A Model of Consumer Creativity in Product Use

Dwane H. Dean
College of Business
Frostburg State University
101 Braddock Road
Frostburg, MD 21532 – 2303, USA

Abstract

The goal of this study was insight into the process by which consumers adapt and use existing products in unconventional ways to solve a problem (such as spraying PAM on a squeaky hinge instead of WD-40). Examples of consumer creativity in product use were collected through an online questionnaire, and a conceptual model of consumer creativity was constructed from this data. The model suggests the process begins with person-based motivations (to save money, time, or effort, etc.). Next, the consumer achieves a problem-solving insight often catalyzed by serendipity, and involving knowledge, past experience, or cognitive learning. The role of serendipity is highlighted and differentiates the model from an existing general model of creativity.

Keywords: serendipity, innovation, componential model of creativity

Introduction

Do you use products in novel, unintended ways? As an example, suppose you have a squeaky door hinge. Most people would probably reach for WD-40, lubricant in an aerosol can, widely used for quieting a squeaky hinge. But suppose you don't have any WD-40. As an alternative, some consumers have used PAM, cooking oil in an aerosol can dispenser. If you don't have any PAM, other consumers have tried dropping liquid soap into the hinge. Indeed, the list of products used to quiet a hinge includes petroleum jelly, candlewax, and many others. What these alternatives all have in common is that none of them were manufactured for the purpose of lubricating moving metal parts. Rather, consumers have adapted the products for an unintended use.

The present study is an exploration into the process by which consumers use existing products in novel, unintended ways to solve a problem. This topic has received almost no attention in the literature. From examples of consumer creativity captured in an online questionnaire, a conceptual model of the process is offered.

Background

As stated above, there is a general absence of literature on the topic of consumer creativity in product use. Certainly, there is literature on consumer adoption of innovative products (Planing & Britzelmaier, 2011) and the need for companies to establish a culture of innovative new product development (Jones, 2011). However, there does not seem to be a literature stream on consumer adaptation of existing products to new, novel uses. The body of literature that is the closest to this topic comes from the software industry, where end-consumers are sometimes provided with "toolkits" by manufacturers and supported in their efforts to develop new applications and/or otherwise extend an existing product (Jeppesen & Molin, 2003; Jeppesen, 2005; Arakji & Lang, 2007). However, the latter is not the same context of consumer creativity being addressed in this paper.

Creativity

Creativity has been defined as the production of novel, useful ideas or problem solutions (Amabile, Barsade, Mueller, &Staw, 2005). Importantly, the conceptualization of creativity requires that the process that results in creativity be heuristic rather than formulaic (Amabile, 1983). For example, one may need a particular kind of cake and decide to bake the cake from a recipe. Baking the cake may be new to the consumer and the cake may be an appropriate solution to the need, but this is not creativity because the path to solution was already laid out in the recipe (an algorithmic approach). Development of a new recipe, however, would be a creative solution – a heuristic approach, since the path to solution did not already exist.

Also, the creative solution must be fitting to a particular goal, not just novel for the sake of being different. Ultimately, the determination of whether a solution is creative or not comes from people who work in the occupation and really understand the problem (Amabile, 2012).

The component model of creativity (Amabile, 1983; Amabile, 2012) proposes three within-individual components and one external component. The first internal component is *domain-relevant skills* (knowledge, skill, and expertise within the domain in which the problem-solver is working). For example, an electrical engineer would need engineering knowledge in order to propose and evaluate a novel solution to a work problem. The second internal component is *creativity-relevant processes* (cognitive style and personality characteristics that facilitate generation of new ideas). This includes the ability to integrate separate pieces of information and break out of traditional thought boundaries. The third internal component is *task motivation* (consisting of intrinsic motivations to try to solve a problem rather than any externally applied pressure to do so). The one external component in Amabile's theory is the *social environment*. This component has special importance in the work setting where organizational culture, politics, and other external factors can combine to either hinder or promote creativity. Creativity is the result of all components, and the level of creativity is believed to be essentially a multiplicative product of the components (Amabile, 1983).

Consumer Creativity

As used here, consumer creativity refers to the use of an existing product in a novel way, typically for a purpose not intended by the manufacturer, to solve a consumer problem. Three examples, collected in this study, will be used to illustrate the construct.

The first example is the use of a potato peeler to peel apples. Many people use a paring knife to peel an apple, but this requires some skill and can result in excess waste if not done correctly. One day, after having peeled some potatoes but before rinsing the potato peeler, some apples were removed from the refrigerator to peel. The visual context of the apples and the potato peeler suggested that the potato peeler might work better than the paring knife, and a quick try determined that this is true – at least as long as the apples do not have bruises. In this case, the creative insight came from a situational factor, the serendipitous timing of two different peeling tasks, and how the product used for one type of peeling might be best for both.

A second example is the use of two (rather than one) paper filters in a basket-drip coffee maker. When only a single paper filter is used, the filter will sometimes collapse away from the side of the basket, allowing coffee grounds to enter the decanter. A way to prevent this is to "sandwich" the coffee grounds between two paper filters. That is, insert one paper filter, distribute the grounds level over the bottom of this filter, then insert a second paper filter with its bottom on top of the coffee grounds, interdigitating the flutes. Once the filters become wet, they adhere together (do not collapse) making sure that no coffee grounds pass through into the decanter. Although this is only a minor variation in the standard process of coffee brewing, it is novel and it solves a problem. The creative insight that led to the solution has its origin in a recent overnight motel stay by the consumer. The coffee provided for the room was in the form of coffee grounds totally enclosed in a filter paper-like envelope. The coffee filter "sandwich" was an attempt to simulate the product form previously encountered – a relatively simple example of cognitive learning.

Some solutions are more creative than others. The third example comes from a consumer who relates a story about *Tilex,* a soap-scum preventer produced by Clorox. Although the consumer was happy with the product, using it as a daily shower spray to prevent soap build-up, the product was considered a bit expensive. While shopping for liquid laundry detergent, the consumer noted that the label listed EDTA as an ingredient (ethylene diaminetetra acetic acid). This consumer had worked in a bio-medical laboratory and recognized EDTA as a calcium-chelating agent, often used to make a low-cost anti-coagulant for drawn blood. Believing that EDTA would bind to calcium residue left by soap in the shower and allow it to be rinsed away, the consumer began using diluted laundry detergent as a daily shower spray. The consumer reports satisfactory results to date. In this case, the solution resulted from a motivation to save money, prior knowledge about EDTA, and the chance reading of a laundry detergent label before purchase.

These three examples of consumer creativity are believed to be consistent with the general definition of creativity laid-out by Amabile et al. (2005). That is, the solutions solve a consumer problem, the solutions require products to be used in unintended ways, and the solutions do not simply mimic the problem-solving of another consumer.

A Model

A conceptual model of consumer creativity is shown in Figure 1. The model is based on a collection of consumer accounts of creativity in product use collected through a web-based questionnaire (to be described). The model is less complex than the more general creativity model of Amabile (1983), although both models contain motivation factors and reference person-based skill/ knowledge. However, the model proposed here emphasizes situational factors and especially serendipity as part of the creative process.

Comparison of the Two Models

Although the two models are different, they are not necessarily in conflict. In developing her model, Amabile appears to be looking at long-term structural factors that affect individual creativity over time in a particular domain of work (writing, science, performance art, etc.). In contrast, the model of consumer creativity proposed here does not assume that there is a work domain (that is, there is no domain of work called consumer creativity). Rather, consumer creativity is, by nature, episodic and short-term, directed at the solution of a problem that is of concern to a particular consumer.

An important difference between the models is the highlighted role of serendipity in the model of consumer creativity. This is a situational factor, a fortuitous observation or event that meshes with prior knowledge or experience and results in an "aha" moment that leads the consumer to a solution to the problem. Serendipity played a role in all three of the narrative accounts of consumer creativity previously detailed (chance timing of two peeling tasks, chance observation of a coffee brewing bag during a motel stay, and chance reading of a laundry detergent label while shopping). Serendipity is believed to be an important influence in consumer creativity because, unlike the writers, scientists, and performing artists modeled by Amabile, the consumer role is not one in which the consumer is actively trying to create (it is not their "job" to create). However, when serendipity offers a solution to the consumer, the consumer accepts it. It may be noted that serendipity has been mentioned by others as an influence in creativity (Styhre, 2008; Diaz de Chumaceiro, 1998) and indeed, the discovery of both Super Glue and Post-It notes occurred through serendipity (Darbellay, Moody, Sedooka, & Steffan, 2014).

Methods

To explore consumer creativity in product use, a short (3-page) questionnaire was created. The first page introduced the idea of consumer creativity in product use and gave some examples. The second page asked the respondent to provide a short narrative of any examples of creative product use they had discovered, focusing on the process of discovery. Finally, the third page finished with demographic items, a comments section, and a single scale (-4 to +4) requesting respondents to rate themselves on their own general ability to "innovate" (compared to an average person) and indicating that zero on the scale equaled an "average" level of innovation ability.

After receiving approval from the local IRB, the questionnaire was posted at a web-based survey site. Respondents were solicited through an e-mail distributed through the "staff" list at the author's university, a small public institution in the Mid-Atlantic area of the U.S. This distribution list contains approximately 516 contacts. Each e-mail included the required disclosure notice and a URL link to the survey site. An initial poor response rate prompted a second distribution to faculty on the College of Education list, adding about 75 people. Data were exported from the website for analysis. To avoid dealing with negative numbers, responses from the innovation scale were recoded 1 through 9.

Sample

Although 59 solicited subjects entered the survey website, only 15 offered a narrative account of product use. This group of 15 recorded 28 accounts of consumer innovation in product use. The sample consisted of 12 females and 3 males. Five subjects were age 49 or older and 10 respondents were age 29-48. Also, 4 subjects had less than a bachelor's degree as their highest level of education, 3 held bachelor's degrees, and 8 had achieved a graduate degree.

Analysis

All accounts of consumer innovation in product use were read. A summary of selected novel uses reported by respondents appears in Table 1. Details from narrative accounts of use innovation appear to support the conceptual model shown in Figure 1. The model suggests that two general factors are necessary for creative product use.

There is a pre-existing lack of satisfaction with the current way of dealing with the problem, leaving the consumer motivated for change. Second, problem-solving insight arises out of a situation-specific context leading to an "aha" moment. Finally, the consumer decides to use the product in an unconventional way to try to achieve a more desirable outcome. Regarding their own general ability to innovate, subjects in this study were quite confident. Indeed, the average response on the 9-point scale was 7.27, indicating that the typical respondent thought they were well above average in innovation ability.

Discussion

The model of consumer creativity proposed here is believed to be a contribution. It adapts elements from a widely accepted model of general creativity (Amabile, 1983) and adds the element of serendipity to suggest a model of creativity specific to consumers. As stated earlier, serendipity is thought to be an important factor in consumer creativity because consumers (unlike writers, scientists, and artists) are not engaged in an occupational pursuit that requires creativity, and they are more likely to come across it on fortuitous occasions. Supporting this, narrative accounts of consumer discovery of novel product uses suggested that serendipity played an important role. The acknowledgement of serendipity in the model proposed here distinguishes it from the more general model of creativity (Amabile, 1983) which has been summarized as stating that creativity "does not occur spontaneously or randomly" (Kurtzberg & Amabile, 2000-2001, p. 286). However, further research on consumer creativity is needed, especially given the small sample size in the current study and the inability to do follow-up interviews with anonymous respondents.

Although the academic literature does not seem to have addressed the topic of consumer creativity in product use (as defined here), some real-world companies already have. Managers at these companies recognize creativity can be part of the consumer relationship with the brand, ultimately impacting brand equity. For example, Pillsbury (a unit of General Mills), conducts a "Bake Off" competition every year in which consumers enter recipes which innovatively combine at least two ingredients from a list of products manufactured by the sponsors of the contest. As a condition of entry, the contest website notes that all recipes become the "sole property of General Mills, and General Mills reserves the right to edit, adapt, copyright, publish, transfer and use" the entered recipes (Pillsbury Company, 2015). The Grand Prize in the Bake Off contest is $1 million dollars. The bake off appears to accomplish several goals: 1) cultivate a relationship with end-users of the products, 2) tap into consumer creativity by publishing the best recipes, and 3) sell more products (which may occur since all recipes must incorporate at least two products manufactured by the sponsors). Past winning recipes are posted at the website to inspire future contestants.

Another company that taps into consumer creativity is the WD-40 Company. The website for this company lists 2000+ uses for WD-40 offered by end-users of the product. Here again, we have a company building a relationship with end-users by allowing them to communicate with other end-users, take pride in posting their newly discovered use for WD-40, and strengthening their relationship with the brand. The website does, however, caution that "These uses have not been tested by WD-40 Company. . . Consumers should exercise common sense whenever using WD-40" (WD-40 Company, 2015). In any event, these two examples are offered as evidence that companies can acknowledge consumer creativity in product use, use it as a tool in public relations, and ultimately, better promote the company.

While acknowledging the positive side of consumer creativity, the possibility of a "dark" side should also be noted. For example, there is an urban legend that a consumer needed to trim a hedge, and not owning a hedge clipper, decided to lift his lawn mower up to the height of the hedge to use it as a make-do clipper. Needless to say, the unsafe act ended badly for the consumer, and he was injured. This story has been around for a number of years and would have to have occurred before the blade-brake clutch became a federally mandated safety device on lawn mowers. In any event, the example is offered as evidence of a possible "dark" side to consumer creativity – using a product in a novel but dangerous way.

It is suggested that companies better acknowledge consumer creativity in product use and possibly develop a strategy that would leverage the activity to benefit the company (as illustrated by the Pillsbury Company Bake Off). This would require that companies view this consumer activity as a resource rather than simply ignoring it.

References

Amabile, T. M. (1983). The social psychology of creativity: a componential conceptualization. *Journal of Personality and Social Psychology*, 45(2), 357-376.

Amabile, T. M. (2012). Componential theory of creativity (Working paper).Harvard Business School. 12-096. April 26. Retrieved fromhttp://www.hbs.edu/faculty/Publication%20Files/12-096.pdf

Amabile, T. M., Barsade, S. G., Mueller, J. S., & Staw, B. M. (2005).Affect and creativity at work. *Administrative Science Quarterly*, 50, 367-403.

Arakji, R. Y., & Lang, K. R. (2007). Digital consumer networks and producer-consumer collaboration: innovation and product development in the video game industry. *Journal of Management Information Systems*, 24(2), 195-219.

Darbellay, F., Moody, A., Sedooka, A., & Steffan, G. (2014). Interdisciplinary research boosted by serendipity. *Creativity Research Journal*, 26(1), 1-10.

Diaz de Chumaceiro, C. (1998). Serendipity in Freud's career: before Paris. *Creativity Research Journal*, 11(1), 79-81.

Jeppesen, L. B. (2005). User toolkits for innovation: consumers support each other. *Journal of Product Innovation Management*, 22, 347-362.

Jeppesen, L. B., & Molin, M. J. (2003). Consumers as co-developers: learning and innovation outside the firm. *Technology Analysis & Strategic Management*, 15(3), 363-384.

Jones, G. (2011). How Procter & Gamble builds billion-collar brands through consumer-focused innovation. *Smart Business Akron/Canton,* 21(4), 14.

Kurtzberg, T. R., & Amabile, T. M. (2000-2001). From Guilford to creative synergy: opening the black box of team-level creativity. *Creativity Research Journal*, 13(3 and 4), 285-294.

Pillsbury Company (2015, June 3). Bake off contest. Retrieved fromwww.pillsbury.com/our-makers/bake-off-contest/about-the-new-bakeoff/rules

Planing, P., & Britzelmaier, B. (2011).A critical literature review on consumer acceptance of product innovations. *International Journal of Management Cases*, 13(3), 235-241.

Styhre, A. (2008). The element of play in innovation work: the case of new drug development. *Creativity and Innovation Management*, 17(2), 136-146.

WD-40 Company (2015, June 3). List of 2000+ uses. Retrieved from www.wd40.com/files/pdf/wd-40_2042538679.pdf

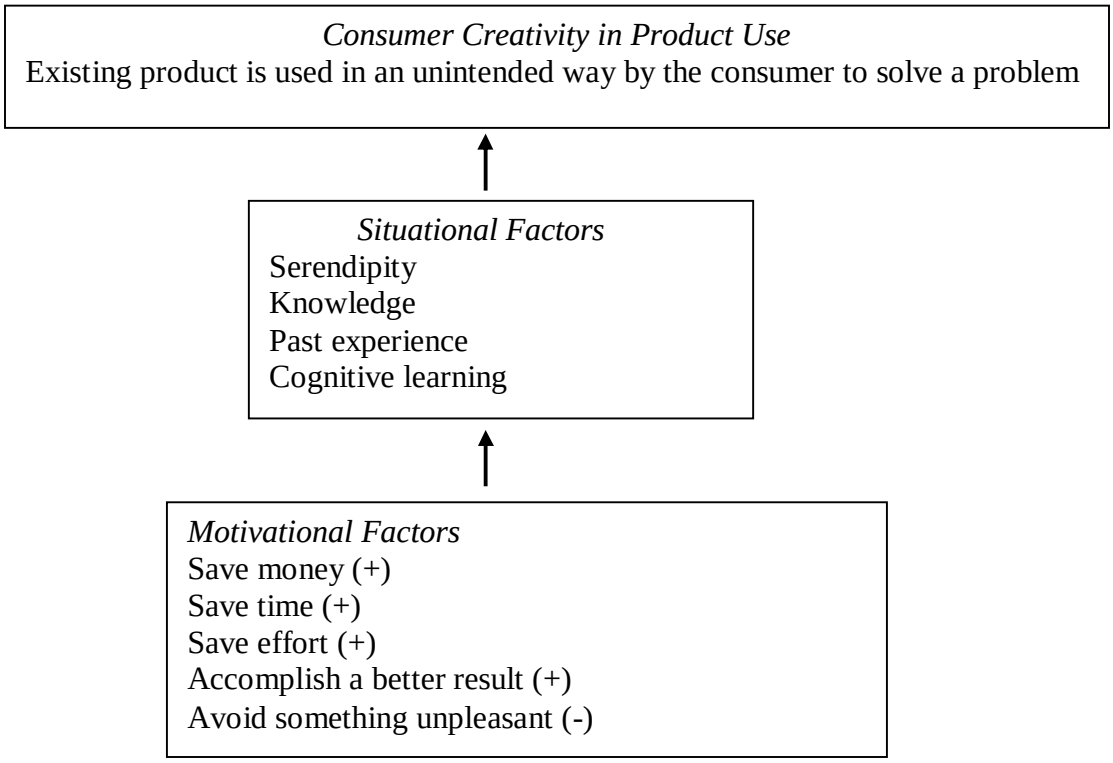

***Figure 1*: Conceptual model of consumer creativity in product use**

Table 1: Selected novel uses for existing products drawn from survey data

Product	*Typical Use*	*Novel Use*
Toothpaste (regular)	Brush teeth	Polishlenses (bothsunglass and eyeglass)
Lysol	Mouthwash	Spray-on insecticide
Bar soap	Body cleansing	Rub on drawer guides to lubricate
Q-tips	Earcleaning	To apply paint To clean segmented bottom of drip coffee basket
Windex (clear version)	Window (glass) cleaner	Pre-treatment for removal of stainsfromfabric Spray-on insecticide Clean patio furniture
Freezer bag	Contain and protectfrozenfood	Use as travel bag for toiletries
Expanding curtain rod	Hold curtain	Position undersink as organizer to hang spray bottles on
Liquiddish detergent	Wash dishes	Add to tank sprayer of herbicide mix – ithelps solution to stick on leaves
Dryersheets	Eliminatestaticcling, soften clothes, and add fragrance	Used dryer sheets can clean mini-blinds and dust television screens