

MIT Sloan

Management Review

**Mohanbir Sawhney, Emanuela Prandelli
& Gianmario Verona**

The Power of Innomediation

MIT Sloan Management Review

Reprints/Back Issues

Electronic copies of SMR articles can be purchased on our website:
www.mit-smr.com

To order bulk copies of SMR reprints, or to request a free copy of our reprint index, contact:

MIT Sloan
Management Review
Reprints
E60-100
77 Massachusetts Avenue
Cambridge MA 02139-4307
Telephone: 617-253-7170
Toll-free in US or
Canada: 877-727-7170
Fax: 617-258-9739
E-mail: smr@mit.edu

Copyright Permission

To reproduce or transmit one or more SMR articles by electronic or mechanical means (including photocopying or archiving in any information storage or retrieval system) requires written permission.

To request permission to copy articles, contact:

P. Fitzpatrick,
Permissions Manager
Telephone: 617-258-7485
Fax: 617-258-9739
E-mail: pfitzpat@mit.edu

The Power of Innomediation

Many companies have learned to use the Internet as a powerful platform for collaborating with customers on innovation. They have created customer advisory panels to solicit ideas for new products, fostered online communities to encourage dialogue among customers, and built toolkits that enable customers and engineers to codesign products. By allowing businesses to greatly expand their reach while maintaining the richness of their interactions, the Internet allows them to make customers active participants in the innovation process.¹

But direct interactions with customers, while necessary to facilitate innovation, are not enough. Direct channels of communication have several limitations. For one thing, companies may not be able to reach the right customers, because their interactions and perspectives tend to be limited to the markets they already serve. For another, they may find it difficult to reach people at the right time, because customers tend to interact with companies at relatively late stages of the decision-making process. And they may also find it difficult to engage customers in the right context, because customers rarely carry on conversations about their lifestyles and interests on company Web sites.

To fully exploit the Internet as an enabler of innovation, companies need to complement their direct channels of customer interaction with indirect, or mediated, interactions. Those points of contact can be carried out by third parties that function as “knowledge brokers,” helping companies overcome the gaps in knowledge about customers that impede innovation. We call this process of mediated innovation “innomediation” and the third-party actors who facilitate it “innomediaries.”

In our research, we identified three distinct types of innomediary and observed how each type can help companies acquire different forms of customer knowledge. Using case studies, we suggest ways in which companies can begin to think about exploiting the power of these emerging intermediaries. For businesses that learn to use customer knowledge from both direct and indirect sources, the Internet holds the key to a multichannel innovation strategy.

Mohanbir Sawhney is the McCormick Tribune Professor of Electronic Commerce and Technology at Northwestern University's Kellogg School of Management in Evanston, Illinois. Emanuela Prandelli and Gianmario Verona are assistant professors at SDA Bocconi — Bocconi University School of Management in Milan, Italy. They can be reached at mohans@nwu.edu, emanuela.prandelli@sdabocconi.it and gianmario.verona@sdabocconi.it.

“Innomediaries”
are helping
companies innovate
more effectively
by connecting them
over the Internet
with a wide variety
of current and
potential customers.

**Mohanbir Sawhney,
Emanuela Prandelli
and Gianmario Verona**

From Infomediaries to Innomediaries

The emergence of innomediaries parallels the development of infomediaries: third parties that mediate between customers seeking to make buying decisions and the companies that want to reach them.² Infomediaries gather and organize information on products and services for individuals who are considering a purchase; they also organize communities of customers on the basis of common interests or specific industries — CNET.com, Home-store.com, and Edmunds.com are examples of infomediaries in the technology, home ownership and automobile markets, respectively. Regardless of the specific approach, infomediaries use content and community to facilitate transactions in a way that complements a company's direct e-commerce channels. In contrast to direct connections, they help companies reach a wider base of customers, connecting them earlier in the decision-making process; and customers use infomediaries with a greater level of trust because of their perceived neutrality.

While infomediaries focus on aggregating product- and company-related information, innomediaries concentrate on aggregating and disseminating customer-generated knowledge. Often, a single company can perform both roles. As a byproduct of connecting actors on the demand and supply side of transactions, infomediaries also gather customer-generated knowledge. By packaging that knowledge in ways that would help companies improve their innovation processes, an infomediary can function as an innomediary as well.

For instance, the infomediary iVillage has created a rich virtual community of women. Discussions in the community about, say, apparel, cosmetics or automobiles could be organized and moderated in ways that would make them very useful to innovators. New product managers, for example, could propose new product concepts, solicit feedback on new products, and observe conversations to get a better understanding of the tacit as well as explicit needs of women. The nodal position that infomediaries occupy between companies and customers puts them in a good position to aggregate customer preferences, solicit individual customer feedback, and gather knowledge that emerges from spontaneous conversations among customers.

Innomediaries as Knowledge Brokers

Innomediaries help companies fill structural holes in the market — gaps between companies and customers that can only be bridged by knowledge brokers: entities that connect, recombine and disseminate otherwise disconnected pools of ideas.³ Structural holes arise in the context of innovation for several reasons. First, despite the Internet's promise of global access, an individual company rarely interacts with prospects, competitors' customers and nonadopters in emerging markets. It has a structural hole: a limited reach in its network of learning relationships. This is a particular problem for companies looking

to expand beyond their current markets and products.

Second, companies suffer from the lack of neutrality: Customers often feel that the information they get directly from the company is biased or reflects a vested interest. They are much more likely to trust a third party that seeks to understand their preferences and opinions of products, brands and manufacturers. Third, companies can engage in dialogue with their customers only in a limited number of contexts. Customers tend to visit a company's Web site when they are well along toward making a purchase decision or after they have already made one. As a result, companies may find it difficult to interact with customers when they are still looking for specific information or evaluating different product or manufacturer options.

Innomediaries can span these structural holes by creating virtual bridges between companies and their customers across space and time. On the spatial dimension, innomediaries enable companies to engage different kinds and larger numbers of customers and prospects. On the temporal dimension, they allow companies to hear from customers at earlier stages of the decision-making process. They also allow companies to obtain customer knowledge that is not constrained by the company's mental models or biases. By allowing businesses to see beyond their current markets, customers and products, innomediaries can improve their "peripheral vision."


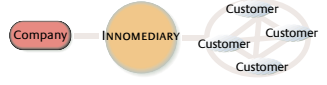
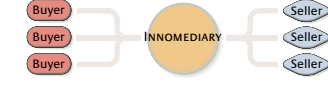
Just as there are a variety of specific mechanisms that make infomediation work (including portals, vortals, communities, metamediaries, brokers and exchanges), there are at least three mechanisms that facilitate innomediation.⁴ The mechanisms differ according to the function they perform, the types of customer knowledge they allow companies to obtain, and the stages in the innovation process they support best. Although innomediaries tend to specialize in one mechanism, they may employ more than that. (For a comparative overview of the three, see "Mechanisms for Innomediation.")

The Customer Network Operator

The simplest form of innomediary is the customer network operator. Innomediaries that fit this label are like online versions of market research vendors that operate customer panels. They support innovation by recruiting and maintaining networks of customers and then providing companies with access to specific customer segments for the purpose of soliciting feedback. Customer network operators are most useful in the stages of concept testing or test marketing, when businesses want to know how customers will react to new products or product concepts. Using this mechanism, companies interact with customers through surveys or by monitoring purchase behavior, so the knowledge they obtain is explicit rather than tacit. In other words, they can use the innomediary to find out what customers "know they know" and what they actually purchase but not what customers

Mechanisms for Innomediation

Although we expect a wide variety of innomediary types to emerge, we have so far identified three mechanisms that help companies exploit customer knowledge in the service of innovation.

	Customer Network Operator	Customer Community Operator	Innovation Marketplace Operator
			
Function	Create networks of customers and provide access to specific segments	Build and operate online communities for specific interests, lifestyles or products	Create marketplaces for innovation between buyers and sellers of innovation
Source and Type of Customer Knowledge	From individuals (mostly explicit)	Socially generated within communities (explicit and tacit)	Specialized expertise from innovative customers and researchers
Innovation-Process Stages Supported	Concept testing Test marketing	Ideation Product design	Discovery Ideation
Direct Online-Channel Equivalent	Customer surveys	Virtual community on company Web site	Customer advisory panels
Examples of Players	comScore Networks, Nielsen//NetRatings	Edmunds, iVillage, LiquidGeneration, WebMD	InnoCentive, ideaMD.com, yet2.com

know yet can't express directly or what they do without being fully aware of their behavior.

An example of a customer network operator is the online market research company comScore Networks. ComScore has recruited a global sample of more than 1.5 million panelists who have agreed to have their Internet behavior confidentially and anonymously monitored. The company uses this huge panel to provide information to companies about their customers, their competitors' customers, or prospective customers; it tracks what people buy, how often, from which sites, and how they respond to online advertising and marketing offers. ComScore aggregates the panelists' online buying information and combines it with data about their offline buying behavior (gleaned from such sources as retail-store scanners and credit card databases) to create a "customer knowledge platform" — a 360-degree view of the surfing and buying behavior of customers over the entire Internet.

ComScore does more than monitor its panelists' general buying behavior; it also offers "private network service" to companies that want to understand and interact with specific customer segments. To set up a private network, comScore recruits a panel of customers according to the company's parameters and monitors its Internet activities. Companies can use private networks to test alternative new product concepts, marketing offers, and marketing communications with a select group of customers located within a "walled garden." The company also allows its private network clients to conduct surveys so they can collect

preference and perceptual data in addition to behavioral data.

In addition to actively recruiting customer panels made up of people who "opt in" (and thus know that their behavior is being monitored for specific purposes), comScore allows its clients to passively observe customer behavior by setting up virtual panels of customers. Consider an automotive manufacturer seeking to tailor communications and programs for the purpose of driving sales of new vehicles, aftermarket parts and service, and financing and insurance to specific customer segments. By setting up a private network with comScore, the manufacturer can continuously monitor such groups as "intenders" (shoppers who are actively in the market), "loyals" (those who have purchased the brand in the past), owners of competitors' products and first-time buyers. These groups are virtually recruited from the comScore database on the basis of passively observed online activity, attitudinal and other attribute data collected via surveys, and data from the manufacturer's customer databases that can be confidentially matched to the comScore file.

Rather than produce a one-time snapshot of behavior, as a customer survey would do, the private network allows the manufacturer to continuously monitor comparison shopping, shopping for nonautomobile products (to help design cross-promotions or loyalty programs), preferred entertainment and information content (for advertising and sponsorships) and the response to current marketing programs. Further, the use of passive observation eliminates the problem of behavior changing as a result of the act

of monitoring itself, a common problem with active observation in the form of conventional surveys or panels.

The Customer Community Operator

While customer network operators help companies to import knowledge from individual customers, they cannot do much to help them gather knowledge that is generated through interactions among customers. The customer community operator is an innomediary that specializes in connecting businesses with people who form a community based on common interests. Community operators commonly begin as infomediaries, creating communities in order to facilitate transactions, and evolve into the innomediary role. They are particularly useful at the ideation stage in the innovation process, when companies are trying to understand customer lifestyles, motivations and unmet needs. They are also valuable at the product design stage, when product designers and managers need to communicate and collaborate with customers to optimize the designs. Community operators can also help companies to identify and profile influencers and opinion leaders within a customer population, to shape the opinions of early adopters, and to accelerate the diffusion of new products through word of mouth or “word of mouse.”

In the automobile market, the case of Edmunds shows how an infomediary evolved to become a customer community operator that supports innovation. Edmunds started out in 1966 as a publisher of automobile buyers’ guides. Although its guides were popular and gained a reputation for providing trustworthy information, the company’s ability to help customers was constrained by the print medium. Information could be updated only quarterly or yearly, and the distribution reach of the publications was limited, as was the amount of content that a guide could contain. Then in 1994, the company established Edmunds.com, put its content on the Web, made it freely available, and quickly became one of the leading sources of unbiased and comprehensive information and advice for potential automobile buyers. Edmunds recognized that it is impossible to be unbiased and simultaneously part of the sales process. As a consequence, it does not sell anything to consumers. Instead, it focuses on editorial content and community management, making its money by referring qualified leads to marketing partners that include auto dealers, automotive OEMs, used car vendors, and financing, insurance and warranty companies.

In 1996, Edmunds created the Town Hall, an online automotive community that is a collection of thousands of message boards featuring online discussions on automobile-related topics. Overseen by 13 community managers, it has more than 500,000 registered users who have posted some 1.5 million messages, making it the world’s largest online community of automotive customers. Visitors to the site express their opinions and detail their experiences on all matters related to buying, selling and owning an automobile. Some customers enter the community only when they

need to buy a car, but many of those registered contribute regularly, and some participate in discussions almost every day. Individual forums are dedicated to every kind of vehicle and every aspect of the automobile buying and ownership experience. Additionally, live chats allow participants to interact with Edmunds.com editors and industry representatives such as designers and engineers.

Edmunds initially created Town Hall as a service for automotive customers but soon realized that it could be a valuable resource for its automobile OEM partners. Thus Town Hall allows automobile OEM executives to host discussions as guests or to answer questions posed by customers. OEM product managers can even create their own subcommunities — about a new model that they may be bringing to market in the future, for example. Some automotive companies have gone further, creating private communities for which they pay Edmunds a monthly fee to host and run their part of the site. Subaru makes use of this service to obtain feedback from a diverse group of customers. This feedback is analyzed and repackaged by Edmunds to suit Subaru’s specific knowledge needs and requirements. For instance, the auto company can find out which competitive models are most often compared with Subaru cars, what features and options customers choose most often in configuring Subaru cars, and what fraction of customers are interested in leasing versus buying Subaru.

By partnering with Edmunds, Subaru can maximize the quality of customer contributions and filter out less relevant and less insightful conversations. For instance, Subaru operates a Subaru Crew Owners Club — a self-selected group of owners who are enthusiastic about their Subarus. The club is a valuable source of customer feedback to product and brand managers on product improvements, as well as suggestions on the design of specific product components. When Edmunds hosts live chat events, it is able to spontaneously engage more than 200 participants per session who act as a clinical group, providing comments and advice about products and product experiences to product managers.

The typical output that Edmunds provides to automotive companies that subscribe to its private community offering includes site-traffic metrics, navigation paths followed by registered users, results from marketing research surveys conducted for them, and summaries of insights from customer conversations within the community. A Subaru employee participates in the Subaru Crew’s message board, posting images, stimulating conversations, highlighting meaningful comments, and identifying the best suggestions to be shared with Subaru brand managers.

Through its Town Hall offering, Edmunds acts as an innomediary, generating revenues for itself by selling services that help companies innovate. The innomediary role allows Edmunds to help automotive OEMs connect with customers who are more committed, active and informed than those who visit Web sites managed by individual manufacturers. It also lets them tap into communities of auto enthusiasts who participate in Town Hall discussions but

would not necessarily visit an individual company's Web site. Customer community operators like Edmunds, iVillage, LiquidGeneration (for Generation Y) and WebMD (on health care) are important conduits of knowledge for companies seeking to gain customer insights that will help them create new products and services.

The Innovation Marketplace Operator

The customer network operator and the customer community operator are "one to many" models in which individual companies connect with many customers through a mediator. The innovation marketplace operator is a "many to many" mechanism whose purpose is to connect sellers of innovation with potential buyers. In this case, the innovations are typically intellectual property — a discovery, patent or kind of know-how. Thus the type of knowledge available for sale is the specialized expertise of professionals.

To understand how innovation marketplace operators function, consider an example from the pharmaceutical industry, where the average cost to discover and develop a new drug is more than \$500 million and the average length of time from discovery to patent is 15 years. Businesses in the industry are constantly searching for ways to improve the speed and lower the cost of their innovation development process.

In June 2001, Eli Lilly created an Internet-based platform called InnoCentive that supported innovation by facilitating direct dialogue between the company on one side and lead users and communities of experts on the other. But InnoCentive quickly evolved into an innovation marketplace, acting as an independent third party to connect a broad range of "solution seeker" companies with a vast base of potential problem solvers. InnoCentive now operates as a subsidiary of Eli Lilly; it is managed by an autonomous team and located in Andover, Massachusetts, far from its Indianapolis-based parent. Although it started with small-molecule synthetic chemistry problems, within a year of its formation InnoCentive was offering its mediated innovation services to companies in pharmaceuticals, chemicals, biotechnology, agribusiness and consumer products.

InnoCentive's approach differs greatly from the way contract research is typically outsourced. The process has four steps. First, scientists review the InnoCentive challenges as posted by companies with problems in need of solutions; the details of each challenge include a molecular structure, problem specifications, the cash incentive and the deadline for submission of proposed solutions. Next, if scientists want to participate in the competition, they register on the site as potential problem solvers. Third, they choose a specific problem to work on, sign the agreement that transfers ownership of the resulting intellectual property to the company, and get a "project room" where they can deploy their work, either as individuals or as members of a team. The project room is a virtual space on the site that allows scientists to post submissions, store documents, and conduct conversations with the seeker company in order to get clar-

ification or further details about the challenge. Researchers can continue interacting systematically until they are able to upload a proposed solution to their own project room. Finally, the company reviews all the proposed solutions, determines the best one that can be reproduced in a laboratory, and awards a cash prize to the scientist or team with the winning solution.

To understand how the InnoCentive process works, consider the case of a seeker company that wanted to improve the process of manufacturing a chemical called 4-(4-hydroxyphenyl) butanoic acid. After devoting 12 man-months of work to the problem, the company had only developed a five-step process that needed expensive starting materials and produced low yields. Its goal was to devise a two-step process that had a starting cost of less than \$100 per kilogram and produced a better yield. The company posted the problem on InnoCentive's site in June 2001. It soon received several submissions, including a promising approach suggested by Werner Mueller, a retired senior scientist from Hoechst Celanese who had since founded his own process R&D company. Mueller posted several intermediate solutions to the problem and worked closely with InnoCentive's scientific staff to improve on each. At the end of November, Mueller's fifth submission was accepted by the seeker company, and he was awarded \$25,000 by InnoCentive. In less than five months, one scientist had solved a problem that had eluded a team of researchers at a leading company. This process of finding a "uniquely prepared mind" to solve the problem would have been impossible without InnoCentive's work as a knowledge broker.

For seeker companies, InnoCentive is a cost-effective, convenient and speedy mechanism for tapping into scientific knowledge distributed across the globe. It allows them to expand their R&D capacity flexibly, without adding to employee costs. And since all payments are contingent upon satisfactory solutions, companies incur no additional expenses as more and more solvers take on a specific problem. Further, because scientists from diverse disciplines and locations can take part, problems that were deemed unsolvable have been conquered by scientists who took surprising approaches or by those who were not necessarily experts in the field associated with the challenge.

For potential problem solvers, InnoCentive provides a quick and easy way to find challenging problems that match their experience and expertise and offers the promise of a financial reward. By June 2002, more than 10,000 scientists from 105 countries had registered on InnoCentive's Web site, and more than half of them were from outside the United States.⁵ Over 3,000 project rooms had been opened and 14 awards had been announced, ranging from \$2,000 to \$75,000; several dozen more awards were in the pipeline. Scientists who participate include retired researchers, university professors, researchers working for independent clinical research organizations and even scientists working for non-competing pharmaceutical firms. Although the cash payments are

modest by U.S. standards, InnoCentive has found that the monetary rewards are significant for scientists from developing countries. The satisfaction of solving a difficult problem also seems to motivate many scientists to participate in InnoCentive challenges.

Innovation marketplace operators like InnoCentive blend the benefits of the distributed mechanism, which are central to the success of the open-source approach to innovation, with those that come from having a sponsor organization that coordinates the marketplace, sets the ground rules, gains trust and creates incentives for participation. The innovation marketplace operator maintains the balance between structure and chaos that is so important in managing distributed innovation.⁶

The Future of Innomediation

Based on the experiences of the companies we analyzed, we can draw some generalizations about the value of innomediaries and the contexts within which they would be expected to create the most value. Innomediation is particularly relevant in four situations: in markets that are fragmented on the demand and supply side (such as consumer product and consumer durable markets); in business markets like medical devices or enterprise software where tacit knowledge possessed by customers is important; in emerging markets like mobile devices where customer preferences and needs are poorly understood and rapidly evolving; and in lifestyle or fashion-oriented markets like apparel where the social aspect of knowledge creation is important. In such contexts, traditional market research is problematic because it is difficult to collect and interpret data.⁷ Further, companies in those contexts are hampered by the cognitive and physical distance between customers and companies. Finally, the wide assortment of brands and manufacturers in these contexts fragments customer attention and makes the company-customer connection less efficient.

In these situations, mediated innovation offers significant benefits to customers as well as companies. Innomediaries like comScore can overcome the problem of limited reach by aggregating the customers of many brands and manufacturers into networks numbering in the millions; that service can be especially valuable in such industries as automobiles, financial services and travel. Like Edmunds, innomediaries can also overcome the problems of interpretation by providing a deeper understanding of the customer context within communities for specific industries (like automobiles or home ownership), demographic segments (such as Generation Y or women), or interests (like fly fishing or cooking). And companies can benefit from specialization by allowing their innovation activities to be open to experts from around the world, as InnoCentive makes possible. In industries such as pharmaceuticals, agrochemicals and medical devices, where expertise is spread across a large and diverse base of people, companies can make use of innovation marketplaces to dramatically improve their chances of finding experts who can help them solve complex problems.

As the Internet evolves into a truly global medium, customers will become more sophisticated, audiences will become more fragmented, and markets really will be worldwide. Such trends bode well for the continued growth of innomediaries as catalysts of innovation. The models we have described only begin to scratch the surface of the potential range of innomediation mechanisms. Newer mechanisms for innomediation will continue to emerge, and those that we have described will become more sophisticated in terms of the services they provide and the kinds of customer connections they facilitate. In the meantime, companies that learn to use these mediated channels of collaboration with customers will find a better route to the innovation that all organizations need today if they are to thrive.

REFERENCES

1. The involvement of customers as active participants in the marketing process is called collaborative marketing. See M. Sawhney, "Don't Just Relate — Collaborate," MIT Sloan Management Review 43 (spring 2002): 96.
2. The term infomediary was coined by J. Hagel and J. Rayport in "The Coming Battle for Customer Information," Harvard Business Review 75 (January-February 1997): 5-11.
3. For the seminal work on structural holes, see R.S. Burt, "Structural Holes: The Social Structure of Competition" (Cambridge, Massachusetts: Harvard University Press, 1992). Structural holes lead to opportunities for knowledge brokering. For a practitioner-oriented article on knowledge brokering, see A. Hargadon and R.I. Sutton, "Building an Innovation Factory," Harvard Business Review 78 (May-June 2000): 157-166. For an application of the knowledge brokerage concept to virtual environments, see P. Cillo, "La Creatività nell'economia della Virtualità," in "Economia della Virtualità," ed. S. Vicari (Milan: Egea, 2001), 61-88.
4. For a list and detailed definitions of infomediary business models, see "Business Models on the Web," from the course "Managing the Digital Enterprise," M. Rappa, North Carolina State University, Raleigh, North Carolina, <http://digitalenterprise.org/models/models.html>.
5. InnoCentive's management initially thought they would face resistance from clinical research organizations (CROs) because its innovation marketplace seemed to be a substitute for their services. But CROs have become an important constituency of problem solvers: They can deploy excess scientific manpower during lean periods to solve problems posted on InnoCentive's site. This unexpected development with an innomediary parallels that of infomediaries, which were originally seen as disintermediating traditional channel intermediaries but are now seen as complementing them.
6. For details of the community-centric model for innovation, see M. Sawhney and E. Prandelli, "Communities of Creation: Managing Distributed Innovation in Turbulent Markets," California Management Review 42 (summer 2000): 24-54. For analyses of cases of communities in the fashion and motorbike industries, see G. Verona and E. Prandelli, "A Dynamic Model of Customer Loyalty To Sustain Competitive Advantage on the Web," European Management Journal 20 (2002): 299-309.
7. See D. Leonard and W. Swap, "When Sparks Fly: Igniting Creativity in Groups" (Boston: Harvard Business School Press, 1999).

Reprint 44210

Copyright © Massachusetts Institute of Technology, 2003. All rights reserved.