

Speaking Silver: Lessons for Product Innovation & Development in an Aging Marketplace

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Abstract: Innovative product design is increasingly crucial as the generally educated and wealthier boomer consumer rises to the fore of the marketplace with a lifetime of technology experience and rising expectations in tow. Although the current emphasis on invention is important, it misses the mark and leads to products that partially or ineffectively respond to the needs and desires of the older user. Design should be considered a strategic tool that allows those involved in the product development process to successfully and competitively tailor the product to the user population. The first step is to learn from those who are expected to be the ultimate users of a product. The following is an examination of consumer-centered design lessons for effective product innovation and development in an aging marketplace.

While some have argued that there will be less passion to innovate in aging economies, because older consumers will be less interested in adopting new products, the AgeLab's work with industry around the world suggests the opposite. AgeLab research indicates that the new expectations of aging baby boomers in Australia, Europe, North America, and the Dan Kai of Japan, are more likely to challenge technology developers and product designers. They will have to work harder to excite and delight the older consumer and find new ways to acquire, not to mention keep, loyalties. Instead of being staid buyers, the aging baby boomer's needs and demands are the forefront of a new consumer pull on product development and innovation.

The coming wave of older adults are more educated, more demanding, and have experienced more technology throughout their lives than any previous generation. Lifetime experience of rapid technological change now powers new expectations for the capacity of innovation to improve how we live, care, travel, work, learn, and play throughout a longer lifespan. A survey conducted by the Rehabilitation Institute of Chicago, indicated that more than 80 percent of baby boomers fully expect scientific and technological advances to improve

their lives as they age (Rehabilitation Institute of Chicago, 2004). Today, the buyers (if not lead adopters) of the most high-tech, high-priced, and high-design are likely to be over 50 and not somewhere between their teens and twenties.

Lesson 1. 'If You Build They Will Come'...Maybe

Today, technology developers and product designers are generating countless ideas to respond to what they perceive characterizes the older market – demands to manage the diseases and disabilities that often accompany old age. While these needs are plentiful, they are an incomplete set of demands from older adults (Coughlin & Lau, 2006). User acknowledgement of an unfulfilled need is the first step to adopting a new technology. However, older adults are prone to user denial, particularly with regard to assistive technologies to support disease and disability. In such cases it is not apparent to an older person that he or she has reached the point at which they need a device to perform the functions that they have conducted all their lives without assistance.

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Many companies organize product design for older consumers within the same teams that address new products for disabled users. While there may be similarities in physical requirements, there are real differences in self-perception and aspiration. The loss of capacity over time does not engender the same level of awareness or acceptance that often accompanies disability at birth or accident. One striking example of this state of consumer denial is the hearing aid. Swiss-based Phonak, one of the world's largest producers of hearing aids, estimates that people may delay being fitted for 'hearing systems' for as long as 10 years after they actually have need for such devices (Rueda, 2005).

Moreover, companies often continue the unified approach of developing products for older and disabled further down the value chain into sales and distribution. Unfortunately, the mixing of these two segments results in advertising and distributing products in venues and retail outlets that appeal to neither consumer group. For example, Toyota found that appealing to the needs of older drivers and disabled drivers as a single market yielded mixed results and even hostility (Coughlin, 2005).

Likewise, a focus on the end-user alone is not necessarily incorrect as it is incomplete. Family or friends may recognize a need for assistance and subsequently influence the older adult to consider using a novel product or service. Assistive technologies, health systems, and related security services are good examples of cases in which the 'buyer' is often a different person altogether from the user. The adoption of a personal emergency response system is more likely to be purchased in reaction to an adult child's perception of a hazard rather than to a need articulated by a frail parent.

Insights for Industry:

- Designers and product developers, particularly those focused on usability, often attempt to address the needs of disabled and elderly users synonymously. Age-related decline and loss of function do not present the same consumer needs as disabilities acquired at birth, from an accident, or from disease. While insights from both groups may be useful in the design process, their development and ultimate delivery to the consumer must acknowledge psychographic and adoption differences.
- Products, services, and devices should be designed so that they are as appealing to the spouse, adult child, or caregiver as they are to the primary 'older' user. Since the adult child or caregiver is often the first to recognize a parent or relative's need, they are often the person to select, purchase, and oversee use and maintenance of the item. Therefore, the caregiver's ease of use should be taken into particular consideration in the design process.

Lesson 2. User-Centered Design May be Best Defined by the User

Ironically, the growth of new disruptive technologies is only rivaled by the growth of disruptive demographics in an aging marketplace. These two forces collide and are reconciled by designers on the interface of every new device. Researchers and industry have spent considerable time and resources on improving the usability of new technologies. Despite these efforts, the capability and functionality of most new devices still outstrips their usability. Greater capability is often coupled with greater complexity packaged in an ever-smaller device.

The cell phone provides a good example. Many phones enable users to play music, take photos, film videos, and some are now mobile platforms used to monitor chronic disease. However, this high level of functionality is not matched with an equal level of usability. In an effort to make more fit into smaller packages, designers have had to sub-optimize the usability needs of less dexterous fingers and readability by bi-focal clad eyes. The result has been a consumer who chooses not to purchase the product at first difficult glance or is quickly frustrated with each use. Two approaches to this dilemma are currently in use – limited functionality or personalization.

LG and Kyocera introduced two handsets that provide a Spartan design with greatly reduced function. LG's Migo VX1000 and Kyocera's TUKA-S provide large easy-to-read buttons with functionality limited to making and receiving calls. US-based Verizon Wireless offers the four button Migo as an easy mobile solution for young children and older adults. The Kyocera phone does not have any user-programmable features and is so simple that it does not need an instruction manual.

Other manufacturers have opted for personalization. European Vodafone, in collaboration with Toshiba, has introduced handsets that offer personalization features to enlarge display font size, functionality, etc., to ease the use of otherwise complex devices. Samsung has enlarged displays and enabled the user to personalize preferences. Empowering the end-user successfully appeals to buyers of all ages. Doing so allows manufacturers and service providers to develop one phone with multiple service options while enabling the user to define his or her needs and preferences.

Insights for Industry:

- Accommodating burgeoning technological capability in a usable form is the designer's dilemma – the older consumer serves as the designer's acid test of success or failure in resolving the trade-offs of function, form, and usability. The explosion of technological capability makes it difficult to resist more function even if the form it takes makes it unusable. If all functions are designed to fit, they must also be designed for ease of use. Greatly reduced function may result in a more usable device, but at the possible risk of not meeting the aspirations of the older consumer and alienating younger buyers. A product obviously designed for the old becomes an 'old man's product.' An adage from the auto industry suggests that you can not build an old man's car, because a young man will not buy it, but neither will an old man.
- Boomers have often been referred to as the 'me generation.' Product developers may find that the me generation will require a focus on design and technologies that allows 'me' to personalize my interface with the world. Such personalized adaptations successfully appeal to users of all ages. During an era in which consumers can customize their personal and virtual spaces, few buyers will be happy with purchases that do not allow them to personally participate in the design process.

Even if older people can easily use a technology, they must value its functionality before adopting it fully. Product developers and designers have often neglected how product value changes with age. Novelty alone often makes a compelling case for younger users to adopt a new device. Purchase may simply be a 'must have' fashion statement and adoption of a new product is sometimes more important for what it 'says about me' than 'what it does for me'.

It would be a mistake to suggest that people lose their desire to be fashionable with each birthday. One only has to note the growing sales of beauty products and boutique clothing stores catering to older consumers. Older adults want fashion as much as their younger friends – they just want that and more.

Research suggests that older users assess whether a new technology clearly provides greater value than the existing means they use to satisfy a given need. If the value is not appreciably greater than the existing means, then the likelihood of spending the time to learn how to use, let alone adopt, the technology is very low (Davis, et al., 1989; Adams, et al., 1992). In addition to their inherent usability issues, PDA adoption has had its greatest competition from the trusty old favorite moleskin notebook. An older adult who manages only one-hundred or so contacts and enjoys the other 'scribbles' they put in their paper-based handheld is not likely to invest time or money in a PDA. Likewise, travelers that frequent local and familiar roads – roads that they may have traveled for decades – are not candidates for in-vehicle navigation systems. Often, the reason older consumers do not adopt these technologies is not due to techno-phobia. Instead, it the technologies have failed to provide compelling value to a more discriminating consumer.

Presenting the personal computer as a more efficient word processor or financial management tool did not provide a compelling case for older users to invest their time to learn the technology. In contrast, email offers a means of remaining connected to friends and family that is in many ways is more frequent, convenient and efficient than writing a letter or making a phone call. The promise of 'connectivity' via email made learning to use and adoption of the personal computer worth the time, making the 50+

Lesson 3. Designing Value: It May Be Usable, But Is It Useful?

age group among the fastest growing populations on the internet (Pew Internet and American Life Project, 2004).

Insights for Industry

- Product development and design for an older consumer has focused primarily on the most basic needs of usability. While this is an important consideration, it is just one of many. The older buyer is a new alpha-consumer demanding a complete and integrated package of high fashion, high usability, and high value.

Lesson 4. Designing Trust

Purchasing a product is only a beginning. Use and adoption requires trust. Engineering trust into new technology is receiving increasing attention from developers of both devices and services for older consumers. Trust can be best thought of as predictability and reliability. Research suggests that younger adults are more likely to ‘trust’ the promise and effectiveness of technology, even in the absence of user experience with the product, than older users who have performed similar functions without the aid of automation (Cotte, et al., 2001).

For example, older consumer acceptance of the now ubiquitous ATM or, more recently, on-line purchasing services has taken longer than younger buyer adoption of the same services. As technology-enabled products and services become more critical to accessing financial information, managing health, and ensuring one’s independence, incorporating the trust factor in design will only explode in importance as the population ages.

Toyota is fast becoming *the* automobile industry leader because of its dedication to reliability. The market has been taught that Toyota can be ‘trusted’ to run, and to run for a long time, with only modest maintenance. Although working to acquire younger buyers, Toyota’s high quality reputation attracts older consumers who are also attentive to style and performance, but place a premium value on reliability. The 2007 Camry dashboard redesign simplified and improved the usability of controls and displays. For example, the redesign increased the size and readability of the speed, fuel, and other instrument clusters. The best selling car in North

America, Camry now has an average buyer of nearly 50 years old. (Edmunds, 2002).

Design simplicity may be the most direct way to engender user trust (Maeda, 2006). As a device’s apparent complexity increases, the level of trust by the user tends to decrease (Sheridan, 2002). It may be simple to argue simplicity in design. However, as more technological capability becomes available at a relatively affordable price, it is difficult for product developers to not include one more function. Trust is at the basis of a consumer’s belief that the product will perform as promised, work when it is needed, and is worthy of continued investment of time and money.

Insights for Industry:

- Trust – as defined by reliability and predictability--will become more important as the market ages. Older adults who have accomplished many tasks without the use of technology or have done well using another method will be harder to convert to a new product or service. Designers will have to adopt the new language of simplicity to engender trust with older users while developers will have to be more sensitive to quality and reliability to ensure consumer confidence.
- A higher standard of trust will be required for the large number of next generation products and services being developed specifically to manage high risk functions that support the health, wellness, and independence of older adults, e.g., telemedicine systems, medication reminders, fall alerts, etc. These products and services will support the wellbeing of vulnerable elders as much as the hopes and fears of their adult children who have ‘out-sourced’ the safety, security, and health management of their parents. Both lives and liability are at stake.

Lesson 5. Good Design: It's All in Your Head

Product development and launch was easier when the consumer was young enough to see everything as new and novel. While admittedly fast moving and hard to keep, the 'tween through twenty-something' market is a relative *tabula rasa* when introducing new technology and design. Easier does not mean profitable in a market where their numbers are not as great as their parents' – moreover, they purchase the more affordable products where margins are thinner. In contrast, the boomers are now all grown up and have grown up tastes – representing both the fastest growing and most lucrative market that purchases the most profitable products. Unlike their children, older consumers have history, experience, and a general understanding to judge and guide their use of new products.

Therein is the challenge – how does a company continue to innovate without leaving the customer behind? Real innovators do not simply respond to requirements and what people want – they must surprise and excite the consumer everyday with new technology, new design, and new value. If that challenge is not great enough, it is even more problematic when the most lucrative market that can afford the initial high costs of such innovations has its experience in the past.

The automobile can be thought of as a test-bed of 'extreme design' – where else can one learn and test the usability of new technology at sixty miles per hour? Older consumers dominate the high-priced luxury car segment where profit margins are greater and constant introduction of the next new thing is essential. BMW provides among the most widely publicized examples of the challenges associated with introducing real innovation to the car.

In 2002, BMW introduced the iDrive, which changed the metaphor of how the driver interacted with countless devices in the car. In order to interact with a device, the driver or passenger manipulates a single rotary controller that scrolls through an LCD display of choices. These choices, the basics of which would normally be located on the dashboard, include everything from entertainment, communications, lighting, navigation, climate control, and 700+ other functions. Once the device is highlighted on the screen, the controller is depressed to select that device. This innovation enabled BMW to 'clean-up' the clutter on the increasingly device

and display-laden dash, which affects every manufacturer's capacity to optimize very limited real estate. Moreover, the iDrive promised to reduce visual distraction by providing the driver with tactile feedback through the knob and enabled a simple easy-to-read platform to provide more functions and services.

Despite the promise of the iDrive, it was received with criticism. It was seen as too difficult and too complicated despite the fact that it had reduced complexity by reducing the number of switches, knobs, and dials while providing a display that was in easy view of the driver. What may have made it more complex was not the physical design but what was in the driver's head. That is, the driver's mental model concluded that any knob-like device that is connected to a display must be something akin to a PC mouse. In fact, even Edmunds.com, the widely used on-line car buyer's guide, alludes to the notion that bringing some of the ease of use from PCs to the car was a long time in the making and it initially saw the iDrive as a move in that direction (Edmunds, 2002). However, the iDrive controller is not a mouse. It frustrated the driver because it did not move and click like a mouse and no mouse of any type had rotary movement. Indeed, to the driver with an iDrive in hand and a PC mouse in their head, the iDrive was a very poor mouse.

Although a difficult first five years since the iDrive was introduced into production, it has successfully infused innovation to an industry that has done remarkably well considering it changes little that touches the driver. Over time, the device has established new space in the older driver's mental model. Mercedes Benz, Audi, and Infiniti have since followed with variations on the iDrive theme. Like BMW, the average age of buyers of these luxury cars is late 40s, if not well over 50+.

While not used in an extreme environment like the car, innovative home appliances, health devices, entertainment systems and other products will confront a combination of increasing older consumer expectations and decades of user experience. More than any previous time in history, designers need a better understanding of the consumer's mental model and how it may provide both insights as well as limitations in learning and usability.

Insights for Industry:

- Research on mental models has been shedding light on the use of automated systems and providing ideas for design for decades. However, the aging of the marketplace demands that designers and their partners in development and marketing be more attentive to the consumer's images of how the world works and how a new product fits within that world.
- While understanding the experiences and metaphors that anchor an older consumer's perceptions is important, older adult learning will be of equal, if not greater, importance. Product developers and designers need to partner with colleagues in marketing and distribution to better understand how new product learning and education can be facilitated in the retail setting, home, and any other venue where a product may be used. The new retail experience may be more about hands-on education than simply an attractive and engaging environment.

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About the AgeLab

The AgeLab is a multi-disciplinary research center dedicated to improving quality of life for older adults. Based within the Engineering Systems Division at Massachusetts Institute of Technology, the AgeLab is uniquely suited to translate cutting edge scientific and technological breakthroughs into innovative solutions that help address challenges posed by the world's aging population.

The AgeLab views longevity as an opportunity to innovate – to invent a new definition of quality living throughout the lifespan. AgeLab activities set agendas of government and business, serve as a catalyst for change, and act as platforms to create new ways to remain engaged, connected, independent, and healthy.

Funded by businesses around the world, AgeLab research focuses on transportation, health & wellness, caregiving, longevity planning, shopping, lifelong engagement, and even play. AgeLab research informs the design of new technologies, aids in government policy decisions in the United States and abroad, and educates older adults and their families on important consumer issues.

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