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Integrating technology and marketing: implications for improving customer responsiveness

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Abstract: From a study of 40 managers of the marketing process in technology-based firms, several issues relevant to marketing and technology integration and its impact on customer responsiveness are examined. Managerial descriptions of their actual experiences in meeting customer needs provide insights into organizing to achieve interfunctional integration and customer responsiveness.

Keywords: marketing function; marketing strategy; functional integration; customer responsiveness, technology-based firms; organizational structure.

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1 Introduction

Improving customer responsiveness has been frequently cited as vital for competitive survival and growth [1,2,3] for a variety of industries such as automobiles [4], consumer electronics [5,6], apparel [7], information technology [8], hospitality [9], banking [10], and logistics [11]. In a similar vein, the need to reduce market response time for myriad organizational activities including new product development has reportedly occupied the energies of over 100 consultants at the Boston Consulting Group [12].

Customer responsiveness and the integration of technology with marketing appear inextricably linked because improvements in the former require a heightened degree of the latter [1,13,14]. To address these parallel concerns, several issues relevant to integration of marketing and technology to achieve customer responsiveness and satisfaction are examined in this paper.

2 Focus

The astute technology-based firm is continually searching for more effective ways to meet customer needs. The need to expedite time to market with high-quality products has been well noted in the literature. Firms responding twice as fast to customer demands reportedly grow at five times the industry average with 20% higher prices [15], and some Japanese firms are reported to develop new products twice as fast, use their assets eight times more productively, and respond to customers ten times faster than their American counterparts [16]. Both the scholarly and practitioner literature are fairly unequivocal in their assessment that improving interfunctional integration and customer responsiveness is important, and directly related to the firm's competitiveness and profitability.

Traditionally, improvements in customer responsiveness have been sought via increased integration among the firm's functional groups. While this *internal* focus has produced important results, the rapidity of technological change coupled with increasingly sophisticated buyers and heightened competition call for fresh thinking about achieving customer responsiveness. This paper reports the results of a field study designed to gain a better understanding of the complex issues related to achieving integration and customer responsiveness.

Forty managers were selected from a population of industrial firms included in the major groups 35 and 36 in the US Government's Standard Industrial Classification (SIC) categories. Group 35 refers to industrial and commercial machinery and computer equipment manufacturers, and group 36 to manufacturers of electronic and other electric equipments and components (excluding computer equipment). The firms were located in two major Standard Metropolitan Statistical Areas (SMSA) in the Northeastern USA. The managers selected for our study were intimately involved in implementing their firm's marketing goals, agendas, and strategies. The sample was non-random and purposeful [17], and consistent with the exploratory intent of this qualitative study. Data were collected via structured interviews in order to increase comparability of managerial responses and to facilitate data analysis. The interviews were subject-centred [18] in that they were designed to access the responding managers' understanding, experiences and activities related to meeting customer needs and implementing their firm's marketing programs.

Our study included Vice Presidents of Sales and Marketing ($n = 10$, 25%), Sales Managers ($n = 7$, 17.5%), Marketing Managers ($n = 6$, 15%), Owners/Chief Stock Holders ($n = 5$, 12.5%), V.P. General Managers ($n = 4$, 10%), Directors of Sales and Marketing ($n = 3$, 7.5%), Directors of Marketing ($n = 2$, 5%), a President, a Manager for Administrative Services and a General Manager also responsible for planning and implementing marketing strategies ($n = 3$, 7.5%). Of the 40 participating managers, 36 had over ten years of industry experience, with 21 of them having spent more than ten years in marketing. Nearly 50% of the firms in the study had between 45 and 99 employees, and 70% had sales of less than \$20 million. The smallest firm had 45

employees with sales a little over \$4 million per year, whereas the figures for the largest firm were 650 and approximately \$300 million.

The interviews lasted between 60 and 90 minutes and were tape recorded and transcribed. As part of a larger study, these managers were asked to describe their interactions with other functional areas and how their firm's diverse skills and experiences were channelled to address customer needs. The managers were also asked how they managed their own staff and team members when implementing their marketing strategies. All of the managers were responsible for establishing and maintaining profitable relationships with customers in environments characterized by high degrees of technological change, competition, and complex customer needs.

As a result of the field study, several fresh insights and thinking about achieving interfunctional integration and customer responsiveness as described and experienced by these managers will be examined. Initially, however, to ground our paper in the literature, some of the traditional processes used to achieve interfunctional integration are examined.

3 Traditional organizational integration processes

Organizational scholars have highlighted several mechanisms for integrating different functional groups, ranging from simplistic hierarchies and rules to the more expensive and complex arrangements such as permanent teams, integrating roles and departments [19]. On the other hand, a review of the marketing literature indicates a considerable reliance on interface management processes for achieving marketing-led functional integration and coordination [20]. Interface management refers to the process of communication and cooperation between two or more functional areas, whereas integration and coordination refer to the desired outcome. Interface management is most needed when marketing is isolated from other functional areas of the firm in its concern for customer satisfaction. Unfortunately, the isolation of marketing is often observed in modern organizations [21].

Scholars have noted, for example, that effective interface relationships between marketing and other functional areas can: facilitate product management [22]; augment diffusion of innovations [23]; and assist in the implementation of business strategies [24]. The interface between marketing and R&D has attracted considerable research attention from marketing scholars. The interest originated from the strategic need to develop high-quality products and accelerate new product development processes [25-28]. Researchers also focused on the interfaces between technology and strategic management [29], technology and production [30], and marketing's interface with logistics [31-33], finance [34] and organizational behaviour [35].

This stream of thinking and research on interfunctional relationships was influential in broadening the scope of marketing in the 1980s. Most firms were characterized by rigid boundaries between departments, and interface management processes generally proved effective in bridging interfunctional chasms. One of its more significant contributions was to establish that marketing-led interfunctional integration could directly impact a variety of organizationally desired outcomes such as new product development and the adoption of innovations.

Reliance on traditional interface relationships continues to be discussed in the literature [36,37]. The need for progressing beyond currently popular coordinating

mechanisms for the improved integration of technology and marketing, however, is increasingly noted in the literature [38]. The continued emphasis on compressing the time taken to introduce high-quality new products to the market [15], and on the goal of satisfying customers' needs in order to develop a sustainable basis for competitive advantage [39] has pressured managers to improve interfunctional integration.

Aligned with these recent concerns expressed in the literature, our findings suggest that traditional interface management practices may not be particularly effective in dealing with new generations of technology, highly skilled global competitors, and increasingly sophisticated, knowledgeable customers.

4 Findings

Although some were more formalized and active than others, we found dyadic and mostly informal communication links between the key marketing and technology personnel in almost all the firms in our study. These interface relationships were particularly intense in those instances where customers' needs were non-standard and required accommodations from various organizational functions such as R&D, engineering, and production. Most customers were accommodated via improvisations in product design and features, modifications in materials (such as aluminium instead of steel), and accelerated delivery dates.

These interface management processes usually engendered a strong 'hub and spokes' model of communication within firms. Marketing functioned as the hub with spoke-like communication links with other departments. However, in order to serve increasingly demanding customers, it was often necessary to integrate the activities of multiple functional groups such as R&D, production and engineering, with marketing and sales. While the dyadic interface processes were reliable mostly for integrating marketing with one other functional group at a time, they often proved ineffective for the *simultaneous* coordination necessary for achieving high degrees of customer responsiveness. Hence, several managers in our study spent inordinate amounts of time coordinating the activities and outputs of separate and often isolated functional groups. In addition to representing an investment of considerable managerial time and energy, such an internal focus deflected attention from important market and customer needs. Further, the 'hub and spokes' pattern of communication did little to create cohesion, focus and shared vision among various organizational members since the communication links were developed among a coterie of key players and often left out other important organizational members.

These interface management process limitations were exacerbated by changing environmental factors such as the increasing number of 'smart' buyers and competitors. Most managers described the industrial buyers in their high-technology markets as both educated and demanding. Educated, in that they were technologically adept, consciously bench-marking with the best in the industry, and capable of evaluating suppliers' abilities in closely delivering their needs. Demanding, in that they often presented stringent product specifications, and expected prompt coordinated delivery and on-line interaction to support their own quality and inventory management programs. Most managers also noted the proliferation of resourceful and dedicated competition in their high-technology markets that threatened all participants. Hence, survival depended heavily on achieving high degrees of interfunctional integration and significant reduction in the response time in developing new technological solutions that customers valued. Our findings also

suggested that further emphasis on dyadic interface management processes were unlikely to engender the high levels of integration or help to achieve the reductions in market response time increasingly demanded by customers.

The current emphasis on interface management in the literature, therefore, appears limiting since it advocates the formalization and intensification of *existing* relationships between functional areas. The *reality* of interface management processes coupled with the environmental challenges, as observed in our sample of mostly small and some medium-sized technology-based firms, calls for innovative and more holistic ways of conceptualizing interfunctional integration and customer responsiveness. In order to develop new and managerially relevant insights, systematically question several old assumptions, and break away from outmoded ways of thinking [16], the following discussion focuses on how several of the managers in our study attempted to improve integration and responsiveness in their organizations.

4.1 *Managerial attempts at improving integration and responsiveness*

Almost all managers relied on their informal and dyadic interface relationships with key people in technology-based functional groups for accommodating and meeting customer needs, and frequently reflected on their struggles to maintain a strategic fit between the firm's limited means and the environment's potential for change. More than half of all the managers ($n = 23$, 57.5%) however, improvised and experimented with several innovative techniques *in addition* to their reliance on traditional interface management processes for improving interfunctional integration and achieving customer satisfaction.

Removed from the thinking characteristic to the notion of division of labour, we found many of the managers in our study dissolving interfunctional boundaries and condensing diverse activities into one unit's realm of responsibility. We also found them developing sensitive and accurate information systems that promoted organizational *meeting of minds* and customer responsiveness. There was also a distinct trend toward empowering employees and team members instead of the focus on Theory X type manipulations. Each of these findings will now be discussed in greater depth.

Fusion of functions

Fifteen managers (37.5%) attempted to bring about a heightened degree of integration by 'fusing' two or more diverse functions into either one person's or a small group's zone of responsibility. For instance, instead of the traditional notion of division of labour, where inventors invent, engineers engineer, marketers market and sellers sell, one manager described the process of combining some of the diverse responsibilities of research with marketing this way:

"The engineers and the scientists were responsible for implementation of new product plans in the market. In the past, there used to be a business guy and the scientists and the engineers. They [the engineers, the scientists, and the business person] used to work together. Now, it is pretty much the scientists in charge of the *whole* project. Now, the scientists have more ownership, they travel and meet with customers [and determine their needs before designing products]. You can design the best stuff ..., but if you don't find a buyer for it, then it is not a good product." [edited for clarity]

This manager suggested that combining R&D and marketing into one unit promoted closer contact with customers, helped streamline internal operations, and improved

customer responsiveness. The 'fusion of functions' also involved bringing together various skilled people into small operating groups to better serve customers. One manager described the process of team building to remove interfunctional boundaries and accelerate new product development this way:

"I am the director of marketing and technology. In other words, we have combined our research and development, engineering, marketing and sales into one group ... to make sure that we are customer responsive. The whole team is customer responsive, to make sure that the whole team really understands the importance of the customer's requirements ... The fundamental idea was to merge the sales, marketing, and R&D people together and to work closer with manufacturing. So the focus is on the customer and the application, so we can take extremely high technologies to market."

Managers frequently commented on the major advantages of fusing diverse skills and experiences. Employees' learning and experiences that were often difficult to articulate and share in less cohesive work environments were better employed in these cohesive units. The fusion also helped short-circuit many bureaucratic problems while promoting flexibility in responding to customer needs. Finally, the fusion facilitated a singular focus on the confluence of technology and customer needs that current organizational integration processes infrequently achieve.

Integrating customers

Six managers (15%) offered several compelling arguments from their experiences in implementing marketing plans and strategies to support the notion that integrating customers into the firm's strategic vision was vital for gaining a competitive edge. Sensitivity to customer needs, close personal contact, and responsiveness were cited as crucial for strategic success. One manager made this comment:

"Listen first, listen to your customers, get feedback ... I travel a fair amount and you still get office bound. You get bound up in what you are doing here, and if you are not willing to listen to what is going on, you are going to get paralysed."

We also found managers relying heavily on frequent feedback from customers. Particularly, managers involved in transferring new technology to the market noted the importance of developing close, productive partnerships with customers. One manager described this in the following way:

"We want to be a business partner with them. We want that customer that we sell our piece of equipment to, to realize that we are trying to build a partnership and a long-term relationship because of all the technological changes ... We want to be the ones to embrace them and bring them to him (our customer)."

Managers noted that including customers in the strategic planning and product development process could help in attaining competitive advantage. They suggested that including customers endowed them the special status of 'insiders', facilitated long-term planning and investment, and often pre-empted competition. This promoted expeditious feedback for strategic alternatives and improved the compatibility between customer needs and the firm's technological and marketing prowess. The inclusion of customers could also accelerate the transfer of new technologies from R&D to the market. One manager commented:

"You want to put the organization as an entity [drawing a circle on a note pad], and you have customers on the boundary and then you've got the competitors, and this guy [to the customer] has been inside. We have [our] customers, and we have them come in, and they live with us. And if they have a problem or a product requirement [we address it]."

In one instance, the integration was initiated by a major customer. The manager described this customer-led collaborative process as follows:

"Everybody [in the firm] was tentative about what our success level was going to be, but our customer was very interested in us participating with them on [the joint development of technology], because of our previous performance levels ... Our entire purpose from the marketing end of things is to get customers to feel like we're an insider, to feel like we are a part of their organization."

The development of new technologies without on-going customer involvement was frequently cited as a source of wasted energy and resources. Managers explained that the obsession with technologies and development of products not adequately valued nor needed by customers often led to strategic failure:

"For a plan to succeed, it has to satisfy the customer's desire to do something ... If the customer looks at it and says, 'that's nice, but so what?' you don't have a plan. [Newly patented technologies and products] do something, but they don't do anything for the customers. It does not necessarily satisfy a need. [Our parent firm, in the past] did not listen to the customer. They had great ideas but nobody wanted to buy [them]. ... Out of the 13 original ventures, my GM [general manager] would look at it and say, 'That's a great product but there is no market for it.' If there is not a market for it, why make it? Great product, wonderful technology, but nobody to buy it."

Involving people in the marketing strategy implementation process

Most of the managers interviewed indicated that survival and profit depended strongly on their ability to generate enthusiastic employee participation in meeting customer needs. We also found that integrating various organizational members in the marketing strategy implementation process represented a considerable source of challenge. One manager described his experiences in the following terms:

"What gets frustrating is when things don't happen as quickly as you would like them to. But that's natural when you have to depend on other people and other things to fit into your plan, and that doesn't always occur when you would like it to."

Eleven (27.5%) managers in our study were uniquely different in their attempts to integrate employees with the marketing strategy implementation process. Instead of the heavy reliance on 'command and control' type thinking widely observed in organizations [40], they emphasized independent thinking, involvement, and decision-making. One manager described his approach to integrating people in the marketing strategy implementation process this way:

"The key is to have people that can think for themselves, that are basically independent thinkers, and can carry things through. Now if they can't accomplish that, then you are going to have to hire someone who can. You can't tell someone exactly what to do, because if you did, you wouldn't need them because by the time you told them, you could do it yourself. ... You make the individuals working for you feel that they are actually a contributor. That's important."

Another manager described the importance of independent thinking as an aid to implementing marketing strategy in the following terms:

“Listen to your people, find out what they are doing, keep giving them all the things that they need, and stay the heck out of their way. Guide them when they do something that you know is wrong ... If you have a problem, and you are not reachable, guess what, they will figure out a way how to solve that problem ... They may not solve the problem exactly the same way I did. That’s okay, ... I don’t believe I have all the ideas.”

Several other managers also appeared to prefer delegating and loosening control over operations in order to encourage employees closest to customers to think independently and to act expeditiously. One manager described his beliefs about involving people this way:

“I believe in delegation. But I believe in trying to explain to people to make sure that they understand what the goals are, and I also believe in making some suggestions for how they can achieve those goals. ... But, the bottom line is that the person is responsible for making things happen.”

The marketing strategy and implementation agenda was shared with employees, and in a majority of instances, co-created. This approach of collaboration and facilitation was characterized by one manager as empowerment:

“[Empowerment means] letting them be a part of the decision-making process, letting them get credit for what they have accomplished. Letting them take responsibility for what they [have] failed to accomplish [and] be a part of the whole planning operation and the whole implementation.”

Our findings run contrary to much of the ‘command and control’ thinking that often dominates organizations [40]. As such, our results support the notion that employee empowerment is important for achieving high levels of customer satisfaction.

Information systems

One of the concerns common to managers ($n = 15$, 37.5%) pressured to improve interfunctional integration and customer responsiveness related to the exchange of information. Most managers, although with varying degrees of emphasis, mentioned the need for a broad understanding and appreciation of other departments’ domains, responsibilities, and constraints. As one manager elaborated:

“In order to do well in sales you have to have a full appreciation of manufacturing and engineering. ... I want to be *user friendly* and be on the other side of the horizontal plane that I work from. I work on a horizontal plane, I am sales and marketing, my opposite and equal is manufacturing, and in the middle of the horizontal plane are a whole series of product engineering, customer services, production control, statistical analysis, and all kinds of stuff. ... I have to have not [any one] expertise [in particular], but I have to be almost a generalist, to understand that the things that I want in sales and marketing ultimately depend on the company’s ability to get a return on the manufacturing side. ... First you have to know what you are doing ... [then] you have to exude the kind of understanding [of other peoples’ and departments’ orientations and constraints], you have to be almost a sociologist, psychologist, to be a good marketer.

When comprehensive and formal information systems were inadequate or absent, we found that managers frequently used informal methods for staying informed. Several managers’ ($n = 14$, 35%) organizational intelligence systems consisted of walking

around, observing, talking and listening to employees and customers. One manager related the following:

I could have an office here in front, but I don't want an office here in front. I am right down in the middle of the sales department. The reason I am down in the sales department is that I want to know what is going on. And if you happen to overhear something, you can step in and help out. I will normally walk back twice a week to the engineering department to become aware of what's happening. So you can change strategies quickly. It is extremely important because if someone just plods along, they may not think it's important to tell you. You might lose 4 or 5 or 6 weeks ..., then I could lose a \$1 million to \$2 million worth of orders. ... By being aware of what's happening, you can change your direction and strategize (*sic*) how we're going to attack a certain problem, how we are going to save an order."

Managers described their need for 'sensitive antennae' and listening as vital for gauging internal and environmental changes, particularly shifts in customers' needs and preferences. Being attentive to customers allowed firms to quickly adapt and change their marketing plans and strategies. The importance of flexibility was described by one manager this way:

"The key word is absolutely 'flexible' because too many people get trapped into coming up with a plan. There is a situation and there is executive analysis, here is our mission, here is our objective, here is our goal, here is our strategies, here is our tactics, here is the budget, here is the timing, here is the PERT chart that combines all of these things, and these are all wonderful things. ... But where they sometimes fall apart is that some people are trying to closely adhere to what the plan is, and they come across the first obstacle that the plan doesn't deal with and all of a sudden there is chaos. So there has to be flexibility within that plan to be able to adjust [to] *whatever* the situation [might be]. [So] we flex, we adapt."

5 Implications

Faced with an environment that continually challenged their competitive position, sales and profits, several managers appeared to improvise, experiment, and adapt ways of integrating functions and people with their marketing initiatives, *in addition* to relying on the more traditional interface management processes. We found more than half of the managers in our study improvising on the basic designs of the organization through which customer needs were determined and met. Specifically, these adaptations involved: dissolving interfunctional boundaries; improvising ways of relating to people and staying informed for satisfying customers; meeting marketing objectives and staying ahead of competition.

One of the stronger implications of this study is that customer responsiveness is likely to result less from the re-emphasis on existing interface processes, and more from progressive and holistic thinking about organizational design. The nature of managers' experimental and adaptive behaviours indicates that high degrees of interfunctional integration and customer responsiveness are best achieved when they are specified into the organizations' original architectural blueprints. On the other hand, we found most firms in our study designed less for integration or responsiveness and more for *machine-like* efficiency under the auspices of division of labour. Managing interfunctional integration and customer responsiveness proved challenging despite the prevalence of

interface management processes because division and disintegration were designed into the organizations' architectural plans.

In general, the radical improvements in the understanding of human behaviour and developments in computer, communications and information technology have only marginally affected the way most organizations are designed. Instead, organizations have attempted to divide their work into narrowly defined tasks, followed by attempts to integrate their *results* [16]. Progressive thinking about new organizational forms has been remarkably slow and frugal. This could relate to the inordinate proportion of managerial experiences in traditional functional–hierarchical firms, and the resulting lack of awareness about designing organizations for speeding customer responsiveness, reducing new product lead-times and improving quality [41].

The lack of progressive thinking about customer-responsive organizational designs also may relate to the inordinately well developed concerns in the organizational theory literature about functional–hierarchical issues. Scholarly attention has historically skewed toward issues such as span of control, job design, stress, socialization and conflict management, and the 'command and control' managerial philosophies exemplified by rewards and punishment, motivation, power and leadership. This line of thinking and orientation in much of management education appears to have influenced the high incidence of functional–hierarchical organizational designs. Currently, much of the thinking related to the integration of marketing and technology assumes that a bureaucratic, functionally divided, hierarchical organization, with conflicting priorities and loyalties, is inevitable. Hence, scholarly writing and research has focused more on processes to overcome divisions and barriers historically designed into firms and less on fundamental design changes that can minimize or even eradicate these divisions. Not coincidentally, the problems and challenges faced by most managers in our study in integrating diverse functional areas were recurrent and systematic.

As a design issue, therefore, the continued emphasis on interface management processes and other temporary structural arrangements such as cross-functional teams are examples of brave, patchy and retro-fitted systems trying to overcome ineffective and outdated organizational architecture. Little has been done at the fundamental design or architectural level to bring about a better fit between the fast changing reality of firms and their environments. We find that even as division of labour is designed into functional–hierarchical organizations, integration and customer responsiveness are best achieved when they are specified into the architectural blueprints of organizations.

Actual managerial improvisations aimed at meeting customer needs and achieving market related goals help stimulate fresh thinking about organizations that can simplify and accelerate interfunctional integration. The major implications of their adaptive behaviours for improving customer responsiveness, supported with relevant findings in the literature, will now be briefly examined. Future attempts to design customer responsive organizations may benefit from thinking about the following design features uniquely implicated from our study of actual managerial involvement in meeting customer needs in volatile and highly competitive environments.

5.1 Collaboration

Modifying the basis for organization from the beliefs in division of labour, to an emphasis on integrating the entire process of determining and serving customer needs can represent a positive step toward improving customer responsiveness. This is likely to

involve the integration of the firm's entire *repertoire* of technological and marketing experts and decision-makers, along with key customers and suppliers. Organizing around the notion of integration, market and customer responsiveness and long-term alliances can help to align the firm's technological and marketing efforts closely with customer needs. Such collaboration is likely to engender co-creation of goals and agendas for all participants at a particular confluence of technology and customer needs. As Schrage [42] notes:

"Collaboration is a process of *shared creation*: two or more individuals with complementary skills interacting to create a shared understanding that none had previously possessed or could have come to on their own. Collaboration creates a shared meaning about a process, a product, or an event." [*italics as in original*]

Integration of customers and suppliers into the firm's strategic vision has been historically advocated in the literature, although in separate contexts. Close relationships with customers including distributors [43] have also been recommended [44–46]. Scholars have highlighted the need for coordinated approaches to meeting customers, gaining their trust and providing valued products and services [13]. Closer relationships between suppliers and buyers are also widely cited as vital for attaining a competitive advantage [47]. The supplier–customer interface is frequently noted as crucial for improving innovation in technology-based firms [48]. Advocates of the highly customer-responsive management approaches such as Total Quality Management (TQM) indicate that lasting improvements in product and service quality require an integration of suppliers, implementors and managers throughout the organization [49]. This process of collaboration for interfunctional integration, as implicated by this study, represents a step beyond the dyadic interface management processes discussed in the literature because it refers to the *simultaneous* integration of the firm's expertise with key environmental players. The intent of collaborative efforts is also to progress beyond the 'command and control' thinking that frequently dominates firms [40], into a more shared and holistic domain.

At this juncture, it is critical to differentiate between the collaborative groups implicated in this study and the cross-functional teams frequently cited in the literature. Academia's concern with cross-departmental processes and teams for implementing strategies in highly uncertain environments has been widely documented for over two decades [50]. In particular, the usefulness of cross-functional teams continues to be noted in a variety of contexts such as improving integration between marketing and other functions [51], quality [52,53], acquisitions and purchasing [54,55], health care [56], selling [57] and product innovation [58–60]. The efficacy of cross-functional teams as a panacea for integration problems, however, has been questioned in recent studies. Tyre and Hauptmann [61] suggest, for example, that coordinating mechanisms that are highly sensitive to shifting task needs and organizational competencies are necessary for integrating technology and marketing. Their findings suggest that cross-functional teams may not provide the required level of sensitivity and flexibility necessary for *sustained* customer responsiveness. Many cross-functional teams are 'tacked-on retro-fits' that function within the constraints of compartmentalized firms with strong tendencies to revert to characteristic territorialism and divided loyalties during adversity. Unlike cross-functional teams, people involved in collaborative efforts define their responsibilities mostly in terms of meeting customer needs and less in terms of any one functional domain. The emphasis in the collaborative design is to include customers and suppliers in joint efforts and develop comprehensive, long-term solutions for all participants.

5.2 *Manager as resource provider*

Scholars are attempting to understand and describe empowerment as a new way of relating with and managing people. Empowerment involves managers actively reducing their own and increasing their subordinates' power in making decisions and solving problems [62]. Empowerment encourages people to think and act independently [63], and can help improve employees' beliefs about their own influence and effectiveness [64]. Furthermore it increases employees' confidence in their own abilities and enables them to use their initiative and creativity in unpredictable situations [65,66]. Empowered organizations also favour co-creation of the firm's agenda with their employees [67], and reward personal achievement [68,69].

Under this umbrella of thinking and research on empowerment, another organizational design feature that we find useful for improving customer responsiveness relates to managerial responsibilities toward employees. Scholars have noted that congruency between strategies, organizational designs and the processes of managing resources and people can impact a firm's profitability [19]. Hence, redefining managerial responsibilities, particularly in terms of relating to people, appears necessary for *aligning* with the changed organizational structures and diffused boundaries. Without such redefinition, managers can hinder collaborative endeavours within their organizations.

The responses of most managers in our study ($n = 29$, 72.5%), as well as the concerns raised by leading scholars of organizational behaviour [40], indicated that current definitions of managerial responsibilities were strongly influenced by the 'control, order, and prediction' ways of thinking. On the other hand, we found the more progressive managers in our study ($n = 11$, 27.5%) addressing issues of employee empowerment and defining their responsibilities primarily as a resource provider and facilitator of employee achievement. These eleven managers noted that high degrees of customer responsiveness resulted from the initiative and ingenuity of those organizational members closest to their customers. The same managers demonstrated a clear shift in their preference away from functional-hierarchical and authoritarian control toward more supportive and facilitative management approaches.

In terms of strategic alignment, managerial actions directed at supporting the resource needs of employees appear more congruent to environments characterized by uncertainty, marketing strategies focused on improving customer responsiveness, and organizations focused on collaboration. An emphasis on collaboration lessens the managerial need for 'control' over people and operations since most marketing agendas are co-created by employees involved in transferring the firm's technology into products and services that satisfy customers. As organizations move from 'command and control' approaches, managerial responsibilities need to be defined in more supportive and facilitative terms. Such redefinitions, as implicated both by the managers in our study as well as by several leading scholars, are likely to accelerate progress toward higher degrees of customer responsiveness.

5.3 *Focus on customers' emerging technological needs*

To escape the tyranny of current needs, it is essential to embark on a joint expedition to discover new technologies, products and services *with* customers. This is likely to promote the alignment of the firm's current technological prowess and future aspirations closely with customer's current and future needs. Scholars also have highlighted the need

for jointly developing new technologies with competitors [70]. The concern with the firm's existing technology alone is limiting because it focuses attention on current needs, current customers and current markets with limited concern for the future.

The need to accelerate the transfer of nascent technologies from R&D labs into useful products, processes and services is also increasingly noted in the literature [71]. Recent directives to the National Science Foundation (NSF) are aimed at accelerating the transfer of fundamental research to marketable products and services [72]. Hence, developments in the environment highlight the need to shift emphasis from technology invention to product applications highly valued by customers. The focus on new technologies is also likely to promote the integration of technology transfer related issues into the firm's strategic vision. It also may help managers respond to future scenarios, and promote the alignment of marketing activities to fit the future environmental needs.

5.4 *Information networks*

Information networks, analogous to updated organizational memory banks that can be accessed by all employees, are vital for developing a broad understanding of others' constraints, orientations and skills necessary for informed decision-making. Such information systems are crucial for creating a common base for shared understanding throughout the dissimilarly oriented organization [73]. Information networks are also likely to support the alignment of organization-wide *global thinking* about customer responsiveness, before coordinated *actions* are initiated locally.

The development of marketing information systems [74] directed at integrating marketing research and intelligence to support decentralized decision-making is also increasingly reported in the literature [75]. Additionally, information technology and management with its facility to support a wide variety of business functions is a basis for sustained competitive advantage [76]. Effective use of information technology has also had positive effects on responsiveness and innovation in firms such as 3M [77], and in other large companies [75].

Recent trends in the microcomputer software industry indicate that the technical support to make this possible at the decentralized unit level may become easier and less expensive in the near future. Microsoft Inc. has diverted nearly 20% of its R&D resources to the development of work-group software which would provide on-line links to support decisions in small groups [78]. Organizations stand at the cusp of an information revolution that can support decentralized thinking and actions. The rapidity of development in information technology, however, has out-paced the actual improvements in organizational productivity because of the strong managerial propensity to merely mechanize existing information processes [16]. While information technology endows power to employees at operational levels [79], some managers in our study appeared to closely control it to maximize their personal control over people and resources. Clearly, further thinking about information technology and its uses will be necessary before developments in computer software can be optimally utilized.

5.5 *Living process*

It may be beneficial to conceptualize customer responsiveness and interfunctional integration as dynamic living processes, and not end-products of organizational

manipulations and temporary motivations. No final stage in integration or customer responsiveness could be identified in the data. As a strategic issue, the emphasis on developing a resilient and flexible posture or a disposition that allows firms to attain high degrees of customer satisfaction *despite* the unpredictability of the environment, appears highly necessary [80].

The responses of managers coupled with the findings of scholars in the organizational strategy implementation literature provide useful insights for thinking about marketing strategies designed to achieve high degrees of customer responsiveness [19]. Implementation of marketing strategies designed for transferring the firm's technology to products customers value requires congruent configurations of organizational designs, managerial responsibilities and information systems. However, several managers in our study explained that static organizational designs and processes often lost their relevance in the fast-changing, unpredictable environments that they faced, while at the same time implicating the need for others. Those firms that demonstrated healthy profits and growth were able to redefine their organizational designs and boundaries, absorb environmental contingencies such as changing technologies and intensifying competition, and embrace major environmental entities such as customers. Additionally, the managers in these same organizations made appropriate improvisations in their strategies and organizations to align with their changing environments.

The complex dynamics of closely aligning marketing strategies and objectives with shifting customer needs, and adapting the organization to implement the strategies in the more progressive firms in our study resembled a living process. The dynamic was *living* because it was characterized by slow but continual and adaptive improvisations in the strategies and the organization to fit the shifting market and customer needs. Our study suggests that, much like living systems, those organizations that can absorb and manage environmental change are more likely to grow and prosper.

6 Conclusions

Managing the marketing process in technology-based firms is challenging because of rapid and often chaotic changes in customer needs and competitive patterns. This study has reported the experiences of managers closely involved in managing the marketing planning and implementation processes in mostly small and some medium sized technology-based firms. Their insights and innovative approaches for meeting customer needs in challenging environments can help stimulate new thinking about customer responsive organizations.

As our study indicates, improvements in customer responsiveness are less likely to emerge as end-products of traditional managerial processes or temporary structural arrangements and more from holistic approaches that involve multiple and closely integrated organizational wide changes. Our study of technology-based manufacturing firms indicates that dissolution of interfunctional boundaries, including key customers and suppliers in the marketing initiatives, redefining managerial responsibilities, and developing an informed, flexible and resilient strategic posture, are likely to be the key components of progressive and holistic approaches toward customer responsiveness.

As such, the findings of this study are expected to help future and more deterministic efforts aimed at understanding and explaining the relations between organizational design alternatives and customer responsiveness.

References

- 1 Masiello, T. (1988) 'Developing market responsiveness', *Industrial Marketing Management*, Vol. 17, May, pp.85-93.
- 2 Bowen, D.E., Sichi, C. and Schneider, B. (1989) 'A framework for analyzing customer service orientations in manufacturing', *Academy of Management Review*, Vol. 14, January, pp.75-95.
- 3 Kaestle, P. (1990) 'A new rationale for organizational structure', *Planning Review*, Vol. 18, July-August, pp.20-22,27.
- 4 Taylor, A. III (1990) 'Japan's new US car strategy', *Fortune*, Vol. 122, 10 September 1992, pp.65-80.
- 5 Vasilash, G.S. (1989) 'Litton integrates the big picture', *Production*, Vol. 101, May, pp.56-61.
- 6 Sullivan, R.L. (1991) 'Best buy's leading edge', *Discount Merchandiser*, Vol. 31, No. 6, pp.21-25,63.
- 7 Black, S.S. (1991) 'Pugh tapped by education foundation', *Bobbin*, Vol. 33, September, pp. 100-102.
- 8 Powell, R. (1991) 'Manufacturing as a source of competitive edge', *Industrial Management and Data Systems*, Vol. 91, No. 1, pp.19-23.
- 9 Teare, R. (1989) 'The hospitality industry in the 1990s: some critical development', *Marketing Intelligence and Planning*, Vol. 7, No. 9, pp.48-49.
- 10 Coskun, A. and Frohlich, C. (1992) 'Service: the competitive edge in banking', *The Journal of Services Marketing*, Vol. 6, No. 1, pp.15-22.
- 11 Muller, E.J. (1990) 'Who's in control?' *Distribution*, Vol. 89, February, pp.0.26-30.
- 12 Byrne, J.A. (1992) 'Management's new gurus', *Business Week*, 31 August 1992, pp.44-52.
- 13 Hill, T. and Chambers, S. (1989) 'Manufacturing strategy: investing to meet the needs of the market', *Director*, Vol. 42, No.11, pp.101-105.
- 14 Talati, K. (1990) 'Logically connected', *CIO*, Vol. 4, No. 1, pp.29-30.
- 15 Weimer, G., Knill, B., Manji, J. and Beckert, B. (1992) 'Compressing time-to-market: today's competitive edge', *Material Handling Engineering*, Vol. 47, April, IM2-IM16.
- 16 Hammer, M. (1990) 'Reengineering work: don't automate, obliterate', *Harvard Business Review*, Vol. 68, July/August, pp.104-112.
- 17 Patton, M.Q. (1990) *Qualitative Evaluations and Research Methods*, Beverly Hills, CA, Sage.
- 18 Taylor, S.J. and Bogdan, R.C. (1975) *Introduction to Qualitative Methods: A phenomenological approach to the social sciences*, New York, NY, Wiley.
- 19 Galbraith, J.R., and Kazanjian, R.K. (1986) *Strategy Implementation: Structure, Systems and Process*, (2nd edition) New York, NY, West Publishing Co.
- 20 Ruekert, R.W. and Walker, O.C. Jr. (1987) 'Marketing's interaction with other functional units: a conceptual framework and empirical evidence', *J. Marketing*, Vol. 51, January, pp.1-19.
- 21 Morgan, N.A. and Piercy, N.F. (1991) 'Barriers to marketing implementation in UK professional service firms', *J. Professional Services Marketing*, Vol. 8, No. 1, pp.95-113.
- 22 Lysonski, S. and Woodside, A.G. (1989) 'Boundary role spanning behavior, conflicts and performance of industrial product managers,' *J. Product Innovation Management*, Vol. 6, No. 3, pp.169-184.
- 23 Gupta, A.K. and Rogers, E.M. (1991) 'Internal marketing: integrating R&D and marketing within the organization', *J. Consumer Marketing*, Vol. 8, Summer, pp.5-18.
- 24 Ruekert, R. W. and Walker, O.C. Jr. (1987) 'Interaction between marketing and R&D departments in implementing different business strategies', *Strategic Management Journal*, Vol. 8, pp.233-248.
- 25 Gupta, A.K. and Wilemon, D.L. (1990) 'Accelerating the development of technology-based new products', *California Management Review*, Vol. 32, No. 2, pp.24-44.

- 26 Moenaert, R.K. and Souder, W.E. (1990) 'An information transfer model for integrating marketing and R&D personnel in new product development projects,' *J. Product Innovation Management*, Vol. 7, June, pp.91–107.
- 27 Saghafi, M.M., Gupta, A. and Sheth, J.N. (1990) 'R&D/marketing interfaces in the telecommunications industry', *Industrial Marketing Management*, Vol. 19, No.1, pp.87–94.
- 28 Moenaert, R.K., Deschoolmeester, D., de Meyer, A. and Souder, W.E. (1992) 'Information styles of marketing and R&D personnel during technological product innovation projects,' *R&D Management*, Vol. 22, No. 1, pp.21–39.
- 29 McGee, J. and Thomas, H. (1989) 'Technology and strategic management progress and future directions,' *R&D Management*, Vol. 19, No. 3, pp.205–213.
- 30 Allen, J. and Varghese, G. (1989) 'Changes in the field of R&D management over the past 20 years', *R&D Management*, Vol.19, No. 2, pp.102–113.
- 31 Rinehart, L.M., Cooper, B.M. and Wagenheim, G.D. (1989) 'Furthering the integration of marketing and logistics through customer service in the channel', *J. of the Academy of Marketing Sciences*, Vol. 17, Winter, pp.63–71.
- 32 Lambert, D.M. and Cook, R.L. (1990) 'Integrating marketing and logistics for increased profits', *Business*, Vol. 40, July–September, pp.22–29.
- 33 Remmel, U.M. (1991) 'Integration of marketing and logistics: a way to competitive advantage in South Africa', *Int. J. Physical Distribution and Logistics Management*, Vol. 21, No. 5, pp.27–31.
- 34 Ratnatunga, J., Hooley, G.J. and Pike, R. (1990) 'The marketing–finance interface', *European Journal of Marketing*, Vol. 24, No. 1, pp.29–43.
- 35 Gronroos, C. (1990) 'Relationship approach to marketing in services contexts: the marketing and organizational behavior interface', *J. of Business Research*, Vol. 20, No. 1, pp.3–11.
- 36 Quinn, J.B., Baruch, J.J. and Paquette, P.C. (1988) 'Exploiting the manufacturing–services interface,' *Sloan Management Review*, Vol. 29, Summer, pp.45–56.
- 37 Lim, Jeon-Su and Reed, D.A. (1992) 'Vital cross-functional linkages with marketing', *Industrial Marketing Management*, Vol. 21, May, pp.159–165.
- 38 Gold, B. (1991) 'Towards the increasing integration of management functions: needs and illustrative advances', *Int. J. Technology Management, Special Publication on the Role of Technology in Corporate Policy*, pp.10–20.
- 39 Devanna, M.A. and Tichy, N. (1990) 'Creating the competitive organization of the 21st century: the boundaryless corporation', *Human Resource Management*, Vol. 29, Winter, pp.455–471.
- 40 Bennis, W. (1992) 'On the leading edge of change', *Executive Excellence*, Vol. 9, No. 4, pp. 5–6.
- 41 Parnaby, J. (1991) 'Designing effective organizations', *Int. J. Technology Management*, Vol. 6, Nos 1/2, pp.15–32.
- 42 Schrage, M. (1990) *Shared Minds: The new technologies of collaboration*, New York, NY, Random House, p.40.
- 43 Anderson, E. and Weitz, B. (1991) 'Forging a strategic distribution alliance', *Chief Executive*, November/December, pp.70–73.
- 44 von Hippel, E. (1978) 'Successful industrial products from customer ideas', *J. Marketing*, Vol. 42, No. 1, pp.39–49.
- 45 von Hippel, E. (1985) 'Learning from lead users', in Buzzell, R.D. (ed.) *Marketing in an Electronic Age*, Boston, MA, Harvard Business School Press, pp.308–317.
- 46 Filip, C.S. (1990) 'Invite your customer to your next sales meeting', *Sales and Marketing Management*, Vol. 142, November, pp.105–107.
- 47 Lyons, T.F., Krachenberg, R.A. and Henke, J.W. Jr. (1990) 'Mixed motive marriages: what's next for buyer–supplier relations?', *Sloan Management Review*, Vol. 31, Spring, pp.29–36.

- 48 Bruce, M. and Rodgus, G. (1991) 'Innovation strategies in the enzyme industry', *R&D Management*, Vol. 21, No. 4, pp.319-330.
- 49 Clemmer, J. (1991) 'How Total is your Quality Management?', *Canadian Business Review*, Vol. 18, Spring, pp.38-41.
- 50 Corey, E.R. and Star, S.H. (1971) *Organization Strategy*, Boston, MA, Division of Research, Harvard Business School.
- 51 Coughlan, P.D. and Wood, A.R. (1991) 'Developing manufacturable new products', *Business Quarterly*, Vol. 56, No. 1, pp.49-53.
- 52 Case, J. (1992) 'Quality with tears', *Inc.*, Vol. 14, June, pp.82-95.
- 53 Edson, J. and Shannahan, R. (1991) 'Managing quality across barriers', *Quality Progress*, Vol. 24, February, pp.45-47.
- 54 McGroarty, J.S. (1992) 'Wising up due diligence', *CFO*, Vol. 8, May, pp.68-70.
- 55 Doyle, M.F. (1991) 'Cross-functional implementation teams', *Purchasing World*, Vol. 35, February, pp.20-21.
- 56 Anderson, C.A. (1992) 'Curing what ails US health care', *Quality Progress*, Vol. 25, No. 4, pp.35-38.
- 57 Hills, C.H. (1992) 'Making the team', *Sales and Marketing Management*, Vol. 144, February, pp.54-57.
- 58 Mitsch, R.A. (1990) 'Three roads to innovation', *J. Business Strategy*, Vol. 11, No. 5, pp.18-21.
- 59 Turner, P. (1990) 'Product management for major accounts - an opportunity to differentiate', *European Journal of Marketing*, Vol. 24, No. 5, pp.30-40.
- 60 McKeown, J.J. (1990) 'New products from new technologies', *J. Business and Industrial Marketing*, Vol. 5, No. 1, pp.67-72.
- 61 Tyre, M.J. and Hauptman, O. (1992) 'Effectiveness of organizational responses to technological change in the production process', *Organization Science*, Vol. 3, August, pp.301-320.
- 62 Walker, R. (1992) 'Rank Xerox - management revolution', *Long Range Planning*, Vol. 25, No. 1, pp.9-21.
- 63 Staples, L.H. (1990) 'Powerful ideas about empowerment', *Administration in Social Work*, Vol. 14, No. 2, pp.29-42.
- 64 Conger, J.A. (1989) 'Leadership: the art of empowering others', *Academy of Management Executive*, Vol. 3, February, pp.17-24.
- 65 Belasco, J.A. (1991) 'Empowerment as business strategy', *Executive Excellence*, Vol. 8, No. 6, pp.15-17.
- 66 Kizilos, P. (1990) 'Crazy about empowerment', *Training*, Vol. 27, No. 12, pp.47-56.
- 67 Belasco, J.A. (1989) 'Masters of empowerment', *Executive Excellence*, Vol. 6, No. 3, pp.11-12.
- 68 Pollack, S. (1989) 'Four keys for empowerment', *J. for Quality and Participation*, December, pp.88-91.
- 69 Dowless, R. (1992) 'Motivating salespeople: one order of empowerment, hold the carrots', *Training*, Vol. 29, No. 2, pp.73-74.
- 70 Hamel, G., Doz, Y.L. and Prahalad, C.K. (1989) 'Collaborate with your competitors - and win', *Harvard Business Review*, Vol. 67, January/February, pp.133-139.
- 71 Badawy, M.K. (1989) 'Integration: the fire under technology transfer', *Industry Week*, Vol. 12, pp.39-77.
- 72 Carey, J. (1992) 'Hey, you in the ivory tower. Come on down', *Business Week*, 12 October 1992, pp.32-33.

- 73 Introna, L.D. (1991) 'The impact of information technology on logistics', *Int. J. Physical Distribution and Logistics Management*, Vol. 21, No. 5, pp.32-37.
- 74 Proctor, R.A. (1991) 'Marketing information systems', *Management Decisions*, Vol. 29, No. 4, pp.55-60.
- 75 Mayros, Van (1990) 'Have I got a system for you!', *Computerworld*, Vol. 24, No. 21, pp.97-102.
- 76 Sullivan-Trainor, M. (1989) 'Building competitive advantage by extending information systems', *Computerworld*, Vol. 23, October, SR/19.
- 77 Freedman, D. (1990) 'The company that innovation built', *CIO*, Vol. 3, No. 11, pp.22-33.
- 78 Rebello, K. and Schwartz, E.I. (1992) 'Microsoft aims its arsenal at networking', *Business Week*, 12 October 1992, pp.156-158.
- 79 O'Leary, M. (1989) 'Rethinking the organization', *CIO*, Vol. 3, December, pp.44-50.
- 80 Quinn, J.B. (1980) *Strategies for Change: Logical incrementalism*, Homewood, IL, Irwin.

Organizing and managing maximum competitive adv

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Abstract: This paper develops an on examine the impact of CIM and FM organizational structure. Firms seeki advances in information and manu double-loop, generative learning in formation of new skills become the Multifunctional teams, horizontal criteria are among some of the impor generative learning and to implement

Keywords: computer-integrated ma systems (FMS); competitive adva diversity; organizational flexibility;

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