JCC
Journal of
CENTRUM
Cathedra ™

CENTRUM
CENTRO DE NEGOCIOS

Leveraging Champions to Build a Knowledge Management System for the Research and Development and Marketing Interface

by

Ervin L. Caraballo*

Ph. D. in International Business, Nova Southeastern University, Puerto Rico
President and Managing Director, Global Targeting, Inc.

Abstract

The research and development (R&D)-marketing interface is one of the most critical elements in the development of commercially successful products. When these two departments can effectively link their processes and information sharing, companies can improve their product development efforts. Champions contribute to the success of this relationship by facilitating the information flow in five critical success factors (CSFs): customer requirements, customer feedback, competition, product development, and goal setting. Management can help the efforts of champions by establishing a knowledge management system (KMS) based on the CSFs. Integrating principles and methodologies from customer relationship management (CRM), an organization can develop a framework to establish a KMS for the R&D-marketing interface.

Keywords: R&D-marketing interface, knowledge management, customer relations management, championing

Introduction

R&D managers are often associated or charged with leading a company's product innovation processes and methodologies. A very important factor in leveraging innovation is for R&D managers to integrate marketing into their front-end efforts, and using champions is another. Combining these two elements gives the potential to deliver excellent results. Knowledge management (KM) is a field that combines people and technology in an effort to make the best use of organizational resources (Schell, 2008) to develop innovative practices. The proliferation of information systems and access to them as well as the increased sophistication and the development of tools has provided significant infrastructure and methodologies to effectively grow the KM field. Thus, developing a knowledge management system (KMS) to effectively capture, store, and implement innovation practices is important for a firm's long-term success.

Innovation delivery is important in creating value and product development, because the global nature of innovation endeavors (Ambos & Schlegelmilch, 2008) has made differentiated product development more competitive. Customers demand products that deliver superior price-performance benefits (Cooper, 1994b, p. 72); consequently, innovation has become more important to the long-term viability of competing and winning for many corporations (Ambos & Schlegelmilch, 2008; Cooper, 1993a, p. 5; Johne, 1996, p. 176,).

Scholars and practitioners have constantly advocated new methods to deliver innovation (Ambos & Schlegelmilch, 2008; Cooper, 1994c; Day, 1994). These include implementing and studying organizational design concepts such as self-managed teams and matrix organizations (McCann & Galbraith, 1981), cross-functional teams, personnel practices, process reengineering, knowledge management, and championing.

The importance of champions in product development has been well documented (Caraballo, 1997; Roberts, 2007; Shane, 1995), as have the leadership characteristics they demonstrate in promoting organizational initiatives (Howell & Higgins, 1990; Day, 1994; Shane, 1994b). Champions are individuals who go outside of their formal position responsibilities and make extraordinary efforts to make a project or product successful (Schon, 1963). They can work individually or as members of innovation

teams. Researchers have studied their characteristics, roles performed in the organization, cultural preferences, and their impact on innovation (Ambos & Schlegelmilch, 2008; Day, 1994; Shane, 1995). However, it is their ability to cut across the corporate hierarchy, their position in the informal network of the organization (Shane, 1994c, p. 29), and their use of influence tactics (Howell & Higgins, 1990, p. 322) that are of most value in championing technology to marketing. These extraordinary efforts are necessary to bridge gaps in corporate culture and organizational structures (Schon, 1963; Shane, 1994b).

In technology-based corporations, R&D and marketing are the key organizational functions that deliver innovative products to the marketplace (Lucas & Bush, 1988, p. 257; Roberts, 2007). Champions emerge from this environment to perform different roles (Howell & Higgins, 1991; Shane, 1995). However, communication between R&D and marketing will have a significant effect on the successful delivery of a product that is innovative and judged to be superior by customers. Champions are in a position to improve communication between these functions by improving the flow of information. Thus, managers have the ability to improve the performance of their champions through the creation and development of organizational and informational infrastructures and developing a KMS.

An effective KMS is one that allows an organization to track what it knows, how it knows it, and how to use it in a collaborative context (Greer, 2008). It must be structured with meaningful information and accessible to those requiring it. The challenge in an R&D-marketing environment is accessing the right information, and understanding the components required for success is part of this. Managers should not have to depend on the information technology (IT) department to design the KMS, but instead, they should be able to customize the components that may already exist in a customer relationship management (CRM) system. However, it is paramount to success that managers establish the right organizational structure to allow information to flow to the right people (Roberts, 2007).

Organizational Design and Championing in the R&D-Marketing Interface

In 1985, Gupta, Raj, and Wilemon began a series of studies aimed at understanding different variables of R&D-marketing interaction. This first study showed that the specialization that organizational structures establish also leads to segmentation that causes problems in cross-functional communication (Gupta, et al, 1985a). This led to the establishment of five key areas that require integration. These areas are in customer requirements, customer feedback, competition, goal setting, and product development. These can be designated critical success factors (CSFs) according to knowledge management methodology (Schell, 2008).

A follow-on study examining dialogue between R&D and marketing in high technology firms demonstrated that these firms require a higher level of integration because of the environmental uncertainty which they face (Gupta, et al. 1985b). This study generated 19 areas in which companies that had successful products concentrated their integration efforts. These were designated the communications agenda items. In 1986, this team expanded their efforts into areas that included organizational design. This showed that integration is dependent on overcoming social-cultural and organizational barriers. However, the social-cultural barrier is the most difficult to overcome. Saghafi, Gupta, and Sheth (1990) found that certain organizational changes would improve communication between the units.

The management literature highlighting information, cross-functional communication, and organizational design blended in well with this portion of R&D-marketing interaction. Lawrence and Lorsch (1967) emphasized a contingency approach based on environment, increasing information processing capacity, and uncertainty reduction. Tushman and Nadler (1978) developed this contingency view further. They believed that organizing around a particular environment would lead to the structure becoming the vital linking mechanism for coordination and control. A year later, Duncan (1979) took this concept of linking information flows provided by organizational communication channels and concluded that properly designing the organizational structure would allow managers to have the information they require.

Several studies in the marketing field conclude that champions are important contributors in the product development process (Cooper, 1990; Gupta & Rogers, 1992; Gupta & Wilemon, 1990b). However, it was the championing literature that best demonstrated the value of these individuals.

Howell and Higgins (1990) found the characteristics and traits of transformational leadership in champions. This insight leads to better understanding of how champions accomplish their mission. However, Shane went further in understanding these individuals, showing how they were different from non-champions (Shane, 1994a) and placing champions into the categories of gatekeeper, organizational buffer, and organizational maverick (Shane, 1995). Champions can accomplish their championing mission from different places and influences within the firm (Day, 1994). Other more recent studies of champions have been undertaken in hospital systems (Pappas, Flaherty, & Wooldridge, 2004), telemedicine (Garfield, Kamis, & LeRouge, 2004), and small business (Jenkins, 2006).

Leveraging Champions

Champions are conduits of information in the five most important areas of communication between R&D

and marketing: customer requirements (CR), customer feedback (CF), competition (CP), goal setting (GS), and product development (PD) (Caraballo, 1997). This particular dimension of a champion's capabilities to channel and direct information sources enables teams to work more efficiently because they have easier access to the information they need. This affirmation of a champion's role in providing a vital linkage through information channels in cross-functional communication gives management an additional lever in the management of innovative resources. Many organizations tend to lean on the IT department as a source of information access, but they get limited treatment because of the lack of understanding of the requirements. Also, existing customer relationship management (CRM) systems are not quite the right fit for an R&D-marketing interface.

Consequently, it is recommended that a three-step approach be adopted (Figure 1) to maximize the efforts of these individuals. First, managers need to design their organization with a configuration that will lead to success as part of the KM strategy. Next, they should plan the KMS to integrate the CSFs in a strategic framework. The final step is to build the system and pick the best tools to support the infrastructure.

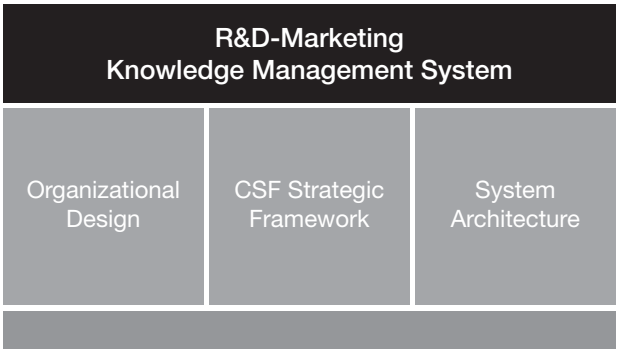

Figure 1. R&D-Marketing Interface KMS Design

Step 1: Design Organizations to Facilitate Information Flows

Organizations are designed to establish a hierarchical structure that will align groups of people according to their functional responsibility (Lawrence & Lorsch, 1967, p. 3). These structures establish a division of labor and streamline reporting processes for effective management (Lawrence & Lorsch, 1967, p. 12). They also provide a repository of specialized skills. These functions and specialized areas transfer information vertically. Horizontal information transfer is limited to avoid overloading decision makers with unfiltered information within an organization (Shane, Venkataraman, & MacMillan, 1995, p. 934). This environment creates barriers that hinder the cross-functional exchange of information. The organizational structures in this environment are usually rigid and constrain information flows. Designing organizations properly will allow cross-functional information sharing and dissemination throughout the organization. Some methods of bypassing or working around these organizational structures are through the creation of cross-functional teams or establishment of matrix organizations.

Cross-functional teams and matrix designs combine the assets of different functional departments to accomplish a specific project. They work best for innovation because they integrate required functional expertise into a cohesive operating unit that is not bound by functional barriers. This leads to an environment that creates products that are differentiated and are of strategic value to the firm (Gupta & Govindarajan, 1991, p. 773). However, because of their cross-functional composition, they still have internal operating differences or conflicts that must be managed and other external matters that will interfere with their mission. A strong project leader who performs as champion will integrate the functions within the unit (Cooper, 1991a; 1993a, p. 11; 1995a, p. 51). Even when these functions are integrated into a small unit, they still depend on each other for information, and champions are required to facilitate the flow of information. Building on this, KM strategy also emphasizes management support and flexibility for success (Gottschalk Khandelwal, 2004; Roberts, 2007).

R&D-marketing integration is one of the most important linkages in a technology-based company's innovation efforts (Anthes, 2008; Saghafi, Gupta, & Sheth, 1990, p. 88). If a company is to leverage these corporate assets in support of innovation, it must be able to determine the best method for integrating their resources. One of the most important variables to the R&D-marketing interface is communication (Pearson & Ball, 1993, p. 440; Roberts, 2007). Therefore, solutions for improved R&D-marketing integration must focus on improving communication by improving the flow of information, regardless of the organizational configuration in place, and building the KMS.

Communication Influence on Organization

Interfunctional communication between R&D and marketing is affected by organizational structure variables such as formalization, centralization, complexity, interconnectedness (Gupta & Rogers, 1992), and leadership (Figure 2). The organization's structure also extends to the social network, and this network is an informal and effective method of integrating dependent departments. Networking breaks down organizational barriers and makes for better innovation results (Gupta and Rogers, 1992, p.29; Hisrich, 1990, p. 217). Champions are important in contacting opinion leaders within the network (Pappas et al., 2004) to diffuse knowledge to

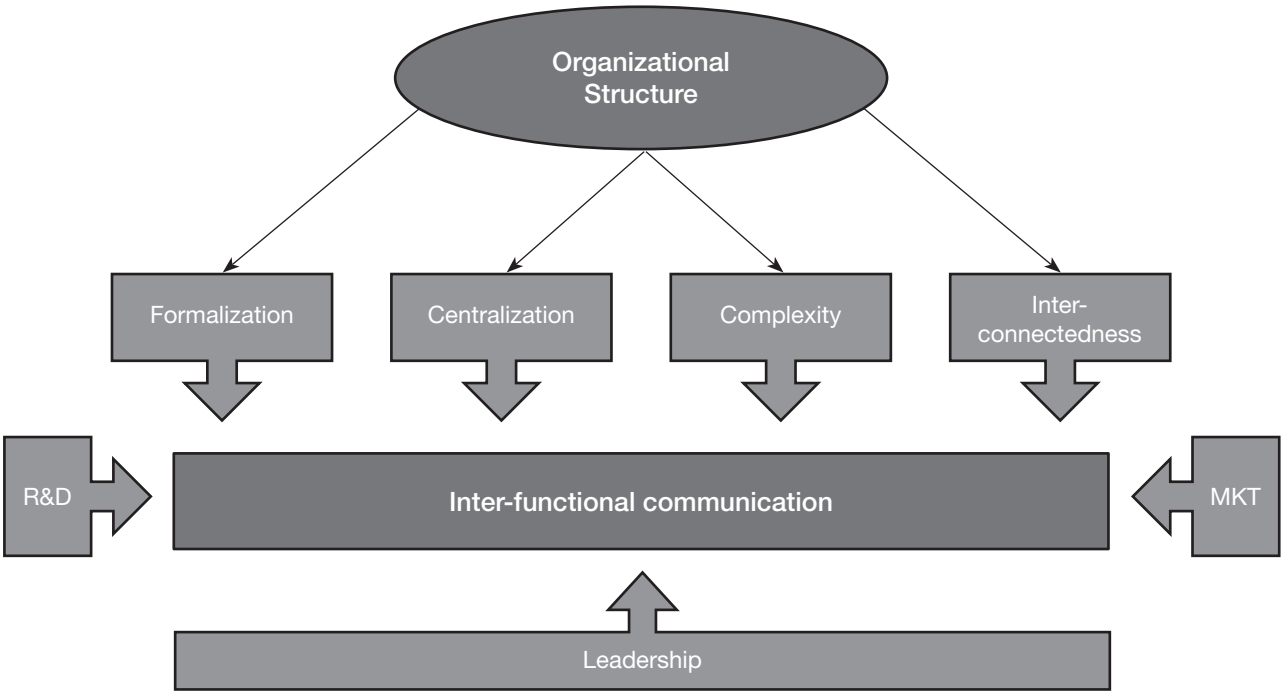

Figure 2: Organizational Structure Variables

facilitate R&D-marketing integration and in leveraging knowledge management.

Lack of communication is due to a constraint in the flow of information and access to the right data. R&D and marketing managers frequently complain about the poor quality of information they receive from each other (Roberts, 2007; Saghafi et al., 1990). This is compounded by IT's inability to deliver the data they need in the format they require. Consequently, increasing the amount of information that is transferred between them and providing the right filters will improve communication and the state of their relationship.

The combination of flexibility in designing organizations to optimize cross-functional skills and the championing characteristics of a leader performing as champion is a considerable source of innovation. Communication in this environment is critical, but champions are often overlooked as good facilitators of this communication. They do this by facilitating the flow of information (Caraballo, 1997). Therefore, when they circumnavigate the system or work within the constraints of this environment to improve information flows, technology-based corporations can improve their innovation efforts. Thus, building the KMS to specifications is an ideal tool for them.

Champions and a properly designed organizational structure provide a greater degree of interconnectedness between R&D and marketing. Properly designing organizations with an emphasis on temporary teams allows managers to have the information they need and allows champions to gather and disseminate information more efficiently. Furthermore, creating the KM infrastructure helps champions. This hones the process of channeling information, and when information is channeled, individuals with the proper authority and skills can take action. The right organizational design will increase cross-functional communication. This, in turn, will lead to formal communication between the units. Champions then convert themselves into formal mechanisms for transmitting information. They become linkage mechanisms. This reduces uncertainty through the direction of information flows and will lead to improved communication. Thus, the role of the champion in organizational structure as information connector is a vital linking element that should not be overlooked.

Champions and the benefits they bring are essential in an innovative environment. Consequently, organizational structures, standard operating procedures, and methodologies must exist to reduce confusion and contribute towards positive interdepartmental relations. It is the ability of the firm to properly manage this first phase that will lead to designing an effective KMS.

Step 2: Establish KMS Strategic Framework

The key to utilizing a KMS is to understand that it provides a framework for learning, capturing, and sharing important information that is specific to the R&D-marketing interface. By establishing this framework, a methodology that provides tools, interventions, and facilitation techniques, management can facilitate the

process for champions or can build an infrastructure that institutionalizes success for the firm, thus, building internal knowledge communities.

In new product development or other innovative venture, relevant information flows between R&D and marketing are often not integrated. In some organizations, it is difficult to access the information required, as in the case of a manufacturer of radio-frequency identification (RFID) equipment based in the Midwest of the United States. According to a former applications director of the firm, 60% of the information requirements of the R&D-marketing interface cannot be met by IT, because they do not know how to formulate it and deliver it. It appears that IT as a focal point cannot anticipate the information required here or does not understand this requirement well enough to properly design a solution. They are accustomed to delivering administrative solutions rather than innovative ones that add value to the R&D-marketing interface. This lack of integration causes conflict and it is the result of a void in formalized mechanisms to provide the right information flow (Gupta, Raj, & Wilemon, 1987). Champions fill this void with their extraordinary efforts motivated by a personal interest to make a product successful (Howell & Higgins, 1990; Shane, 1994a), and they do this by facilitating the flow of information through five CSFs (Gupta et al., 1985a). These CSFs provide communication flow from marketing to R&D in CR, CF, CP and GS and communication from R&D to marketing in PD (Figure 3).

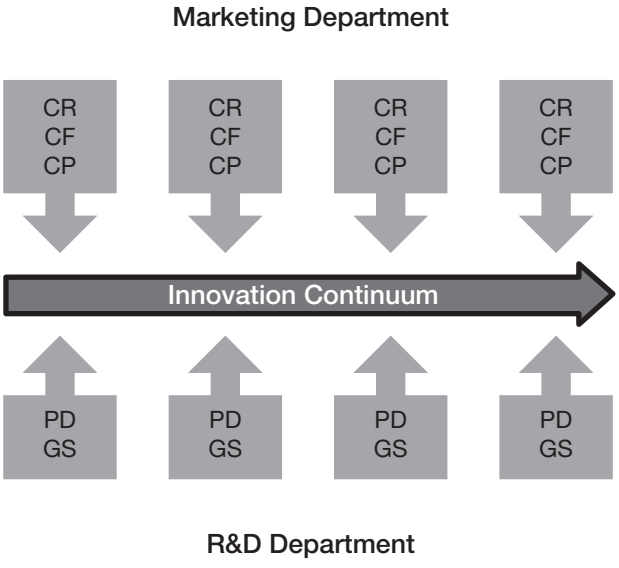

Figure 3. CSFs and the Innovation Continuum

Because the organizational configuration tends to cause compartmentalization and distort communication without the involvement of a champion, it is important to understand how champions work with and impact the CSFs. All too often, R&D and marketing are looking to the IT manager as a third-party broker. Unfortunately, in this capacity, IT is more a supplier than a value-added knowledge repository. Managers need to consider this in their KMS so that they can assist champions. This serves as a basis for knowledge transfer and formalization as well as building the knowledge community. Therefore, the framework for the KMS needs to be built upon the following CSFs.

Customer Requirements (CR)

For technology-based corporations to be successful, they must focus more on research that is of commercial value and less on general science (Anthes, 2008; Naik, 1995). R&D must deliver products that meet the requirements established by customers. To do this, they require marketing input. Information flowing in a standard manner will not provide the additional impetus required for successful product launching in this environment. Instead, this keeps the two organizations working on different sides of the innovation continuum. A linkage mechanism is needed (Wheelwright & Clark, 1994, p. 37). Champions provide this linkage by assuming various roles.

First, champions interact with the firm's external environment in their role as gatekeepers (Howell & Higgins, 1990, p. 318). Customer requirements are filtered through marketing to the champion or even direct customer contact, depending on the position of the champion in the firm. When a champion is actively participating in this process, market information is timely, and R&D idea generation to support requirements is increased (Cooper, 1994b, p. 66). Champions can also increase and hasten information sources by allowing members of the innovation team to bypass standard procedure when it is practical to do so. These two primary roles of the champion give R&D and marketing a greater degree of interconnectedness that allows them to transmit information on customer requirements more quickly, more efficiently, and with greater accuracy. Significant CR information is available to champions in CRM systems.

Customer Feedback (CF)

Customer feedback is the process of listening to the market (Johne, 1994). Actively listening allows organizations to know the forces that are shaping the environment and what actions can be taken to shape products for this market in a form favorable to the firm (Johne, 1994, p. 56).

A product is successful when it has been accepted commercially by its customers (Cooper, 1994b, p. 61). A steady flow of customer feedback provides different methods and uses for future products. The greater the success of a product, the longer it remains a viable source of information from a customer's perspective. A champion's ability to follow up after market implementation will feed that information back to the firm. Champions can

be aggressive when advocating an innovation (Howell & Higgins, 1991; Shane, 1994a). They do not allow themselves to be restricted and confined by functional responsibilities when dealing with anything related to the innovation they are championing (Howell & Higgins, 1990; Shane, 1994a). They will actively follow up on innovations with marketing to ensure the product is performing as the champion expected and asserted. They will do this by hurdling corporate obstacles (Day, 1994, p. 150) and frequently updating the R&D link to this product. This role is that of an organizational buffer because it establishes a monitoring system (Shane, 1994a). Therefore, post-commercialization feedback between R&D and marketing is improved by the champion's nonrestrictive personality and presence. Much of this information is available through CRM systems but must be extracted and tailored for the R&D-marketing interface.

Competitors (CP)

An external environment that impacts product development is competition (Gupta & Wilemon, 1990a, p. 25), and competition is a very difficult element to analyze internally. Business intelligence is a strong lever for champions to use here. This external information is disseminated to the firm by the gatekeeper—the champion that connects the external technological environment to the internal capabilities of the firm (Howell & Higgins, 1990, p. 318). Often, the marketing department collects and analyzes raw data, but the champion filters and adapts the data to the firm's internal development structure. When marketing brings back competitive information to R&D, it allows the development team to establish benchmarks. It also gives R&D the opportunity to evaluate other technologies and reduce the amount of uncertainty they face in their own technologies.

R&D can gain insight into emerging technologies through marketing intelligence. Champions can direct the collection and emphasis of the intelligence effort because they are aware of what each organization needs in terms of information deliverables. In this sense, the champion acts as facilitator and integrator (Gupta & Wilemon, 1990b, p. 288).

The champion's close relationship to the innovation many times places this individual in a position of knowing more about the product's potential than anyone else. The champion is also in a position to mold and shape this product to beat the competition. When the product can be positioned to beat the competition, it takes on a role of increased strategic importance (Johne, 1994, p. 47). This role as a gatekeeper is a pivotal position in the direction setting of information requirements and knowledge diffusion. Developing a business intelligence practice that integrates internal and external elements is helpful at this juncture.

Product Development (PD)

When a new product is conceptualized, it will have enemies because of its potential to cannibalize sales of existing products (Johne, 1996). Many companies have developed products that have terminated in the R&D facilities or have been successfully marketed by other companies (Day, 1994, p. 149). These are innovations that have been developed but not pushed outside of the firm's developmental environment. This lack of push may be due to poor perception by marketing and the inability of developers to communicate the value of this product (Tidd, 1993, p. 288). In this environment, products without a champion are destined to fail (Day, 1994; Gupta & Wilemon, 1990b, p. 291). Most are managed and tracked through an enterprise resource planning (ERP) tool. Under these circumstances, the champion who takes over a product and attempts to lead it to success is performing as an organizational maverick (Howell & Higgins, 1990).

One of the requirements in developing innovative products is to have a strong market orientation that uses marketing research as an input to design decisions (Cooper, 1994b, p. 61). This element may be missing when R&D is promoting an innovation. This also tends to alienate marketing, because in most organizations, during the product development phase, marketing determines needs from data extrapolated from research reports, and R&D determines the best method for delivering products that will meet these needs (Gupta et al., 1985a). There seems to be more manufacturing coordination at this point. This information is required to clarify product definition and scope (Gupta & Wilemon, 1990a, p. 25). Information on uses of products, capabilities, and unique features will flow from R&D to marketing to establish a successful offering when a champion is involved. Marketing is then in a better position to communicate the benefits of the innovation to customers. This is where the custom aspect of designing a CRM begins to add value.

Goal Setting (GS)

R&D and marketing work in different time frames and often have different goals (Cooper, 1994b; Gupta et al., 1985a). Each functional area must understand the other's goals and how they interact with their own goals. Managing the product life cycle (PLC) also presents organizational challenges. Marketing has a short-term orientation with a tendency to emphasize products that will sell quickly (Gupta et al., 1986). R&D has a long-term orientation and often appears hampered in its innovation efforts by marketing's strategic direction (Gupta et al., 1985b). However, R&D may not be working on products that are of commercial value. A firm must consolidate these differences in goals in order to have commercial success with its products.

Champions believe in technological innovation (Howell & Higgins, 1991). They will work to make

those innovations a commercial reality by transporting information that is vital to both R&D and marketing to make the technology successful. They do this by overcoming the time-frame differences of each group and allowing them to merge their goals into a consolidated corporate objective. When a project has a champion, requirements are clearer because of the extraordinary efforts of this individual to make a project a commercial reality. This is because champions often have access to additional resources and can access these more easily than other individuals (Day 1994). These resources can be information and knowledge; thus, building the KMS infrastructure is important. This makes goals easier to work with and diminishes R&D-marketing conflict because uncertainty is reduced and team members are working with a clearer vision of what they need to accomplish. This is facilitated by the champion's consistent efforts to acquire information and transmit it to members of the innovation team.

Step 3: KMS Architecture

The first two phases established the framework for the champion's contribution to the implementation of a successful innovation program. The third phase is where the system is actually built to help champions access the right information and help them in facilitating the flow of information and establishing the foundational tools. This phase serves as a base system that can be modified and adapted as the organization becomes familiar with its deployment in their organization's environment.

The nature of the R&D-marketing interface requires that champions build strong relationships; therefore, the KMS needs to be designed as a customized CRM program based on relationship marketing (RM) techniques. RM has a goal of establishing customers for life and understanding the lifetime value of each customer. However, most implementations are focused on segmenting and understanding buying behavior. These same principles need to be adjusted to the unique environment of the R&D-marketing interface. In this context, the KMS is designed with the champion in mind, but realizing that anyone accessing it and knowledgeable about the organization's innovation efforts can also capitalize on it.

The KMS consists of a database, data warehouses, and a data mart (Figure 4). The system is designed to access data from internal and external sources through the business intelligence (BI) process. Individual functional areas access, analyze, and store the data as information

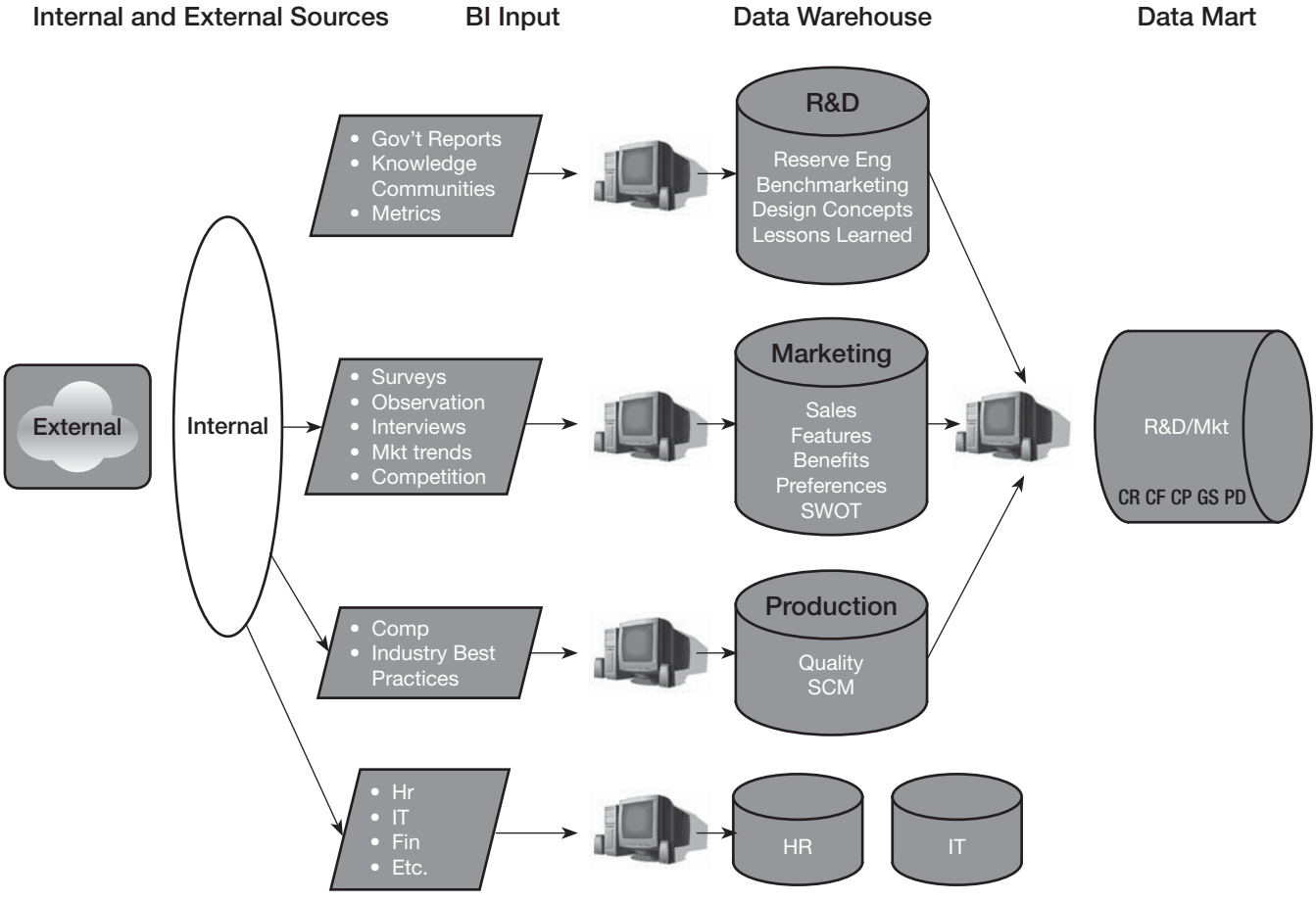

Figure 4: R&D-MKT KM5

that is relevant to their use and in an appropriate format in the data warehouse. At this point, this information is of a strategic nature. Each one of these data warehouses contributes input about the CR, CF, CP, GS, and PD attributes to the R&D-marketing data mart. Once in the data mart, the information is tactical. Working with the IT department within this framework will make the R&D-marketing KMS effective. The IT department will also be able to coordinate many of the existing systems and put together the technical details needed to make the system functional. In essence, this system creates the value IT is challenged to provide but leverages IT's supplier role.

Components

The Database

The foundation of the system is the data that organizations collect and store. It starts at this point with a relational database management system that allows the forming of tables. The value of the database is that it leads to knowledge and information. The process begins by establishing the business rules with a database architect (DBA). Some key points to consider and develop in more detail include integration, condensation, stabilization, and normalization around CR, CF, CP, PD and GS.

The Data Warehouse

A data warehouse is a central aggregation of data that are specific to a functional area. It is an enabling tool for a community because of its relevancy to that community. R&D and marketing rely predominantly on information stored within their own data warehouses. However, because there is a tendency to provide more cross-functional teaming in this environment, information from other data warehouses such as human resources (HR) and perhaps finance may be useful in the innovation process. For instance, an HR data warehouse could be useful for the champion in identifying talent that can contribute to the project. Another could be IT with some of the practices they have developed for using their tools. These repositories expand this system beyond CRM and into the KM realm.

To build this warehouse, most organizations have an existing enterprise resource planning (ERP) infrastructure they can use, such as SAP, Oracle, or Microsoft, for allocating and configuring storage to make the data warehouse functional. These vendors have kits that can accelerate the deployment of the system. The importance of this warehouse is that it needs to be active in seeking data from multiple sources and that it can be accessed easily in a relevant manner. If one is building a new system, one would also need to research extract transform load (ETL) and online analytical processing (OLAP) engines. The IT department can help with specific technical configurations and working with providers.

The Data Mart

This is the formulation of information pulled from multiple sources and tailored specifically to the R&D-marketing interface based on the CSFs. Figure 5 shows some specific types of attributes that can be used. However, each organization will customize and populate it based on its specific products and industry drivers. Having established business rules for the database at the front-end will make this information easier to access and provide value to the organization.

Customer Requirements	· Feature, function, benefit · Acquisition and operational costs
Customer Feedback	· Quality of the product · Ease to use · Recomended improvements
Competition	· Pricing · Differentiators · Benchmarking · Competitive product profiling
Product Development	· Commercial realituy · (RAS) Reliability, Availabity, Serviceability · Capabilities · Lessons learned
Goal Setting	· Planning horizon · Product life cycle phase · Profitability

Figure 5. Critical Success Factor Attributes

What to Look For

Data mining and analytics is how managers gain value from the system. It is best to have a fundamental understanding of statistical techniques and their purpose; however, one can use a research question to drive the purpose and select the technique required. Figure 6 provides a guideline for this approach.

As the process of extracting the data needed for R&D-marketing innovation efforts becomes more iterative and focused on the CSFs, a comfort level will be developed with particular techniques. Specific techniques that could be useful in the R&D-marketing interface will be treated in a subsequent paper. This list is not all-inclusive and should be viewed as a starting point. The key to using it successfully is embedded in the industry drivers for each firm. Managers must consider that it is also important to understand that the data should be mined, manipulated, and tailored to leverage their existing resources

Method	Purpose	Sample Technique
Classification	Description	Decision Trees
Regression	Description	Predictive Modeling
Clustering	Prediction	Genetic Algorithms

Figure 6. Data Mining Approaches

Conclusion

The creation of a KMS tailored specifically to the R&D-marketing interface is a valuable tool for a champion to use to help improve a company's innovation processes. The KMS is also a method for senior managers to ensure that champions have all project-critical information and can disseminate it in a timely manner. Since champions are conduits, a KMS will help them ensure information is being applied, stored, diffused, and directed appropriately.

The importance of building a KMS in the R&D-marketing interface is that it provides a formalized mechanism to improve the quality of information that R&D and marketing are sharing. The interfunctional nature of the R&D-marketing interface makes this design effort unique, and this is a point that managers can exploit in trying to develop a company's competitive advantage. In building the KMS, it is important to leverage existing systems, but it is also important to tailor it to the specific industry in which the company operates. The analytics presented in this paper are just the starting point. Once the KMS is built, it will grow as an active learning system that will add value to the firm's innovation efforts.

References

Ambos, B., & Schlegelmilch, B. B. (2008). Innovation in multinational firms: Does cultural fit enhance performance? *Management International Review, 48*(2), 189.

Anthes, G. (2008). The new face of R&D. *Computerworld, 42*(32), 32.

Bohling, T., Bowman, D., LaValle, S., & Mittal, V. (2006). CRM implementation: effectiveness. Issues and insights. *Journal of Service Research, 9*(2), 184.

Caraballo, E. L. (1997). *The effects of championing on information flows between R&D and marketing.* Unpublished doctoral dissertation, Nova Southeastern University, Ft. Lauderdale, FL.

Cooper, R. G. (1990). New products: What distinguishes the winners. *Research Technology Management, 33*(6), 27-41.

Cooper, R. G. (1991a). New industrial financial services: What distinguishes the winners. *The Journal of Product Innovation Management, 8*(2), 75-90.

Cooper, R. G. (1993a). Uncovering the keys to new product success. *IEEE Engineering Management Review, 21*(4), 5-18.

Cooper, R. G. (1994b). New products: The factors that drive success. *International Marketing Review, 11*(1), 60-76.

Cooper, R. G. (1994c). Perspective: Third-generation new product processes. *The Journal of Product Innovation Management, 11*(1), 3-14.

Cooper, R. G. (1995a). Developing new products on time, in time. *Research Technology Management, 38*(5), 49-57.

Day, D. (1994). Raising radicals: Different processes for championing innovative corporate cultures. *Organization Science*, *5*(2), 148-172.

Duncan, R. (1979). What is the right organization structure? *Organizational Dynamics, 7*(3), 59-80.

Garfield, M. J., Kamis, A. A., & LeRouge, C. M. (2004). Champion networks in federated interorganizational systems: Case studies in telemedicine. *Communications of AIS, 14*, 596-615.

Gottschalk, P., & Khandelwal, V. K. (2004). Knowledge Management Technology in Law Firms: Stages of Growth. *International Review of Law Computers and Technology, 18*(3), 375-385.

Greer, S. (2008). A lessons-learned knowledge management system for engineers. *Chemical Engineering, 115*(8), 50.

Gupta, A. K., & Govindarajan, V. (1991). Knowledge flows and the structure of control within multinational corporations. *Academy of Management Review, 16*(4), 768-792.

Gupta, A. K., & Rogers, E. (1992). Internal marketing: Integrating R&D and marketing within the organization. *IEEE Engineering Management Review, 20*(1), 29-36.

Gupta, A. K., & Wilemon, D. L. (1990a). Accelerating the development of technology- based new products. *IEEE Engineering Management Review, 18*(4), 23-33.

Gupta, A. K., & Wilemon, D. L. (1990b). Improving R&D/marketing relations: R&D's perspective. *R&D Management, 20*(4), 277-290.

Gupta, A. K., Raj, S. P., & Wilemon, D. L. (1985a). R & D and Marketing Dialogue in high-tech firms. *Industrial Marketing Management*, *14*(4), 289-300.

Gupta, A. K., Raj, S. P., & Wilemon, D. L. (1985b). The R&D - Marketing interface in high-technology firms. *Journal of Innovation Management*, *2*(1), 12-24.

Gupta, A. K., Raj, S. P., & Wilemon, D. L. (1986). A model for studying R&D - marketing interface in the product innovation process. *Journal of Marketing*, *50*(2), 7-17.

Gupta, A. K., Raj, S. P., & Wilemon, D. L. (1987). Managing the R&D - marketing interface. *Research Management*, *30*(2), 38-43.

Hisrich, R. D. (1990). Entrepreneurship/intrapreneurship. *The American Psychologist, 45*(2), 209-221.

Howell, J., & Higgins, C. (1990). Champions of technological innovation. *Administrative Science Quarterly, 35,* 315-341.

Howell, J., & Higgins, C. (1991). Champions of change: Identifying, understanding, and supporting champions of technical innovations. *Organizational Dynamics, 10*(1), 40-55.

Jenkins, H. (2006). Small business champions for corporate social

responsibility. *Journal of Business Ethics, 67*(3), 241-256.

Johne, A., (1994). Listening to the voice of the market. *International Marketing Review, 11*(1), 47-59.

Johne, A. (1996). Succeeding at product development involves more than avoiding failure. *European Management Journal, 14*(2), 176-180.

Lawrence, P. R., & Lorsch, J. W. (1967). Interdepartmental relations. *Administrative Science Quarterly, 12,* 1-47.

Lucas, G. H., & Bush, A. J. (1988). The marketing-R&D interface: Do personality factors have an impact? *Journal of Product Innovation Management, 5*(4), 257-268.

McCann, J., & Galbraith, J. R. (1981). Interdepartmental relations. *Handbook of Organizational Design, 2,* 60-84.

Naik, G. (1995, May 22). Top labs shift research goals to fast payoff. *The Wall Street Journal*, p. B1.

Pappas, J. M., Flaherty, K. E., & Wooldridge, B. (2004). Tapping into hospital champions—strategic middle managers. *Healthcare Management Review, 29*(1), 8-16.

Pearson, A. W., & Ball, D. F. (1993). A framework for managing communication at the R&D/marketing interface. *Technovation, 13*(7), 439-448.

Roberts, E. B. (2007). Managing invention and innovation. *Research Technology Management, 50*(1), 35.

Saghafi, M. M., Gupta, A. K., & Sheth, J. N. (1990). R&D/ marketing interfaces in the telecommunications industry. *Industrial Marketing Management, 19*(1), 87-94.

Schell, W. J. (2008). Building a knowledge management framework to overcome the challenges of developing engineering teams in financial services. *Engineering Management Journal, 20*(1), 3.

Schon, D. (1963). Champions for radical new inventions. *Harvard Business Review, 41*, 77-86.

Shane, S. (1994a). Are champions different from non-champions? *Journal of Business Venturing, 9*(5), 397-421.

Shane, S. (1994b). Championing innovation in the global corporation. *Journal of Research and Technology Management*, *7*(4), 29-35.

Shane, S. (1994c). Cultural values and the championing process. *Entrepreneurship Theory and Practice, 18*(4)*,* 25-41.

Shane, S. (1995). Uncertainty avoidance and the preference for innovation championing. *Journal of International Business Studies, 26*(1) 47-68.

Shane, S., Venkataraman, S., & Macmillan, I. (1995). Cultural differences in innovation championing strategies. *Journal of Management, 21*(5), 931-952.

Tidd, J. (1993). Technological innovation, organizational linkages and strategic degrees of freedom. *Technology Analysis & Strategic Management*, *50*(3), 273-284.

Tushman, M. L., & Nadler, D. A. (1978). Information processing as an integrating concept in organizational design. *Academy of Management Review, 3,* 613-624.

Wheelwright, S. C., & Clark, K. B. (1994). Accelerating the design-build-test cycle for effective product development. *International Marketing Review, 11*(1), 32-46

Author note

Ervin L. “Vinny” Caraballo is head of the Global Targeting Advisory firm.

* All correspondence should be sent to drvinny@globaltargeting.com