Social Media and New Product Development

Abstract:
Social media has changed the relationship between the organization and the consumer, so that the consumer feels connected to the governance and activities of the organization. Because social networks such as Facebook and Google are so widely used, the social media within them has turned into a vast marketplace of ideas for firms to identify consumer opinion and emerging trends. Simply, co-creation brings consumer insight into the new product development process through social media channels from product ideation to product launch. This article assesses optimal co-creative environments using a new product diffusion model and concept generation process model. With these models, this paper presents further exploration into the consequences and applications of co-creation theoretically as well as within case studies.

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1. Introduction

This section serves as an in-depth overview of foundational ideas that are the building blocks of models and methodologies this article builds upon. Social media and new product design have built a symbiotic relationship that allows firms to harness the power of web 2.0 and the insight of the consumer to create products and services with higher perceived market value. Before this article identifies case studies, best practices and new technologies analysis, this section describes the keys to understanding co-creation, the web 2.0 environment and social media as it relates to new product design.

1.1 Service Dominant Logic

In order to delve into the evolving and dynamic topic of co-creation, service-dominant logic must be understood in order to build from its platform. Fundamentally, service is the basis of exchange between a company and a consumer. Service-dominant logic considers the relationship between goods and services rather than the traditional approach of identifying them by their differences to one another (Lusch, Vargo, Malter 2006). Co-creation builds upon this intrinsic relationship. Service dominant logic is based on foundational pillars that bind together to create the underpinning of new product development from a customer-oriented perspective. The first pillar is that the business offers value propositions, which are translated by the consumer to create perceived value. The second is that a service-oriented company is fundamentally customer oriented and therefore “the customer is always a co-creator of value” (Williams, Aitken 2011).

Service dominant logic denotes a shift in focus from operand to operant resources, which has evolved the commonly held opinions of exchange processes beyond merely commerce (Vargo, Lusch 2006, p. 54). As research for service dominant logic has grown, Vargo and Lusch have reaffirmed this initial assertion they made with their follow-on article, Service-dominant logic: continuing the evolution, as they define service dominant logic as “not only accommodative but potentially foundational” to all types of marketing efforts (e.g. social, non-profit) as well as universal societal issues (2008). Operant resources are the foundation for a company achieving competitive advantage within an industry (Vargo, Lusch 2008). Service dominant logic offers insight to the source of value creation and exchange, also identifying those processes as inherently relational, customer oriented and phenomenological. (Vargo, Lusch 2008).

Table 1. Shifts in focus of research interests.

<table>
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<th>Previous focus</th>
<th>Complemented with current focus</th>
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<tr>
<td>Word of mouth as driver</td>
<td>Consumer interdependencies as drivers</td>
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<td>Fully connected networks</td>
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The service dominant logic of marketing redefines the customer as co-producer of value within a company’s product development system. This relationship between customer and company has been heightened with improved communication so that the company is able to launch offerings that are directly inline with consumer’s real-time needs and wants (Vargo, Lusch 2004). Businesses are now market-oriented, learning organizations able to better react to its audience’s preferences. This has optimized activities serving the bottom line and enhanced the relationship between a firm and its consumers.

1.2 Social Media History
Social media has changed the relationship between the organization and the consumer, so that the consumer feels connected to the governance and activities of the organization. An online presence is one of the main resources employed for user acquisition and engagement. By using social networks like Twitter, Facebook, blogs, and Myspace, companies are able to reach out to consumers in a non-abrasive, accessible fashion while building a user base. When consumers feel as though they are a part of a community, they are more inclined to participate, represent, evangelize, or give back to an organization.

As the world of business and technology evolve and entwine, business practices must adjust to accommodate new industry innovations. Production and product development strategy has been influenced through various social, political and economical events across the world that has ultimately led it to its Internet-centric condition within the current Information Era. Social media is created through online communication tools that serve as conduits to the exchange of participant’s personal/professional information and ideas (“Social Media-Definition…” 2011). Social media now influences the way domestic and international businesses develop and manage new products.

Traditional media is being reshaped by technology growing the ways and breadth of which one can communicate as well as enhancing the targeted messaging embedded in socialized media. By shifting the foundation of which traditional mass media based their business models, social media and technology is opening the channels of communication that allow people to access and share information more easily. There is an argument that social media is returning media toward the “discursive ways of the pre-industrial era” (Coming Full Circle 2011). With this evolution toward a larger diversity of perspective within the socialsphere, it is clear that the Internet has effectively disrupted the traditional communication business models.

Social media presence affords many opportunities for interested parties to understand and act on behalf of an organization; opportunities that are not existent or effective in traditional media use. It combines what were once two separate entities—supplier and consumer—into a single collaborative unit, a real community in a virtual world.

1.3 Crowdsourcing
The power of accessing the public for ideas and solutions is known as “crowdsourcing.” Crowdsourcing is a term coined by Jeff Howe in a 2006 article for
Wired magazine, “The Rise of Crowdsourcing.” Crowdsourcing is becoming increasingly useful for companies to engage in with the rise of social media technology and new opportunities are available for co-creation in the new product development process. Social media allows for new platforms for which organizations can reach the public, where they tend to visit online, to find ideas and solutions to product development. The key concept is that a crowd composed of independent members with diverse opinions can provide unique judgments and creative solutions. This step is efficient if the independent members are given appropriate mechanisms to aggregate and to feedback inputs and opinions (“The Revolution Will Be Shared” 2010). Harnessing crowdsourced content and collective intelligence is described as the core pattern of Web 2.0 because it highlights the following qualities of participants in a social system; participation, network effects and feedback loops in order to cultivate powerful social systems based on member engagement. Essentially user-generated content is collective intelligence based on the collaborative ideas of those participating in a social system (Warr 2008).

Crowdsourcing is transforming the way businesses engage with customers as co-creators and Influentials within the value adding process. Through crowdsourcing problems are explored quickly at low costs and the organization is able to access a larger pool of ideas. By using the crowd to identify and develop potential new products, a firm is able to collect primary feedback from customers regarding preferences, needs and wants which builds a community around the brand as well. Crowdsourcing allows consumers to feel ownership toward contribution and collaboration. Joseph Pine and James Gilmore labeled the idea of co-creation as the experience economy, where consumers buy experiences rather than commodities (1996). Co-creation has created equilibrium between the firm and consumer, which has shifted away from a consumer economy into a collaborative environment where both players are partners in the new product development process.

Many companies are engaging in crowdsourcing through social media to gain these insights from the public. GE created Ecomagination Challenge to involve participants to help develop the next-generation power grid. Proctor & Gamble created Connect + Develop program that invites customers to submit their ideas on how to improve P+G products or develop new products. InnoCentive is another unique social media platform that allows nonprofits, companies, and government organizations to submit challenges and problems to the community of “solvers,” who compete for cash prizes to solve the challenge or problem (“Innocentive” 2010). These examples all provide evidence of the power of crowdsourcing and the opportunity for companies and organizations to engage the public in co-creation.

Crowdsourcing is one of the main activities involved within co-creation. Crowdsourcing enables opportunities for “gathering information, capturing tacit knowledge, building collaborative relationships, and tracking contact with customers and prospective customers” (“The Revolution Will Be Shared” 2011). The job of the firm is to motivate participation from consumers in order to aggregate beneficial product feedback. There needs to be a balance between internal and external motivation to promote feedback from consumers and integrate it with product design.
1.4 Direct Feedback

Social media has enabled organizations to include the consumer in the process of developing new products. As evident from the case studies examined later in this article, more organizations are investing in social media because of the advantages that the platforms can bring to the new product development process. Within the new product development process, there are specific areas where social media can be maximized to benefit the organization. Social media can be utilized in opportunity identification and selection, concept generation and evaluation, product development, the launch of the product, and identifying the market confirmation of the product.

Listening to consumer wants and needs is important for organizations when developing new products. In today’s changing technology environment, anyone can go online and generate content about products or services and what it means to them. Consumers’ insights can provide a benchmark to whether a product or service is meeting the customer expectations. These insights can also provide information on what products need improvement or modification and ideas that could potentially lead to brand new products. The key to obtaining this feedback is for organizations to create a medium where clear communication can exist between the firm and the customer.

This is where social media plays an important role in direct feedback. Consumers do not have to call a customer service line or seek out the organization. They can give feedback on products, services, and companies in a variety of social networks that organizations can then extract valuable information. The comments, posts, and other consumer-generated content can be easily accessed and responded to in real time by organizations to create a rich communication bridge between consumer and firm. Social media allows firms to gain knowledge on mass numbers of consumers at the fraction of the price and time that focus groups could provide. Social media also provides a friendlier space for companies to allow consumers to express their criticism or praise.

(Source: Kumar, V., and Yashoda Bhagwat (2010), "Listen to the Customer," Marketing Research, 22, 14-19.)
Before the social media revolution, organizations gained customer feedback through customer service operations that included telephone lines, survey satisfaction cards, and an address that customers could write a letter to a company representative. It was time-consuming, costly, and bias because customers how would take the time to engage were usually upset and frustrated (Kumar 2011). Social media now allows anyone to give immediate feedback about a product or service they like, or criticisms that could help direct the organization in improving. Customers can communicate in real-time with an organization and may provide more valuable insights because they know they are being heard (Kumar 2011).

One of the most popular tactics that organizations use in gaining feedback is making fan pages. Facebook has been utilized by organizations because they can create a company page where the public can become a fan and socialize with other fans. This creates a familiar and safe environment for people to share about products and services they like, while being able to also criticize and voice their opinion about improvements. Companies can then engage and understand what their customers and fans are saying about the products and services they offer and make improvements. Companies can also test new product concepts and ideas and measure the reaction of the customers in real-time (Kumar 2011).

1.5 New Product Development

Social networks have been a tool for companies to source emerging trends and popular ideas from online conversations. Companies are able to interact directly with the consumer, testing product ideas before making any commitments. This way, brands get an abundance of relatively cheap feedback regarding consumer preference directly by the consumer. The Information Age has allowed customers access to an unparalleled diversity of information that exists an Internet connection away. This has led customers to an improved ability to “articulate value expectations” which offers firms key insights to value drivers that fuel consumer buying behavior (Harmon, Laird 1997). With this information, firms are able to create a holistic marketing strategy based on the values and perspectives of they target consumers.

(Source: Harmon, R. (2011) “Concept Selection Process” In-class Powerpoint.)

Taking a look at the basic Product Development Process, this article reviews how social media creates consumer touch points using web 2.0 technologies. Specifically this article analyzes the place of social media with concept development as well as testing and refinement. Through these lenses this article identifies key performance characteristics and metrics for which to measure success. That being said, the entire product
development process is taken into consideration with emphasis on new product creation and production.

1.6 Thesis
Social media has played an integral part in shifting enterprise toward service orientation, therefore aligning customer insight collected through social media to the process of new product development. This alignment, known as co-creation, has reformed the product development and management process to create a system that fully integrates the consumer perspective from ideation to execution.

2. Value Co-Creation
As competition strengthens among all markets, it is important for firms to look to innovative practices for new product development and social media strategy. That is why companies such as Unilever have turn to co-creative strategies to help in the new product development process (McEleny, 2010). Co-creation is the collaboration of users and companies in the process of innovation (Kristensson, Matthing & Johansson, 2007). This trend of co-creating allows companies to gather data straight from their customers and then use that insight to create better products to serve their needs.

While co-creation is a great way to bring in new ideas for the new product development process, it can have its downfall if not managed properly. It should be understood that while companies are gaining insights from users of their products, the users might not always have the best information for companies to use. Each user will have their own opinion and companies will need to sort through all the data to find information that will result in their product being a success.

2.1 The Importance of Co-Creation
Organizations are investing in integrating co-creation into the new product development process. Co-creation is defined as the collaboration of users and companies in the process of innovation (Kristensson, Matthing & Johansson 2007). Co-creation allows organizations to reach out and identify new ideas and concepts from consumers that it is applied toward developing added value to new and existing products. With the rise in social media and Web 2.0, there is a huge opportunity for firms to gain direct consumer insight, which organizations cannot ignore without consequences (Orange 2011).

The online revolution changes the way the consumers interact with brands. The Internet has shifted towards user-driven technologies such as blogs, social-networks, and video sharing platforms (Smith 2010). This revolution results in the increase of user-generated content, global community, and the publishing of consumer opinion (Smith, 2010). Organizations investing in co-creation can take advantage of the opportunities presented from this technological shift in new product development process. The additional value that an organization can gain from co-creation include the following:

• New forms of generating ideas
• Better product designs
• Successful product launches in the market
• Increased brand loyalty
• Reduced marketing costs

These attributes make co-creation an important part of the product development process. The adoption of social media provides an opportunity for organizations to reap these benefits.

2.1.1 Idea Generation

One of the benefits of co-creation is that firms are able to identify new ideas for an opportunity or problem. The formation of ideas about a new product is an important step in the process. Social media platforms have developed a new environment where collaborating and creating content can be done by anyone (Smith 2010). Many organizations have begun to invest in co-creation, creating unique social media platforms where they can have the consumer involved with idea generation. Kraft Foods has implemented such platforms and claim that companies can engage consumers in two-way conversations that provide benefits such as developing concepts that will pass consumer acceptance hurdles (Holay 2011). Pepsi is another organization that has taken advantage of co-creation in regards to idea generation. They developed a program called Mountain Dewmocracy that utilized Facebook, Twitter, YouTube, and a private online forum. The purpose was to include consumers and fans in the decision making process on new ideas for the Mountain Dew brand. The Mountain Dewmocracy was successful in generating new ideas and feedback about future flavors, soda names, packaging graphics, and advertisements (Kumar 2011).

Companies such as Pepsi and Kraft Foods invested in co-creation and saw success in generating new ideas around their products. Firms continue to invest more money into using co-creative strategies because they see the value of gaining feedback and opinions from their customers when developing new products and improving existing ones. Accessing key audiences outside the organization is called “crowdsourcing”, a term coined by Jeff Howe in a 2006 article for Wired Magazine. Crowdsourcing enables companies to access individual members of a network with diverse opinions, judgments, and creative solutions in order for the firm to continue developing new products and identifying new opportunities in the market place (“The Revolution Will Be Shared” 2011).

2.1.2 Product Design

The generation of new ideas can help organizations identify opportunities for improvement in products. This can be the invention of a completely new product or adjustments in a current product. Social media is reorienting the economy where the power is in the hands of the people rather than executives (Smith 2010). This revolution has changed the way people respond to products. Tom Smith writes in his article, “The Social Media Revolution”, that consumers search for information on a product and that search brings back results that is dominated by user content and opinion. Because of this, Smith argues that the networks of influence are growing and dominated by strangers that expose firms to different consumer influence. The opinions we find in online space influence us offline as well (Smith 2010).

With co-creation, an organization can connect with their consumers and create products that better serve their needs and wants (McEleny 2010). Unilever is a company
that has invested online to include consumers in the product and marketing planning processes. Unilever reported that the trials were so successful, that co-creation is now at the start of the development of every new Axe (Lynx) product launched. For Unilever, it is important to include the consumer in the process because they help develop the products they want to use (Smith 2010). By using social media and co-creation, companies can respond to the wants and needs of their customers and continue to improve and create product designs.

2.1.3 Brand Value

When companies interact and include customers in the new development process, they can reduce their marketing costs and increase brand loyalty. By engaging in this CRM activity, customers feel more connected to the brand they helped shape. Organizations also reduce marketing costs because the product relevancy has been enhanced (McEleny 2010). Many companies have created private online forums that include the consumer in decision-making processes. The company New Look created an online forum called MyLook. MyLook taught customers how to be involved in business decisions and it rewarded them for being advocates of the brand. It also encouraged users to provide feedback on product decisions and tie them into the CRM activity (Smith 2010).

Social media enables organizations to get customers involved with the brand and uses powerful marketing techniques such as “buzz marketing” and “word-of-mouth” to increase brand loyalty and brand value (Smith 2010). Social media has also made the consumer a commentator, reviewer, and publisher in the online world. Companies that listen to these consumers gain valuable insight while increasing loyalty because the consumers feel valued as participants in product development and management (Smith 2010).

2.1.4 Building a Co-Creative Environment

Co-Creation has many benefits and values to offer to an organization. There are also many challenges a company may face when implementing and investing in co-creation. Allison Dahl expresses in “Building an Innovation Community” that to “Build sustainable communities, managers need to view technology as an enabler and focus the effort on taking a participatory role and iterative approach to build a system that reflects the needs and values of stakeholders at all levels in the organization.” The key to success is the human-centered approach. There are key success factors for an enterprise innovation community that include (Kumar 2011):

- Stakeholder involvement at all levels
- Pilot program before enterprise launch
- Value proposition for community members
- Network of support
- Transparency of results
- Foundation in current business objectives

Co-creation cannot work successfully without creating an environment that supports its objectives. Organizations must design a platform that sustains consumer involvement. Another challenge is the ability of the managers to create appropriate
mechanisms to aggregate inputs and opinions (“Revolution Will Be Shared” 2011). Consumers involved in the decision-making processes also need appropriate incentives and rewards for the feedback that they deliver.

The factors that Dahl identified for success for building an online community serve as a template for implementing co-creative programs. The first consideration made by managers should be the level of stakeholder involvement in the process. This will then allow for a social media platform design to be created based on the objectives of the program. When this platform is designed, it should be tested before the initial launch. This will allow the organization to make changes and improvements to the design that will improve the co-creation process (Kumar 2011).

When the organization is involved with co-creation, they need to create a value-proposition for the community members. This can include what the company hopes to gain from the collaboration and what rewards and benefits the community may receive for their help. Co-creation is effective when enrooted into the business objectives of the organization and it needs to be clear what those objectives are to the company and the customer. This should be supported at all levels of the organization and results should be transparent to those involved to better create a community.

2.2 Business Opportunity

As competition rises, businesses must find new ways to adapt or innovate according to the changes going on in the market. Businesses that fail to find new ways to innovate and stay ahead of market trends will lose out on potential business opportunities, leaving room for their competitors to outshine them.

Co-creation has helped companies such as Unilever and Dell find success in their product innovation processes. These companies first dipped their toes in the co-creation waters by beginning with trials. These trials proved to be so successful that they have decided to keep this method as part of their long-term strategies and use it towards other areas of the business (McEleny 2010). Other companies such as Starbucks and Kraft have found co-creation to be quite useful in their product development process as well.

This method of co-creating with a brand’s consumers helps companies in many ways. It not only helps the company produce a product or service that aligns with the needs of their consumer, but it saves the company a good amount of money and time in the long run (McEleny 2010).

2.2.1 Co-Creation and Social Media

Companies that use co-creation are those that are able to spend a good amount of time engaging with their consumers. Depending on the amount of engagement a company is able to participate in will sometimes determine the success of their end results. Also, the size of the company influences whether investing in co-creation will result in a success as well. This is because these larger companies will most likely already have a loyal customer base, which will allow them to create online communities to gain insights from them, whereas small companies may not have these types of resources (McEleny 2010). Smaller companies then should first utilize social media to see what their customers are saying and gather data from that process, before they make any steps to integrate co-creation into their strategies.

Companies who integrate co-creation into their product development strategies
are also successful because they treat their community of customers not just as respondents, but also as partners (McEleny 2010). They don’t just receive feedback from customers and call it good. Co-creation is a process that involves the customers and the company from beginning to end. If companies are merely only using social media without the co-creation component, it doesn’t do the company much good and doesn’t gain them very much insight into what trends are becoming more prevalent in the market. To be successful, companies need to involve their customers in the product innovation process from beginning to end.

### 2.2.2 Co-Creation Strategy

A study that was done to find out how to successfully implement co-creation into the new product development process found that there were seven key strategies involved (Kristensson, Matthing & Johansson 2008):

1. **Users identify needs in their own setting of use.** This is where users learn about their own needs by engaging with the product.
2. **Users identify needs in their various roles.** This is encouraging users to adopt or consider the various roles they play. The product development team is more likely able to obtain a wider array of original and value-creating ideas.
3. **Provide users with analytical tools.** This simply means that having more knowledge can help create ideas.
4. **Motivate users via the apparent benefit to be gained from their involvement.** Users are more motivated if they see that they will benefit from their contributions.
5. **Non-reliance on brainstorming when generating ideas.** Best ideas are from real life experiences.
6. **Users not having too much knowledge of technology.** Users who have too much knowledge have a more difficult time coming up with more creative ideas.
7. **Involve heterogeneous groups of users to ensure that a diversity of ideas is provided for future services.** Companies risk creating a product that is only valued by a small segment of people. Companies need a diverse group of potential users.

Integration of these seven strategies into the co-creation process can help reveal user’s latent needs that could result in successful development of new products.

### 3. Literature Review

The literature review examines current knowledge and contributions to topics, which enhance the understanding of social media’s application in new product development. The literature review continually update new and current knowledge and information on a particular topic. In the realm of social media, concept generation process, new product diffusion and co-creation have been analyzed. In concept generation, creativity is the main aspect that is crucial to producing successful concepts. The main idea is to blend base concepts together to generate new ideas. As new product diffusion models have been under close watch, they have continued to be critiqued over the years. The flow of communication and personal influence are believed to play a bigger role in new product diffusion then have been lead on because they shape the
diffusion process from innovators to laggards. Social media has now allowed companies to gain access to consumer’s wants and needs while saving on expenses through co-creation while providing a win-win for both the consumer and producer. Next is a closer examination of these topics analyzing the contributions that have been made to these concepts in the past.

3.1 Concept Generation Process

The concept generation process is known to have five steps: clarify the problem, search externally, search internally, explore systematically, and reflect on the solution and the process. The process starts with the customer’s needs and target specifications in mind first. A lot of the time, it is common that a development team will identify 5 to 20 concepts to seriously consider out of hundreds they began with. Each of the five stages can be returned to multiple times throughout the process, and especially when developing new products. That being said, how does the concept generation process benefit Social Media and new product development?

Yukari Nagai, School of Knowledge and Science, Japan Advanced Institute of Science and technology explored studies on the design process and examined concept generation against the problem-solving perspective. In Nagai’s study the concept generation can reveal the “creative features of the design process” (Nagai 2009) and other studies look at the formation of ideas, “New ideas evolve from generated ideas that are invoked form old ideas” (Finke et al. 1992). Lieu et al introduced a different concept generation process that uses stimuli, or more specifically verbs. In the study, Nagai found that, “increasing the number transitive verbs as stimuli may increase the number of complete concepts the designers generate from their findings, that words from lower levels of the hierarchy tended to result in a higher percentage of complete concepts, and that transitive verbs tended to result in more success in the development of complete concepts.” Word graphs were also used in earlier approaches. All of these different concept generation processes have been known to create more concepts faster. With all of the methodologies, Nagai focused on the creativity aspect of concept generation. Nagai, “Attempts to capture the essence of the concept generation process by (1) we compare a design task with a non-design task and (2) analyze the essence of creativity from the viewpoint of the manner in which things re viewed. Nagai combines two concepts together, ‘base concepts’ to create new ideas and concepts from those already existing. For example, the invention of the art knife was formed from base concepts.
Two concepts were used: chocolate segments and sharp edges of broken glass. Taxonomical and thematic are two types of base concepts used. Then using linguistic studies, noun phrases can also generate concepts through property mapping, hybrid linking, and relation linking. The example used was the snow-tomato example where those two words were blended for the concept ‘powdered ketchup’.

<table>
<thead>
<tr>
<th>Design Process</th>
<th>Property Mapping</th>
<th>Concept Blending</th>
<th>Concept Integrating in Thematic Relation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example:</td>
<td>e.g. ‘White tomato’ for Snow Tomato</td>
<td>e.g. ‘powdered Ketchup’ for Snow Tomato</td>
<td>e.g. ‘humidifying refrigerator’ for Snow Tomato</td>
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Two Hypothesis were formed, “(1) The concept blending process characterizes the concept generation process and (2) Non-alignable differences are related to concept blending and creativity in the concept generation process” (Nagai, 2009). Throughout the study, Nagai found that, “the originality of the outcomes was affected by the type of recognition of non-alignable differences particularly in the case of concept blending, which characterizes the design process” (Nagai, 2009).

3.2 New Product Diffusion Model

New product failure rates typically tend to be high, reported to be between 40 and 90 percent (Mahajan, 2000). Linked to high failure rate are internal and external factors that influence new product sales. These factors are both controllable and uncontrollable. Marketing researchers have tried to develop techniques to predict and/or explain these levels of new product sales over time. New product diffusion models can provide information on new product sales and also display the products acceptance through the stages of adoption groups such as innovators, early adopters, early majority, late majority and laggards. How can Social Media aid in forecasting new product failure rates and how products will be adopted in regards to the innovators or the laggards?
Humbert Gatignon and Thomas S. Robertson wrote a paper for the Journal of Consumer Research to provide “New theoretical propositions to advance consumer diffusion research and to provide a foundation for diffusion modeling” (Gatignon, Robinson 1985). They reviewed the above model and made suggestions upon how it could be better. They believe the model could elaborate more for each construct. Communication is known to be a theory of diffusion and focuses on interpersonal communications within social systems. Gatignon and Robertson believe that personal influence is the key player in diffusion as they shape the diffusion process from innovators to laggards. They believe that studies in the past have lacked conceptual impact and new insights and methods on the part of consumer behavior scholars. In this paper they add two conceptual foundations to Rogers diffusion theory; “The role of marketing (change agent) actions and the role of competitive actions”. Illustrated is a diagram or model of the diffusion process and demonstrate that, “the diffusion pattern at the social system level is an outcome of the distribution of individual adoption decisions”. In the figure, Gatignon and Robertson present three types of proposition, those are; construct descriptions, direct causal relationships, and interactions.

Through prior research, Gatignon and Robertson believe that the hierarchy of effects model has ignored “low involvement adoption process models” which involves awareness, trial, attitude information, and adoption. They find it important to look at product diffusion multidimensionally by looking at repeat purchases as well as the width and depth of adoption. Personal influence and opinion leadership are explored as a component of diffusion models. They believe there are flaws in the Weimann’s two-step model and those are; relevance, role, direction, intent, form, sign personal factors, network analysis. Below states Catignon and Roberton’s opinions/corrections respectively:

- Personal influence is operative mainly under a hierarchy-of-effects adoption process.
- When personal influence is operative, it is interdependent with mass media and its effect is most pronounced at later stages of the adoption process. When personal influence and mass media are in conflict, personal influence has greater impact.
- The impact of personal influence is greater under information-seeking conditions and least under information-giving conditions.
- Consumers who are highly dependent on normative influence (conformity intention) will be slower to adopt.
- The impact of visual influence increases with the information content that can be visually communicated for a particular product category.
- Negative personal influence has greater persuasive impact than positive personal influence, assuming a credible source and consistent information content.
- Opinion leader traits vary by product category.
- Homophilous influence is more common, but heterophilous influence beyond the boundaries of the social system is common among innovators.

When viewing the social system and diffusion theory, Gatignon and Robertson characterize the social system in three dimensions; values and norms, system evolution, and homogeneity of population characteristics. They also use three dimension to distinguish the diffusion process; the rate of diffusion (speed), the pattern of diffusion (shape), and the potential penetration level (size). The flow of communication and competition play major roles in the impact on diffusion and how products are adopted. Gatignon and Robertson explore personal characteristics and perceived innovation characteristics. Characteristics such as higher income, higher education etc relates to innovators and relative advantage, compatibility, and trialability are characteristics related to perceived innovation. Gatignon and Robertson conclude that, “consumer diffusion theory has considerable further potential as a theory of communication and as an important framework for new product marketing” (1985). As Social Media continues to grow and aid in the process of new product diffusion, how will companies sustain a competitive advantage when communication and word of mouth is playing such a big role?

3.3 Co-Creation Review

The Millennials were born into the world of technology to the point where people would think they came into this world holding a smart phone. With that in mind, technology is always changing and updating. In the Information Age, companies have to learn how to adapt and work with new technology daily. In today’s world competition is fierce. With competition being so stiff, it makes it difficult for companies to introduce new products to the market. With technology being such a big part of everyday life, companies are starting to look into social media tools. Social media is the quickest and easiest way to gather opinions from customers and to react accordingly to the market demand. Businesses also need to realize social media is not just a passing fad; it’s here to stay and is constantly growing (CRM & Social Media Online, 2010). By implementing co-creation companies can cut down on costs, time, and risk of failure.
3.3.1 Co-Creation Advantages

Co-creation is the process of collaboration of users and companies in the process of innovation (Kristensson, Matthing, Johansson 2007). Co-creation ensures that the experience of consuming a product or service must vary from consumer to another (Cova, Dalli, Zwick 2011). Co-creation is a great tool for companies to utilize in new product development. By implementing co-creation companies can gain insight on what consumers want and need without the added expense of marketing campaigns. How do we determine why a consumer would participate in the co-creation process? “An interaction can be described along three main components: the content, the process, and the people. Further, one’s expectations of how an interaction should look are affected by motives and personality (Fuller 2010, p. 100).”

Figure 1, shows the framework used in virtual co-creation stating that there are five components to be considered that all link together. Content being what the product or task the consumer is dealing with and the partner the consumer works with are linked together. The personal characteristics, motives, and process are linked together because it determines how that consumer would interact during the co-creation process. As described in Fuller, one of the components that influence the process is motive. There are ten different motive categories for engaging in co-creation that Table 1 describes.
"Consumers engage in virtual co-creation activities because they expect doing so will be rewarding. It is either the outcome linked to the engagement such as a better product or receipt of an incentive or it is the task itself which consumers derive value from (Fuller 2010, p. 1).” A consumer considers activities highly rewarding when “flow” is experienced. “Flow refers to a highly enjoyable and intrinsically rewarding “optimal” experience during which consumers get totally absorbed by the activity and lose any sense of time and space (Fuller 2010, p. 1).” Consumers experience flow when the activity is just the right amount of difficulty that gives them a feeling of control and makes it interesting. So not only is the company gaining value from the information that they receive from the consumers, the consumer is gaining value from participating.

An example of a company that utilizes co-creation is Mountain Dew. Mountain Dew launched its project called Dewmocracy, which involved 4,000 of its loyal fans to help create three new Mountain Dew flavors. The customers collaborated with the company on the flavors, name, color, and packaging design for the new drinks. Frank Cooper, CEO at PepsiCo said, “By maintaining an open dialogue with our consumers through an intense, year-long collaborative project, we’ve offered them an opportunity to leave their imprint on a brand they truly love and have solidified an even stronger relationship with fans who matter most” (Verrider 2010). Not only does the consumer gain a sense of value from co-creation, the company also gets the incentive of the ability to charge premium prices for the co-created product and service. By creating an

<table>
<thead>
<tr>
<th>Motive Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic</td>
<td></td>
</tr>
<tr>
<td>Interest (IT)</td>
<td>Individuals contribute to new product development because they may consider it as enjoyable and rewarding activity other than the effort.</td>
</tr>
<tr>
<td>Curiosity (CI)</td>
<td>Consumers may engage in virtual co-creation activities because they are curious.</td>
</tr>
<tr>
<td>Attitude—Community Support (AC)</td>
<td>Attitude may mediate consumers to engage in virtual co-creation activities and to support producers in innovating new products.</td>
</tr>
<tr>
<td>Main Friends (MF)</td>
<td>Getting in touch with like-minded people—employees and consumers—may be a reason for consumers to participate in virtual NPD.</td>
</tr>
<tr>
<td>Self Efficacy (SE)</td>
<td>Consumers virtually working on new product development tasks, similar to “Hackers,” may derive a sense of accomplishment due to their contributions.</td>
</tr>
<tr>
<td>Information Seeking (IS)</td>
<td>Consumers may engage in virtual co-creation activities because they are seeking information or product-related information pertinent to their hobby or upcoming product purchase.</td>
</tr>
<tr>
<td>Skill Development (SD)</td>
<td>Engaging in virtual new product development enables consumers to improve their-skills and gain additional knowledge.</td>
</tr>
<tr>
<td>Recognition—Visibility (R)</td>
<td>Consumers may participate in virtual new product development to become visible and get recognition from other participants as well as from the producer.</td>
</tr>
<tr>
<td>Personal Need—Deprivational (D)</td>
<td>Personal need may motivate consumers to virtually engage in virtual NPD.</td>
</tr>
<tr>
<td>Compensation—Monetary Reward (C)</td>
<td>Immediate as well as delayed payoffs such as...</td>
</tr>
</tbody>
</table>

enjoyable co-creation experience, it positively impacts the relationship between consumers and the company as well as the consumers and product relationship. An enjoyable and compelling co-creation experience positively affects trust, word of mouth communication, and brand image. The marketers’ job is to create a positive experience that challenges the consumer enough to keep their attention focused on the task, but not so difficult that the consumer becomes frustrated with the task. Customer management must also find a way that consumers can act, innovate, tinker, and run free while harnessing the information that is received. Co-creation offers insight into what the consumer wants and needs. By getting consumers involved in the very beginning of new product development it saves the company time, energy, steps, and costs. Companies waste a lot of time and money on new products that need to be changed and redeveloped, losing half the market in the process. By involving consumers, companies get an idea on what needs to be done to a product so that it does well in the market.

3.3.2 Co-Creation Disadvantages
Co-creation offers many advantages but there are also disadvantages to implementing co-creation. While co-creation gives companies a look into what the consumer wants and needs in a product, the company could also be receiving information that would satisfy the market as a whole. If companies don’t interpret and manage the information coming from the co-creation process the opinions could get lost and the success of the product could drop. Communication is a big process of co-creation. There is constant communication between company officials and the co-creation participants. Being able to keep track and categorize the conversations between both sides is a key part of the process. “Conversations are likely to be non-linear and even “double-back” to previous points of common interest. Thus these conversations are often not useful for refining current services or testing new features for next-generation products (Lusch & Vargo, p 112).”

Another disadvantage of co-creation is the costs associated with the process. The first cost is the “time-to market cost” (Lusch & Vargo, p 115). Co-creation takes a long time to integrate. If a company is under pressure to get a new product or service into the market as quickly as possible, co-creation should wait until getting the product to market is not an issue. Using co-creation in short time constraints could result in losing half of the market. The second cost that could come into play is opportunity costs. While the opportunity costs are short term, it still needs to be taken into consideration while thinking about implementing co-creation into the business plan.

3.3.3 Cultural Implications
Marketing is different in every culture. To market a product in different countries, companies must realize that one marketing campaign does not work globally as well. A product that is marketed here and has a huge success rate may not do that well as a foreign country such as Asia. When creating new products and using co-creation and social media tools, companies must take into consideration the different cultural views. Everything about a product needs to be tweaked to some extent before it can be marketed to consumers in different countries to become successful. "Consumer culture denotes a social arrangement in which the relations between lived culture and social resources, between meaningful ways of life and the symbolic and material resources on which they
due, is mediated though markets (Penaloza & Mish, 2011).”

“Due to the dynamism and multidimensionality of value, value co-creation processes often depend on how consumers interpret market offerings, marketing communication, quality, performance, and value (Schroeder, 2011).” The company cannot create value; value is created by how the consumer interprets and accepts the product or service. Firms offer a value proposition to the consumer and the consumer interprets value from the offering.

4. Case Analyses

The use of new social media tools such as Twitter, Facebook and YouTube have become so prevalent in today’s society that companies are making drastic changes in the way they connect and market to people. In order to maintain a strong market share it is necessary that these companies keep the marketing aspect of their business in strong correlation with the evolution of technology. By connecting with people on a more personal basis through the social media tools, companies have found it easier to reach their consumer with more personalized ads, easier to hear the voice of the customer (e.g. blogs), connect with the people on a regular basis and provide information about new services or products being offered. Companies have found much success by having kept up with the technology trend; companies are earning higher profits while keeping customer satisfaction at an all time high.

These particular cases were chosen upon a medley of factors relating to the application and success of social media tools. While reviewing firms, it was important to note the integration of social media comparative to other companies. This article analyzes industry-leading firms that chose to embrace the powers of new media before their competition and therefore exemplify the authentic effects of optimal word of mouth marketing. Another criterion was the application of social media from a top down approach. This article also analyzes inherently market-oriented, learning organizations so therefore the executives implement the company culture and diffuse it through the rest of the corporate hierarchy. This way, social media is a conscious, strategic choice that is both parts planned and organic. Through this criteria, the case studies show off well articulated social media strategy within new product development that is aligned with the mission and vision of the companies.

4.1 Social Media Application in B2B, B2C Strategy

Although marketing through social media tools is commonly viewed as a technique in the Business-to-Consumer business type, it also has prevalence in the Business-to-Business practices as well. The motives behind marketing within both of these business segments are the same for each of the firms in both categories. In simple terms they are both trying to engage and attract the attention of customers and potential customers in our environment of evolving technologies. Dan Ziman, who is the director of marketing programs for Emeryville, provider of Lithium Technologies states, “Some of the larger communities are more B2C oriented, but that’s the nature of the beast” (Musico 2011). Dan also expresses that only about 40% of his companies customer base is B2B oriented whereas 60% is B2C oriented. This shows that there can be both types of business marketing practices within any given firm, and in this example the B2C marketing via the social tools was in higher proportion in comparison to the B2B oriented
marketing.

Although the motives behind the use of social media in both business practices are similar, the aspects of marketing in both segments have their differences. “Adoption is not different among B2B and B2C companies out there- that’s driven by demographics,” says Anthony Nemelka who is the CEO of Mountain View, which is an on demand social CRM provider Helpstream (Musico, 2011). He also says that in B2B community forums (online interactive websites) most of the company employees take the role of being the community managers as well where as in B2C forums the community managers are mostly the customers sharing ideas and thoughts.

There are many arguments suggesting that B2B practices in social media are more effectively handled (and may even be more prevalent) than B2C social media marketing practices. According to an article in Business Insider by Alexandra Reid (Reid, 2011):

- 81% of B2B companies maintain company related profiles on social networks, compared to 67 per cent of B2C.
- 73% of B2B companies monitor brand mentions, compared to 55 per cent of B2C.
- 66% of B2B companies engage in discussions, compared to 43 per cent of B2C.
- 50% of B2B companies upload content to social networks, compared to just 32 per cent of B2C.

Though the practices of social media marketing in both business aspects may have differences, the utilization of both types is prevalent in most companies. Companies find most success in marketing in both segments to reach a broader audience and to create stronger ties with direct customers and their business partners as well.

4.2 Automobile Industry – General Motors

The General Motors Company, also known as GM, is a U.S.-based automaker with its headquarters in Detroit, Michigan. The company manufactures cars and trucks in 34 countries. The company also employs 244,500 people around the world and sells/services vehicles in 140 countries (Wernle 2011). General Motors is a prime and excellent example of a company falling within the automobile industry using social media to market their products and connect with the consumer on a more personal basis than ever before. General Motors has successfully created a way of connecting with their customers through Facebook, Twitter, YouTube, LinkedIn and other forms of blogging via the Internet. General Motors has found that by using these tools in conjunction with their company’s objectives, they have successfully been able to handle customer complaints with much more proficiency, advertise new product or services to a larger number of people, receive customer feedback on products, increase company profits, increase awareness of their brand (creating brand loyalty) and raised the level of satisfaction among customers through listening to the voice of the customer.

4.2.1 Challenges

Due to the fall of the financial industry in 2007, corporations falling within many industries faced hardship. General Motors was a company within the automotive industry that was hit hard by the decay; GM filed for bankruptcy in June of 2009.
GM has faced many difficult financial times from the time the company was started and has always found a way to “get back in business.” The company has built an excellent reputation through being so resilient to hard economic times. Since the company was not doing well in 2009 due to a fall in the economy, they lost touch with customers and consumer confidence in the brand plummeted.

### 4.2.1 Solutions

GM put together an extensive social media team consisting of members with backgrounds in finance, media relations and marketing in May 2009 (Wernle, 2011). The group’s task was to “implement and oversee a tidal wave of social media touch points that introduced the freshly restructured GM brand mentality with openness and consumers at the center.” Through the use of platforms such as Twitter and Facebook, GM was able to get an insight of what people were saying about the brand (brand reputation) and from there they were quickly able to justify any misconceptions without distancing the customer. GM was able to successfully communicate any misunderstandings through these social media tools and in return helped boost the corporate title once again.

GM has been very successful at taking full advantage of the social media tools offered. They have successfully created an image among the most popular tools (Facebook, LinkedIn, YouTube and Twitter) and raised brand awareness as well as customer satisfaction to an all time high. The following is a list of tools they have taken advantage of and the numbers to show the success (Wasserman, 2011).

- Approximately 298,063 “likes” on their Facebook page
- Over 20,000 followers on Twitter
- Over 2,620,450 total uploaded views on YouTube
- Over 31,000 followers on LinkedIn

These numbers represent the quantity of consumers they have an almost a direct connection with. These numbers show how GM has been extremely successful with this new means of marketing and connecting to the people and overall this has benefited the company’s reputation as well as their financial earnings.

GM is also another prime example of a company using social media tools in B2B type of marketing. GM is directly trying to engage the customer with blogs and interactive web services to help them better adopt the trend of evolving technology and in doing so they are holding a strong point of the market share in the motors industry.

### 4.3 High-Tech Industry – Cisco Systems Inc.

Cisco Systems Inc., started in 1984 by husband and wife Len Bosack and Sandy Lerner. Cisco is one of the worldwide leaders in networking, transforming how people connect, communicate and collaborate. Cisco is a publicly traded corporation (NASDAQ: CSCO) with a Q4 FY11 Revenue of $11.2 billion, and employs 71,825 people. Even though Cisco is a giant in the high-tech industry and have been around for 20+ years, they still face challenges in areas, like product innovation and development. Cisco employed the services of Spigit, an innovation company that produces results using social media, to help them in their endeavors (Cisco 2011).
4.3.1 Challenges
Cisco was facing a few challenges that they felt Spigit’s expertise could assist them with, such as:
- Create a truly global contest website that can track user ideas, facilitate collaboration and increase customer engagement
- Implement a software platform to manage submissions and automatically surface the best ideas using factors besides just popularity
- Employing a more intelligent approach than just simple “post & vote” functionality
- Build a community that can easily scale to accommodate two million users and incorporate multimedia to showcase Cisco products

In short Cisco was trying to create a social network that incentivized “thinkers” to create, post, discuss, develop, and engage on innovative products and services.

4.3.2 Solutions
With the help of Spigit, this is what they came up with as some solutions:
- Designed and implemented an external Cisco I-Prize community powered by Spigit that includes voting, comments and an idea market to identify Cisco’s next billion dollar idea
- Spigit’s Innovation management platform in combination with Cisco’s collaboration tools, will serve as the platform by which entrepreneurs can submit, share and build on their ideas with fellow innovators
- The Spigit platform will also serve to evaluate all entries for their technology innovation and business value and receive the US $250,000 prize
- Include functionality for Reputation scores via RepURank algorithms to assign value to an idea based on several factors like the idea generator’s reputation, role within an organization, level of expertise, number of votes and by the 360 feedback given by the community (Spigit)

The results of the I-Prize competitions were substantial. A total of 2900 participants representing more than 156 countries submitted 824 ideas to the competition. The ideas were then narrowed down to 32 semifinalists, and nine teams representing 14 countries in six continents reached the final phase of the competition. In the end team Rhinnovation prevailed with their idea for Life Account, which proposed creating a physical and virtual platform that facilitates connectivity along with smart objects, people, and information. With such great success Cisco and Spigit in January 2010, they launched I-Prize 2 (Cisco 2011).

Cisco is an example of Business to Consumer type of social media marketing. Cisco is trying to engage their stakeholders directly through the use of idea sharing via an I-Prize contest showing direct relation from the business to the consumer.

4.4 Hospitality Industry – Hospitality Social
Hospitality Social is a hospitality company out of Naples, Florida. They specialize in increasing the overall dining experience for restraints through offering wine menus on an iPad on their very own Personal Sommelier iPad Wine Menu System. With word of mouth having traditionally been the most important focus for restaurateurs and hospitality executives, social media now makes that viral. By combining the iPad with expert advice, it will improve the dining experience and will give a significant advantage to any venue that has it.

4.4.1 Challenges

With increasing competition within the hospitality industry, Hospitality Social needed a way to maintain its improve its value offerings to existing and potential consumers. While more traditional forms of marketing and customer service have been employed within the Hospitality Industry, it was clear that consumers expected more and therefore Hospitality Social needed to find ways to cultivate and deliver perceived value in both those categories.

4.4.2 Solutions

Hospitality Social has combined social media with restaurant menus. Their interactive menus on Apple iPads will take wine lists and food menus and create pairs based on restaurant suggestions and also consumer suggestions. By doing this switch from paper menus to interactive iPad menus there has been many benefits, such as:

- No more paper menus. Increase in wine sales (20%)
- Interactive wine lists improve your guests' experiences
- Operational Benefits, like an automated 86 list
- Enhance and extend your brand to the table
- Increase repeat business
- Enhance venues with and without sommeliers
- Guests love it
- Guests keep track of the wines that they liked without having to call the restaurant the next day
- For restaurants with sommeliers, provides an interactive tool for conversation
- Increase the value of your selection by comparing ratings and price
- Build your Wine IQ by understanding what wines are selling (Hospitality Social)

4.5 Web 2.0 Tools- Spigit

Throughout the case studies there were a handful of turnkey concept development solutions mentioned. Spigit was one tool worth mention in the context application in the aforementioned case studies. Spigit harnesses the power of social media to connect engaged communities on developing new products, solutions, and services. An overview of their core competencies is taken from their corporate website:

Spigit, the crowd innovation company, creates a new paradigm for realizing untapped business value, connecting employees, customers and business partners for innovation and insight discovery. Using social technology and the power of crowds, Spigit’s solutions tap into the collective intelligence of an organization and transform it into actionable, predictive information. By incorporating an effective mixture of game mechanics, social recognition and rewards, idea graduation, and idea trading, Spigit allows companies to harness the social capital within their
internal and external communities and pinpoint the ideas that drive revenue and generate cost savings. Spigit has done such a great job of using the power of social media that companies such as Overstock.com, AAA, US Bank, City of New York, Estee Lauder and Capgemini have employed them to develop new products and services through Spigit’s crowd innovation.

So what is crowd innovation? “Crowd innovation is a new paradigm for finding unexpected business value” (Crowd Innovation). Instead of building centralized R&D or innovation teams, you reach from the edge of your organization to the core, activating the knowledge of the crowd: your employees and customers. When you provide your crowd with interactive and engaging tools, social forces take over and the crowd transforms into a cohesive community that delivers results.

Crowd innovation is the process of directing the crowd to solve your strategic objectives. By tapping into the intellectual power of employees and customers, enterprises have the ability to spark innovation and deliver ideas that can transform their business and create competitive advantage. The collective knowledge of these groups can be powerful when channeled towards problems of mutual interest, and more importantly, they have the ability to scale in ways that other methods can’t” (Spigit 2011)

How does Spigit work for product development and innovation? First they connect. They help unite your employees and customers. This is key to uncovering new and better business solutions. By breaking down the walls of traditional corporate communication and leveraging the available expertise of your people, it allows your company to find the best ideas rapidly.

Next Spigit helps your company collaborate. They use the combined intelligence of the crowd to ensure that the best ideas come to the surface, are polished, and implemented. They assist in engaging your internal and external communities to create business value.

Lastly Spigit helps create. They open up channels for purpose-driven, scalable innovation community creation, which is key to generating valuable business results. Without the ability to evaluate and select the best ideas from your crowd, engaging the community is pointless. Leveraging crowd innovation workflow processes such as intelligent workflow automation and idea evaluation task management allows you to align worthy ideas to specific corporate strategies. Actionable ideas are then transformed into innovative solutions, products, and services for your business (Spigit).

4.6 Conclusions

Companies that successfully align business strategies with technological trends will excel in their industry and be top competitors in the market place. The utilization of social media tools to market business propositions will only produce better business practices, a higher customer/business relationship and increase company profits while keeping customer satisfaction at an all time high. Keeping up with technological trends in the changing environment will keep companies from falling behind in the market place to other companies who are making better business decisions in correlation with technology.

To measure the results of social media is a case-by-case scenario. For the Cisco case study, the results are evident in the amount of submissions and engagement from contestants. With over 2900 contestants and 824 ideas submitted, Cisco’s
competition utilizing social media and co-creation was successful for both Cisco and the contestants (Cisco, 2011). With Hospitality Social, the iPad wine sommeliers, results were also relevant. Wine sales, for the participating restaurants, increased by 20%, plus with the automation of services we can assume that efficiency increase which helps the bottom line (Hospitality Social, 2011). For Spigit, the Idea Generation Company, measuring success in co-creation with them can be seen through Cisco’s results as well as the other satisfied clients. With their 3 step strategy plan of connecting, collaboration, and creation they have seen a number of great results (Spigit, 2011). The hardest to measure would be the traditional way of thinking when it comes to social media and co-creation. GM has utilized Facebook, Twitter, and YouTube, but from more of a customer service end. Through engagement GM can gather data on what their target segment wants in future products. What they do with that feedback from the consumer has yet to be seen, since their footprint in social media is still fairly new. Only time will be able to tell if GM has taken those comments and utilized them in the development process of co-creation in their future products.

5. Analysis
The analysis section offers an in-depth interpretation from the basic concepts offering in the beginning of this article and applied to the aforementioned models. Social media can be integrated into all existing new product development processes and in the following article this article explores the role of the consumer as a co-creator with the respective firm. Within the product development process, the analysis sections emphasizes specific parts of the system in order to provide a comprehensive understanding of social media’s influence within a firm’s value creation process.

5.1 Co-Production
Co-production is based on the evolving relationship between consumer and firm, with emphasis on the value-added activities toward product development. Essentially, co-production is the social exchange and adaptation of an offering based on the collaborative efforts between firm and consumer. Both parties are interested in attaining value either through a product, of through product feedback. As the typologies of social structures have changed, the utilization of co-creative activities has been a natural evolution to optimize the new product development process. Customers are no longer a “passive receiver”, only relevant within product transactions (Wikström, 1996). Rather consumers are now seen as an active participant within the entire process, from product ideation to distribution.

Firms must adopt customer-approach to new product development in order to fully reap the benefits of co-production theory. As enterprise becomes customer-oriented, products are more aptly meeting the needs of its intended audience so that the exchange process is infused with value. Customer feedback has a positive effect on interactive value creation because it enables companies to build a holistic process image for all process participants.

5. 2 Concept Development Process
The concept development process helps organizations to identify customer needs, create concepts for new products, refine the concepts, and test ideas that will later be
developed and planned for product launch. The concept development process contains different stages that allow this to happen. In regards to social media use and new product development, three stages have been identified as being most important:

1. The Concept Generation Process
2. The Concept Selection Process
3. The Concept Testing Process

5.2.1 Concept Generation Process

The concept generation process is a vital step in the concept development process. This is the area where research is gathered to develop ideas that could lead to the development of a new product or improving on an already existing product. The concept generation process contains five key steps to generating ideas that will then lead to the selection process and concept testing. The five main steps are the following:

1. Clarify the Problem
2. External Search
3. Internal Search
4. Systematic Exploration
5. Reflection on the Process
Through the process, one begins to understand and generate ideas for products that may meet a customer’s needs and unlock solutions to developing a new product. Social media can play a vital role in this process because it allows companies to connect with consumers in order to share ideas and gain awareness of existing product issues or generate ideas for a new product to meet a customer need. The first step is identifying the problem. Firms are able to listen to the conversations occurring online by target audiences in order to identify evolving consumer preferences. Once a problem is recognized, an organization can then perform an external search to find solutions to the problem. Social media can benefit an organization because social media allows a company to connect with the consumer. One example is Mountain Dew’s DewMocracy campaign, a social media marketing effort through Facebook, Twitter, and YouTube, that allowed consumers to play a role in voicing the opinion in new types of soda flavors, advertisements ideas, and packaging selection (Holay, 2010).

Solutions for identified problems can also be revealed through an internal search through the organization. Many companies have invested in creating private social media platforms that allow for members in an organization to share their ideas and voice opinions about ideas for new products (McEleny, 2010). Through an external and internal search, solutions may be generated for the problem and systematic exploration can begin to filter ideas in order to fit how they may work together in solving the problem. This will then lead to the selection process.
5.2.2 Selection Process

After concept ideas have been generated, the selection process is used to refine the ideas that are most important or to be used in further development. The selection process consists of six main steps:

1. Prepare Matrix
2. Rate Concepts
3. Rank Concepts
4. Combine and Improve
5. Select The Best Concept
6. Reflect on the Process

In order to decide what concepts are better than others, a matrix is created to label criteria, referencing, and establish weights for importance. This also includes creating scales and comparing the ideas generated so that they can be ranked. After the criteria is established and concepts have been rated and ranked, an organization can combine and improve the concepts so that the most important developmental concepts move to the next stage of concept testing (Harmon, 2011).

Social media can play an important role in determining what criteria are most important and what the weightings should be for different concepts. A hypothetical example could be found in the guitar instrument industry. When screening different concepts for a new guitar prototype, companies may use online forums to find out what guitar players find most important in the design. This could include what the weight of the guitar should be or the type of wood used to make the body and neck. Participants could give insight to the electronics installed for the pickups and the shape the guitar overall. This co-creation and crowdsourcing can help organizations focus on what is important to the consumer and better prepare for the actual concept testing.
5.2.3 Concept Testing

After concepts have been selected, the next step is to test the concepts. The concept testing section of the concept development process is important because it decides what concepts are no/go decisions, what market to be in, selecting the best concepts out of alternative ideas, making improvements, and forecasting demand. The concept testing process is made of seven stages:

1. Define the purpose of the test
2. Choose a survey population
3. Choose a survey format
4. Communicate the concept
5. Measure the customer response
6. Interpret the results
7. Reflect on the process

Social media is most useful in the concept testing process. The different platforms that social media provides allow companies to engage through concept generation stages to build rich information that can lead to better testing results of a concept. After an organization defines what the purpose of the test is for and what market they want to focus their efforts on, they are able to choose a survey population and format, which allows for the concept to be tested. Companies have been using social media to identify the population of interest. Social media allows for many different formats to survey that population, which can include online forums, video chats, blogs, and online surveys.

Social media also provides new opportunities for how a company communicates the concept to the tested population. Some communication techniques include videos, sketches, and working prototypes. Online social media allows for companies to be creative and measure responses from the survey population by using interactive media on different fields. The innovations in real-time data collected from online also allow companies to measure responses and analyze data more efficiently. This can then lead to deciding what concepts more forward in the concept development process.

This was true for Domino’s Pizza, who re-established their organization and its products after years of losing market share and facing negative criticism from consumers. Domino’s Pizza developed a completely new pizza and menu based off of customer feedback through social media channels. Through Facebook, YouTube, and Twitter, customers were able to provide comments and criticisms about the new pizza qualities and areas Domino’s could improve. The results of the new menu and brand image has led to Domino’s moving to the 2nd largest pizza chain and higher revenues (Kumar, 2011). Brewtopia, a company that specializes in customized brewed beers, also utilized social media in the product development. They created an online community where beer enthusiast decided on every detail of the product in its development. Members could vote on what the alcohol content should be, what packaging design should look like, and the flavors of the beer (Kumar, 2011). The members were rewarded with dividends based on how the beer sold in the market for their participation.

This co-creation allows companies to develop the product and save time on revisions after product launch because it is relevant to the consumer who help create it and more aware in the mind of the customer. There are pitfalls to this co-creation development with social media. Companies must realize that certain segments of the
public are more aligned to help in the development process than others and it can be a challenge deciding on who should be involved. This becomes the second challenge because people outside the organization can reveal prototypes and future projects on social media that can compromise the future launch of the product in the marketplace. It is important that organizations that utilize social media in new product development create established boundaries and guidelines that allow for the organization to be protected. It is also important for organizations to also not ignore the internal environment in gathering ideas.

### 5.3 New Product Diffusion Model

Social media offers new product offerings to diffuse at rates like never before, challenging the paradigms of consumer adoption and technology life cycle models. The traditional social network, as it is known now and as it was known ten years ago, still serves as the conduit to innovation. The difference is the socialization of the networks so that consumers are able to interact with peers and brands in real-time, offering authentic insights and valuable consumer feedback. The development of online social networks (e.g. Facebook, Twitter, Google) has evolved marketing strategy so that firms interact with target consumers within the social network. Marketing efforts have shifted to focus on “enhancing the internal influences in those networks” (Peres, Muller, Mahajan 2010).

The initial model used within product diffusion was an aggregate model, which represents the overall results of individual-level processes. The most popular diffusion model is the Bass Model, which makes the basic assumption that the “social system is homogenous and fully connected” (Peres, Muller, Mahajan 2010). This aligned adoption process is represented at the aggregate level, but further research has shown that social networks are not homogenous or fully connected (Kossinets, Watts 2006). Therefore, diffusion models are now extending past the aggregate level to an individual-level perspective. However to create a holistic picture of a market, the individual-level and aggregate market formulations should be equivalent. An advantage of using agent-based models is the ability it allows firms to account the spatial qualities of diffusion, a measure of special density of adoption, which can be applied to forecasting the success or failure of a product (Peres, Muller, Mahajan 2010).


Another element affecting the modern product diffusion model is social contagion, or imitative behavior shared by consumers. The relationship between social contagion and new product develop and marketing are as follows: (1) social contagion
among customers is at work, (2) some customers’ adoptions and opinions have a disproportionate influence on others’ adoptions, and (3) firms are able to identify and target those Influentials or opinion leaders (Iyengar, Van den Bulte, Valente 2011). There are various roles within new product diffusion that facilitates growth or hinders it. Research on social contagion has studied the key players in these social networks and observed the influence of opinion leadership on new product infiltration. There is evidence that social contagion transcends network ties and that “the amount of contagion is moderated by both the recipients' perception of their opinion leadership and the sources' volume of product usage” (Iyengar, Van den Bulte, Valente 2011).

Understanding the relationship between Influentials and general consumers will help shape the idea of network structure; a key factor in determining an innovation diffusion process and its pattern. These network shape typologies used to reenact the behavior of its participants has helped shape the development of new product diffusion theory. The network structure allows researchers to see into the behavior and communication habits of its individual agents, offering insight into the degree of connectedness between members of a network. The conclusions regarding social contagion support the use of “network-leveraging campaigns hinging on central Influentials exerting above-average social influence on other customers” (Bohlmann, Calantone, Meng 2011).

The relationship between players within a social network is determined in large part by the digital divide. The digital divide has inspired global enterprise to questions the relationship between those who have access to technology and those who do not. This gap, whether it is narrowing or widening, defines new product diffusion models across all industries. Internet diffusion is the primary issue of global divide and has shaped international policy and marketing tactics (Huang, Chen 2010).

6. Conclusions

Businesses can use certain strategies to ensure the successful implementation of social media into their new product development process, as well as learning from other firms who have used social media in their business model, but there are other factors that could cause a barrier to a business’ success. Businesses need to also be aware of the structure of social networks and how it influences the new product diffusion process. Another important issue that businesses need to be aware of is the internet diffusion
process and the digital divide and how this affects the business’ ability to connect to their consumers in a way that will be beneficial to the new product development process.

6.1 Social Networks and New Product Diffusion

One of the primarily conclusions of this paper is that network structure is a key factor in determining an innovation diffusion process. This allows marketers to understand the pattern of new product diffusion in the sense of the influence of individuals and on a larger level, network structure. Because of the socialized nature of today’s virtual networks, new product diffusion has been optimized so that the diffusion process as well as customer feedback occur alongside one another. Firms are now able to tap into key players and social agents within the product diffusion process in order to encourage consumer adoption and product growth. Marketers must understand social structure in order to identify key social influencers in a peer group mix at the cohort level so that they may design messaging that is diffused through a target market successfully. Social networks have optimized information flow facilitated disproportionately by members within the community. Mobilizing Influentials to evangelize a brand will promote consumer insight that may be applied to the new product development system. Social networks lead the way to understanding consumer’s consumption behavior, which support the success of new product development and management.

Though this paper’s analysis of the new product diffusion model, it is clear that the structure of a social network is key when strategizing a product’s entry into a market. In networks such as Facebook, Twitter, and Youtube there are opinion leaders (media bloggers, celebrities) that have a larger influence over other member’s opinions and consumption patterns. Not only is it important for companies to be a part of social networks, it is in a firm’s best interest to identify Influentials so that they may become a part of the new product diffusion strategy. A major conclusion from this paper is that the flow of communication and personal influence are critical in shaping product diffusion models.

6.2 Determinants of Internet Diffusion

The diffusion of the Internet varies worldwide depending on economic, political, cultural and geographical factors (Crenshaw, Robison 2006). In the United States alone, Internet users represent about 78% of the population (“Internet World Stats” 2011). When looking at the percentage of total Internet users in the world, the results are a mere 30% of the total population.

One study tested seven hypotheses to find the determinants of Internet diffusion rates (Wunnava, Leiter 2009):

Hypothesis 1. *Countries with a higher GDP per capita are more likely to have higher penetration rates.* Wealthier companies are more likely able to invest in more R&D and innovation.

Hypothesis 2. *Countries with more developed telecommunication and technology infrastructures are more likely to have higher penetration rates.* Telecommunication and technology infrastructures are more likely to be available in developed areas.

Hypothesis 3. *Countries with higher educational standards and literacy rates are more likely to have higher penetration rates.* Schools were
among the first institution to heavily make use of the Internet and to introduce students to it. Literacy is found not to be a significant variable. Hypothesis 4. Countries with a large percentage of their population living in urban areas are more likely to have higher penetration rates. Firms want to reach the most number of people at a low cost. Hypothesis 5. Countries in which the population has a high level of English proficiency are more likely to have higher penetration rates. English is the most commonly used language on the Internet. Hypothesis 6. Countries with less income inequality are more likely to have higher penetration rates. It is argued that in countries that have a higher income inequality, fewer people are able to afford the Internet. Out of very few studies to test this hypothesis, one study found that income inequality does not have a significant effect on Internet connectivity. Hypothesis 7. Countries that are politically less free are more likely to have lower penetration rates. The Internet could cause potential problems for the government.

The results of this study confirmed the hypotheses. The diffusion of the Internet varies from country to country due to the factors listed above creating a global digital divide. Wunnava and Leiter’s study suggests that countries try to fight income inequality and promote higher education. Another possible approach is to improve on the existing infrastructure and increase the availability of personal computers. If countries do not work to increase the adoption of the Internet, possible outcomes could include countries not being able to grow due to the inability to access information (Wunnava & Leiter 2009).

6.3 Bridging the Digital Divide

Evidence shows that the digital divide prevents people from accessing information (Liu & San, 2006). This not only applies to Internet users, but to companies as well. The digital divide could prevent companies in under-developed areas from having access to the Internet as well as reaching the right customers that will be the most beneficial to co-creation.

Several studies have been done to find possible solutions to bridging this gap. Most studies have found higher education to be a common solution. In the study done by Abu Bakar Zaitun and Barbara Crump (2005) they suggest that there are four main players that will ultimately play a role in bridging the gap of the digital divide. These players include: institutions of higher education, the industry, the government and the rural community. The figure below shows the roles of the key players in bridging the digital divide.
They go on to list examples of projects that have been implemented to bridge the digital divide gap in Malaysia such as: e-Melaka, e-Bario, The Mobile Internet Unit and Cyber Cafes. These efforts have been made by the government as well as national corporations.

Another article by A.M. Singh (2004) lists possible solutions within higher education to bridging the gap, of which some could be used outside of higher education. Below are some of the solutions to bridging the gap:

1. Develop a technology culture
2. Dispose of outdated technology
3. Provide training
4. Introduce computer literacy and Web-based research across all faculties
5. Develop an e-learning culture
6. Develop an e-research culture

We can see that strategies to bridging the digital divide gap will be an effort made by the four key players but that education plays a huge role. Nonetheless, it is important that the digital divide gap is narrowed. This will help consumers have access to information and also for businesses to grow and innovate because they are able to have access to more consumers that may be beneficial to their co-creation process.

6.4 New Product Development

After analyzing the concept development process it is apparent that there are three main sub-processes that social media can have a dramatic effect on within new product development. The first area is the concept generation process. Social media plays an important role because the technology allows companies to connect to the public and
crowdsource for ideas and opinions. It also allows for a company to search for problems with existing products and solutions to fix and or create new ones.

The second area is the selection process. Because of crowdsourcing and the real-time connectivity associated with social media, organizations are able to take direct feedback from the consumer in optimal concept selection. The third area that social media plays a major role is within concept testing. Because of the many different platforms that social media provides, companies may test concepts with millions of users through various networks and media types. The concept development process is an important model to follow for companies engaging an audience through social media and developing new products with the aggregated insight.

7. Future Research

Something to be considered is how consumers become aware of co-creation opportunities. If a company spends a lot of money on marketing this new process of co-creation for a new product are they really saving money on marketing expenses? It takes marketing and advertising to get consumers aware of the opportunity to help create a new product. This might be able to be put into the opportunities cost section because while co-creation is a good tool for businesses to use in the long run it does take time to implement into the business plan.

It would also be interesting to see what forms of social media are used in the co-creation process. Some of the most popular forms of social media are Facebook, Twitter, and YouTube. In these forms of social media, businesses can get information out to their target audience with a relatively low cost and reach millions. Another way companies can gain feedback from their target market is by creating an interactive website much like Mountain Dew did when they created Dewmocracy. This approach would increase the spending on web development but might become a crucial tool in co-creation.

The application of social media in new product development is so new that future research will be needed to identify best practices and key elements (players, technologies) within a successful social media strategy. Some questions to be answered by future research include:

• How does the concept generation process benefit Social Media and new product development?
• As more and more ideas are generated, what will need to happen in the future to make sure new ideas are original and creative to produce innovative products?
• How can Social Media aid in forecasting new product failure rates and how products will be adopted in regards to the innovators or the laggards?
• As Social Media continues to grow and aid in the process of new product diffusion, how will companies sustain a competitive advantage when communication and word of mouth is playing such a big role?

7.1 Future Research Implications

In many cases it has been show that using social media can be quite beneficial to the new product development process given that the company uses certain strategies to ensure success. However, there can be certain implications that may arise if companies are not careful enough. Such implications include the creation of alter/counter brands,
receiving the wrong information and reaching the wrong users. Some of these implications can cause the company to take the wrong turn in their product development process and create products that may not be needed or wanted by their customers.

7.1.1 Web 2.0 Environment

Companies such as Unilever and Dell have benefited from co-creation, but the analysis needs to take into consideration the implications of co-creation within the Web 2.0 environment. Web 2.0 is known to be a people-centric (Murugesan 2001) and user-generated (Anderson 2007) environment with tools such as blogging and social applications. While this can be helpful to companies, it can cause great implications for brand managers.

Such implications include the development of counter brands and alter brands (Cova & White 2010) as show by the chart below:


Brand strategist and product managers are now faced with situations that they did not expect to get from co-creating. Instead of creating value only for the companies, the consumers are now generating their own communities by making sense of their own interpretations of value (Cova & White 2010). When these “consumer-producers” are equipped with that much information and power, they do one of two things: create their own communities that compete on a conscious or unconscious basis with corporate brands or create a separate brand (Cova & White 2010).

Cova and White states that the positive motives of consumers to co-create value are the development of the community, enjoyment and self improvement (2010). They go on to say that there are also negative motives to opposing the brand community and
use the example of a game called “Warhammer” where the negative motive was feeling exploited by the company. In the case study involving Warhammer games, several online community members created a counter brand community by producing counterfeit products for cheap. Counter brands exist because former brand community members become frustrated with a company’s behavior and then decide that action must be taken. Because of this, the company does not gain any value from co-creation. Instead, they gain more competitors (Cova & White 2010).

In the second case study, the website “Couchsurfing” was introduced as an alter brand community (Cova & White 2010). Alter brands exist to serve the common goals of a community (Cova & White 2010). These communities are created not by negative motives such as counter brands, but actually by positive motives, such as by wanting to create a better community. Alter brands do not create value for companies either and may actually pose as an indirect threat.

In order to prevent the creation of counter brands, companies should prevent members from their online community from being frustrated. They need to do this by making sure that their members know that the company values them and that their contribution is greatly appreciated (Cova & White 2010). In the example of Dell, Dell Hell was created as a counter brand in response to Dell’s poor customer service. Dell responded by creating Idea Storm where consumers could voice their opinions, and in turn, Dell would listen and take action. This worked out well for them in the end because they were able to engage with their consumers to see what they needed to change. In the case of alter brands, companies should strive to connect the alter brands to their own brands so that it eliminates additional competition. Because alter brand communities are created to have bring about an even better community, this can be beneficial to the company’s brand community as well.

7.1.2 Engagement
Any firm can simply use social media to gain feedback from their customers, however the firms that will benefit the most are those that are willing to spend the time to engage with the customers through co-creation. Reading what a customer is saying about the brand is not sufficient enough to use towards developing a new product. Companies who do not have the resources and time to spend on engaging with the customers should not use co-creation and social media as a method (McEleny 2010). If a company chooses to use social media in their new product development process, they must spend a good amount of time engaging with the customers, making them feel valuable and a part of the co-creation process. Otherwise, companies will not get the feedback that they need because they are not engaging enough to probe for more questions and answers between the conversations with their customers.

7.1.3 Segmentation
Another implication of using social media in the new product development process is that companies might find themselves seeking feedback from the wrong users. Companies need to look at lead users who are willing to provide feedback and become part of the co-creation community. The user must be knowledgeable of the product and be innovative. If companies seek information from the wrong users, this won’t help them
in the new product development process because the firm will end up producing products that are not wanted or needed by their customers.


Kumar, V., and Yashoda Bhagwat (2010), "Listen to the Customer," Marketing Research, 22 (Summer), 14-19.


McEleny, Charlotte (2010), “Brands invest in online co-creation,” *New Media Age*, 01-03.

McEleny, Charlotte (2010), “Unilever to use social media to aid product development,” *New Media Age*, 01-02.


9. Appendices
Product Development Process

Planning → Concept Development → System-Level Design → Detail Design → Testing and Refinement → Production Ramp-Up
Broken glass

The art knife
(the first snap-off blade cutter)

Chocolate bar
<table>
<thead>
<tr>
<th>Design Process</th>
<th>Property Mapping</th>
<th>Concept Blending</th>
<th>Concept Integrating in Thematic Relation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example:</td>
<td>e.g. ‘White tomato’ for <em>Snow Tomato</em></td>
<td>e.g. ‘powdered Ketchup’ for <em>Snow Tomato</em></td>
<td>e.g. ‘humidifying refrigerator’ for <em>Snow Tomato</em></td>
</tr>
<tr>
<td></td>
<td>→</td>
<td>→</td>
<td></td>
</tr>
</tbody>
</table>
FIGURE 1. Virtual Co-Creation Research Framework

1) Content/Task: What?
- Kind of product
- Innovation task

2) Process/Tools: How?
- Incentives
- Intensity of participation
- Extent of participation
- Level of multimedia richness
- Powerful tools

3) Partner: With whom?
- Interaction with other consumers
- Interaction partner

4) Motives: Why?
- Curiosity
- Dissatisfaction with existing products
- Intrinsic interest in innovation
- To gain knowledge
- To show ideas
- To get monetary rewards

5) Personal Characteristics: Who?
- Domain specific skills
- Involvement in innovation activities
- Internet specific innovation task involvement
- Adoption and innovativeness
- Novelty seeking
- Exploratory behavior
- Web usage
- Previous innovation activities
### TABLE 1. Motive Categories for Engaging in Virtual Co-Creation Projects

<table>
<thead>
<tr>
<th>Motive Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic: Playful Task (T)</td>
<td>Individuals contribute to new product development because they may consider it as playful and enjoyable activity valued for its own sake, and therefore perceived as intrinsically rewarding rather than an effort.(^a)</td>
</tr>
<tr>
<td>Curiosity (CJ)</td>
<td>Consumers may engage in virtual co-creation projects during NPD just because they are curious. They have a desire of knowledge because of intrinsic reasons.(^b)</td>
</tr>
<tr>
<td>Altruism — Community Support (A)</td>
<td>Altruism may motivate consumers to engage in virtual co-creation activities and to support producers in innovating new products.(^c)</td>
</tr>
<tr>
<td>Make Friends (MF)</td>
<td>Getting in touch with like-minded people—employees and consumers—may be a reason for consumers to participate in virtual NPD. Beyond the interest in the topic, the possibility to get in contact with like-minded people is a reason why consumers engage in virtual communities.(^d)</td>
</tr>
<tr>
<td>Self Efficacy (SE)</td>
<td>Consumers virtually working on new product development tasks, similar to &quot;Hackers,&quot; may derive a sense of accomplishment due to their contributions. They may perceive the co-creation activity as a challenge to be mastered.(^e)</td>
</tr>
<tr>
<td>Information Seeking (IS)</td>
<td>Consumers may engage in virtual co-creation projects because they are seeking innovation or product-related information pertinent to their hobby, upcoming product purchase, or just through novelty seeking behavior. Prior studies show that people participate in online communities because they are looking for more information relevant to them.(^f)</td>
</tr>
<tr>
<td>Skill Development (SU)</td>
<td>Engaging in virtual new product development enables consumers to improve their skill and gain additional knowledge. They may be interested to learn more about new technologies and products, and find solutions to hitherto unanswered questions.(^g)</td>
</tr>
<tr>
<td>Recognition — Visibility (V)</td>
<td>Consumers may participate in virtual new product development to become visible and get recognition from other participants as well as from the producer. Online community members are motivated to share their know-how and participate in activities for ego gratification or the desire for peer recognition.(^h)</td>
</tr>
<tr>
<td>Personal Need — Dissatisfaction (D)</td>
<td>Personal need may motivate consumers to virtually engage in virtual NPD. Sports enthusiasts start to modify or develop their own products because they are dissatisfied with existing products and because they derive benefit from using their innovation.(^i)</td>
</tr>
<tr>
<td>Compensation — Monetary Reward (C)</td>
<td>Immediate as well as delayed payoffs such as... may be the reason why consumers engage in virtual co-creation during NPD.(^j)</td>
</tr>
</tbody>
</table>

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Concept Development Process

Mission Statement

- Identify Customer Needs
- Establish Target Specifications
- Generate Product Concepts
- Select Product Concept(s)
- Test Product Concept(s)
- Set Final Specifications
- Plan Downstream Development

Development Plan

- Perform Economic Analysis
- Benchmark Competitive Products
- Build and Test Models and Prototypes
The classic Bass curve