

Chapter 3

Interactive Marketing and Organization Learning Dynamics: Implications of ISES Research for Energy Companies

Larsson, R. – Driver, M. – Sweet, P.

3.1 Executive Summary

The energy industry is facing an increasingly dynamic situation with deregulation and accelerating technological change. This presents a strategic challenge for utilities to speed up their marketing learning curve through an integrated approach where previous more or less piecemeal experiences are combined with new marketing insights and information technology (IT) developments. New IT can assist in this competition by providing interactive user interfaces to accommodate different kinds of customers. The pace of change and increasing sophistication of customers understanding and competitor actions necessitates various forms of collaborative strategies like virtual organizations in the existing extensive network of power producers and distributors.

The chapter provides first an overview of how business and IT considerations can be combined to create more customer value through high-precision market learning and interorganizational systems in the utility industry. Second, this is done by applying a Decision Style approach for accommodating different customer styles as well as organizational members' styles of processing information. Third, an integrated "energy dynamics" management concept is developed for utility firms, that will enable them to effectively handle the present marketing and IT challenges through three synergistic approaches - high-precision marketing, advanced IT applications, and utility-driven local business development.

The utility industry is a prime candidate for such market interaction development given its extensive connections with customers and the growing importance of energy considerations for its customer base. Style-based business information systems enable value-creating user interfaces, which in turn enables interactive market learning systems for high-precision marketing efforts. Extending the range of these business information systems to include virtual organizations of power producers and their suppliers and distributors amplifies the strategic opportunities of such an integrated approach to market interaction.

3.2 Riding the Wave of Change: Dynamic Challenges in the Energy Industry

As deregulation becomes a matter of fact and technological change accelerates, the energy industry faces an increasingly dynamic situation. The historical stability of a regulated natural monopoly with captive subscribers and long-term planning horizons of several decades is being replaced by the turbulence of competition for more demanding customers. New technologies and business strategies are about to revolutionize the energy industry and planning horizons rapidly shrink as the uncertainty about the future mounts (Ottosson, Cegrell, Gustavsson, Larsson & Svensson, 1996).

Given its history of relative stability and lack of marketing orientation, the dynamically challenged energy industry has been bombarded by “doomsday prophesies” during the last years from academics, consultants, and practitioners in related industries with greater experience of competitive dynamics. However, the cohesive focus that the energy industry has developed over the years should not only be viewed as a threat and barrier to change. What utilities may lack in marketing and change experience, they can compensate by cohesively refocusing their resourcefulness towards becoming dynamic competitors by moving towards more advanced marketing methods.

A key to this challenging strategic transformation is to speed up the marketing learning curve of utilities. While companies in more competitive industries have gradually learned marketing by trial and error over time, utilities need to make a quantum learning leap. This can be done through an integrated approach where previous more or less piecemeal experiences of others are combined with new marketing insights and information technology (IT) developments. The research program “Information, Society, Energy, Systems” (ISES) is a virtual organization with the aim to develop a better understanding of this situation of emerging market interaction and IT in the utility industry.

The purpose of this chapter is twofold: First, it is to provide an overview of how business and IT considerations can be combined to create more customer value through high-precision market learning and interorganizational systems in the utility industry based on the ISES research. The approach applied as part of ISES utilizes a Decision Style Approach to accommodating different customer styles as well as organizational members’ styles of processing information. Second, it is to use this research to develop a practical, dynamic management concept for

utility firms, that will enable them to effectively handle the marketing and IT challenges arising from deregulation and technological changes. We outline three synergistic approaches - high-precision marketing, advanced IT applications, and utility-driven local business development - towards value creation for industrial, commercial, and household customers.

3.3 The Business and IT sides of Market Interaction

Customers and organizations interact on the market to create value. In doing so, they all process information about the offered supply and needed demand. This is done through both human cognition, communication and information technology (IT) systems. Marketing has as a science as well as a practice been mainly addressed in behavioral terms within the area of business administration. Recent IT developments have provided promising new media opportunities for marketing, but the lack of integration of business and IT knowledge is hindering both sides to make the best use of this strategic synergy potential.

In a similar way, the customer and organization sides of market interaction have been divided into externally oriented marketing and internally oriented organizational issues. The creation of customer value has thus largely been relegated to the marketing side of business administration, while information systems have been focused on the organizational side. Consequently, new IT opportunities have begun entering business administration in terms of facilitating the emergence of so called “virtual organizations“ of geographically dispersed and otherwise diverse units. The marketing side is also developing in this interorganizational direction in terms of industrial and relationship marketing, but has so far largely failed to integrate the idea of creating customer value through IT-facilitated virtual organizations.

The utility industry throughout Europe is facing substantial regulatory and technological changes. Deregulation will force the development of new business strategies for creating more customer value than the competition. New IT and communication systems, such as data transfer on the power grid and other media developments (like the ones used on the Internet), can assist in this competition by providing interactive user interfaces to accommodate different kinds of customers. The pace of change and increasing sophistication of customers’ understanding and competitor actions necessitates various forms of collaborative strategies like virtual organizations in the existing extensive network of power producers and distributors.

The ISES research program was started by EnerSearch AB in 1996 in order to develop a better understanding of this situation of emerging market interaction in the utility industry. ISES is itself a virtual research organization consisting of participants from several European universities (in-

cluding Lund, Karlskrona/Ronneby, Linköping, Uppsala, and Free University Amsterdam) and corporate sponsors (including ABB Network Partner, Electricité de France, IBM Utility and Energy Services, PreussenElektra, and Sydkraft) in addition to EnerSearch AB.

At least four of the nine ISES subprojects have been dealing with new business strategies, interactive user interfaces and related structured data bases, virtual organizations, and how these issues interact as the utility industry is becoming a competitive market. The four subprojects and their intersections are displayed in figure 3:1 to illustrate the business and IT sides of market interaction between power customers and organizations.

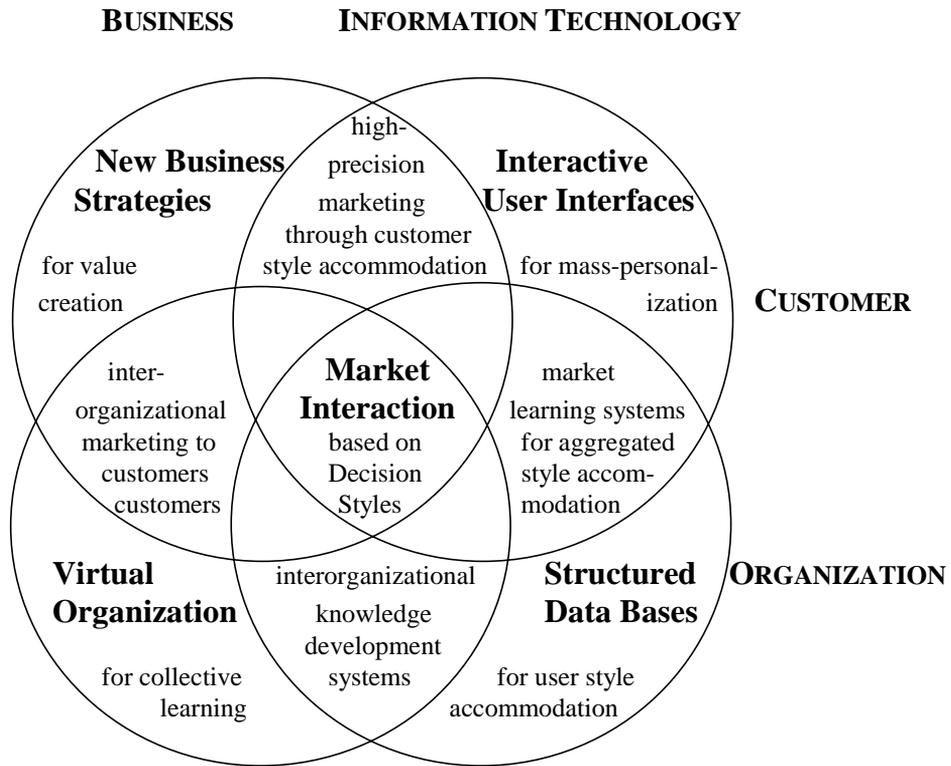


Figure 3:1. Decision Style-based Business Information Systems for Market Interaction.

3.3.1 New Business Strategies

Business strategies should begin with the ultimate target of creating customer value. Utilities have previously not had much of a customer orientation since regulation and the natural monopoly turned power customers into captive subscribers. Deregulation turns this situation around by creating customer choices over which utilities must compete. Few utilities have fully grasped and dealt with the great threats and opportunities that arise from this regulatory change. However, the utilities that first succeed in doing so will maximize their opportunities and minimize their threats at the expense of those utilities that continue to neglect or otherwise fail to manage the emerging power market interaction.

Competition in a market with a homogeneous product and under utilized production capacity is likely to result in bloody price wars. To avoid this “nightmare market scenario,” utility companies must devise new ways of interacting with the customers and developing various new services that can create customer value beyond merely price-sensitive energy. Hence, utilities are facing the dual challenge of finding out what additional valuable services they can provide and how they should communicate with the customers in order to market them effectively (Sweet, 1997). Managing this is an interactive process of engaging in a market dialogue and building customer relationships through communication (Passby, 1998). Utility organizations can tap the creative potential of some customers to articulate and develop new service concepts and customize their availability in ways that articulate customers appreciate and hopefully purchase.

3.3.2 Interactive User Interfaces

The most obvious way to find out what and how to market to customers is to interact with them. Unfortunately, utilities have had very limited interaction with most of their customers (such as connection, billing, payments, malfunctions, and disconnection). While large industrial customers have received more personalized and frequent attention, it would not have been economically feasible for even the most customer-oriented utility to assign individual customer contact persons for the thousands and thousands of small commercial and especially residential customers.

New media is, however, providing more opportunities for interactive customer interfaces for utilities. Professional call centers allow for more effective handling of large volumes of incoming telephone calls from customers as well as combinations with outgoing direct telemarketing from utilities to customers. Electric billing can be made more interactive by offering customized use and cost information in addition to direct marketing (Driver & Cresse, 1997; Passby, 1997). Increasingly, households have access to the Internet through which they can access and interact with utility information systems. Public sources such as information kiosks and on-line library services offer additional possibilities to interact with residential customers. Finally, the new IT application of communication on the power grid allows at least low bandwidth information exchanges through the continuous power connection with each household for possible customized remote metering and various home automation services.

All these interactive user interfaces enable utilities to more or less automate customized market communication and service offerings. Through this automated interactivity, utilities can gain sufficient knowledge about individual customers to effectively mass-personalize their market interaction (that is, large scale adaptation of services to fit customer needs, wants, habits, etc., Sweet, 1997).

3.3.3 Structured Data Bases

This mass-personalization can be enhanced by structuring the utilities' customer data bases as well as the information data bases that the utilities make available to their customers. Utilities can accumulate customer knowledge gained from previous interactions to better customize the market communication and service offerings in ways that are suitable to the customer's style of processing information. By also structuring available utility information in the same way, customers are able to get the right amount and type of information for them instead of too much, too little, or the wrong kind. For example, it is futile to offer many alternatives and lots of information to customers who prefer to focus on just one simple service. That is, customer styles can be better accommodated by utilizing data bases that captures the different ways in which customers process information (Sweet, Brousseau & Biglari, 1997).

3.3.4 Virtual Organizations

The pervasive changes sweeping the utility industry are creating immediate need for much knowledge about customers, marketing, competition, and IT. Given that utilities often lack experience in these areas, it is almost a "mission impossible" for any one utility. Hence, it makes sense for several power producers, distributors, and related firms to collaborate in different ways for collectively learning faster how to compete better. By pooling the existing experience and strengths of a group of utility-related firms, the weaknesses of respective firms can be more quickly overcome (Larsson & Baderschneider, 1997).

Such inter-firm collaboration can consist of a group or network of related utilities that act together as a virtual organization without being formally integrated into one hierarchy (Bosch-Sijtsema, 1997). This is made possible by utilizing commonality of interests, reciprocity, complementary competencies, speed, flexibility and interorganizational information systems between member firms instead of a centrally planned authority governing subunits within one organization. If the member firms can trust, complement, and communicate with each other, a virtual organization can collectively learn to enhance the member firms' market interaction. However, we have found that working in a virtual organization appeals to certain styles (of individuals) of processing information better than others.

3.4 An Integrative Approach through Decision Styles

The key to more effective market interaction is to find and build a common denominator for the more or less separated business and IT sides of customers and organizations. The ISES research group has found one such common denominator in Driver’s Decision Style model of human information processing. The model and theoretical basis it is built upon addresses how individuals differ in terms of two dimensions: (1) the amount of *information use* (i.e., does the individual settle for using only small or moderate amounts of information – satisfice – or does s/he use as much information as possible – maximize); and (2) *solution focus* (i.e., does the person generate one single solution to a problem and stick to it over time – unifocus – or does s/he generate several different solutions that are all entertained and/or changed – multifocus). The combination of these two dimensions creates a matrix with four plus one additional major types of Decision Styles – Decisive, Flexible, Hierarchic, Integrative, and Systemic (Driver, Brousseau & Hunsaker, 1993; Driver & Brousseau, 1997).

		Information use		
		Satisficer	Maximizer	
Solution focus	Unifocus	Decisive fast action-oriented efficient	Hierarchic analytic logical quality	Systemic analytic compre- hensive prioritizing
	Multifocus	Flexible fast action-oriented adaptable	Integrative analytic exploratory creative	

Figure 3.2. Decision Style Matrix.

Individual differences in information processing can capture essential characteristics of customers as well as organizational members. By know-

ing the Decision Styles of customers, products can be developed to suit individual ways of processing information, and also be effectively marketed in a corresponding manner. Similar to this external style accommodation, organizational members can improve internal and inter-firm communication by accommodating each others' Decision Styles. Both interactive customer interfaces and intra-/interorganizational information systems can be designed to accommodate user styles. We will here briefly describe how the Decision Style model can be used to improve market interaction for utilities by integrating the business, IT, customer, and organization aspects (see the intersections of the circles in figure 3:1).

3.4.1 High-Precision Marketing through Customer Style Accommodation

The Decision styles of energy customers influence their attitudes, communication and other behavior related to power use (Sweet, 1997; Passby, 1997). Larsson and Sweet (1996) outlined a basic high-precision marketing framework for how utilities can achieve mass-personalization through interactive marketing information systems. By using interacting interfaces, the customers themselves provide Decision Style indications that enable utilities to accommodate the ways in which customers process information thus increasing the likelihood of satisfaction and loyalty.

The high-precision marketing approach can be seen as an attempt to overcome the drawbacks of traditional volume-based marketing which aims at maximizing the number of offering exposures to potential customers (Larsson & Passby, 1997). This latter approach discounts the great number of rejections involved in such mass-marketing that can actually undermine future marketing appeals. In contrast, the alternative approach of emphasizing high-precision marketing attempts to increase sales with fewer rejections and greater long-term customer retention through personalization of product development and market communication.

Decision Styles can be used to improve precision in marketing in at least four ways:

1. to determine what type of product or services to offer to differing styles;
2. to determine how to communicate offers in a style appropriate manner;
3. to determine what salesperson style will be the most effective for different customers;

4. to determine what salesperson style is most effective for different products given their information characteristics.

As an example of the first use, utility customer's Decision Styles were analyzed as well as their approach to selecting a electric utility service and their preferences concerning information content of their electric bill. Larsson and Passby (1997) present some preliminary findings how individual household customers differ in terms of electric power system preferences (such as how many new services they are interested in and if they want to control the services themselves or let the power supplier do it for them) depending on their Decision Styles (see figure 3:3).

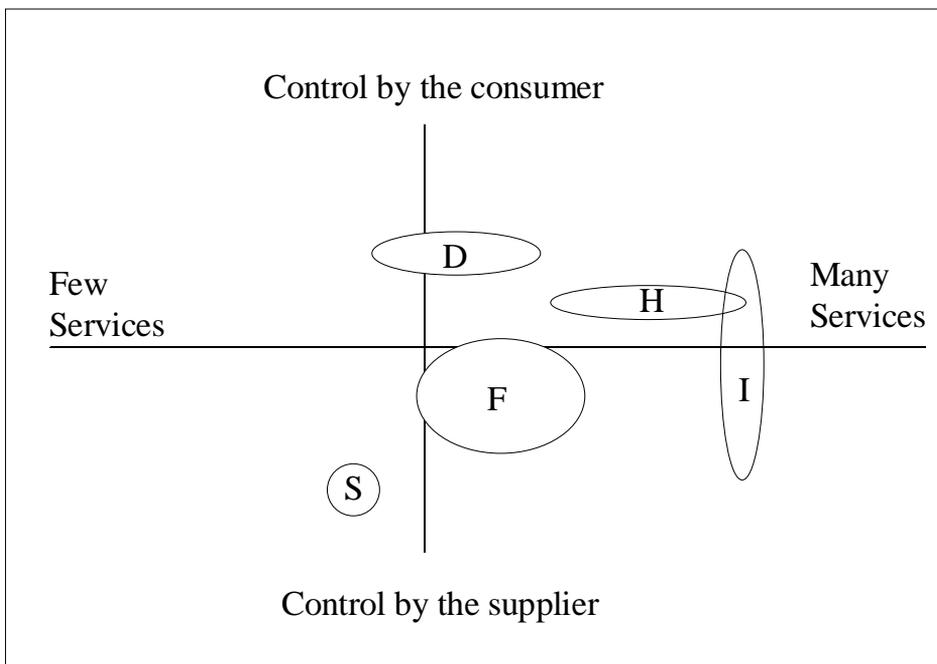


Figure 3:3. Decision Style differences in power preferences (D=Decisive; F=Flexible; H=Hierarchic; I=Integrative; S=Systemic).

With regard to style impacts on the form of communication used, Driver and Cresse (1997) found that in an American sample only the high data oriented Hierarchic style wanted a large amount of varied information and advice on their bill. A similar study in Sweden confirmed this pattern in general. However, in Sweden the other high

- information use style - Integrative, also showed interest in complex content of the bill. It appears that both the nature of the product and culture affect how style relates to preferred communication patterns. For instance, the multi-focus, complex Integrative style may not want information on what they see as non-critical issues, such as electric bills, in the U.S.; but in Sweden the relevance of energy issues may be more central and induce some Integrative customers to seek more information.

A similar type of matching process can be realized between sales people and their customers. Baderschneider (1996; 1998) studied the importance of Decision Style fit for customer-utility relationships in Germany and Sweden. Fifty-six customer relationships of seven power producer and distribution firms were analyzed in terms similarity of the Decision Styles of the firm representatives and the respective customer. Out of the 36 customer relationships which were considered to be good, 84 % shared at least one of the two style dimensions use and focus. In contrast, the 19 problematic customer relationships were to 53 % characterized by so called "toxic" communication, that is, completely opposite Decision Styles. Thus, sales attempts to accommodate customer styles seem to have great promise. Current developments include "Sales Partner" software to facilitate estimation and accommodation of customer Decision Styles and "Sales Partnering" workshops for building better relationships with industrial customers (Larsson, Sweet & Baderschneider, 1997).

Finally, products can best be sold by a sales person with a style appropriate for the product. Brousseau (1987) found that the maximizing Decision Styles were more successful in selling complex products. In contrast, a much simpler product required more satisficing styles. In all, Decision Styles predicted the sales persons' performance to a high degree of accuracy.

3.4.2 Market Learning Systems

While single interactive user interfaces have a limited ability to accommodate customer styles, it is possible for a set of them to create an interactive market learning system. Sweet, Brousseau and Bigliari (1997) outline a system which utilizes a combination of "multiple interfaces" with customers which continually attempt to accommodate the style of customers. The multiple interfaces take a concurrent marketing approach by including traditional market research activities (questionnaires, focus groups, etc.), sales activities, and service activities. The term "multiple interface" also implies the use of electronic media like web sites that range

from information (usually early in the sales cycle) to customer support and service, and even billing. All these user interfaces, whether electronic, paper-based, or personal, are capable of giving important indications of customer style.

Their Decision Style approach towards interactive market learning involves multiple assessments of customer interactions and behavioral data gathered by different marketing groups. This approach has the added value of focusing each group on recognizing and facilitating customer value in every interaction with him/her. Such information is continually updated so that increasingly precise indications of customer decision styles can be accommodated by a portfolio of style-accommodating offerings and market communication, sales, and service practices. Larsson, Sweet and Baderschneider (1997) discuss this aggregated set of power customer interfaces and joint ability to achieve high-precision energy marketing.

3.4.3 Interorganizational Knowledge Development Systems

Advanced IT is a crucial enabler in shaping the future utility industry (Akkermans, Driver, Larsson & Ottosson, 1997). In addition to becoming much faster, cheaper, and more reliable, IT can provide new capabilities that transcend the business-as-usual of utilities. For example, Akkermans and Ygge (1997) describe how one can achieve distributed load management in an intelligent, large-scale (dealing with thousands of devices) and highly automated fashion by means of agent-based software and communication. This new service can also utilize customer style indications for estimation of customer utility functions when optimizing household loads (e.g., see the relationship between Decision Styles and temperature preferences studied by Sweet, 1997).

IT is also a central element of virtual organizations. Given their typical lack of face-to-face interaction, virtual organizations rely heavily on interorganizational information systems as their media of communication and collective learning. Attempts of utilities and related firms to create interorganizational knowledge development systems (such as in ISES, see Bosch-Sijtsema, 1997) require similarly high-precision communication for enhancing their joint learning of more effective market interaction. The Decision Style approach can also be used to create higher precision of the communication within virtual organizations. Driver and Bosch-Sijtsema (1997) show initial findings of how similar versus different styles affect interaction patterns within the ISES interorganization.

Similarity in style improved communication. Subsequent analysis of the data also suggests that only the multi-focus styles liked using electronic message technology (email, fax) while the less complex, focused Decisive style disliked these media, preferring to use direct communication via the phone. Styles also differed on the value of teams and group meetings. The multi-focus styles were positive toward the value of teams and groups while the unifocus styles were negative. Interest in projects other than their own also varied by style, with multi-focus styles taking a positive stand and the unifocus styles showing concern only for their own project. Leadership showed strong style patterns. Leaders who had a style similar to a follower's style were well regarded, whereas when leader and follower styles differed, views of the leader and even of the whole enterprise became negative.

The above results suggest that most aspects of a virtual organization could be tailored to the members' styles. For instance, if members are largely Decisive, the leadership should also be Decisive, the focus should be on one fairly short-term project and phones become the communication tool of the office. However there is a deeper issue than matching via styles. Some styles may simply be less suited to virtual organizations. The research at Enersearch showed that multi-focus styles had higher communication rates and liked electronic communication as well as group team meetings (all factors making virtual organizations work). The uni-focus styles were negative to all these factors. Finally, multi-focus persons made the most effort to support communication and integration. Possibly development of multi-focus thinking is needed for effective virtual organization. Training programs have been effective in changing styles toward a more multi-focus pattern (Driver, Svensson, Amato & Pate, 1996; Brousseau & Sullivan, 1997).

3.4.4 Interorganizational Marketing to Customers' Customers

Utilities and related firms will not only cooperate to collectively learn about new market interaction from each other, but also rethink their marketing strategies relative each other. Traditionally, marketing has been viewed in terms of a single company that markets its products to either other business firms – so called industrial or business-to-business marketing – or the end-consumer.

Practice as well as much marketing research has suffered from a myopia of only focusing on a single organization that employs either industrial or consumer marketing. From an overall business systems point of view, these merely dyadic marketing approaches are likely to suboptimize the marketing efforts of the whole business network of suppliers, producers, distributors, and other related firms that together create a value chain towards the end-consumer.

The emergence of IT-based virtual organizations enables companies, in coordination with customers, to orchestrate a value creating network for marketing increasingly flexible and customized products. By starting to look beyond one's immediate business customers towards one's customers' customers, companies can integrate industrial and consumer marketing. That is, they can begin to jointly optimize the whole business network's marketing efforts towards the ultimate consumer. Such interorganizational marketing collaboration that is organized as a virtual organization where all parties that engage in a value creation process for the end-consumer transcends the traditional value chain approach of sequential marketing dyads (see figure 3:4).

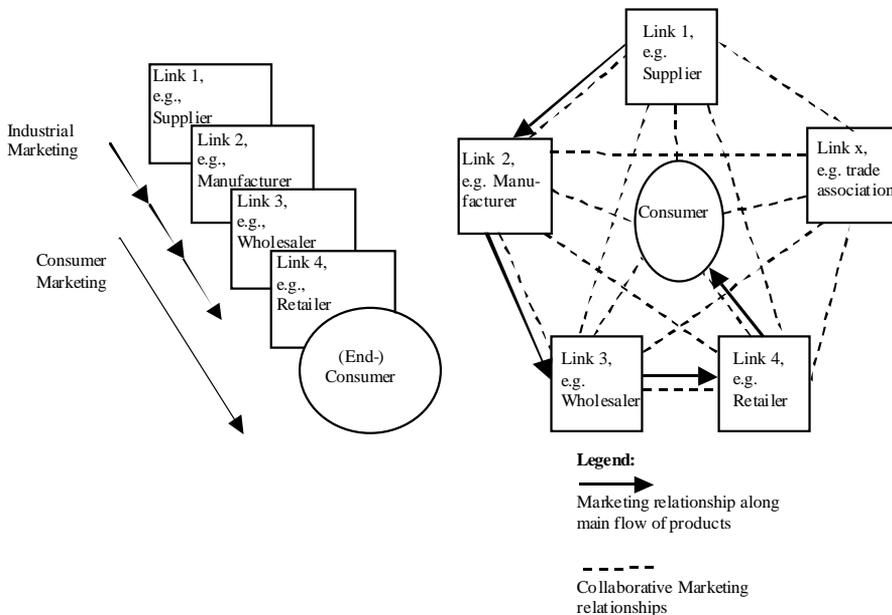


Figure 3:4. Comparison between traditional and virtual organization marketing.

The virtual organization adds “virtual marketing relationships” to the sequential relationships that are established along the product flow. These additional links of market information cross the boundaries of industrial and consumer marketing and can be used to enhance customer value. Thus, suppliers, producers, and wholesalers can benefit from jointly considering end-consumer information and marketing rather than limiting themselves to only industrial marketing to the immediate vertical business link. Retailers are also able add industrial marketing insights to their end-consumer marketing instead of considering the other parties as merely their suppliers from which they purchase. Such virtual organization marketing opportunities can be enhanced by using the Decision Style model for high-precision marketing as well as virtual team-building (Akkermans, Driver, Larsson & Ottosson, 1997). The referenced works above show in different ways that knowledge about how customers as well as employees process information is crucial for the great communication and processing tasks demanded when the goal is to create as much value as possible for end-consumers.

The “whole” market interaction overview suggests that a Decision Style approach can be an enhancing bridge between the business and IT sides of how customers and organizations meet. In particular, the utility industry is a prime candidate for such market interaction development given its historically limited customer orientation as well as its extensive physical on-line connections with customers. Style-based business information systems enable value-creating user interfaces, which in turn enables interactive market learning systems for high-precision marketing efforts. Extending the range of these business information systems to include virtual organizations of energy producers and their suppliers and distributors amplifies the strategic opportunities of such an integrated approach to market interaction. We now turn to the reformulation of these research efforts into a practical management concept for the utility industry.

3.5 Energy Dynamics: A Marketing and Information Management Concept

The most basic competitive advantage of firms is the ability to create more value for customers than other firms are able to do. Since it is the customers themselves who ultimately determine the value they expect and get from a firm's offerings, knowledge about customer needs and preferences and how they change over time is crucial for developing competitive value creation (Sweet, Brousseau & Bigliari, 1997). New advanced IT enables the design of interactive user interfaces as intra- and interorganizational information systems to create and utilize market-oriented knowledge. Based on this, we suggest that the following three related main approaches make up an "energy dynamics" concept of marketing and information management for the utility industry (see figure 3:5).

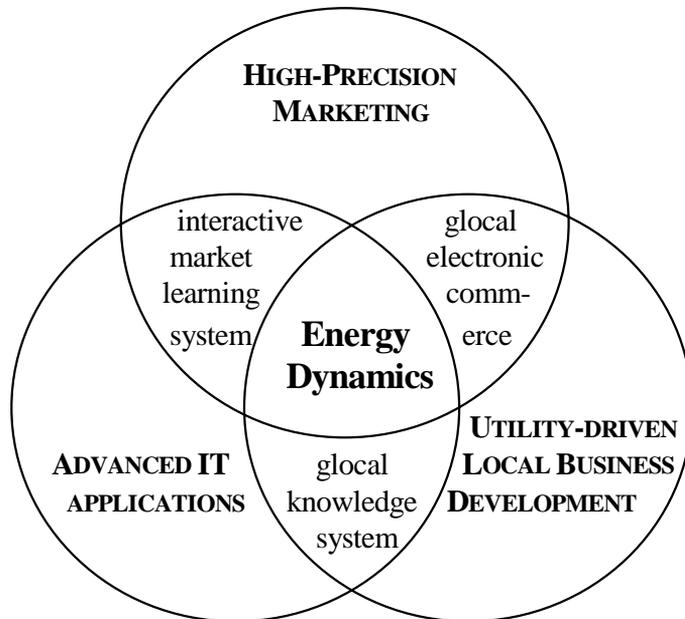


Figure 3:5. The Energy Dynamics Concept for Marketing and Information Management.

1. High-precision marketing through interactive market learning systems. The tradition of technological precision within utilities can be extended to the marketing area. Rather than treating the customers like a mass of captive subscribers, energy companies should develop high-precision marketing by developing and offering products and services that are better targeted to individual customer needs and wants. The design of interactive market learning systems will help improving the relationships between utilities and their customers by matching market communication and product development to individual Decision Styles of customers.
2. Advanced IT applications for the utility industry. Advanced information technology is a crucial enabler in shaping the utility industry for years to come. Through IT, it is now possible to (i) achieve direct communication with the customer; (ii) create knowledgeable and intelligent-acting systems; and (iii) make services interact responsively to individual customer preference and style. Both for marketing and for implementing new customer-oriented services, this will be a key success factor.
3. Utility-driven local business development. Smaller, relatively remote, and less developed communities are facing problems as they struggle to compete economically with larger, more strategically located communities. The migration of business firms and people from these less fortunate communities result in vicious circles with less business activity and more unemployment. Utility organizations located in these regions are particularly hard-hit, due to the large investments in facilities and infrastructures that must be maintained despite declining revenues. At the same time, their huge infrastructures also positions them well to become key actors for developing community business to increase their sales and enjoy substantial competitive goodwill within the community.

The remainder of the chapter will discuss these three dynamic approaches and their synergistic intersections in terms of interactive market learning systems, "glocal" electronic commerce, and glocal knowledge systems.

3.5.1 High-Precision Marketing Through Interactive Market Learning Systems

Traditionally, most customers, especially the residential ones, were known to the utility company as merely “subscribers” who had no identity. Customers were more or less treated alike, given the same offerings presented in the same way irrespective of individual differences. By abandoning the mass-marketing concept in favor of a dynamic high-precision marketing concept, the utilities have better possibilities to cope with the increased competition. Such high-precision marketing that benefits both local customers and business can be further enhanced by the use of the Driver Decision Style model as described above. This approach is particularly suitable for accommodating customer styles in the utility industry, given its varied industrial/commercial and residential/household customers as well as its opportunities for direct access to each customer (Larsson & Baderschneider, 1997; Larsson & Passby, 1997).

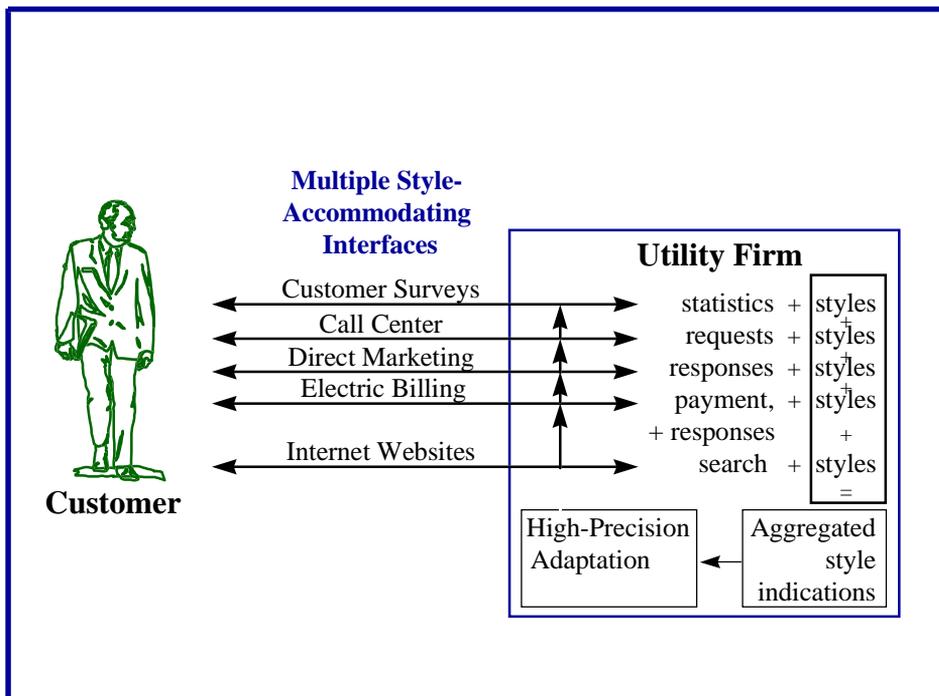


Figure 3.6. An Interactive Market Learning System.

The high-precision marketing approach can be further amplified through application of advanced IT. The idea of an *interactive market learning system* with multiple user interfaces goes beyond the limited ability to accommodate customer styles of a single interactive user interface (Sweet, Brousseau and Bigliari, 1997). Larsson, Sweet and Baderschneider (1997) outline a series of such interactive customer interfaces including customer surveys, call centers, direct marketing, billing, and internet website for aggregated and partly automated customer style accommodation (see figure 3:6).

3.5.2 Advanced IT Applications for the Utility Industry

In shaping a new market and customer orientation in the utility industry, information systems management will be a key factor (Akkermans, Driver, Larsson & Ottosson, 1997). IT nowadays rapidly advances over a broad front. It is not only the case that IT as we know it in its present form becomes much faster, cheaper and more reliable. This is true, but only makes "business-as-usual" more cost-effective. In addition, completely new capabilities are currently emerging that offer great opportunities for new customer services. There are several important trends here that are worth pointing out.

- Telecommunication technology has now produced the infrastructure to establish two-way communication between the utility and each customer. Direct real-time information exchange is now possible and is becoming faster and cheaper.
- Software and knowledge engineering now allow to make information systems as well as devices act more knowledgeably and intelligently. As a result, the days of software programs as just number-crunching tools are past. Intelligence in systems enables a much wider range of functionality as well as reliability. At the same time, it makes systems look more natural and easy-to-use from the view of the customer.
- Modern software technology has made it possible to interact with the customer in very flexible and user-friendly ways. Graphical user interfaces, for example, provide the possibility to exchange information in a variety of forms (text, pictures, charts, even video-like animation). The current flexibility of IT even allows for personalized customer style accommodation.

These new capabilities should not be underestimated. Customers may now directly interact with the utility in a real-time and personal fashion in ways similar to surfing on the Internet. New services based on ad-

vanced IT can not only be useful and beneficial, but even enjoyable to use for customers. Who could have imagined such possibilities, say, five years ago?

As evidenced by these trends, the new IT-based utility services draw from and require the integration of different components, fields, and developments in IT. This integration is a challenging area in itself, and will require some development and experimentation.

On the other hand, present IT constitutes a generic technology in the sense that it provides a broad and general infrastructure on top of which many applications and services can run simultaneously. Remote metering, customer information services, electronic marketing: all these services employ a very similar set of IT capabilities. And this makes their (joint) development also more feasible financially speaking. Akkermans and Ygge (1997) describe test results from an approach to distributed load management in an intelligent, large-scale (dealing with thousands of devices) and highly automated fashion using agent-based software and communication schemes. This is one example of a new service in which different areas and developments of advanced information technology, as outlined above, are exploited and tightly integrated.

Another advanced IT application of relevance to the energy industry is the enabling of what can be called "*glocal knowledge systems*" through virtual organizations. Such a system combines many locally situated persons and units in a more or less global grouping which can be seen as a virtual organization through acting as if it was a "real" organization. Given their typical dispersed locations and resulting lack of face-to-face interaction, virtual organizations rely heavily on interorganizational information systems as their communications media and collective learning. Attempts of utilities and related firms to create interorganizational knowledge development systems require similarly high-precision communication and possible individual style training/development efforts for enhancing joint learning of more effective market interaction.

The emergence of IT-based virtual organizations enables companies to break free from a "marketing myopia" of only focusing on a single organization that employs either industrial or consumer marketing depending who is one's immediate customer. By starting to look to one's customers' customers, companies can integrate industrial and consumer marketing. That is, they can begin to jointly optimize the marketing efforts of the whole business network of suppliers, producers, distributors

and related organizations towards collectively creating value for the ultimate consumer. This in some ways "draws tighter" the connections in value networks extending from producers through intermediaries to end consumers – and back. Thus a knowledge of each is useful and critical in creating the greatest value for end consumers.

The relevance of such "glocal" knowledge systems and virtual organization marketing for energy utilities is striking. No other industry has as widespread, frequently used, and continuously connected customer network. Energy producers can benefit from not only limiting their marketing efforts to their power distributors, but also cooperating with the distributors to market to their customers that typically include most industrial (and otherwise commercial) and household customers in respective regions.

Even if the new IT approach for communicating over the power grid does not allow for more advanced information services that require broad bandwidth, the comprehensive and continuous connectedness of energy customer networks provides new business opportunities beyond "mere" remote metering reading, distributed load management, and home automation services that can be offered directly through the power grid in the future. Larsson and Baderschneider (1997) list a wide set of strategic possibilities that an IT-based virtual organization marketing approach offer the utility industry, such as:

- energy producers can develop and provide high-precision energy marketing skills to their distributors in order to both provide valuable knowledge services to their direct customers and enhance the marketing efforts to their customers' customers;
- energy producers can utilize their central position to develop and support interorganizational knowledge systems among its suppliers and distributors to collectively learn how to better cooperate and jointly market to their end-customers through virtual team-building activities;
- traditionally more business-oriented suppliers to the energy producers can assist them in developing and providing such high-precision energy marketing and virtual team-building skills to their distributors;
- energy producers and their virtual marketing organizations of suppliers and distributors can become prime candidates for strategic marketing alliances with other industries that market to a wide set of industrial and/or household customers (e.g., telecom, insurance and other financial services as well as providing "green power" to the increasing number of businesses that are reorienting themselves towards ecologically-based marketing).

3.5.3 Utility-Driven Local Business Development

As important local businesses are being forced to close down or leave, smaller or more remote communities face the threats of increased unemployment, declining commercial activity, and migration. Utilities suffer from these negative local developments due to the fixed costs for their existing infrastructure investments combined with reduced sales from less power use.

The increasingly information-driven society can be both a threat and an opportunity to these communities. The threat is that small local businesses can be out-competed by larger and more IT-competent companies from the outside, through electronic commerce via the Internet. The opportunity is that local businesses can through the same media reach a global market, without leaving the local business area.

The required knowledge of IT for this business development is usually not sufficient in most existing smaller companies. The utility company can hereby make a contribution to local business development, by sharing its expertise in IT. Utilities have wide resources and developed relationships to most parts of the communities as well as the incentives to turn around negative local developments in their communities. Thus, they can become key-actors in terms of driving local business development to increase local power use at the same time as gaining community goodwill and local competitive advantages relative potential entry from competitors.

Brousseau, Driver and Schönknecht (1997) outline a strategy for utility firms to act as business development catalysts within their communities to strengthen the economic base of their communities, leverage existing infrastructure assets, and assure a secure revenue stream for the future. The strategy consists of power utilities establishing three main mechanisms (see figure 5:7):

- Local Customer Networks where the community members are invited to state their product interests and information preferences in order to help themselves to get the information they desire about the products and services that they want (and thereby screen unwanted products and wrong kinds of information) at the same time as they help the local businesses to increase their local sales by making such wanted high-precision marketing offers;
- regional Business InterNetWorks where local businesses join to

(a) access the Local Customer Network, (b) advertise their demands from and offerings to other businesses, potential entrepreneurs, and job applicants in the region in an interactive, continuous, and inexpensive way, (c) access new demand in its and other regions and nations through the global reach of Internet marketing, and (d) provide a basis for combining people in business start ups to achieve style, interest, and skill complementarities;

a small entrepreneurial development unit with specialists that can ambulate between the utility's regions and communities, and based on the Business InterNetWork information, (a) identify high-potential combinations of persons and existing businesses with complementary interests and resources, (b) offer to convene and team-build these combinations to overcome common uncertainty and interpersonal barriers to collaboration, and (c) offer training in high-precision marketing techniques, including on the Internet for increasing "global" sales.

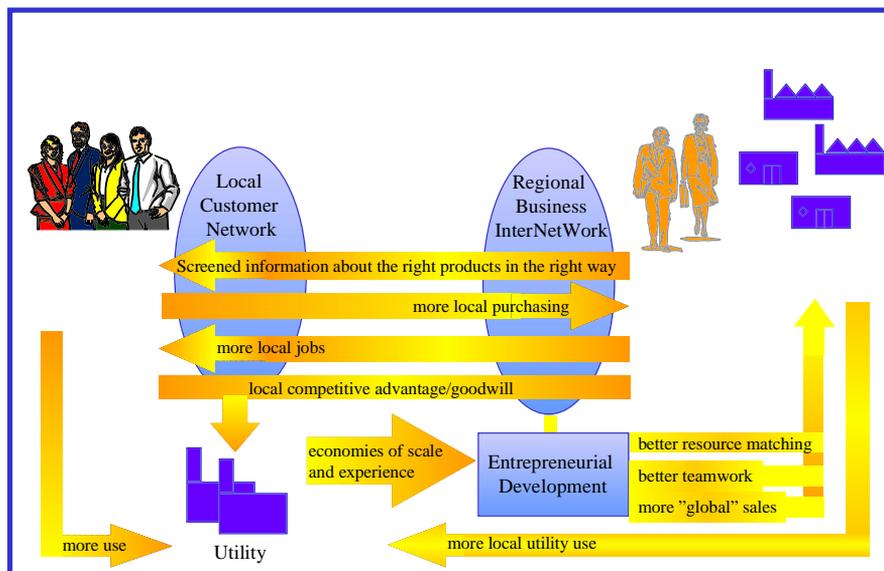


Figure 3:7. Synergistic Benefits from Utility-Driven Local Business Development.

The Decision Style model has already been discussed as a helpful tool for

high-precision marketing. It can also contribute to the identification, convening, and team-building of high-potential entrepreneurial combinations. Research has found it useful for matching the information processing requirements of business ideas and situations with the information processing capacity/styles of the entrepreneurs (Driver, Larsson & Svensson, 1995). Furthermore, business development often involves many various activities that require different Decision Styles. A single individual or a group of individuals with similar styles will therefore seldom manage all these different activities equally well. Composing a group with several different styles can solve this problem, but such heterogeneous groups tend to suffer from high propensity for conflict. However, the Decision Style model can also be used as a facilitating tool of group processes by providing understanding and complementary use of different Decision Styles (cf. Brousseau & Sullivan, 1997).

3.6 Conclusions

Market interaction can be enhanced through a Decision Style approach to integrating business and IT sides of how customers and organizations meet. In particular, the utility industry is a prime candidate for such market interaction development given its extensive connections with customers and the growing importance of energy considerations for its customer base. Style-based business information systems enable value-creating user interfaces, which in turn enables interactive market learning systems for high-precision marketing efforts. Extending the range of these business information systems to include virtual organizations of power producers and their suppliers and distributors amplifies the strategic opportunities of such an integrated approach to market interaction.

The energy dynamics concept of marketing and information management in the future utility industry rests upon three approaches: (1) high-precision marketing through interactive market learning systems; and other (2) advanced IT applications for the utility industry, including distributed load management; and (3) glocal knowledge systems for utility-driven local business development through establishing Local Customer Networks, regional Business InterNetWorks, and entrepreneurial development units that facilitate glocal electronic commerce.

Utilities are uniquely positioned to make use of their wide infrastructure and other resources to compete by "globally" bridging local communities and providing more customer value with IT-based high-precision marketing and business development. The Decision Style model offers a dynamic tool for enhancing the achievement of this competitive value creation.

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