequently run high when engineering people work together”, “Engineering and marketing people dislike having to work with one another.”, “There are no disagreements between engineering and marketing departments”, “Members of the engineering and marketing departments feel that the goals of their respective departments are in harmony with each other.” and “Individuals in one departments will only contact someone in the other only when it is strictly needed”.

The moderacy of the answers, leads to the conclusion that there is still a long way to go for harmonious relations between departments.

For statements 1-6, there are some differences across sub-divisions except in statement 5 where the weighted averages are quite close to each other. Respondents are once again mostly indifferent with slightly inclining to disagree to the statement that “Engineering and Marketing people do not understand each other”.

For statements 1, 2, 3, 4 and 6, there seems to be significant differences across different sub-groups. For the first statement “Engineering / Marketing people do not trust each other.” marketing people disagree while manufacturing tend to be indifferent. Further; again with statement 1., Engineers with marketing training tend to disagree, however, people in the marketing department tend to disagree even stronger. With statement 2, that is “Marketing takes a short – term view and engineering a long – term view”, while engineering people agree marketing people tend to disagree. Again with the same statement, while engineers without marketing training more than agree, engineers with marketing training are between disagreeing and being indifferent. While engineers in the marketing department, on the other hand, are again between disagreeing and indifference, economic and business major marketers more than disagree.

With statement 3 reading that “It is difficult for engineering to communicate effectively with marketing”, between departments, while marketing people are close to disagreeing, engineering people are on the way to agreeing. With the same statement, engineers with marketing training tend to disagree, while engineers without training are indifferent tending towards agreeing. In the marketing department, economy and business majors are half way between disagree and strongly disagree while, engineers are only near disagree. With statement 4 that reads “There are cultural differences between engineers and marketers”, marketing department people were between disagreeing and being indifferent while, engineering department people were more close to indifference. With the same question, on the other hand, engineers with marketing training were nearer to disagreeing while the engineers without marketing training were closer to being indifferent. With this statement however, in marketing department economics and business majors were closer to indifference than engineers in the department. Engineers in marketing department were closer to disagreeing than engineers in the engineering department. Sixth statement which stated that “Friction between engineering and marketing people is healthy” was on the average rated with indifference. Engineers with marketing training almost disagreed with this statement while engineers without marketing training were on the average almost indifferent.

When the effect of marketing training were compared with the results of Shaw and Shaw study (1998) it is observed that in contrast with their research, in this study engineers with marketing training reacted as expected and rated the statements more optimistically.

Table 6.

		Effect of Departmentalization on Total		Effect of Marketing Training on Engineers		Effect of Background in Marketing Department		Effect of Departmentalization on Engineers	
	Total n=82	Engineering n=48	Marketing n=34	With marketing training n=29	Without marketing training n=38	Economics & Business n=15	Engineering n=19	Engineering n=48	Marketing n=19
1. Engineering / Marketing people do not trust each other	256	285	215	251	284	181	242	285	242
2. Marketing takes a short – term view and engineering a long – term view	271	230	188	257	339	142	221	330	221
3. It is difficult for engineering to communicate effectively and marketing	272	329	226	275	319	142	225	329	225
4. There are cultural differences between engineers and marketers	275	287	244	255	281	260	231	287	231
5. Engineering / Marketing people do not understand each other	260	268	250	262	280	233	263	268	263
6. Friction between engineering and marketing people is health	320	333	282	212	289	306	263	333	263
7. All engineering people should know something about marketing	424	439	402	448	418	366	431	439	431
8. All marketing people should know something about engineering	408	412	403	448	394	366	431	412	431
9. Engineering people are more important to a company than marketing people	235	279	178	261	246	160	194	279	194
10. Tensions frequently run high when engineering and marketing people work together	271	273	268	265	281	246	284	273	284
11. Engineering and Marketing people dislike having to work with one another	263	273	250	272	264	246	252	273	252
12. There are no disagreements between engineering and marketing departments over the way services are provided between them	284	286	282	280	291	266	289	286	289
13. Members of the engineering and marketing departments feel that the goals of their respective departments are in harmony with one another	318	320	314	255	344	305	335	320	335
14. Individuals in one department will only contact someone in the other, only when it is strictly necessary	300	302	298	309	279	321	278	302	278

What Can Engineering and Marketing Learn From Each Other

Respondents were asked, in open questions what engineering and marketing departments can learn from each other. The different viewpoints were grouped.

To the question what marketing people can learn from engineering, most of the comments concentrated on learning about the product itself, production processes and its problems, product quality and technical characteristics (Table 7). These findings agree with those of Souder (1985) and Shaw and Shaw (1998).

Table 7.

Factors Relating to what Marketing people can learn From Engineering	Number of comments recorded	%
Product Knowledge	27	27,28
Production Processes & Problems	16	16,16
Product Quality	16	16,16
Technical Characteristics	13	13,13
Technical Feasibility	10	10,10
Product Design	6	6,06
Other (Timing, Capacity strategic planning inventories)	11	11,11
Total	99	100,00

Table 8.

Factors Relating to what Engineering People can learn From Marketing	Number of comments Recorded	%
Customer Expectations	30	38,96
Market Conditions	13	16,88
Marketing and Sales Techniques	6	6,06
Marketing Processes	5	6,49
Market Research Methods, Communication – Public Relations	4	5,19
Other (Strategic Planning, Persuasion, Competition, Human Relations)	15	19,48
Total	77	100,00

Most comment stated that engineering people can learn from marketing about customer expectations and market conditions (Table 8). These findings are once again parallel to those of Shaw and Shaw (1998).

Contact and Integration Between Engineering and Marketing

In order to assess the degree of connectedness and integration of engineering and marketing departments, respondent were asked to evaluate the integration of the two departments on a 5-point scale (Table 9).

11 of the engineers that work in engineering declined to answer this question.

In general, the integration of the engineering and marketing departments were evaluated as a little above medium. The marketing people with economics and business education were more pessimistic. Although it is relieving to observe that respondent do not rate integration as in sufficient, there is plenty room for advancement. To the open end question asking the areas where they think the integration is efficient, respondents cited product design, communicating and informing and customer desires as first three areas (Table 10).

To the question on areas of improvement respondents answers concentrated interestingly again on communicating, product design and marketing planning (Table 11).

Table 9.

Effect of		Level of Integration
Departmentalization on Total	Engineering n=37	3,19
	Marketing n=34	3,15
Marketing Training on Engineers	With marketing training n=27	3,22
	Without marketing training n=29	3,13
Background in Marketing Department	Econ & Bus n=15	2,93
	Engineering n=19	3,32
Departmentalization on Engineers	Engineering n=37	3,19
	Marketing n=19	3,32
	Total n=71	3,16

Table 10.

Area	N	%
Product Design	10	23,26
Communicating – Informing	10	23,26
Customer desire	8	18,60
Cost optimization	4	9,30
Other (Targets, responsibility, feasibility)	5	11,63
Not efficient	6	13,95
Total	43	100,00

Table 11.

Area	n	%
Communicating – Informing	10	17,86
Product Design	8	14,29
Marketing planning	8	14,29
Production planning	7	12,50
Customer desire	6	10,71
Training	5	8,93
Quality	3	5,36
Other (timing, details, cost, profitability)	9	16,07
Total	56	100,00

Again to determine the frequency and quality of contact, structured and open end questions were posed.

Table 12.

Frequency	n	%
Daily	8	12,70
2-3 times a week	4	6,35
Once a week	8	12,70
When necessary	31	49,21
Scarcely	12	19,04
Total	63	100,00

Open end question on frequency of contact on were grouped in Table 11. Although most preferred answer “when necessary” might be evaluated as favorable, meaning “respondents feel free to communicate whenever they need”; there might be also a subjective element in deciding an information is necessary or not. Of the 64 respondents answered, 63 stated that they can communicate with the other department whenever they need.

Among the methods of communications, face to face communication is the most common one. (Table 13).

Table 13.

Frequency Method	Never	Infrequent	Frequent
Face – to – face	5	48	26
Reports & Written	1	32	40
Telephone	10	40	24
Meetings	9	42	20
E-mail	10	38	22
Total	35	200	132

Of the 63 respondents who answered the open – end question that asked to evaluate the relations with other department, 41 % stated that they were satisfactory or good (Table 14). Once again, marketing people in general and engineers in marketing department seemed more pessimistic about the relations.

Table 14.

Relation	Engineering		Marketing						General	
	n	%	Engineer		Econ & Bus		Total		Total	
	n	%	n	%	n	%	n	%	n	%
One-sided	2	5,41	1	7,69	1	7,69	2	7,69	4	6,35
Unsatisfactory	6	16,22	1	7,69	1	7,69	2	7,69	8	12,70
Average	8	21,62	6	46,15	4	30,77	10	38,46	18	28,57
Must progress	4	10,81	2	15,39	1	7,69	3	11,54	7	11,11
Satisfactory	8	21,62	2	15,39	2	15,39	4	15,39	12	19,05
good	9	24,32	1	7,69	4	30,77	5	19,23	14	22,22
Total	37	100,00	13	100,00	13	100,00	26	100,00	63	100,00

In order to specify the kind of information departments receive from each other, open end questions were asked. Although relatively few responses were received, customer demands and relations, new trends and product sales information and information on competitive products were on top of the list of engineering department people. Marketing department receives information on producibility, production time, technical information, production dates, delivery time, product quality.

To the question “how much do you benefit from the information you get?”, 75,8 % of 62 who responded considered it as either beneficial or very beneficial. Once again, of the 62 respondents who answered the question whether conflict exist between engineering and marketing department, 75,8 % said there is conflict (Table 15).

Table 15.

	Engineering	Marketing			Total
		Engineers	Econ & Bus	Total	
Yes	20	6	9	15	35
Moderate	7	5	-	5	12
No	11	4	-	4	15
Total	38	15	9	24	62

The level of conflict were then asked, on a 5 point scale, the average for engineering were 2,11; while it was 2,52 for marketing. For engineers within marketing department it was even higher with 2,67 average. Therefore, once again it can be observed that marketing people especially engineers in this department are more pessimistic about the relations of the departments.

On the areas of conflict, of the 25 comments recorded 40 % were “not speaking the same language”, cultural differences, differences in views, lack of understanding and incompatibility of goals. The others pertained to not taking into consideration production processes, technical specifications, production planning and ignorance of marketing people (% 36) on the engineering side and to have not enough support in after – sales – services and inventory and shipping problems on the marketing side (% 24). This agrees with the findings of Griffin and Hauser (1996).

The remedies are stated along the same lines of conflict. Of the 24 comments recorded 41,67 % stated that cultural and language differences and lack of understanding should be eliminated; engineering department should be informed so as not to ignore market and sales conditions, customer demands (%33,33) and informing marketing department of the engineering orientation approach, timing requirements and capacity problems (% 25).

The last question was aimed at specifying the effect of integration between departments in performance criteria of the company. Engineering and marketing people regardless of department or educational background, 86,76 % stated that interdepartmental integration is either effective or very effective in product / service quality, 88,24 % stated that it is either effective or very effective in market share, 94,2 % declared that it is effective or very effective customer satisfaction, 88,89 % declared that it is effective or very effective in customer retention, 91,18 % replied that interdepartmental integration is either effective or very effective in sales growth, and 88,06 % replied that it is effective or very effective in profitability (Table 16).

Table 16.

	Quality		Market share		Customer satisfaction		Customer retention		Sales growth		Profitability	
	n	%	n	%	n	%	n	%	n	%	n	%
Not Effective	1	1,48	-		-		-		-			
Little Effective	2	2,94	2	2,94	1	1,45	3	4,76	-		1	1,49
Moderately Effective	6	8,82	6	8,82	3	4,35	4	6,35	6	8,82	7	10,45
Effective	26	38,24	25	36,77	28	40,58	27	42,86	23	33,83	24	35,82
Very effective	33	48,52	35	51,47	37	53,62	29	46,03	39	53,35	35	52,24
Total	68	100,00	68	100,00	69	100,00	63	100,00	68	100,00	67	100,00

Conclusion

In this study; a questionnaire was prepared and sent to manufacturing firms in İzmir and Manisa; in order to explore the relationship between their engineering and marketing people, their interdepartmental connectedness and conflict and ultimately, the integration of the two departments. The results of the study reveal that; the respondents generally agree that engineers should know something about marketing and marketing people should know something about engineering with all other structured statements on a 5 - point scale about trust, understanding, cultural differences, and friction of engineering people with marketing people, the weighted averages for total or sub – groups cluster around indifference with some discrepancy between sub – groups. In particular, engineers with marketing training and/or who are in marketing department have more positive attitude than engineers without training and/or who are in engineering department. Therefore, it can be concluded that; the relations between the two departments must be improved. This need for improvement is further revealed with the answers to the question of integration and conflict.

The integration of the two departments were rated as moderate on the average and three fourths of the respondents that answered the question of conflict thought that there is on the average moderate conflict between two departments. Respondents stated that the knowledge marketing people must obtain from engineering department mostly relates to the product characteristics, production processes and product quality. Engineers, on the other hand must be obtain knowledge on customer expectations, market conditions and marketing and sales methods. The information actually obtained are parallel to the answers to structured questions.

The respondents reported that, they do not have any problems to contact the other department and most preferred methods of contact is face – to face and by phone. An open - end question showed that the interdepartmental relations are need to be progressed. This results agree with the answers to structured questions. The reasons of conflict we cited as “not speaking the same language” cultural differences, incompetencies in goals, not taking in to consideration products and processes technical characteristics and not understanding market condition sales and marketing in general. Therefore remedies are proposed along these lines.

Finally all the respondents agreed that the interdepartmental integration effect performance criteria of product / service quality market share, customer satisfaction and retention sales growth and profitability.

Engineering and marketing people know that they have things to learn from each others, to develop the quality of relation and integration between the two department and reduce the conflict, because interdepartmental integration effect company performance. Therefore every precaution should be taken by management to train market people in product and process characteristics and engineering people in customer needs and preferences and marketing sales techniques. It seems that also some formal or informal psychological training is necessary to cultural differences, to reconcile incompatible goals and to make them to speak “the same language”, and realize that they are working towards the same ultimate goal. Top management’s devotedness, participation and support in this process of training and education, as the findings of previous studies show (e.g., Morgan and Piercy (1998)), is the key to successfully reduce the conflict and promote the integration between engineering and marketing.

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