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MARKETING RESEARCH PROCESS IN
HIGH-TECH MARKETS

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STATEMENT:

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INTRODUCTION

Given the prominence of technological developments in our economy, categorizing particular industries as low- or high-tech may not be as easy as one would expect. Simply drawing a continuum ranging from low-tech industries on the one end to high-tech industries on the other and placing industries on the continuum based on common perceptions might, in fact, be misleading. Agriculture, heavy industry (steel mills, etc.) and services might not be as low tech as some might believe (Mohr, Sengupta & Slater, 2005, p. 3).

This thesis begins with an introduction to the high-tech environment. The first chapter not only examines definitions of high-tech industries, but also shows that strategies have to be adapted to the type of innovation, radical or incremental. To successfully perform on the market, firms have to adopt a mindset of being not marketing oriented, however market oriented. Kohli and Jaworski (1990, pp. 1-18) subscribe to a firm that is market oriented emphasizes the gathering, dissemination, and utilization of market intelligence as the basis for decision making.

Before coming to the main topic of the thesis, I wanted to present high-tech customers, who have not similar buying habits than customers in low-tech industries. For a firm to survive, it is vital to have a precise comprehension of customer behavior when buying high-tech products. To give emphasis on its importance, I have briefly introduced each category of adopters. Moreover, my goal was also to define gaps between categories of adopters and to set out the main one called "the chasm". If a firm fails crossing it, it fails completely.

Main goal of the thesis was to present an overview of the research tools high-tech marketers can use to explore their customers and demand on the market. Companies in high-tech industries can choose among different research tools, however methods have to be aligned with the type of innovation. Concept testing, conjoint analysis, customer visit programs, emphatic design, lead users, quality function deployment and prototype testing are types of research being in detail described as well as demonstrated with examples.

1 DEFINING HIGH TECH

If high tech is permeating even basic industries, just what is high tech? Is it an industry that produces technology? Or is it one that intensively uses technology? Just what is technology? Technology is the stock of relevant knowledge that allows new techniques to be derived and includes both product and process know-how. Product technology covers the ideas embodied in the product and its constituent components. Process technology encompasses the ideas involved in the manufacture of a product (Capon & Glazer, 1987, pp. 1-14).

If technology is useful know-how, what, then, is high technology? There are nearly as many definitions of high tech as are people studying it. For example, one definition characterizes high-technology as (Technology, Innovation, and Regional Economic Development, 1982):

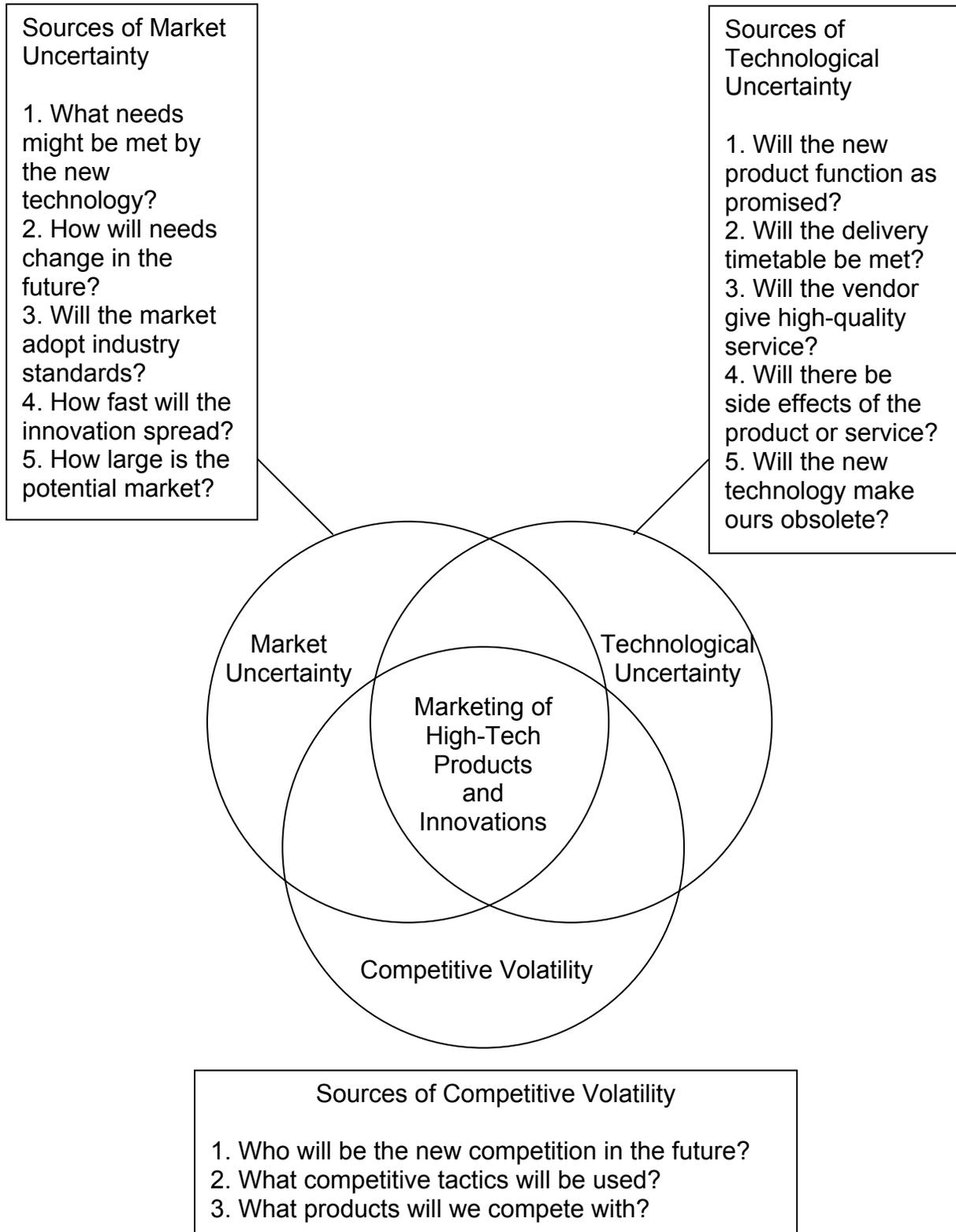
“engaged in the design, development, and introduction of new products and/or innovative manufacturing process through the systematic application of scientific and technical knowledge.”

As shown in Figure 1 (p. 3), another view of high technology is based on common characteristics that all high-technology industries share, most notably, market uncertainty, technological uncertainty, and competitive volatility (Mohr et al., 2005, p. 6).

1.1 *Market Uncertainty*

Market uncertainty refers to ambiguity about the type and extent of customer needs that can be satisfied by a particular technology (Moriarty & Kosnik, 1989, pp. 7-17). There are five sources of market uncertainty. Market uncertainty arises first and foremost, from consumer fear, uncertainty, and doubt about what needs or problems the new technology will address, as well as how well it will meet those needs. Anxiety about these factors means that customers may delay adopting new innovations, require a high degree of education and information about the new innovation, and need post-purchase reassurance and reinforcement to assuage any lingering doubt. Second, customer needs may change rapidly, and in an unpredictable fashion, in high-tech environments. Third, customer anxiety is perpetuated by the lack of a clear standard for new innovations in a market. Fourth, due in large part to the prior three factors, uncertainty exists among both consumers and manufacturers over how fast the innovation will spread. Finally, uncertainty over how fast the innovation will spread contributes to an inability for manufacturers to estimate the size of the market (Mohr et al., 2005, p.7).

Figure 1: Characterizing High-Tech Marketing Environment



Source: Mohr et al., 2005, p. 6.

1.2 Technological Uncertainty

Technological uncertainty is “not knowing” whether the technology – or the company providing it – can deliver on its promise to meet specific needs (Moriarty & Kosnik 1989, pp. 7-17). Mohr, Sengupta and Slater (2005, p. 9) continue by defining which factors give rise to technological uncertainty. The first comes from questions about whether the new innovation will function as promised. The second source of technological uncertainty relates to the timetable for availability of the new product. Third technological uncertainty arises from concerns about the supplier of new technology. Fourth, the very real concern over unanticipated consequences or side effects also creates technological uncertainty. Finally, in high-tech markets, technological uncertainty exists because one is never certain just how long the new technology will be viable – before an even newer development makes it obsolete. As a new technology is introduced, its performance capacity improves slowly and then, because of heavy R&D efforts, improves tremendously, before reaching its performance limits.

1.3 Competitive Volatility

A third characteristic that underlies high-tech markets is competitive volatility. Competitive volatility refers to changes in the competitive landscape: which firms are one’s competitors, their product offerings, the tools they use to compete. There are three sources of competitive volatility (Mohr et al., 2005, p. 10).

First, uncertainty over which firms will be new competitors in the future makes it difficult for firms to understand high-tech markets. Indeed, the majority of the time new technologies are commercialized by companies outside the threatened industry. These new players are viewed as disruptive and frequently dismissed by incumbents (Cooper & Schendel, 1976, pp. 61-69).

Second, new competitors that come from outside existing industry boundaries often bring their own set of competitive tactics, tactics with which existing industry incumbents may be unfamiliar. However, these new players end up rewriting the rules of the game, so to speak, and changing the face of the industry for all players (Hamel, 1997, p. 70-84).

1.4 Radical/Breakthrough Innovations

Radical innovations are “so different that they cannot be compared to any existing practices or perceptions. They employ technologies and create new markets. Breakthroughs are conceptual shifts that make history,” (Abernathy & Utterback, 1978, pp. 41-47). In standard marketing parlance, they are discontinuous innovations. Others refer to breakthrough innovations as revolutionary (Shanklin & Ryans, 1984, pp. 164-171), and they are developed in supply-side markets (Maney, 1999, pp. 164-

Supply-side markets are characterized by innovation-driven practice, in which a company's goal is to achieve profitable commercial applications for laboratory output; R&D is the prime mover behind marketing efforts, and specific commercial applications or targets are considered only after the innovation is developed. For these reasons, these markets are sometimes referred to as "technology-push" situations (Mohr et al., 2005, p. 19). Most radical innovations are developed by R&D groups (in companies, in universities, in research laboratories), who often haven't specifically thought about a particular commercial market application during the development process (Gross, Coy & Port, 1995, pp. 76-84). In other cases, radical innovations are developed as a new way to meet an existing need, or in response to the identification of an emerging need. Regardless of whether innovation originates from "pure" science or in response to a need, the new technology then creates a new market for itself. Competitive advantage for a breakthrough technology is based on the superior functional performance that the new innovation has to offer over the existing methods or products (Mohr et al., 2005, p. 20).

1.5 Incremental Innovations

Incremental innovations, on the other hand, are continuations of existing methods or practices and may involve extension of products already on the market; they are evolutionary as opposed to revolutionary. Both suppliers and customers have a clear conceptualization of the products and what they can do. Existing products are sufficiently close substitutes (Shanklin & Ryans, 1984, pp. 41-47). Incremental innovations occur in demand-side markets, in which product characteristics are well defined and customers can articulate their needs. In contrast to the view of the Internet as a radical innovation, some see it as an evolutionary innovation, "part of a continuum of technologies that drop the cost and improve the distribution of information," comparable to the impact of television (Abernathy & Utterback, 1978, pp. 41-47).

In an industrial context (manufacturing applications), incremental innovations may be developed by producers of a mature product who have achieved high volume in their production process (Shanklin & Ryans, 1984, pp. 41-47). Hence, economies of scale may be very important, and pricing may be based on experience curve effects (costs decline by a fixed and known amount every time accumulated volume doubles) that arise from economies of scale and learning curves. Often, because the importance of scale economies to these firms innovations may take the form of production process innovations, which lower the costs of production. Competitive advantage is frequently based on low-cost production. Firms whose bread-and-butter business comes from a specific product find that they may be less flexible to radical change and vulnerable to obsolescence. Some believe that marketing strategy for innovations is complicated by the fact that innovating firms might view an innovation as a breakthrough, whereas

customers might view it as an incremental (or vice versa) (Mohr et al., 2005, p. 23).

1.6 Suppliers' and Customers' Different Perception of Innovation

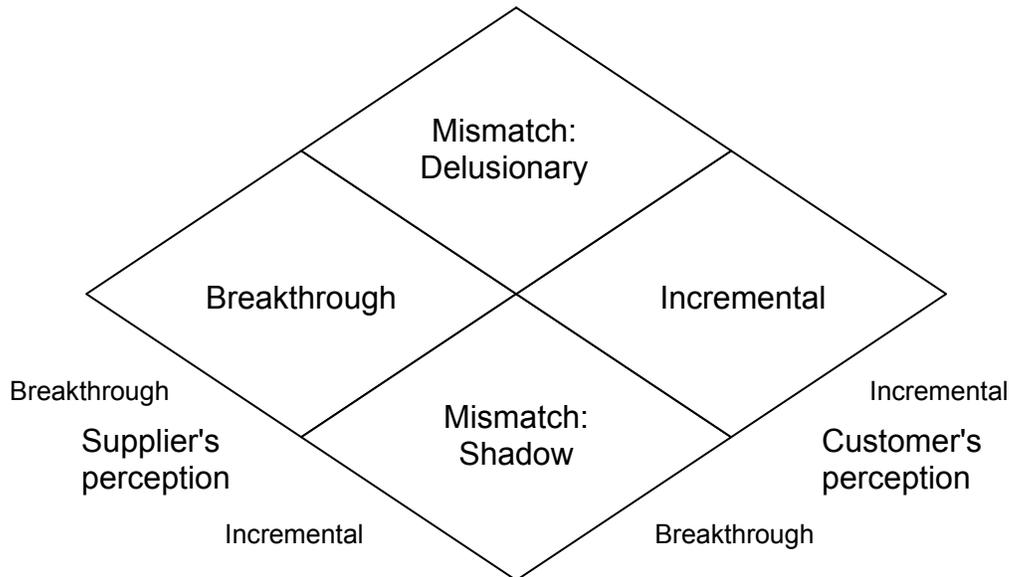
Figure 2 (p. 7) highlights the four possibilities that can occur when considering both the suppliers' and customers' perception of the innovativeness of a new product. Obviously, when both parties' perceptions match, the path to marketing is fairly clear – as long as marketers understand that each type of innovations needs to be managed differently. However, when a firm views an innovation as incremental but customers see the innovation as a breakthrough (or vice versa), mistakes can happen (Kasturi & Bartus, 1995, pp. 63-75).

- Shadow products are developed in the shadow of other, more central products and are not central thrust of a firm's efforts.

Such innovations appear at the outset to offer a marginal contribution, and very few companies pay attention to marketing them proactively. Hence, such products tend to be marketed within the structure of the existing organization (existing brand manager, sales manager, and manufacturing line). Market segmentation and channel selection, if anchored to existing solutions, are typically wrong, presenting a marketing mistake. The real market might be with new customers in new segments. Imagination and creativity may identify new problems the innovation could solve. Shadowed projects lack urgency and attention, which further undermines their potential odds of success (Kasturi & Bartus, 1995, pp. 63-75).

- Delusionary products are innovations where the suppliers have grandiose visions for the product but their customers do not share the same euphoria. These might be typical "lab" projects, wherein the technical team views the innovation as the "next best thing since sliced bread," but customers simply do not understand it or do not agree that it is so great (Kasturi & Bartus, 1995, pp. 63-75).

Figure 2: Supplier versus Customer Perceptions of Innovation



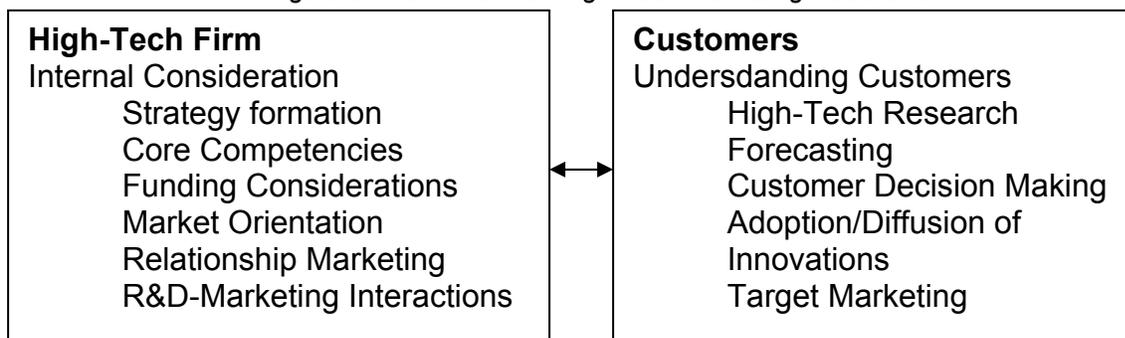
Source: Kasturi & Bartus, 1995, pp. 63-75.

1.7 Does marketing needs to be different for high-technology products and innovations?

Moriarty and Rowland (1989, p. 18) discuss in their paper if it is clear that the nature of the marketing must be tailored to the type of innovation. But is high-tech marketing all that different from its low-tech counterpart? Or, will standard marketing tools suffice for high-tech markets? Are high-tech marketing disasters caused by the use of standard marketing approach, when a unique set of tools is necessary to handle the market, technological, and competitive uncertainties? Or, are high-tech marketing disasters merely the result of flawed execution of basic marketing?

Given the high degree of uncertainty, the margin for error for high-tech marketers is likely smaller than for conventional markets. In that sense, high-tech firms must execute basic marketing principles flawlessly (Gardner, 1990, case: 90-1706).

Figure 3: Framework for High-Tech Marketing Decisions



Source: Mohr et al., 2005, p. 28.

Figure 3 (p. 7) provides the conceptual framework used for making high-technology marketing decisions. On the left side of the figure are the internal considerations that a firm must address and understand as the foundation to effective marketing. The management of high-tech firms has some unique considerations compared to management of traditional companies. Larger high-tech firms that begin to function as a corporate bureaucracy can struggle with how to remain innovative. Smaller high-tech firms wrestle with how to move from a technology-driven, engineering mindset to a market focus. For both sizes of firms, resolving conflicts between R&D and marketing is of paramount importance. Moreover, whereas all marketing is premised upon relationships, the management of relationships and strategic alliances often necessitate collaboration with competitors, where protection of intellectual property is even more important than traditional strategic alliances – particularly when the innovative firms are collaborating on cutting-edge research. On the right side of the figure are the customer considerations. One of the particularly challenging aspects of high-tech marketing is to understand customers and markets. For example, in conducting marketing research in high-tech industries, users often cannot articulate their needs very clearly because they simply cannot envision what the technology can do or how it can benefit from them (Mohr et al., 2005, pp. 28-29).

2 MARKET ORIENTATION

Shapiro (1988, pp. 119-225) states that it is important to note that a market orientation is not the same thing as a marketing orientation. A marketing orientation might imply that marketers have disproportionate influence or that marketing activities are the source of the firm's competitive advantage. On the other hand, in market-oriented firms, there is no consistently dominant function or coalition of individuals. In fact, any group may take the lead as long as its members are committed to the continuous creation of superior customer value. And, while marketing activities may be source of competitive advantage, competitive advantage is just as likely to derive from market-focused skills in R&D or in product development. A firm cannot be fully market oriented if the entire organization is not committed to creating customer value.

As shown in Figure 4 (p. 9), a firm that is market oriented emphasizes the gathering dissemination, and utilization of market intelligence as the basis for decision making (Kohli & Jaworski, 1990, pp. 1-18). Shapiro (1988, pp. 119-225) continued that customer-oriented marketing activities are critical to gathering information to reduce overwhelming uncertainty over demand.

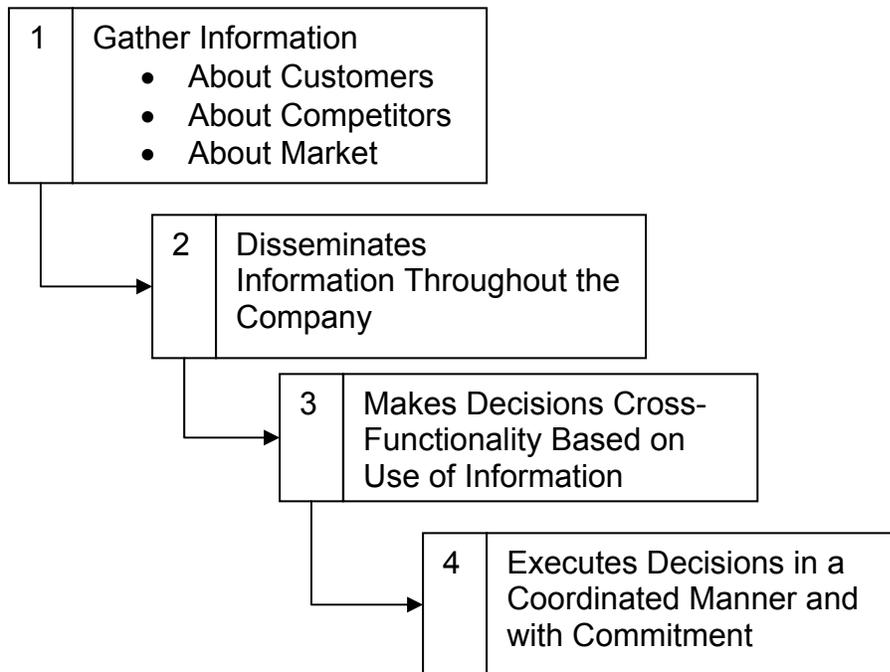
First, market oriented firms gather a wide array of information from the market. Market intelligence includes information about current and future customer needs, as well as competitive information and trends in the marketplace. The acquisition of information can be done via customer hit lines, trade shows, customer visits, working with lead users, competitive intelligence, or some of the more high-tech-oriented research tools (Shapiro, 1988, pp. 119-225).

Gupta, Raj and Wilemon (1986, pp. 7-17) continue that market oriented firm disseminates the information throughout the company, effective dissemination increases the value of information when each piece of information can be seen in its broader context by all organizational players who might be affected by or utilize it. People in the organization must be able to ask questions and augment or modify the information to provide new insights to the sender.

When organizations remove the functional barriers that impede the flow of information from development to manufacturing to sales and marketing, they improve the organization's ability to make rapid decisions and to execute them effectively (Shapiro, 1988, pp. 119-225).

Figure 4: Market Orientation and R&D Interaction in High-Technology Firms

Market-Oriented Firm



Source: Mohr et al., 2005, p. 111.

McQuarrie and McIntyre (1992, working paper: 92-114) define that another common approach to encourage information sharing in the development process is to send people from multiple functions on customer visits. Not only does this stimulate real-time information sharing, it generally increases the quality of the information gathered.

Third, market oriented firm uses the information to make decisions. To ensure that all information is considered before a decision is made, organizations must provide forums for information exchange and discussion. When decisions are made interfunctionally and interdivisionally, greater representation of the information and a closer connection to the market issues will occur. Moreover, interfunctional decision

making implies that the people who will be involved in implementing the decisions are the ones actually involved in making the decisions – the idea being that if one is involved in making the decision, he or she will be more committed to implementing that decision (Shapiro, 1988, pp. 119-225).

Finally, the market-oriented firm executes the decisions in a coordinated manner. Commitment to execution is necessary to successful implementation of a market orientation. An organization can generate and disseminate intelligence; however, unless it acts on that intelligence, nothing will be accomplished. Responsiveness to market intelligence involves selection of target markets; development of products/services that address their current and anticipated needs; and production, distribution, and promotion of the products in a way that produces both customer satisfaction and customer loyalty (Kohli & Jaworski, 1990, pp. 1-18). All functions in a market-oriented company – not just marketing – participate in responding to market needs (Shapiro, 1988, pp. 119-225).

3 HIGH-TECH CUSTOMERS (Moore, 2002)

3.1 *Innovators*

The early market for high-tech products is comprised of technology enthusiasts, people who appreciate technology for its own sake and are motivated by the idea of being a change agent in their reference group. Their interest in new ideas leads them out of narrow circles of peers into broader circles of innovators. They are willing to tolerate initial glitches and problems that may accompany any innovation just coming to market and are willing to develop makeshift solutions to such problems. Geoffrey Moore believes that the enthusiasts want low pricing in return for alpha- and beta-testing new products. In the computer industry enthusiasts work closely with the company's technical people to troubleshoot problems. Although not much revenue come from this group, it is key to accessing the next group.

3.2 *Early Adopters*

The next category, the early adopters are visionaries in their market. They are looking to adopt and use new technology to achieve a revolutionary breakthrough to gain dramatic competitive advantage in their industries. These people are attracted by high-risk, high-reward projects, and because they envision great gains in competitive advantage from adopting new technology, they are not very sensitive. Customers in the early market typically demand personalized solutions and quick-response, highly qualified sales and support. Competition is typically between product categories (e.g., between DVDs and CDs) at the primary demand level. Communication between possible customer adopters cuts across industry and professional boundaries.

3.3 Early Majority

The next group - moving into the mainstream market - are the pragmatists or the early majority. Rather than looking for revolutionary changes, this group is motivated by evolutionary changes to gain productivity enhancements in their firms. They are averse to disruptions in their operations and, as such, want proven applications, reliable service, and results

From a marketing perspective, these people are not likely to buy a new high-tech solution without a reference from a trusted colleague. A trusted colleague to a pragmatist is – who else? – another pragmatist, not a visionary or enthusiast who has a different view of technology.

3.4 Late Majority

The late majority conservatives are risk averse and technology shy; they are very price sensitive and need completely preassembled, bulletproof solutions. They are motivated to buy technology just to stay even with the competition and often rely on a single, trusted adviser to help them make sense of technology.

3.5 Laggards

Finally, laggards are technology skeptics who want only to maintain the status quo. They tend not to believe that technology can enhance productivity and are likely to block new technology purchases. The only way they might buy is if they believe that all their other alternatives are worse and that the cost justification is absolutely solid.

Table 1: The Categories of Adopters

Innovators	People who are fundamentally committed to new technology on the grounds that, sooner or later, it is bound to improve our lives. Moreover, they take pleasure in mastering its intricacies, just fiddling with it, and they love to get their hands on the latest and greatest innovations. Thus they are typically the first customers for anything that is truly brand-new.
Early Adopters	The first constituency who can and will bring real money to the table. They help to publicize the new innovations, which helps give them a necessary boost to succeed in the early market.
Early Majority	These people make the bulk of all technology infrastructure purchases. They do not love technology for its own sake, but rather, are looking for productivity enhancements. They believe in evolutionary not revolutionary, products and innovations.
Late Majority	These customers are pessimistic about their ability to gain any value from technology investments and undertake them only under duress, typically because the remaining alternative is to let the rest of the world pass them by. They are price sensitive, highly skeptical, and very demanding
Laggards	Not so much potential customers as ever-present critics. As such, the goal of high-tech marketing is not to sell to them but, rather to sell around them.

Source: Mohr et al., 2005, p. 177.

4 CROSSING THE CHASM (Moore, 2002)

Each category of adopters has unique characteristics. Moore characterizes the degree of these differences as gaps between each group in the marketplace. These gaps represent the potential the potential difficulty that any group will have in accepting a new product if it is presented in the same way as it was to the group to its immediate left. Each of the gaps represents an opportunity for marketing to lose momentum, to miss the transition to the next segment, and never to gain market leadership, which comes from selling to a mainstream market. The differences between the early market (innovators/early adopters) and the mainstream market (early majority) are more pronounced than differences between the other categories, and hence warrant special attention.

The largest gap between categories of adopters is between the early market (innovators/early adopters) and the mainstream market (early majority, late majority, and laggards). This deep and dividing schism is the most formidable and unforgiving

transition in the adoption and diffusion process. The chasm is the gulf between the visionaries (early adopters) and the pragmatists (early majority, mainstream market) and derives from critical differences between the two. Visionaries see pragmatists as pedestrian, whereas pragmatists think visionaries are dangerous. Visionaries will think and spend big, whereas pragmatists are prudent and want to stay within the confines of reasonable expectations and budgets. Visionaries want to be first in bringing new ideas to the market, but pragmatists want to go slow and steady. The chasm arises because the early market is saturated but the mainstream market is not yet ready to adopt. Hence, there is no one to sell to.

4.1 Early-Market Strategies: Marketing to the Visionaries

As mentioned previously, visionaries require customized products and technical support. Because such customization for several visionaries can pull a firm in multiple market directions, they can be a costly group of customers to support. However, for a new high-tech startup, sales to these visionaries represent the initial cash flows to the firm. Hence, given the demand from visionaries and need for cash flows, there is much pressure both to support their customization needs and to release products early to these customers. Just as customization needs and to release products early to these customers. Just as customization can pull the firm in multiple market directions at a steep cost, early release of a product can backfire if it has not been adequately tested.

The goal of the marketer's firm at this point is to establish its reputation. In new high-tech startups, this time of selling to the early market is exciting and energizing. The product is often the focus; engineering and R&D folks play a critical role, and brilliance and vision are embraced. Firms try to develop the best possible technology for the market they pursue.

4.2 The Chasm

The bloom falls off the rose, however, when the firm takes on more visionaries than it can handle, given the high degree of customization and support they expect. No pragmatists are yet willing to buy, presumably because there is no credible reference for them. Hence, revenue growth tapers off or even declines. The goal of the high-tech marketer should be to minimize the time in the chasm. The longer the firm spends in the chasm, the more likely it is that it will never get out.

One implication of the chasm relates to relationships with venture capitalists and investors. Lack of knowledge of the existence of the chasm can create a crisis. Key personnel become disillusioned and management becomes discredited. Investors may pull out at the very time that more financing is necessary to get the product to the mainstream market. The ultimate demise of early-market success stories might be explained by the existence of this chasm.

4.3 Marketing to the Pragmatists

In contrast to marketing to the visionaries, who are willing to tolerate some incompleteness in the product and will fill in the missing pieces, marketing to the mainstream market requires that the vendor assume total responsibility for system integration. This need demands the development of a complete, end-to-end solution for the customer's needs, or the whole product. Identifying the whole product requires an exhaustive analysis of what it takes to fulfill the reasons the customer is buying. Asking what else customer will need, from a systems perspective makes apparent possible switching costs and exposure.

The job of the firm in the chasm is either to develop or to partner with firms to provide the whole solution to the initial customers in the mainstream market. Rather than developing the "best possible solution", the goal here is to develop the best solution possible. Yet, this is a very different skill set than that required to succeed in the early market. Now, the R&D team, rather than basing development on engineering solutions, must work closely with partners and allies on a project-oriented approach. For many, this is work on compatibility, standards, and so forth. Moreover, this period may require that engineers go to customer sites to observe them in action. Customer service is a critical component of crossing the chasm. The vendor goal at this point is to bring in revenue.

Another crucial strategy in crossing the chasm and speaking to the needs of the mainstream market is simplifying, rather than adding additional features.

Communication between pragmatic customers in the mainstream market tends to be vertical, or within industry and professional boundaries (rather than horizontal, across industry boundaries, as in the early market). Recent research shows that higher levels of communication between the early market adopters and the main market adopters is a key factor in mitigating the sales slump of the chasm (Goldenberg, Libai & Muller, 2002, pp. 1-16).

Competition is between vendors within a single category of solutions or product offerings. Indeed, pragmatics will want to see a competitor's proposal and product offering before making a decision. Competition, to the pragmatics, is actually a sign of legitimacy for the new technology. Customers typically demand some sort of industry standard to minimize their perceived risk.

Firms that succeeded in the mainstream market have complemented their initially strong competencies in technological development with equally strong competencies in partnering and collaborative skills. Partners often drive further expansion, and so the firm's ability to interact with partners becomes a critical success factor.

In the early market (enthusiasts and visionaries), power belongs to the technology

providers and the system integrators (firms that bring different suppliers' products together to create one integrated solution for a customer's needs). These market players (technology providers and system integrators) make the decisions about whom to bring into the process as partners. In crossing the chasm and approaching the early mainstream pragmatists, the power is centralized in the hands of the company that has effectively picked the target customer, understands why they buy, and designed the whole product. In the pragmatists market, the market leader and its partners have the power. In later markets (mainstream conservatives), power is vested in the distribution channels or companies that provide superior distribution of product.

4.4 *The Bowling Alley*

The bowling alley is a period during which the new product gains acceptance in niche markets within the mainstream market, but has yet to achieve general, widespread adoption. During the bowling alley stage of market development, the market is typically not large enough to support multiple industry players. The successful firm will establish itself as the dominant market leader. One of the best ways to become the market leader is to follow a "whole product" strategy and partner extensively to create the de facto standard in the market.

4.5 *The Tornado*

Hof (1998, 122-128) describes the tornado as a period when the general marketplace switches over to the new technology. It is driven by the development of a "killer app", or an application of the technology that is based on a universal infrastructure, is appealing to a mass market, and is commoditizable.

The massive number of new customers entering the market in a rapid time period can swamp the existing system of supply. During this stage, companies have a huge opportunity to develop their distribution channels. In fact, when companies hit this stage of the cycle, they need to focus on operational excellence: getting their products out to the consumers through streamlining the creation, distribution, installation, and adoption of their whole product. This is typically best done by beefing up internal systems to handle high-volume workload.

4.6 *Main Street*

Main street refers to the period when the tremendous growth in the early majority/pragmatists market stabilizes. This period of after-market development is when base infrastructure for the product's underlying technology has been deployed and the goal now is to flesh out its potential. Rather than focusing on generating sales from new customers, companies must sell extensions of their products to their current customer base to be competitive. Overall, it is important to emphasize operational

excellence and customer intimacy, rather than product leadership.

4.7 Marketing to Conservatives

Finally, for continued success in the mainstream, the high-tech firm will also need to reach out to the conservative market. This requires making the product even simpler, cheaper, and more reliable and convenient, and possibly splitting the product line into simpler components. From an engineering perspective, this is the anathema of good engineering work.

5 HIGH-TECH MARKETING RESEARCH TOOLS

High-tech environments are fraught with change and uncertainty. Customers have difficulty envisioning how technology can meet their needs. They are not aware of what new technologies are available or how those technologies might be used to solve current problems. They might not even be aware of the needs they have. Moreover, in this environment, firms must accelerate the product development process, closing the time between idea to market introduction. Successful firms in high-tech markets collect useful information to guide decisions (Mohr et al., 2005, p. 134).

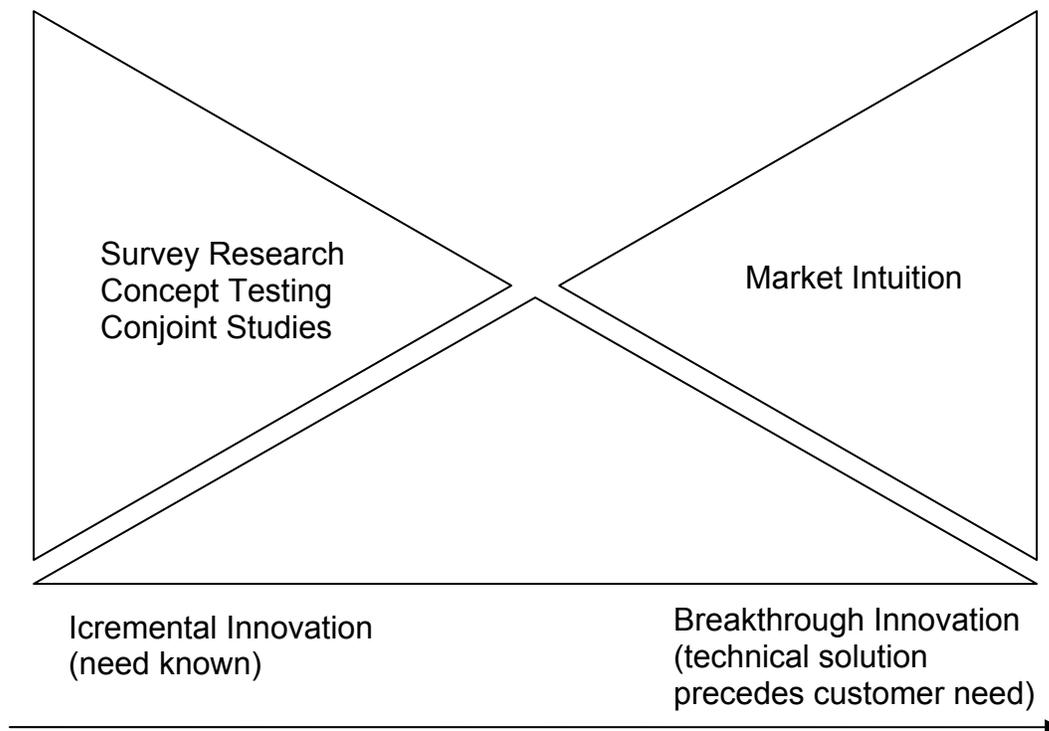
As Figure 5 (p. 17) shows, research methods must be aligned with the type of innovation being developed (Leonard-Barton, Wilson & Doyle, 1995, pp. 281-305). This is consistent with the contingency theory of high-technology marketing. For incremental innovations, new-product developments are in alignment with the current market. Customer needs are generally known, and traditional marketing research can help companies understand such needs. Indeed, traditional marketing research techniques are most effective when a product or service is well understood by customers, or when the customer is familiar with possible solutions because of related experience in other contexts. Traditional marketing research tools may consult one of the many excellent resources available (Mohr et al., 2005, p. 134).

However authors Leonard-Barton, Wilson and Doyle (1995, pp. 281-305) argue that standard marketing research tools typically do not address new uses or new benefits and less effective when customers are unfamiliar with the product being researched. Hence, for breakthrough products or for rapidly changing markets, standard where technical solutions might not provide useful information. In the extreme, where technical solutions precede customer needs, market research might consist largely of guided intuition. Industry experts may be helpful, and the creation of different future scenarios can be used to guide decision making based on intuition.

In the midrange (between incremental and radical innovation), very useful techniques include customer visits, emphatic design, the lead user process, quality function deployment, and prototype testing. Figure 5 (p. 5) also depicts the flow of the chapter

in that we first consider traditional tools of marketing research that are most appropriate for identifying opportunities for incremental innovation or for managing existing products. We then consider tools that may be useful for providing insight into opportunities for breakthrough innovations (Mohr et al., 2005, p. 135).

Figure 5: Aligning Market Research with Type of Innovation



Source: Leonard-Barton, Wilson & Doyle, 1995, pp. 281-305.

5.1 Concept testing

One of the more challenging decisions faced by a new product development (NPD) team is concept selection, the narrowing of multiple product concepts to a single, “best” product concept. The NPD process starts with the generation of ideas for a product that addresses an identified customer need. Many product concepts should be considered since only a small percentage of new product ideas ultimately prove to be profitable (Stevens & Burley, 1997, pp. 16-27). Also, keeping multiple product concept options open and freezing the concept late in the development process affords the flexibility to respond to market – and technology shifts and many actually shorten total product development time (Iansiti, 1995, pp. 37-58). Mohr, Sengupta and Slater (2005, p. 135) continue that common approaches to idea generation include: the various observational techniques that I will discuss; brainstorming, where employees from engineering, marketing, sales, and manufacturing are guided through a series of creativity exercises to generate new product ideas; focus groups, where members of the target market are asked to think about how different product or service ideas could satisfy their needs; and depth interviews, where target customers participate in lengthy, nondirective, one-to-one interviews regarding their needs and potential solutions to those needs. Concept testing then evaluates these early-stage

ideas and decides which of them are good enough to be developed further. These concepts are described in one or two paragraphs, sometimes with a name and a price, and potential customers are asked to rate them on dimensions such as interest in trying the product, purchase intent, uniqueness, and perceived value. The result can give the firm a better idea of customer interest, so the new product concept can be refined to improve its chances of success before going to a full-blown, predictive concept test. In the last stage, the number of concepts is reduced, based on the result from the previous stage, to a manageable set that can be thoroughly assessed. In this stage, a representative sample of potential customers is asked to view a small number of new product concept finalists and complete a battery of questions and diagnostic ratings.

5.2 Conjoint analysis

Author Mohr, Sengupta and Slater (2005, p. 136) describe conjoint analysis as how respondents are asked to make judgments about their preferences for combinations of product attributes, such as price, brand, speed, warranties, technical services, etc., that involve various levels such as high or low price, premium or value brand, and so forth. The basic objective is to determine the tradeoffs respondents are willing to make within the range of the attributes provided. For example, all other things being equal, a consumer may prefer to have a warranty, but is price sensitive. Conjoint analysis helps to infer whether, on average, consumers in the market would be willing to trade off a less extensive warranty for a lower price or whether the warranty is crucial, despite a slightly higher price. Conjoint analysis accomplishes this by estimating how much each attribute level is valued based on the choices that respondents make about product concepts whose attributes are varied in a systematic way. The value of conjoint analysis lies in the attention it gives to specifics of each product offering and how the various product features fit together to deliver a complete offering. One of the first steps in designing a conjoint study is to develop a set of attributes and levels of those attributes that adequately characterize the range of product options. Focus groups, customer interviews, and internal corporate expertise are some of the sources used to structure the sets of attributes and levels that guide the rest of the study. The analyst then develops a set of profiles that cover the full range of attribute levels specified in the study. Respondents then indicate their preference for each level of an attribute and the relative importance of each attribute. The results from this analysis are then used to make product development and positioning decisions.

5.3 Customer Visit Programs

Mohr, Sengupta and Slater (2005, p. 136) define customer visit program or a systematic program of visiting customers with a cross-functional team to understand customer needs, when implemented correctly, can also lead to significant insights and benefits for high-tech marketers. The idea of using customer visits for market

research has developed in response to the challenges faced by managers in many industries. Customer visits are more than a tool to groom customer relationships; they offer a variety of benefits, including the following:

- 1 **Face-to-face communication.** Development of new-to-the-world products benefits from the unique capacity of personal communication to facilitate the transfer of complex, ambiguous, and novel information.
- 2 **Field research.** Doing research at the customer's place of business allows personnel to see the product in use, talk to actual users of the product, and gain a better understanding of the product's role in the customer's total operation.
- 3 **Firsthand knowledge.** Everyone believes his or her own eyes and ears first. When key players hear about problems and needs from the most credible source – the customers – responsiveness is enhanced.
- 4 **Interactive conversation.** The ability to clarify, follow up, switch gears, and address surprising and unexpected insights provides depth to interactions.
- 5 **Inclusion of multiple decision makers.** Many technology products are purchased by groups of people, and customer visits allow all of the players' various needs and desires to be addressed.

To realize these advantages, customer visits are much more than merely talking to people. Good customer visit programs can reveal new pieces of information that may have a direct impact on products or services offered to customers (Mohr et al., 2005, p. 136):

1. **Get engineers in front of customers.** It is vital that cross-functional teams participate in the customer visit program. Relying solely on marketing personnel to conduct customer visits makes cross-functional collaboration unlikely and marketing may lack credibility with key technical people. The people who participate in the visits must be the ones who will use the information. Teams should include, at a minimum, an engineer, a product-marketing representative, and the account manager. For cross-functional teams to work smoothly in customer visits, good teamwork must exist between engineering and marketing.

For a customer visit program to be successful, it must be part of the corporate culture and enthusiastically embraced by the technical team. R&D managers who say, "Go see the customers yourself," or "Take the project team out to visit customers" are vital to communicating the appropriate attitude. Having only marketers go out to visit customers does not substitute for a commitment on the part of the entire organization to understand customers. Finally, having only-level executives on customer visits makes other company personnel question the degree to which customer focus is real or just window dressing.

2. **Visit different kinds of customers.** Ideally, team should visit multiple customers to get more than just an idiosyncratic reading on customer needs. The common tendency in customer visit programs is to visit only national accounts. Although visiting national accounts may result in increasing satisfaction with these accounts, market share may shrink if the firm falls into the trap of developing products that exactly suit an ever-smaller number of customers. Often the freshest perspectives and greatest surprises come from atypical sources, such as competitors' customers, global customers, lost leads, lead users, distribution channel members, or "internal" customers of the firm's own field staff. Customer councils are another important source of information. They are typically designed to get feedback, share perspectives, and build stronger customer relationships. They offer the potential of synergy through group action.
3. **Get out of the conference room.** Because customers often don't realize and cannot vocalize specific needs, it is important to listen and observe what they do. This is especially important for companies that tend to invite customers to their own premises. When a firm hosts its customers' visits on the premises, the visits tend to take place in the company's visit center. Such a policy may cut costs and save time in the customer visit program, but it puts the customers in a passive role; the company is typically show-casing its products and giving VIP treatment to customers.
4. **Take every opportunity to ask questions.** Customer visit programs are useful not only for new-product development ideas but also for customer satisfaction studies, identification of new market segments, and a myriad of other issues. Interesting questions to ask include:
 - If you change any one thing about this product, what would it be?
 - What aspects of your business are keeping you awake at night?
 - What things do we do particularly well or poorly, relative to our competition?
 - What things do we do particularly well or poorly, relative to our expectations?
5. **Conduct programmatic visits.** A systematic approach including between 15 and 40 visits will yield a depth of understanding and illumination that can go well beyond what a few scattered visits can offer. It is important to coordinate the visits so that customers are not confused and irritated by a series of haphazard visits from different divisions and levels in the firm. Promptly log and review customer visits in a central database. Reviewing all profiles that are kept in a central database allows firm to spot trends, define segments, identify problems and glimpse opportunities (McQuarrie, 1995, pp. 9-21).

5.4 Emphatic Design

The process of using emphatic design tools is very similar in flavor to the notion of

customer visits. Being market oriented in high-tech markets means that observation of customers (what they do) is often more useful in developing novel insights than is asking customers more direct questions (what they say). Emphatic design, or contextual inquiry in Microsoft's terminology, is a research technique based on the idea that users may not be able to articulate their needs clearly. It focuses on understanding user needs through empathy with the user world, rather than from users' direct articulation of their needs. For example, users may have developed "workarounds" – modifications to usage situations that are inconvenient yet so habitual that users are not even conscious of them. Or customers may not be able to envision the ways new technology could be used. Based in anthropology and ethnography, emphatic design allows the marketer to develop a deep understanding of the current user environment, to extrapolate the evolution of that environment into the future, and to imagine the future need that technology can satisfy (Leonard-Barton & Rayport, 1997, pp. 102-113).

5.4.1 Process to Conduct Emphatic Design

Leonard-Barton and Rayport (1997, pp. 102-113) offer a five-step process to conducting emphatic design.

1. **Observation.** At the first step of undertaking an emphatic design study, researchers should clarify the following:
 - **Who should be observed?** Although "customers" is a logical answer, often non-customers, customers of customers, or a group of individuals who collectively perform a task may provide useful information.
 - **Who should do the observing?** Differences in perception and background lead different people to notice very different details when observing the same situation. Hence, it is best to use a small cross-disciplinary team to conduct observational studies. Members should be open-minded and curious, and they should understand the value of observation. For this reason, hiring trained ethnographers to assist in the study is useful. Moreover, those who know the capabilities of a particular technology are often not the ones who are in contact with the customer (who knows what needs to be done). Hence, the process of conducting emphatic design requires cross-functional collaboration between marketing and R&D.
 - **What behavior should be observed?** It is important to observe the "subjects" in as normal an environment as possible. Although some believe that observation changes people's behavior (which is probably unavoidable), some alternatives to observation are experiments in highly artificial lab settings or focus groups, both of which also have limitations. The idea here is to gather new kinds of insights that other research techniques cannot.

2. **Capture the data.** At the second step of the emphatic design process, researchers need to establish how to record the information. Most data from emphatic design projects are gathered from visual, auditory, and sensory cues. Hence, photographs and video graphs can be useful tools that capture information lost in verbal descriptions, such as spatial arrangements.

Whereas standard research techniques may rely on a sequence of questioning, emphatic design asks very few questions other than to explore, in a very open-ended fashion, why people are doing things. Researchers may want to know what problems the user is encountering in the course of the observed activity.

3. **Reflection and analysis.** At the third step, the different team members and other colleagues review the team's observations contained in the captured data. The purpose is to identify all of the customers' possible problems and needs.
4. **Brainstorm for solutions.** At the fourth step, brainstorming is used to transform observations into ideas for solutions.
5. **Develop prototypes of possible solutions.** At the fifth, researchers need to consider more concretely how possible solutions might be implemented. The more radical an innovation, the harder it is to understand how it should look and function. Researchers can stimulate useful communication by creating some prototype of the idea. Such prototypes, because of their concreteness, can clarify the concept for the development team, allow insights from others who weren't on the team, and stimulate reaction and discussion with potential customers. Simulations and role playing can be useful prototypes when tangible representations of the product cannot be made.

Increasingly, high-tech firms, such as Hewlett-Packard, IBM, Motorola, and Intel, are using emphatic design to augment their traditional marketing research practices. They are hiring social scientists, anthropologists, and psychologists to help them figure out how people use products. By observing customers in their work environments and other natural settings, the research technique helps to close the gap between what people say they do and what they really do. Ethnographers tend to study relatively few subjects, chosen with great care, looking for big insights rather than statistical data.

5.4.2 Example

How does Intel learn about how customers work and use electronic equipment? How does the knowledge it learns help Intel design more effective products in the future? Intel has hired an eight-person team of "design ethnographers" who go to customer sites to observe customers in their natural settings. Their goal is to learn how

customers navigate their daily environments so that they can then use this information to help Intel design more effective products in the future (Takahashi, 1998, pp. B1, B22).

At first, the corporate culture within Intel – particularly the R&D folks – did not take the ethnographers seriously. Indeed, their presence was an acknowledgment put them at odds with most other employees. But the success rate when technical engineers design what they think other people want is only 20 percent, says former Intel chairman, Andy Grove. For example, Grove believes that Intel wouldn't have sunk millions of dollars into its Proshare videophone, introduced by Intel in the early 1990s, if it had done more ethnographic research. The quality of the videos was slow, jerky, and not synchronized with the sound. However, Intel loved the phone because it required significant computing power, based on the underlying microprocessors. Yet consumers hated it, because the out-of-sync video resulted in miscues when people nodded or shook their heads (Takahashi, 1998, pp. B1, B22).

So, Intel has used emphatic design in a variety of industries and with different customer groups to gain new insights. For example, its design team has spent time observing people working in the salmon industry off the coast of Alaska. The team was trying to understand how technology, such as satellite-guided locators instead of helicopters to monitor fishing boats, would help. Other insights have come from observing business owners. In observing their harried schedules, the design team learned that businesspeople needed a tool to capture all the messages and phone numbers they write down on self-stick notes, such as an electronic organizer that recognizes handwriting (Takahashi, 1998, pp. B1, B22).

Does the nature of being observed change people's behavior? The Intel team finds that most people love to be observed and eventually lower their guard when they are being studied by the researchers. And ethnographic researchers are masters at getting people to feel at ease under observation. For example, one of the Intel team members has spent hundreds of hours with teenagers in their bedrooms, using videotapes to catalog their behaviors and belongings, from dirty laundry to posters. His goal is to find out more about how they live and what technology they might find useful. Some of his insights: Teens should be able to send pictures to each other instantaneously, over phone lines to computers and into flat-display beside picture frames. They also need handheld computers that allow them to communicate schedule changes to their parents when they're out and about. The bottom line is that what user does with a product, rather than what the product can do, ultimately drives its success (Takahashi, 1998, pp. B1, B22).

5.5 Lead Users

Another research technique helpful in high-tech environments is the lead user process. Used to generate ideas for breakthrough innovations, the lead user process

collects information about both needs and solutions from the leading edges of a company's target market and from markets that face similar problems in a more extreme form. The types of customers that tend to innovate are lead users – customers that are well ahead of market trends and have needs that go far beyond those of the average user (von Hippel, 1986, pp. 791-805).

Lead user may face needs months or years before the bulk of the marketplace and, as such, are positioned to benefit significantly by obtaining solutions to those needs now. In some cases, lead users may have even developed a solution to their needs that marketers can then commercialize for other users (von Hippel, 1978, pp. 3-11).

Eric von Hippel (1986, 791-805) advocates the use of a four-step process to incorporate lead users into marketing research. The process is conducted by a cross-disciplinary team that includes marketing and technical departments. The process can be time-consuming with each step taking about four to six weeks, and the entire process four to six months.

1. **Identify important market/technical trends.** Lead users are defined as being in advance of the market with respect to an important dimension, which is changing over time. Therefore, before one can identify lead users, one must identify the underlying trend on which these users have a leading position. "One cannot specify what the leading edge of a target market might be without first understanding the major trends in the heart of the market".
2. **Identify and question lead users.** Customers who are affected early on by significant trends often face product and process needs sooner than do others in a market. As such, they may be positioned to realize a relatively higher benefit from solutions to those needs than are others. In business-to-business markets, manufacturers typically have a better understanding of their key customers than may be possible in consumer markets. Hence, personal knowledge of customers may identify lead users, whereas survey may be used to identify lead users in consumer goods industries. A very practical method for identifying lead users involves identifying those users who are actively innovating to solve problems present at the leading edge of a trend.
3. **Develop the breakthroughs.** The team may begin this phase by hosting a workshop that includes several lead users who have a range of expertise, as well as a number of representatives from different areas of the company (marketing, engineering, manufacturing, etc.). During the workshop, the group combines insights and experiences to provide ideas for the sponsoring company's needs.
4. **Project the lead user data onto the larger market.** One cannot assume that today's lead users are similar to the users who make up the major share of

tomorrow's market. Firms must assess how lead user data will apply to more typical users rather than simply assume such data transfer in a straightforward fashion. Prototyping the solution and asking a sample of typical users to use it is one way to gather data to make the projection. Based on a determination of how the new concept fits the needs of a larger target market, the team will present its recommendations to senior managers. This presentation will include evidence about why customers would be willing to pay for the new products.

5.6 The Lead User Process At Work: 3M Corporation

3M EXAMPLE 1 (von Hippel, Thomke & Sonnack, pp. 47-57): MEDICAL IMAGING

Step 1: Identify important market/technical trends. A team focused on medical imaging knew that a major trend was the development of capabilities to detect smaller and smaller features in medical images - very early stage tumors, for example. Its initial goal was to develop new ways to create better high-resolution images.

Step 2: Identify and question lead users. Through networking with research experts in the field, the team identified a few radiologists who were working on the most challenging medical problems. They discovered some lead users in radiology that had developed imaging innovations that were ahead of commercially available products.

Networking to other fields that were even further ahead in any important aspect of imaging led the team to specialists in pattern recognition and people working with images that show the fine detail in semiconductor chips. The lead users in pattern were very valuable to the team. Military specialists relied on computerized pattern recognition in reconnaissance. These users had actually developed ways to enhance the resolution of the best images by adapting pattern recognition software. This discovery of the use of pattern recognition helped the development team refine its initial goal (developing new ways to create better high-resolution images) to finding enhanced methods for recognizing medically significant patterns in images, whether by better imaging or by other means.

Step 3: Develop the breakthroughs. In the course of a two-day lead user workshop, lead users with a variety of experiences were brought together: people on the leading edge of medical imaging, those who were ahead of the trend with ultra-high-resolution images, and experts on pattern recognition. Together, they created a solution that best suited the needs of the medical imaging marketplace and represented a breakthrough for the company.

3M EXAMPLE 2 (von Hippel et. al, pp. 47-57): INFECTION CONTROL

Another 3M team was charged with developing a breakthrough product for the division's surgical drapes unit, which designs the material that prevents infections from spreading during surgery. Surgical drapes are thin, adhesive-backed plastic films that adhere to a patient's skin at the site of the surgical incision prior to surgery. Surgeons cut directly through these films during an operation. Drapes isolate the area being operated on from the most potential sources of infections: the rest of the patient's body, the operating table, and the members of the surgical team. But drapes don't cover catheters or tubes being inserted into the patient. The drapes' cost prohibited market entry into less developed countries.

Step 1: Identify important market/technical trends. In looking for a better type of disposable surgical draping, the team first had to learn about the causes and prevention infections by reading research articles and interviewing experts in the field. Then, the team gathered information about important market trends in infection control. During this process, the team realized it didn't know about the needs of surgeons in developing countries where infectious diseases are still major killers, so the team traveled to more hostile surgical environments to learn how people keep infections from spreading in those operating rooms. Some surgeons combated infections by using cheap antibiotics as a substitute for more expensive measures. The team saw a coming crisis with the doctor's reliance on antibiotics: Bacteria would become resistant to the drugs.

Step 2: Identify and communicate with lead users. The team networked to find the innovators at the leading aedge of the trend toward much cheaper, more effective infection control. As is usually the case, more cheaper, more effective infection control. As is usually the case, some of the most valuable lead users turned up in surprising places. For example, specialists at leading veterinary hospitals were able to keep infection rates very low, despite facing difficult conditions ans time constraints. As one vet said, "Our patients are covered with hair, they don't bathe, and they don't have medical insurance, so the infection controls we use can't cost much."

Another surprising source of ideas was from Hollywood: Makeup artists in Hollywood are experts in applying materials that don't irritate the skin and are easy to remove. Because infection control materials can be applied to the skin, those attributes were very important.

Step 3: Develop the breakthroughs. During the lead user workshop, the participants were invited to brainstorm about revolutionary ideas for low-cost infection control. The outcomes of this session were the following ideas:

- An economy line of surgical drapes, made with existing 3M technology, targeted to the increasingly cost-conscious medical world.

- A “

5.7 Quality Function Deployment

Quality function deployment (QFD) is an engineering tool that first identifies what the customer's requirements are (through customer visits, emphatic design, working with lead users, etc.) and, second, maps those requirements onto the product design process (Concept Engineering, 1995). The basic idea in quality function deployment is to use the voice of the customer in the new-product development process to ensure a tight correlation between customer needs and product specifications (Griffin & Hauser, 1993, pp. 63-73). Mohr, Sengupta and Slater (2005, p. 147) continue that the process prioritizes and ensures that all design decisions take into account the importance of that design requirement from the customer's perspective. The ultimate outcome is a new product that provides superior value to the marketplace via a customer-informed design team. It requires close collaboration between marketing, engineers, and customers.

The implementation of QFD is a multistage process, including the following (Concept Engineering, 1995):

- Collect the voice of the customer. Through customer visit programs or emphatic design, identify customer needs, in the customer's own words, regarding the benefits they want the product to deliver. Roughly ten to twelve customers will yield close to 80 percent or more of the customers' needs (assuming a relatively homogeneous market segment). These desired benefits and attributes can be weighted or prioritized to help the product development team in design tradeoffs later (e.g., to trade off processing speed versus price, in the case of a computer chip).
- Collect customer perceptions of competitive products. Surveys of customers can be used to assess how well current products fulfill customer needs. These data are an important component in identifying any gaps or opportunities in the market.
- Transform customer insights into specific design requirements. Sometimes called customer requirements deployment, the idea in this step is to identify the product attributes that will meet the customers' needs. It is important here to understand the interrelated nature of various attributes. For example, although customers may want more speed in processing, they may also want a lower price. This step is sometimes also referred to as the house of quality, or the planning approach that links customer requirements, competitive data, and design parameters.

5.8 Prototype Testing

A prototype testing is a model of the ultimate product or service. As a model, the prototype may provide only the essential elements of the planned final product while

ignoring minor or purely supporting elements. The first test in prototype testing is against the technical design specifications. If the prototype does not meet specifications, appropriate adjustments are made. When it does meet specifications, the prototype is then evaluated by potential customers (Mohr et al., 2005, pp. 151-152).

5.9 Gathering Competitive Intelligence

Another vital element in the information arsenal for the high-tech marketer is competitive intelligence. Competitive intelligence is information about competitors: who they are, their products, their marketing strategies, and likely responses to the marketing strategies of other firms in the market. Effective competitive intelligence provides solid knowledge of the market, customers, and competitors; quick response time; and superior strategy based on identification of threats and opportunities. Competitive intelligence provides firms with an early warning system to ward off disasters. Indeed, “the essence of smart competitive management is an action that preceded its obvious time,” (Gilad, 1995, pp. 32-36).

For competitive intelligence programs to work, they must affect the mindset and decisions of the people whose actions most significantly affect the bottom line – namely, top management. Moreover, effective competitive intelligence programs are much more than mere passive watching of the market (i.e., competitive monitoring); rather, firms that are skilled at reading signals from the market actually develop a core competency in understanding the competition. To do so, they must find it safe to challenge the status quo, to bring an outside perspective, and to be unconventional. It can be difficult to gather competitive intelligence in high-tech markets. Sometimes one does not think to look outside the industry for competition. As a result, firms must monitor related industries for competitive moves (Mohr et al., 2005, p. 153).

The flipside of gathering competitive intelligence is sending competitive signals. Indeed, some firms proactively attempt to send signals to competitors in the marketplace via a variety of mechanisms (Mohr, 1996, pp. 245-268). Mohr, Sengupta and Slater (2005, p. 156) then continue in another work with an example, pre-announcing of products, or the announcement of a firm’s intention to release a product in the future, is commonly used and can preempt competitors by postponing customers’ buying decisions. Firms can send competitive signals by sharing information within industry contacts, customers, or distributors; the information will eventually be disseminated to others.

5.10 Forecasting Customer Demand

Forecasting future sales of high-tech products is difficult for many reasons. Quantitative methods typically rely on historical data, but for radically new products, there are no historical data. Moreover, data obtained through traditional techniques

are of dubious value, because it is difficult for customers to articulate their preferences and expectations when they have no basis for understanding the new technology. Forecasting tools can be categorized into quantitative and qualitative tools. Basic quantitative tools include moving averages, exponential smoothing, and regression analysis. As noted previously, because of their reliance on historical data – which are often nonexistent in a new high-tech marketplace – quantitative methods may not be available in high-tech markets. Qualitative forecasting methods, such as the Delphi and morphological methods may be more applicable (Mohr et al., 2005, p. 157).

The Delphi method is probably the most common qualitative method. In this technique, a panel of experts is convened and asked to address specific questions, such as when a new product will gain widespread acceptance. These experts are purposefully kept separate, so that their judgments will not be influenced by social pressures or group influences. The answers to initial questions are sent back to the participants, who are asked to refine their own judgments and to comment on the predictions of the others, in an attempt to find consensus. Anonymity among the panel members allows for open debate (Mohr et al., 2005, p. 157).

Mohr argues (2005, p. 137) this method does have limitations, including lack of reliability assessment and potential sensitivity to the experts selected, such limitations also apply – possibly even more so – to other subjective estimates. Selection of the experts also warrants careful attention. Experts from the industry in general, including lead users, can offer their knowledge as a useful benchmark against the estimates generated internally by a firm. Another useful forecasting tool in high-tech markets relies on analogous data to make inferences about the new technology. The basic idea is to use data about another product currently on the market, or one that existed at an earlier time, to forecast a new product's expected growth pattern. This technique is valid only to the extent that the analogy holds true. The degree to which the analogy is appropriate depends on the logical connection between the products involved.

Additional techniques might also be useful in making forecast for high-technology products. The information acceleration (IA) technique relies on a virtual representation of a new product to assist in product development and forecasting (Urban, Hauser, Qualls, Weinberg, Bohlmann & Chicos, 1997, pp. 143-153). Such representations are more vivid and realistic than are traditional concept descriptions and less expensive than relying on actual prototypes. Hence, they provide a useful middle ground between traditional concept descriptions and actual physical prototypes. Feedback from customers is obtained through the use of the virtual representation of the new-product idea (Mohr et al., 2005, p. 158).

5.11 Other Considerations in Forecasting

Whichever forecast method or combination of methods is used, the forecasters must ensure that bias does not enter into the forecast due to personal or organizational desires of success for the technology. Stakeholders in new technology often inflate predictions of its future success, and “since their bullish statements of technical potential are often misleadingly packaged as precise market forecasts, unwary businesses and investors often suffer.” Marketing researchers can avoid bias by studying a new technology’s potential buyers, who have less of a stake in its success. However, this is typically not done due to the fact that the group of potential customers can be difficult to reach, making accurate market research expensive and time-consuming (Brody, 1991, p. 38).

Many times, decision makers are less than confident in the prepared forecast for a certain technology, and this lack of confidence can sometimes lead to indecisiveness or bad decisions. Although forecasting demand for new technologies is difficult, it is often critical to provide information to decision makers. Forecaster should keep in mind that success of the forecast is not based on whether it comes true, but on quality of information provided to the decision makers who are the end users of the forecast (Mohr et al., 2005, p. 159).

CONCLUSION

How to characterize high-technology environment, which are the sources that have crucial impact? Market uncertainty is the first source and defines environments customer, do they actually exist or if there is potential market for the product or innovation. Next source technological uncertainty refers to vagueness if the technology is able to function as promised and meet customer needs. The last one competitive volatility defines firms' competitive environment. Furthermore, to attract customers a firm has to be aware of the type of innovation, radical or incremental, and be able to tailor marketing to the type of innovation.

Effective R&D-marketing interaction and being market oriented is another vital factor on firms' performance. To begin with, firms has to gather information from the market, communicate it through the company, consider gathered information when making decisions and finally decision is made in coordinated way.

Understanding customer behavior is the basis to develop effective marketing strategies. There are five categories of adopters. Innovators are usually the first customers, very technology oriented and key to moving to another category. Early adopters seek for a new technology that could help them gain competitive advantage. Early majority group intention is to adopt new technology only because it's on the market and not to gain competitive advantage, they act reactive. Late majority are pessimistic about technology investment, skeptical, and very demanding. Laggards are the group of customers with no intention whatsoever to buy something new. Characteristics differ from category to category and those differences are described as gaps between them. Most important gap to beat is between the early adopters and early majority, it is called the chasm.

Uncertainty is in high-tech markets a key point on the road to success. Final customers are the main target when selling product or service and in high-tech markets it is difficult to imagine what is the added value of the new technology if customer aren't acquainted how to use it. It is most likely they are not even aware of needs they have. To avoid those problems, a firm has to cautiously collect information from the market. Not only on competitors, marketers have to cautiously work on gathering information on customers, how they behave, why so, and incorporate them in the development process. Unsatisfied customer can jeopardize firms' success that is why companies have to work hard to get familiar with their psychology and their habits. There has always existed a clash in the mindset of technical people and users, who are in fact customers. Technical people do not understand users, users don not understand technical people. This gap or clash can be avoided by using high-tech research tools and put attention to results. Proper interpretation of results could bring firms' to another stage in their lifecycle, to a higher one and more profitable one.

POVZETEK V SLOVENŠČINI

UVOD

Tehnološki napredek v današnjem svetu je povzročil, da razvrščanje industrije med visoko ali ne, ni tako preprosto kot bi marsikdo pričakoval. Ravno tako je zavajajoče metati v en koš vsem poznano industrijo in visoko industrijo. Tudi kmetijstvo, težka industrija ali storitve so del visoke industrije.

Diplomska naloga se začne z uvodom v svet visoke tehnologije. Prvo poglavje, poleg glavne definicije visoke tehnologije, še predstavi kako prilagoditi strategije trženja glede na vrsto inovacije, postopno ali radikalno. Podjetja morajo za uspešno delovanje na trgu posebiti miselnost tržne usmeritve in pozabiti trženjsko usmerjenost. Avtorja Kohli in Jaworski (1990, str. 1-18) v svojem delu opisujeta tržno usmerjeno podjetje kot tisto, ki zbira, širi in koristi informacijo s trga pri sprejemanju poslovnih odločitev.

Za preživetje podjetja je izredno pomembno poznavanje potrošnikovega obnašanja pri nakupnem procesu visokotehnološkega izdelka. Proces odločanja Pomembnost tega sem opisal v posebnem poglavju, kjer so predstavljene tudi same kategorije potrošnikov. Ravno tako sem hotel opisati problematične točke pri osvajanju različnih kategorij kupcev, pri čemer sem izpostavil glavno, imenovano »brezno«, saj je uspeh podjetja na trgu življenjsko odvisen od te točke. V kolikor podjetju ne uspe preskočiti te ovire, propade.

Glavni cilj naloge je bil predstaviti pregled raziskovalnih orodij, katere tržniki lahko uporabijo pri raziskovanju obnašanja kupcev in povpraševanja na trgu. Visokotehnološka podjetja imajo možnost izbirati med več orodji, vendar mora biti uporaba le-teh prilagojena vrsti inovacije. V nalogi sem podrobno predstavil tako teoretično kot tudi s praktičnimi primeri orodja kot so izbira koncepta, skupna analiza, programi interakcije s strankami, izrazit načrt, glavni uporabniki, razvijanje kvalitetnih funkcij, testiranje prototipa in zbiranje informacij o konkurenci.

DEFINICIJA VISOKE TEHNOLOGIJE

S tem, ko se uporaba visoke tehnologije širi tudi med v industrijo najbolj osnovnega tipa, se poraja vprašanje – kaj sploh je visoka tehnologija? Ali je to vrsta industrije, katere proizvod je tehnologija? Ali pa je to smer industrije, ki intenzivno uporablja tehnologijo? Kaj sploh je tehnologija? Tehnologija je zaloga relevantnega znanja, ki pripomore k razvoju novih tehnologij in vključuje tako končne izdelke kot napredek v izkušnjah. Produktivna tehnologija pokrije vse ideje za proizvod tako, da jih utelesi v izdelek in njegove sestavne dele, procesna tehnologija pa obsega ideje, ki se pojavljajo pri samem procesu proizvodnje. (Capon & Glazer, 1987, str. 1-14).

Če je tehnologija uporabno znanje, kaj je potemtakem visoka tehnologija? Za visoko tehnologijo obstaja skoraj toliko definicij kot je ljudi, ki se s tem ukvarjajo. Ena definicija, na primer, definira visoko tehnologijo kot (Technology, Innovation, and Regional Economic Development, 1982):

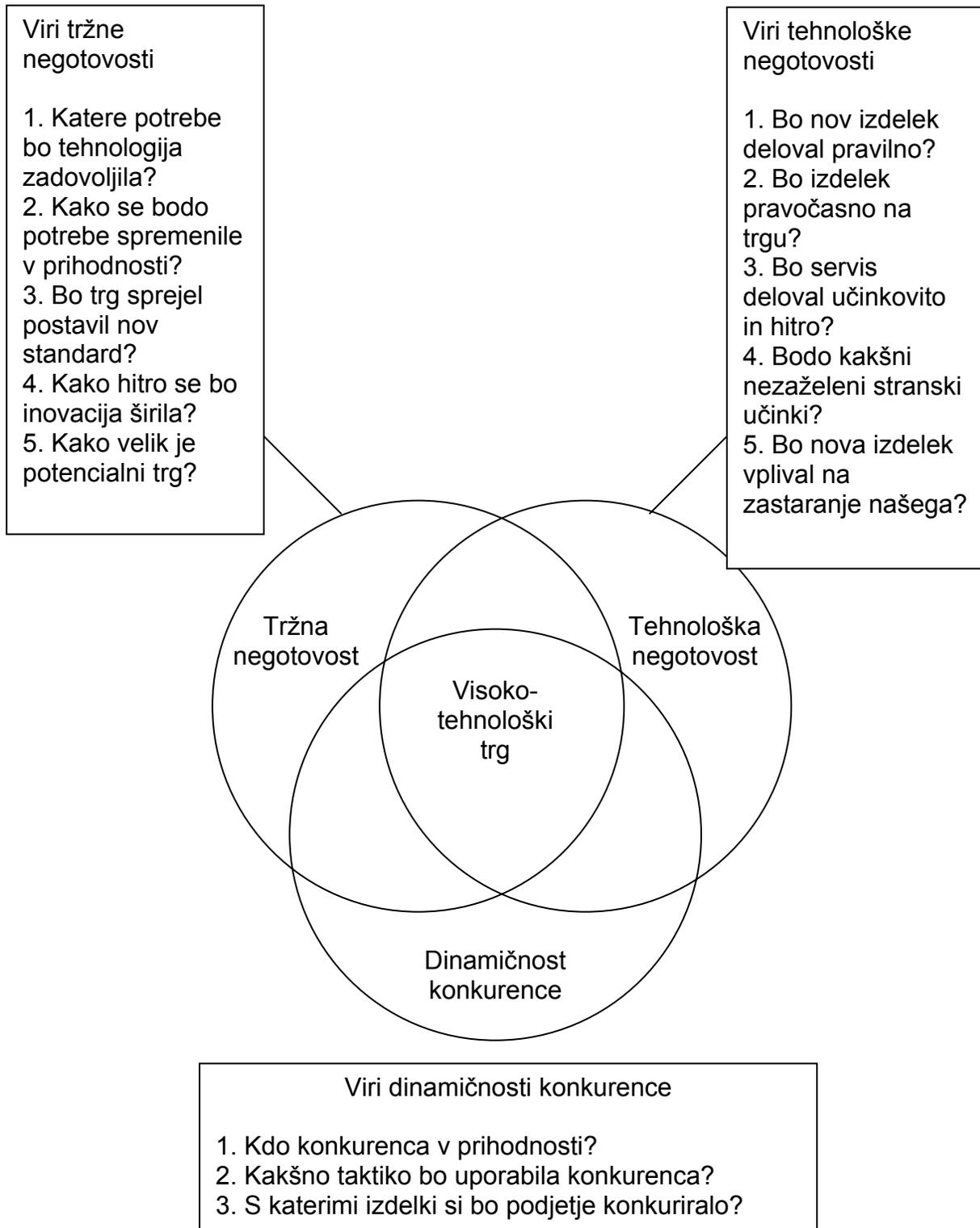
“tehnološko smer, ki se loteva dizajna, razvoja in predstavitve novih izdelkov ter inovativnega procesa izdelovanja, kar doseže s sistematičnim uporabljanjem znanstvenega in tehničnega znanja.”

Tržna negotovost se navezuje na nejasnost, ki nastane ob uvedbi nove tehnologije iz vidika potrošnika, kako bo ta tehnologija sposobna zadovoljiti njegove potrebe. Tehnološka nejasnost je predvsem nepoznavanje ali je nova tehnologija oz. produkt sploh sposoben zadovoljiti potrebe glede na obljube podjetij (Moriarty & Kosnik 1989). Tretja lastnost visokotehnoloških trgov je dinamičnost konkurence, ki se nanaša na spremembe v konkurenčnem okolju; kdo so konkurenti, njihova ponudba in orodja, ki jih uporabljajo pri preboju na trg (Mohr et al., 2005, str. 10).

Radikalne inovacije so tako drugačne od obstoječih navad in potreb, da se ne morejo primerjati z njimi. Ustvarjajo popolnoma nove trge in s tem zaposlujejo nove tehnologije (Abernathy, Utterback, 1978, str. 41-47). V standardnem marketinškem izrazoslovju so poimenovane tudi kot nekontinuirane. Nekateri radikalne inovacije poimenujejo kot revolucionarne (Shanklin & Ryans, 1984, str. 164-171), in so nastale na ponudbeni strani (Maney, 1999, str. 164-171).

Na drugi strani imamo postopne inovacije, pri katerih gre za nadgrajevanje obstoječih izdelkov oz. storitev že poznanih na tržišču. Oboji, proizvajalci in kupci imajo jasno predstavo o izdelkih in njihovih lastnostih (Shanklin & Ryans, 1984, str. 41-47).

Slika 1: Značilnosti visokotehnoloških trgov



Vir: Mohr et al., 2005, str. 6.

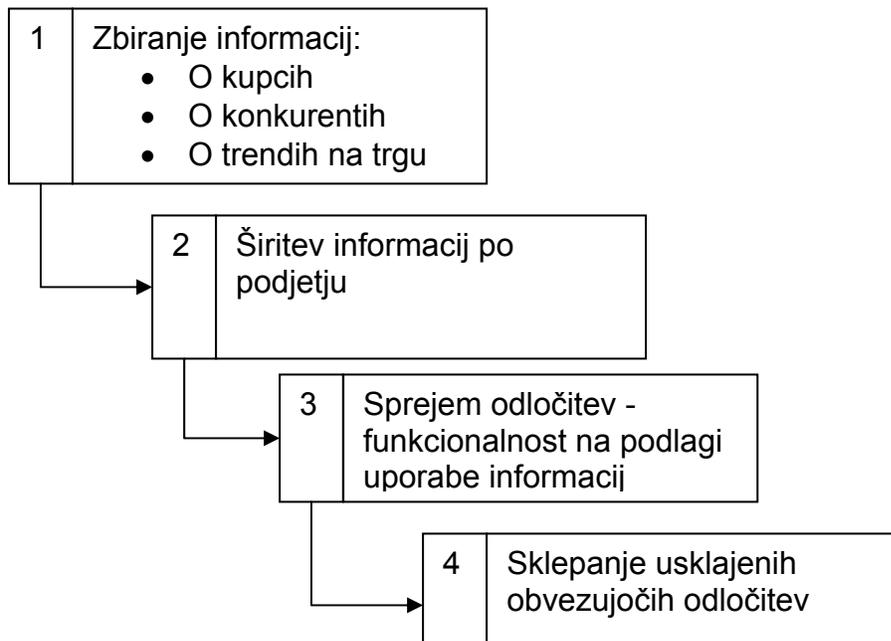
TRŽNA ORIENTIRANOST

Shapiro (1988, str. 119-225) pravi, da je pomembno ločevati med izrazoma tržna orientacija in marketinška orientacija. Marketinška orientiranost lahko namiguje na to, da imajo ljudje, ki se s tem ukvarjajo, nesorazmeren vpliv na marketinške dejavnosti ali pa, da so marketinške dejavnosti vir konkurenčne prednosti podjetij. Po drugi strani pa v tržno orientiranih podjetjih ne obstaja prevladujoča funkcija posameznika ali pa koalicija posameznikov, ki bi bila venomer na tem položaju. Pravzaprav lahko tukaj vodenje prevzame vsaka skupina, vsaj dokler so njeni člani predani svojemu delu, ki pomeni nenehno ustvarjanje izdelkov s prevladujočo vrednostjo za stranke. In medtem ko so marketinške dejavnosti lahko vir konkurenčne prednosti, se lahko le-ta pojavi tudi kot rezultat tržno usmerjenih veščin v R&D ali pa med razvojem izdelkov. Podjetje ne more biti v celoti tržno usmerjeno če celotna organizacija ni predana ustvarjanju konkurenčnih izdelkov za stranke.

Kot je možno videti na Sliki 2, podjetje, ki je tržno orientirano, poudarja zbiranje raztrošenih delcev v celoto in koriščenje tržnega poznavanja kot podlage za sklepanje odločitev (Kohli & Jaworski, 1990, str. 1-18).

Slika 2: Tržna Orientacija in R&D Interakcija v visokotehnoloških podjetjih

Tržno usmerjeno podjetje



Vir: Mohr et al., 2005, str. 111.

KATEGORIJE KUPCEV

Vsaka kategorija kupcev ima unikatne lastnosti. Moore (2002) definira stopnje teh razlik kot vrzeli med vsako skupino na tržišču. Te vrzeli predstavljajo potencialne težave, ki jih bo imela vsaka skupina pri sprejemanju novega izdelka, če ji je predstavljen na isti način kot je bil predstavljen predhodni skupini. Vsaka od vrzeli predstavlja verjetnost, da trgovina izgubi zagon, da zgreši prehajanje k naslednjemu delu in da nikoli ne pridobi vodstva v marketingu, vodstva, ki pride s prodajo izdelka množicam. Razlike med manjšim trgom (inovatorji in zgodnjo večino) in širšim trgom (manjša večina) so bolj izrazite kot razlike med ostalimi kategorijami, in si zato zaslužijo posebno pozornost.

Tabela 1: Kategorije kupcev

Inovatorji	Ljudje, ki so izrazit pripadnik novi tehnologiji na podlagi tega, da nam bo visoka tehnologija prej ali slej izboljšala življenja. Prav tako jim je v veselje obvladovanje njene zamotanosti, samo igrakanje z njo, radi pa se polastijo tudi najnovejših in najboljših novih izdelkov, inovacij, torej so v bistvu prve stranke, ki kupijo nekaj, kar je predstavljeno kot novost na trgu.
Prvi kupci	Prva skupina, ki lahko in bo prinesla denar v proračune. Pomagajo reklamirati nove inovatorje, kar jim pomaga pri uspehu na zgodnjem tržišču, saj jim da potreben zagon.
Zgodnja večina	Skupina ljudi, ki opravi veliko večino nakupov tehnološke infrastrukture. Tehnologije ne ljubijo zaradi nje same, ampak iščejo predvsem povečanje zmogljivosti in produktivnosti. Verjamejo v evolucionarne in ne revolucionarne izdelke in inovacije.,
Pozna večina	Te stranke so pesimistične kar se tiče njihove sposobnosti iz trženja kakršnekoli uporabne vrednosti njihovih investicij v tehnologijo, zato se tehnoloških podvigov lotevajo le pod pritiskom, ponavadi zaradi tega, ker je edina preostala alternativa temu to, da pustijo, da svet in življenje bežita mimo njih. Občutljivi so glede cen, zelo skeptični in zelo zahtevni.
Zamudniki	Niso preveč potencialni kupci, so pa zelo kritični. Zaradi teh njihovih lastnosti je cilj visokotehnološkega trga izdelkov ne prodajati njim, temveč raje ljudem okoli njih.

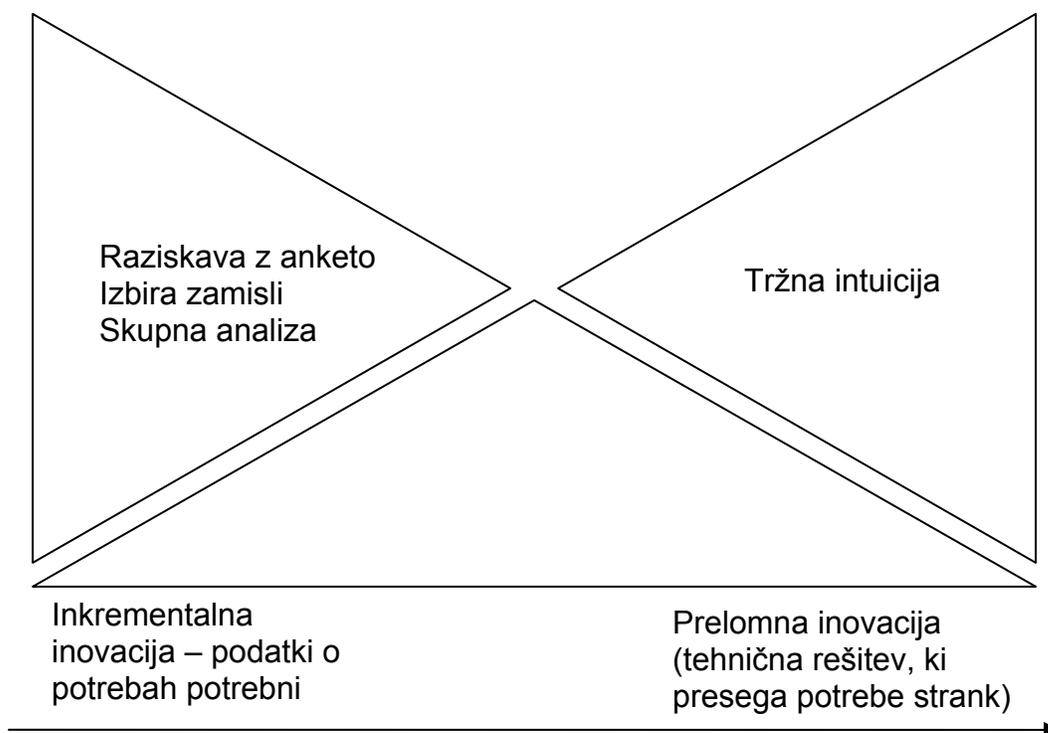
Vir: *Mohr et al., 2005, p. 177.*

ORODJA ZA RAZISKAVO VISOKOTEHNOLOŠKIH TRGOV

Visokotehnološke sfere so polne sprememb in nezanesljivosti. Stranke imajo težave s predvidevanjem, kako lahko nove tehnologije zadostijo njihovim potrebam. Ne zavedajo se tega, da so nove tehnologije sposobne rešiti trenutne probleme ter kaj vse nove tehnologije dejansko zmorejo. Mogoče se celo ne zavedajo potreb, ki jih imajo sami. Še več, v takšnem okolju morajo podjetja še pospešiti proces razvoja izdelkov ter s tem posledično zmanjševati količino časa, ki preteče od same ideje do postavitve izdelka na tržišče. Uspešna podjetja na visokotehnološkem tržišču zbirajo uporabne informacije, ki jih nato vodijo pri sklepanju odločitev (Mohr et al., 2005, str. 134).

Kot prikazuje Slika 3, morajo biti metode raziskave iste vrste kot tip inovacije oz. produkta, ki je v razvoju (Leonard-Barton, Wilson & Doyle, 1995, str. 281-305). To je skladno z naključnostno teorijo visoko tehnološkega marketinga. Za rastoče inovacije se procesi razvoja novih izdelkov spogledujejo s trenutnim stanjem na tržišču. Potrebe strank so splošno znane in tradicionalne marketinške raziskave lahko podjetjem pomagajo pri razumevanju teh potreb. Res je, da so tradicionalne marketinške raziskave najbolj učinkovite, ko je izdelek ali storitev pri strankah dobro sprejeta, ali pa takrat, ko stranka pozna možne rešitve zaradi podobnih izkušenj iz drugih področij. Metode Tradicionalne marketinške raziskave vedno vključujejo poizvedovanje tudi po enem izmed ogromno izvrstnih virov za raziskave (Churchill & Iacobucci, 2001).

Slika 3: Povezovanje raziskovanja trga z vrsto inovacije



Vir: Leonard-Barton, Wilson & Doyle, 1995, str. 281-305.

Izbira koncepta

Eden izmed večjih izzivov med razvojem novega izdelka visoke tehnologije je brez dvoma izbiranje koncepta ter oženja izbora zamisli za proizvode enega za drugim, dokler ne ostane le še eden, ki je izbran kot ustrezen oz. najboljši (Mohr et al., 2005, str. 135).

Skupna analiza

Avtorji Mohr, Sengupta in Slater (2005, str. 136) opisujejo skupno analizo kot nekakšno anketo, pri kateri so vprašani naprošeni, da podajo ocene in njihova mnenja o lastnostih in kakovosti izdelkov, lastnostih kot so cena, blagovna znamka, hitrost, garancija, tehnične storitve ponudnikov itd. Možnih odgovori na vprašanja o teh lastnostih nihajo od visokih do nizkih cen, priznanih blagovnih znank ali takšnih, pri katerih dobiš več za isti denar, itn. Prvi cilj je določiti izdatke, ki so jih vprašani pripravljene nameniti v povezavi s serijo vprašanj na vprašalnikih, ki so jih izpolnili.

Programi interakcije s strankami

Mohr, Sengupta in Slater (2005, str. 136) opisujejo programe obiskovanja strank oz. sistematičen program obiskovanja strank kot delovanje ekipe, katere člani so strokovnjaki na veliko področjih, kar privede k razumevanju potreb potrošnikov, kadar pa svojo nalogo opravijo kar se da dobro, pa lahko to vodi tudi k vidnejšemu poznavanju in koristim za trgovce z visoko tehnologijo.

Ideja za uporabo obiskovanja strank kot metodo raziskave trga se je razvila kot odgovor na izzive, pred katere je bilo postavljenih veliko menedžerjev v več industrijskih panogah. Obiskovanje strank je več kot le orodje za razvoj prijateljskih odnosov s strankami; obiski ponujajo celo vrsto koristi, vključujoč naslednje (Mohr et al., 2005, str. 136):

- **Zelo osebna komunikacija.**
- **Raziskava področij.**
- **Informacije iz prve roke.**
- **Interaktivni pogovori.**
- **Vključevanje strank med sklepalce pomembnih odločitev.**

Izrazit načrt

Proces uporabe značilnih načrtovalnih metod je zelo podoben v primerjavi z idejo obiskov strank. Biti tržno naravnano na trgu visoke tehnologije pomeni da je opazovanje potrošnikov (kaj delajo) pogostokrat bolj uporabno pri razvijanju poznavanja novitet kot pa je direktno spraševanje kupcev (kaj pravijo). Izraziti načrti

oz. iz konteksta razvidno povpraševanje, kot temu pravijo pri Microsoftu, je tehnika raziskave, ki ima podlago na ideji, ki pravi, da uporabniki tehnologije mogoče ne znajo jasno izraziti njihovih potreb. Osredotoči se na razumevanje potrošniških potreb, kar doseže z empatijo s svetom, v katerem živijo uporabniki določene tehnike, ne pa toliko na tisto, kar imajo o svojih potrebah uporabniki visoke tehnologije dejansko povedati (Leonard-Barton & Rayport, 1997, str. 102-113).

Glavni uporabniki

Še ena tehnika raziskave, ki pride prav v svetu visoke tehnologije, je proces vodilnih uporabnikov. Ker je uporabljen za izmišljevanje oz. plojenje idej za prelomne inovacije, proces vodilnih uporabnikov zbira informacije o tako potrebah kot rešitvah, ki jih dobi z vodilnih položajev ciljnih trgov podjetij in pa s tržišč, ki se soočajo s podobnimi problemi, le da v bolj kompliciranih in ekstremnih oblikah (Mohr et al., str. 141).

Razvijanje kvalitetnih funkcij

Razvijanje kvalitetnih funkcij (QFD) je inženirska metoda, ki najprej poizve o potrebah kupcev skozi obiske strank in z delom z vodilnimi uporabniki, nato pa te zbrane podatke zabeleži pri procesu načrtovanja izdelka (Concept Engineering, 1995). Osnovna naloga razvoja kvalitetnih funkcij je poslušanje in uporaba želja strank v procesu razvoja novih izdelkov, s tem pa zagotoviti tesno vzajemnost med izdelkom in potrebami strank (Griffin & Hauser, 1993, str. 63-73).

Testiranje prototipov

Testiranje prototipov je vzorec ultimativnega delovanja izdelka ali storitve. Kot model lahko prototip pokaže le osnovne elemente planiranega končnega izdelka, medtem ko ignorira določene manjše ali pa samo podporne elemente. Prvi test pri testiranju prototipa je preverjanje, ali lastnosti prototipa zadoščajo tehničnim specifikacijam. Če prototip ne zadošča specifikacijam, so narejene primerne spremembe. Ko prototip zadošča tehničnim specifikacijam, je ocenjen še s strani potencialnih strank (Mohr et al., 2005, str. 151-152).

Zbiranje informacij o konkurenci

Še en vitalni element, ki ne sme manjkati v informacijskem arzenalu trgovca z visoko tehnologijo, so informacije o konkurenci. Informacije o konkurenci trgovcu z visoko tehnologijo povedo naslednje: kdo spada med konkurenco, kateri so njihovi izdelki, njihove tržne strategije in kakšni so njihovi odzivi na marketinške strategije drugih podjetij na trgu. Učinkovita baza informacij o konkurenci prispeva k trdnemu poznavanju tržišča, strank in konkurentov; hiter odzivni čas; superiorna strategija, zasnovana na prepoznavanju morebitnih groženj in priložnosti. Zbrane informacije o

konkurenci prispevajo k zgodnjemu opozorilnemu sistemu podjetja, ki je tam zato, da štiti pred marketinškimi katastrofami. Torej drži, da je jedro pametnega konkurenčnega menedžmenta dejanje, ki je pred svojim časom (Gilad, 1995, str. 32-36).

Predvidevanje in napovedovanje zahtev potrošnikov

Predvidevanje prodaje izdelkov visoke tehnologije v prihodnosti je težko zaradi več razlogov. Kvantitativne metode se ponavadi nanašajo na pretekle podatke, a za čisto, nove izdelke informacije sploh ne obstajajo. Še več, podatki, pridobljeni s tradicionalnimi tehnikami, nimajo nobene gotove veljave, ker je potrošnikov njihova pričakovanja in izbire težko definirati, ko pa nimajo nobene podlage za lažje razumevanje novih tehnologij. Metode za predvidevanje in napovedovanje se lahko delijo na kvantitativne in kvalitativne. Osnove kvantitativne metode vključujejo opazovanje nestatičnih povprečij, eksponentno izboljševanje in analiza regresije. Kot že omenjeno prej, se kvantitativne metode preveč zanašajo na pretekle podatke, ki pogosto na novejših tržiščih z visoko tehnologijo sploh ne obstajajo, in so zato mogoče na novejših tržiščih nedosegljive. Kvalitativne metode predvidevanja, kot na primer Delphi in morfologijske metode, pa so po drugi stran bolj primerne za napovedovanje zahtev (Mohr et al., 2005, str. 157).

Metoda Delphi je najbrž najpogostejša kvalitativna metoda. Pri uporabi te tehnike se skliče skupina strokovnjakov, katere se naprosi, da imenujejo specifična vprašanja, kot na primer kdaj bo novonastali izdelek pridobil široko sprejemanje, odobravanje. Ti strokovnjaki namenoma delujejo ločeno zaradi tega, da njihova mnenja niso pod vplivom socialnih pritiskov ali pa vplivov iz skupine. Odgovori na začetna vprašanja so poslana vsem sodelujočim, ki so naprošeni, da podajo svoja lastna mnenja in da podajo komentarje na napovedi drugih, s čimer poskušajo najti skupne točke. Anonimnost med skupino strokovnjakov dovoljuje odprte razprave (Mohr et al., 2005, str. 157).

Ostali oziri napovedovanja

Velikokrat so ljudje, ki sklepajo odločitve, manj gotovi glede podane napovedi za določeno tehnologijo. Ta primanjkljaj gotovosti lahko včasih vodi k neodločnosti in k slabim odločitvam. Čeprav je napovedovanje zahtev potrošnikov glede tehnologije težko, je velikokrat ravno to tista kritična točka, ki tistim, kateri sklepajo odločitve, posreduje informacije. Napovedovalci morajo vedeti, da uspeh napovedi ne temelji na tem, ali se napoved uresniči, ampak na kvaliteti informacij, ki so jih podali odločevalcem, ki so na koncu koncev samo uporabniki napovedi (Mohr et al., 2005, str. 159).

ZAKLJUČEK

Kako opisati okolje, v katerem je visoka tehnologija, kateri so tisti viri, ki imajo odločilen vpliv? Nezanestljivost trga je prvi vir in definira stranke v tem okolju, njihov obstoj, če sploh je, in če obstaja potencialni tržišče za izdelek ali inovacijo. Naslednji vir je tehnološka nezanesljivost, ki se nanaša na nejasnost sposobnosti tehnologije delovati, kot je bilo obljubljeno ter zadostiti potrebam kupca. Zadnja konkurenčna spremenljivost opiše konkurenčno okolje podjetja. Še več, če hoče podjetje privabiti kupce, mora paziti, da se zaveda, katere vrste je njihov izdelek, radikalen ali v porastu, in da je sposobno zaradi izdelka oziroma tipa inovacije prirediti ves marketing.

Učinkovita R&D marketinška interakcija in to, da je podjetje tržno orientirano, je še en pomemben dejavnik, ki lahko pripomore k storitvam podjetja. Na začetku mora podjetje zbrati informacije s trga, jih razširiti po celotnem podjetju ter pretehtati zbrane informacije med sklepanjem odločitev in na koncu so odločitve sprejete usklajeno.

Razumevanje obnašanja strank je podlaga za razvoj učinkovitih tržnih strategij. Obstaja pet kategorij potrošnikov. Inovatorji so ponavadi prve stranke, zelo tehnološko usmerjeni in ključ k prestopom k ostalim kategorijam. Zgodnji potrošniki iščejo nove tehnologije zato, da bi jim pomagale pridobiti konkurenčno prednost. Zgodnja večina potrošnikov ima namen uporabiti novo tehnologijo kvečjemu zato, ker je na trgu, ne pa zato, da bi si pridobili konkurenčno prednost, ravno nasprotno. Pozna večina potrošnikov je pesimistična glede njihove investicije v tehnologijo, so skeptični in zelo zahtevni. Zamudniki in mečkači so skupina strank, ki sploh nima namena kupiti karkoli novega. Lastnosti se spreminjajo od kategorije do kategorije in te razlike so nekakšne vrzeli med njimi. Najpomembnejša vrzel, ki jo je treba zaobiti, je med zgodnjo večino potrošnikov in pozno večino potrošnikov, in je imenovana brezno.

Negotovost je pomembna točka na trgih visoke tehnologije, saj pomeni pot do uspeha. Končni kupci so glavne tarče prodaje izdelka ali storitve in na tržišču visoke tehnologije si je težko predstavljati, kakšna je dodatna vrednost izdelka, če kupci niso seznanjeni s tem, kako jo izkoristiti. Zelo je verjetno, da niso seznanjeni niti s potrebami, ki jih imajo. Da se bi tem problemom izognili, mora podjetje zbirati informacije s tržišča zelo pazljivo. Ne smejo biti pozorni je na konkurenco, trgovci morajo pazljivo delati tudi na zbiranju informacij o strankah, kako se obnašajo, zakaj se tako obnašajo, vključiti pa jih morajo tudi v sam proces razvoja izdelka. Nezadovoljne stranke lahko ogrozijo uspeh podjetja, zato morajo podjetja trdo delati na tem, da se spoznajo z navadami in psihologijo kupcev. Vedno so obstajala nesoglasja med mišljenjem tehničnih oseb in uporabnikov njihovih storitev in izdelkov. Tehnični ljudje ne razumejo uporabnikov in uporabniki ne razumejo tehničnih ljudi. To

vrzel oz. nesoglasje se lahko zaobide z uporabo visokotehnoloških metod za raziskavo ter posvečanju več pozornosti rezultatom raziskav. Pravilno razumevanje rezultatov lahko podjetja privede do nadaljnjih stopenj v njihovem delovanju, k višjim in bolj dobičkonosnim stopnjam.

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