Holistic Product Development for New Product Success: Advancing Beyond Stage-Gate

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Abstract
Typically, stage-gate processes follow a linear path of product development. On this path, specific aspects of a product are independently developed using an atomistic approach to research. However, the consumer product experience is holistic, not atomistic, as it takes into account all aspects of a product. By ignoring this, an atomistic research approach produces situations in which product experiences fail to meet expectations or elicit positive emotive responses. These products crash in the marketplace. By moving towards holistic product development, companies attain an early 360 degree view of the consumer experience, which can be incorporated into product design over successive iterations. These companies achieve faster time to market with winning products.

Introduction
Most companies utilize a stage-gate process to develop and bring new products to market. However, the facts are that most new product introductions in the consumer packaged goods industry do not succeed. Since the 1990s reports have circulated that the industry average is 2% or less. So, what has happened here? Are these problems a result of poor research, ineffective innovation processes, inefficient product development processes or just a very dynamic marketplace?

Most companies utilize a stage-gate product development process where each stage is focused on optimizing certain aspects of the product (Cooper, 2001). The activities within successive stages increase costs and resources. Gates after each stage are used to control costs by killing projects that do not merit further attention. The stage-gate process is applied to sequentially identify the right opportunity, develop a compelling product concept, build the right product prototype, design and engineer the right packaging, and so on. The fact that companies have been experiencing low new product success rates for the last 15 years suggests the stage-gate process needs to be retooled. It suggests something is wrong in how the product components fit together into a cohesive product such that high expectations lead to trial and positive experiences lead to repeat trials.

Marketing and consumer product research bring the voice of the consumer into this process. The historical low success rates indicate a need to change the research paradigm. It is evidence of a widespread gap in corporate understanding of the consumer. Figure 1 shows the degree of disharmony between concept and product within a company’s...
product build stage. In most cases, purchase intent measures drop dramatically after a product is tried. Disharmony such as this indicates the process does not sufficiently focus project activities to gain an early understanding of the needs of the consumer. This knowledge gap leads to lack of focus, product rework and heightened risk of failure in the marketplace.

These problems are rooted in the linear, staged approach that most companies take in developing products. Stage-gate methods focus the activities of the development team on optimizing particular aspects of the product. This fosters an atomistic style of marketing research, oriented to help optimize in sequential order each aspect of the product. In other words, the “best” of each product component is found without regard to the product as a whole. Since the consumer product experience is holistic, not atomistic, a linear process is doomed to yield product disharmony and failure.

Know Thy Elephant
The atomistic approach to research brings to mind the story of the blind men and the elephant. In that story, a group of blind men come across an elephant. Each blind man touches and feels a different part of the elephant’s body. The first blind man feels a tusk of the elephant and calls the animal a spear. The second touches the elephant’s trunk and says the elephant is a snake. The third bumps into a sturdy leg and calls the elephant a tree. The fourth grasps the elephant’s tail and labels the animal a rope. The blind men break into a dispute over their perceptions and beliefs of the elephant. Although each is partly right, they are all in the end wrong. The moral here, quoted from John Godfrey Saxe, is communicated in this poem:

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\text{So oft in stages of development*} \\
\text{The disputants, I ween,} \\
\text{Rail on in utter ignorance} \\
\text{Of what each other mean,} \\
\text{And prate about an Elephant} \\
\text{Not one of them has seen!} \\
\text{\textit{*modified to suit our topic}}
\]

In our case, the elephant is the consumer product experience. Each stage of product development is narrowly focused on a piece of this experience. Our interpretation of each piece, without taking into consideration the rest of the experience, can lead, as with the blind men, to misguided notions. As marketers we often assume the concept with the highest purchase interest is “best” without regard for how the elements might be expressed into tangible product features. R&D engineers take the concept and focus their efforts in optimizing hedonic and utilitarian qualities without regard for how the tangible features of the product elicit emotions that drive behavior. Only at the validation stage is the whole product experience tested. As a result consumers experience disharmony in the form of unpleasant surprises and dissatisfaction. A product experience might be hedonically pleasing, but disappointing by not fulfilling expectations. A concept that over-promises might have high initial trial, followed by low repeat. All these paths lead to product failure.
To achieve product success rates higher than the dismal industry average, you must know thy elephant. You must understand, to the point of owning, the consumer product experience. This can only happen by embracing a holistic product development paradigm. This paradigm strives to achieve early 360 degree views of the consumer experience. Through an iterative, rather than linear, staged process the product definition is sharpened. This narrowing of an initial, broad holistic focus is distinctly different that the paradigm used in stage-gate processes. Instead of focusing on parts of the elephant, you bring into focus the elephant as a whole and sharpen that focus throughout the process. You don’t just understand the elephant. You make it yours. You know thy elephant.

Making the Shift to Holistic Product Development

A holistic paradigm shift is not as difficult as one might think. It requires little change in organization structure. Gates remain intact. The success criteria at each gate function similarly to manage risk and control costs. Project teams will need to learn how to achieve a more holistic focus. Marketing research must learn how to design robust research projects that yield a 360 degree perspective of the consumer experience. The HPD process can be viewed schematically as a spiral, rather than a linear process (Figure 2). In stage 0 opportunities are discovered, not by screening a bucket of diverse new ideas with consumers, but by using a combination of qualitative and quantitative methods to gain insights into existing consumer experiences such that a range of opportunities to satisfy unmet needs might be identified. In stage 1, these opportunities are evaluated to define a rough, holistic product description that elicits compelling emotional and/or rational responses among a defined consumer target. The target is defined and validated through a combination of qualitative and quantitative research that defines actionable segments with common concerns, motives, unmet needs and response behaviors to product experiences. In stage 2, a protocept (concept and rough prototype) is developed and tested to create a business case for the project. The target is recruited based upon consumer types discovered in stage 1. Gaps are discovered in emotional, functional and perceptual response behavior between concepts, prototypes and package mockups to define harmonization drivers. In stage 3, the protocept is refined into a full product definition focusing on harmonization drivers that achieve high utilitarian and hedonic value. In stage 4, the product is tested in-market leading to a launch decision.

The holistic paradigm maintains at all times a 360 degree view of the consumer experience and uses that view to sharpen the focus throughout the process such that the product definition achieves the project goals. HPD requires that marketing research be holistic, rather than atomistic. As many traditional marketing research methods are atomistic in nature, new methods must be developed that capture a complete view of the consumer experience. Therefore, for this paradigm shift to occur, agents of change must be present that enable cost effective and timely design and execution of holistic research
methods. Fortunately, these agents of change are present and readily available for use by marketing researchers.

**Agents of Change**

Three agents of change have emerged that enable a shift from atomistic to holistic research. The first is a rapidly growing understanding of the underlying factors driving consumer behavior. Recent advances by clinical and experimental psychologists have uncovered many of the cause and effect relationships underlying motivation and consumer choice behavior (Lundahl, 2005). This knowledge has been incorporated into a powerful robust research design framework (Figure 3). This framework is the cornerstone of holistic research and HPD. However, this framework is not actionable without technology that advances our research capabilities. Therefore, the second agent of change is Information Technology (IT). We can now use the internet do much more than just conduct surveys. We can apply IT to observe consumer behavior, quickly and cost effectively collect quantitative and qualitative response information, and to rapidly disseminate research study results. The third agent of change is Data Processing Technology (DPT). Computing power has rapidly advanced in the past few years. We can not only rapidly collect data, but it can be analyzed in real time. Combining IT and DPT with our framework for robust design paves the way for conducting Real-Time (RT) Research. Here research designs can be dynamically altered in response to real-time results. Furthermore, recent computing advances allow massive data to be synthesized into easily interpreted maps, which crystallize the cause and effect relationships underlying consumer behavior.

The HPD paradigm leverages these agents of change in the form of RT Research, achieving cost effective and timely 360 degree views of consumer experiences. RT Research leads to exciting new research designs, deepening our knowledge through exploratory insights and more accurate behavior predictions. Following are three case studies that demonstrate how RT Research can be leveraged to yield an improved, more holistic product development process.

**Examples of HPD Applications**

**Scoping the Opportunity**

Stage 1 activities are typically characterized as “Scoping.” The gate at the end of this stage is used to weed out projects that are not likely to help a company achieve its
business goals within its new product strategy. The target market and unmet need(s) are typically established at this stage. Many researchers call this the “fuzzy front end” of the process. A problem typically encountered at this stage is an inability by consumers to accurately articulate their unmet needs. Survey research that generates usage and attitudinal response data is too atomistic. It focuses on associating purchase and usage behavior with consumer characteristics. The quantitative nature of the data leads to the capability to define segments. However, these segments rarely are of value in defining distinct groups with clear unmet needs. These studies are not experiential in nature. Qualitative techniques such as ethnographic observations or one-on-one interviews are better at achieving insights into unmet needs. However, these techniques are also atomistic as they do not have sufficient scope and number of responses to define and estimate the market size of segments with common unmet needs.

The HPD paradigm can be applied to dramatically improve the scoping cycle. The robust design capabilities of RT Research techniques allow for rapid segmentation on the basis of responses to different product experiences. A meaningful and actionable characterization of identified segments can be achieved through advanced analytics and perceptual mapping. Insights can be deepened and validated through RT Research techniques that automatically screen respondents representing emerging segments for immediate qualitative research sessions.

Figure 4 displays a perceptual map from an application of HPD to the All Purpose Cleaner category (Lundahl and Ingersoll, 2005). A robust research design was applied to segment respondents on the basis of their actual responses to six product experiences. Information was collected that characterized the products and the consumer concerns, lifestyles, usage behaviors and self-image. This research identified a target comprised of consumers who love to clean, frequently entertain in their home, seek convenience application devices, and associate strong, bold fragrances with effectiveness. This holistic research study identified opportunities to target consumers within this category with a new product that exhibits a new, bolder fragrance that is in harmony with utilitarian benefits perceived as “powerful.”

Figure 5 shows a HPD application to interview children remotely after their evaluation of new peanut-butter “protocepts” (Lundahl and Stucky, 2005). Proprietary software tools automatically identified children with distinct response patterns such that they could be immediately recruited for remote one-on-one interviews. This
research design resulted in deep insights into the types of new product features eliciting positive emotional responses. Children were segmented to help quantify the market opportunity.

Defining the Business Case
Stage 2 activities are typically focused on building a Business Case for the respective project. The gate is used to identify projects that will yield a return on investment at an acceptable level of risk. The most difficult aspect of this stage is translating the language of the consumer (as is used in communicating the benefits of trial) into tangible product qualities and features. This translation is essential to achieve high trial and repeat rates. Market research is often too atomistic within this stage, focusing on rational response behavior to product concepts, branded or unbranded. This approach misses important insights into how expectations and experience combine to formulate product emotions.

The HPD paradigm focuses market research to design studies that generate insights into the underlying rational and emotional expectations elicited by concepts, and the relative importance of specific tangible product qualities in achieving an experience fitting with expectations and underlying concerns driving purchase behavior.

Figures 6 and 7 characterize the emotions and memories elicited by fabric softener fragrances. These, in turn, were applied to build a business case for a new fabric softener (Stucky et al., 2005). Respondents were allowed to utilize their own words in describing their perceptions and emotions associated with several in-market products. Several clear relationships emerged characterizing how certain product differences translate into perceptions and emotions. This provided insights into how lavender and vanilla fragrances combine to achieve the emotions of joy, comfort and calmness. These qualities were also found to be strongly associated with memories of babies making it an ideal fit as a fabric softener for infant laundry. This strengthened the business case for this product. Its uniqueness in both the perceptual and emotional space suggests the product delivers an unmet need within the category.
The Future
The holistic product development (HPD) paradigm offers companies an opportunity to achieve a competitive advantage by retooling their product development process. Real-Time (RT) Research capabilities that utilize the cause and effect relationships underlying consumer behavior can now be applied to achieve early, 360 views of the implicit drivers underlying behavior. This vantage point leads to rapid identification of new product opportunities differentiated by compelling consumer experiences.

Throughout the product development process opportunities are now emerging to accelerate time to market and to achieve greater certainty that product introductions will be a success. HPD improves the product development process by continually sharpening the product definition while maintaining a holistic viewpoint. This leads to harmonization of the components that collectively deliver a product experience achieving the opportunity identified early in the product development process.

Making the shift to a HPD process requires a collaborative effort from a diverse project team with specialists into various product components, brand managers and new product development leaders. It requires that researchers specializing in marketing and consumer product guidance embrace the concept of robust research designs to achieve the benefits delivered through HPD. It also requires research suppliers that have RT Research capabilities and the knowledge of how to design and execute holistic research.

In this paper we have defined the basic HPD principals and associated research practices. We believe the industry must make the HPD paradigm shift if it is going to break away from the poor product development success rates it has experienced using a linear stage-gate process. InsightsNow has demonstrated that RT Research enables an improved product development process. As a full service supplier of research, we have proven that RT Research techniques do achieve speed to market with greater certainty that products will become a success.

References Cited


