The role of the web in improving customer input to the service/product development process: Brazilian cases

Cláudia Aparecida de Mattos, Fernando José Barbin Laurindo

University of São Paulo

e-mails: claudia.mattos@poli.usp.br, fjblau@usp.br

Abstract: Nowadays, the economic scenario, sometimes identified as "The Digital Economy" (TAPSCOTT et al., 1996) or "Digital State" (MARTIN, 1997), is vastly known for the increasingly critical role played by Information Technology (IT). In this context, this study aims to investigate how concepts related to the New Economy have been applied to product and services development processes that emphasize customer relationship aspects. In order to investigate these aspects, the adopted methodological approach was case study (YIN, 2002; CLAVER et al., 2000). This research analyzed through two case studies how these companies have been using IT tools to support service/product development processes and which results they have obtained regarding productivity using such initiatives. The preliminary results allowed the identification of enablers and tools to support the development of a new service/product as well as the identification of the components that are used during the innovation cycle of product creation in the New Economy.

Keywords: information technology, internet, virtual customer.

1. Introduction

Information technologies (including computers, networks and telecommunications) are adding new capabilities for rapid and inexpensive customer input to all stages of the product development (PD) process. The Internet (or the Web) has been considered the most ubiquitous IT application (PORTER, 2001; ZWASS, 1998, TAPSCOTT, 2005). Dutta and Segev (1999) mentioned that Interactivity allows increasing the richness in the relationship with customers and creates new paradigms for designing products and services, whereas connectivity allows new coordination mechanisms between an organization and its customers. The Social networks as active participants in producing change (blogosphere, podcasting), e-collaboration between company and customers to provide value for each, ubiquitous technologies leading platform and the Live Web (Web 2.0) are some forms that enable the improvement of customer inputs to the product development process. According to Dahan and Hauser (2001), while information technology transforms internal Product Development processes within firms, it also impacts the firms external interactions with potential consumers of new products. This article intended to analyze, through two case studies, how companies have used IT tools to support the service/product development processes with emphasis on customer inputs to the Product Development and what results they have obtained both in terms of productivity and in terms of productivity with those initiatives. This study was conducted based on data gathered in field research through semi-structured interviews, besides the use of secondary data to deepen the analysis of the objects under study.

2. Theoretical framework

Ogawa and Piller (2006) mention that new products have suffered from notoriously high failure rates. Many new products fail, not because of technical shortcomings, but because they simply have no market. Not surprisingly, then, studies have found that timely and reliable knowledge about customer preferences and requirements is the single most important area of information necessary for product development. To obtain such data, many organizations have made heavy — but often unsuccessful — investments in traditional market research.

In this context, the Web can transform market research, engineering, prototyping, and revision of new products. Web-enabled product development will allow companies not only to drastically reduce costs and time for developing new products, but also to design what customers really want.

Several areas of research accentuate the increasing importance of customer orientation and customer integration. For the success of new products, customer integration is seen as an important factor (COOPER; KLEINSCHMIDT 1995; GRIFFIN; HAUSER 1993). Dutta and Segev (1999) mention that enterprises are increasingly more dedicated to explore the potentialities and capabilities enabled by the Internet. These authors detail this affirmation based on a proposed model, called "The Marketspace Model", which presents two basic dimensions: interactivity and connectivity. These two aspects, interactivity and connectivity, are transforming organizations business models. Interactivity allows a greater richness in the relationship with customers and creates new paradigms for designing products and services, while

connectivity allows new mechanisms of coordination among organization and its customers.

Venkatraman and Henderson (1998) developed a framework (Figure 1) in which virtuality is defined as a strategy that reflects three distinct but interdependent vectors:

- Customer interaction vector;
- Asset configuration vector; and
- Knowledge leverage vector.

That study is interested in the first vector that represents interaction with customers (virtual encounter). This first indicator of organizational virtuality reveals the organization's relationship with the customer. This vector deals with challenges and opportunities for the interaction between companies and customers. IT enables customers to try products and services in a remote way, to actively participate in the dynamic customization process and to create communities of customers.

In the first stage of this vector, customers may be anywhere in the world, having a remote experience with products and services through the intensive use of IT.

In that context, the Web can transform the engineering, market research, prototyping, and revision of new products. Web-enabled product development will allow companies not only to drastically reduce costs and time for developing new products, but also to design what customers really want.

Dahan and Hauser (2001) state that while information technology transforms internal Product Development processes within firms, it also impacts these firms external interactions with potential consumers of new products. Customers' broadband connections at home and at work, combined with emerging Internet panels of willing respondents, mean that Product Development teams can reach customers more quickly and, ultimately, less expensively. Media rich computing and communication mean that product stimuli can include more realistic virtual prototypes and more realistic product features. Also, powerful, server-based software and downloadable applets mean that web-based methods can be more adaptive to customer input and change questioning procedures on the fly.

Dahan and Hauser (2001) mentioned three capabilities of web-based customer input. (Figure 2) The web has made these capabilities more powerful and is putting these capabilities directly into the hands of the Product Development (PD) team.

First capability is related to the Communication that can include much more rapid interaction not only between the PD team and the respondents, but also between the respondents themselves. With this rapid communication, it is now theoretically possible to gather sophisticated market information in a few days rather than the 4-6 weeks that are typical with traditional methods. Web-based customer input can reduce the time required to conduct studies, and enhances understanding of the respondents' task through interactive, hyperlinked help systems incorporated into the website.

The Conceptualization utilizes the graphic and audio capabilities of multimedia computers to depict virtual products and product features. With rich virtual prototypes, the teams responsible for developing products can test their ideas and preliminary designs earlier in the process, well before physical prototypes are built. Although prior research has used virtual prototypes and information acceleration in central-location interviewing, in virtual concept testing (VCT), respondents view new product concepts and express their preferences by "buying" their most preferred concepts at varying prices. Even for products or prototypes that exist in physical reality, virtual depictions have a cost and speed advantage over physical prototypes

Computation enables improvement over fixed survey designs by dynamically adapting web-pages in real time, based on mathematical algorithms, while participants are responding.

Real-time computation also enables stimuli to become dynamic, interactive, and more informative.

For example, instantaneous computation of price and performance as a function of design choices provides key feedback during the user design process. In this way, the end-user can better learn about tradeoffs and his or her personal preferences, thereby improve the accuracy of decisions about an "ideal design."

The capabilities extend and enhance the trends that we have seen over the past ten years as computer-aided interviewing (CAI) has enhanced traditional telephone and central-location interviewing.

Vectors	Stage 1	Stage 2	Stage 3
Customer Interaction	Remote experience with products and services	Dynamic Customization	Communities of Customers
Asset Configuration	Modules	Interdependent Process	Coalition of Resources
Knowledge Leverage	Work unit	Corporate Asset	Professional Community
Characteristics	Stage 1	Stage 2	Stage 3
Focus	Tasks	Organization	Inter-Organization
Performance Objective	Efficiency (ROI)	To Add Economic Value (EVA)	Innovation and Sustainable Development (MVA)

Figure 1. Virtual organization: three vectors and three stages (adapted from VENKATRAMAN; HENDERSON, 1998).

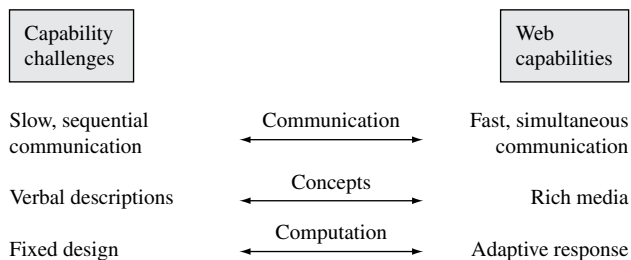| Capability challenges		Web capabilities
Slow, sequential communication	Communication ←——→	Fast, simultaneous communication
Verbal descriptions	Concepts ←——→	Rich media
Fixed design	Computation ←——→	Adaptive response

Figure 2. Virtual customer research exploits three dimensions of the web (DAHAN; HAUSER, 2001).

According to Urban (2000), the Internet can represent an indirect method of capturing unmet customer needs by observing customer interactions with an Internet-based sales recommendation system. By organizing the web site by agendas based on features or customer needs, a virtual engineer can listen in and observe how customers process attributes and, in particular, when they search for attributes, features, or needs that cannot be satisfied by any existing product. Specifically, the companies can exploit new data that are obtained by "listening in" to ongoing "dialogues" created when customers use the Internet to search for information and advice about purchases. As consumer tastes evolve and new technologies make new features feasible, promising unmet-need segments emerge. If the segment is large and the needs are truly unmet, such opportunities can revolutionize the industry. These opportunities are extremely profitable for the innovating firm.

According to URBAN (2000) marketing and marketing research interact with product-development teams at many stages in the phase-review, stage-gate, or waterfall processes of opportunity identification, concept creation, design and engineering, testing, and launch. For example, voice-of-the-customer methods, focus groups, and ethnographic approaches all explore opportunities once they are identified and provide a lens on the needs of a customer segment (e.g., BURCHILL, 1992).

During the "design and engineering" phase conjoint analysis clarifies and prioritizes feature levels. During the "testing" phase of product development, information acceleration methods test virtual concepts and clinics test new physical prototypes. Once needs-based segments are defined, the process is effective and efficient. But the marketing role is not limited to existing market segments.

According to Tapscott and Williams (2007), the rhythm of change and the evolution of customers' demands are so quick that companies can no longer depend solely on their internal capacities to meet external needs. Nor can they rely on relationships that were strongly established with some partners to accompany the customers' desire for speed, innovation and control. Companies must interact in a dynamic way and create in a joint effort with partners, competitors, government and, above all, with the customers. It is important to emphasize that Collaboration is seen as the crucial competence to integrate the individuals' capacity and distant organizations into the creation of wealth in the economy (TAPSCOTT; WILLIAMS, 2007).

Kwak (2001) said that Web sites could use the individual-based approach to construct pseudo-users, and combine them with real customers in a collaborative-filtering system. Using a variety of bots to rate different items, he explains, provides a way to enrich sparse databases and quickly feed in information on new products.

Web-enabled product development can also improve the adequacy of a product to a market by allowing potential customers to "experience" virtual product prototypes several times during the product development, and give detailed on-line reactions to its appearance, functionality, and features. In addition, companies can monitor how customers actually use products to uncover unconventional uses and to determine failure modes. These insights can be used throughout marketing and sales, and especially for customer relationship management (CRM). Hamel (2000) calls this the positive feedback effect. A firm with a large base of users, and a way of rapidly extracting feedback and information from those users, may be able to improve its products and services faster than its competitors. In this virtuous circle, products and product innovation can be improved, which, in return, attracts new customers. In addition to product improvement, a better knowledge of its customers allows a firm to establish a personalized relationship tailored to the needs of every single customer.

McAfee (2006) mentioned that there is a new wave of business communication tools including blogs, wikis and group messaging software — which the author has dubbed, collectively, Enterprise 2.0 — that allow for more spontaneous, knowledge-based collaboration. In that context, those technologies will provide access to expanded, shared experience and knowledge and facilitate meetings among team members to deliver more creative ideas. Collaborative environments will orchestrate interaction within networks of workers, partners and customers to boost creativity and innovation. The Social networks as active participants in producing change (blogosphere, podcasting), e-collaboration between company and customers to provide value for each, ubiquitous technologies leading platform and the Live Web (Web 2.0) are some forms that allow improving customer input to the product development process.

A study conducted from 2003-2006 by McElroy and Gray (2007) with over 27,000 respondents found that respondent participation increases from 13.5% when the respondent feels no affinity or sense of community to over 36.5% when they feel that they are respected, have a high affinity for the company, are told the truth from the get-go and feel relevant.

Theories on subjects as wide-ranging as the diffusion of innovations (e.g. ROGERS 1995), dynamic trading behavior (e.g. HIRSHLEIFER et al. 1994), and the mechanics of word of mouth marketing (e.g. DELLAROCAS, 2003), rely on information diffusion as a central theoretical building block, making important assumptions about how information spreads between individuals. Potential adopters are exposed to new innovations and are convinced to adopt through "processes by which participants create and share information with one another in order to reach mutual understanding" (ROGERS, 1995: 17).

The importance and popularity of social networks has been borne out by the staggering numbers of participants who join the networks. In order to facilitate the collaboration between customers and organization, the companies began utilizing social networks (networks of key product users who had networks of their own). Finally, it should be highlighted that the social networks, blogs, podcast, wikis and user communities and all the other exciting initiatives are critical tools for collaboration, not the substitute for customer interactions.

Social networks are ubiquitous and provide a peer-to-peer exceptionally valued experience for the individuals involved. They engender high levels of trust from customers because the company that is creating the network (and the same goes for user communities though they have a different form and somewhat different function), is involving the customers directly in their thinking and decision making.

According to Armstrong and Hagel (1996) Virtual Communities (VCs) are formed on the Internet and are expected to evolve to a strategically important e-business model. VCs foster trust among their members and allow them to interact, exchange ideas and experiences, regardless of their geographical or ethnic origin. Organizations should consider VCs as a new market place since their members are current or future customers. Through the interaction with the members of VCs, companies will eventually learn more about the needs of their customers, they will also strengthen their relationships and they will be able to customize their services.

3. Case study and results

3.1. Methodological approach

The problem of the present study was investigated through a Qualitative Research approach and the method used was Case Study (YIN, 1991; CLAVER, et al., 2000). According to Yin (1994), the Case Study, or the central tendency of all types of Case Study, is that they aim to clarify "one decision or a set of decisions: why have they been made? How have they been implemented? What results have been achieved?" Clearly, the case study research method is particularly well-suited to IT research, since the object of our discipline is the study of information systems in organizations, and "interest has shifted to organizational rather than technical issues" (BENBASAT, et al. 1987).

The present study was carried out through semi-structured interviews with three professionals from the company and through secondary data obtained from the organization.

Two companies, from different industries, were chosen for this study based on the process they faced towards the interaction with the customer (virtual encounter). Data and information were gathered through semi-structured interviews with different professionals from the companies (business manager, IT professional) and through secondary data obtained from the organization.

The script was used as a data collection instrument, to guide the interviews that were conducted in the field. It was created with the aim of determining the most important points and of linking the theoretical framework with the observed practice. The script was organized and structured based on the theoretical framework described in section 2 (Theoretical Framework). The interviews, regarding their form of operationalization, can be structured or non-structured. For the purposes of the present research, semi-structured interviews were conducted. In these interviews, the researcher aims to obtain, through conversation, data that can be used in qualitative analysis, that is, the aspects considered the most relevant in a research problem. The script was divided according to the sections below:

Section I – Establishing general information about the company.

Section II – Company Virtualization – emphasize Product development.

- The reasons why the companies have been applying virtuality characteristics to their Product development;
- What are the adopted technologies? Why?
- How the virtualization solution affected the company's operations;
- The business processes that were or are being affected by the IT / e-business implementations;
- What results have been achieved?
- The participation of customer s in the specification and design of products; and
- The provision of on-line communications to customers;

The main proposition for this study can be stated as follows:

- Web-based Interaction between customers and organizations offer new promising ways of bringing customers into the company right to where the value creation begins – in new product development.

One of the organizations studied (organization A) is a pharmaceutical company and the other, Organization B, belongs to the telecommunication sector.

3.2. Case A

3.2.1. Description of company A

The pharmaceutical sector is one of the most globalized industries and one of the oldest in the process of production and commercialization diffusion. Company A under analysis is one of the largest pharmaceutical companies in the world and is constantly investing in the development of new medicines. The company has factories in several countries, as well as many distribution points. In Brazil, the company is responsible for conducting and supervising studies on new drugs at several research centers located in states of the South, Southeast and Northeast regions. The company has been operating in Brazil for more than fifty years and is currently responsible for more than 40 products.

3.2.2. The context of company A

The pharmaceutical industry has to deal with regulatory issues, increasing costs, decreasing R&D productivity, among other issues. In this competitive scenario, the company has been searching for new possibilities regarding its business model, aiming to achieve greater competitiveness. As in other sectors, IT emerges as a means to stimulate improvements and competitiveness, allowing for greater customer interaction and connectivity.

Among the tools, the Web produces the effect of increasing the medical community awareness concerning the value of access to information, of continued education, and of the radical paradigm change that the universal presence of this large network has brought to all aspects of society, including the health area. The decision to study this company derives from the fact that it has been investing in many technological tools and that its IT planning focuses on improving customer relationship through the digital channel. One of the investigation goals was to understand why the company has adopted the IT tools and why it has virtualized its processes. One of the company's strategic objectives is to improve customer relationship. Thus, the company's main initiatives are related to the identification of customers who influence opinions and the definition of actions in order to involve them.

> "Our customers are doctors. Therefore, the purpose is that these professionals not only prescribe our medicines, but also indicate them to their colleagues" *(Marketing manager)*

One of the actions that have been adopted to strengthen the relationship is the virtual visits. On a scheduled day and time, the doctor talks with a representative through cameras.

"The main advantages are time and needs flexibilization, content dissemination, the construction of a common agenda and the generation of new themes for discussion in addition to the promotional agenda", stated the sales manager.

The company manager mentioned the importance of the concept of social networks as promoters of the organization diffusion of information and of innovations.

The development of websites for holding e-Symposia, e-Forums and Virtual Visits, aimed at the creation of social networks and communities, in order to disseminate information and exchange ideas. According to company A, the development of the web represents a way to increase customer relationship. The e-symposia define a common object, share knowledge and practices, expand the interaction group, establish an interaction for a short period of time, disseminate contents and information resulting from recently completed studies, metrics are linked to access, visitors, frequency, questions per participant, and requests for reference materials. Another observed initiative was e-forums. The e-forums aims to establish an identity and share knowledge and practices, focus on a socially defined group, allow greater interaction for longer periods of time, stimulate construction around themes of interest and Metrics are linked to access, visitors, frequency, content development, materials download and generation of new discussion groups. Virtual visits can be an interesting way to improve relationship with customers. First, one can make definitions according to the customer's need (date and time), strengthen the relationship (both face-to-face and virtual), share knowledge and practices, disseminate contents, build a common agenda and flexibilize time and need (minutes to hours).

The company's aims with these investments are:
- To create bonds and add value to the individuals, producing a process of concrete and symbolic exchanges;
- To create networks, since in the networks culture develops, is perpetuated or changed; and
- To integrate and to disseminate innovations through the networks.

The e-symposium promotes knowledge exchange, allowing for interaction with lecturers in other countries, groups access, and located meetings. In addition, virtual promotion and connections with other doctors are made possible.

3.3. Case B

3.3.1. Description of company B

Company B belongs to a Technology sector and is present in over 100 countries. It is one of the leading manufacturing companies. It provides equipment, solutions and services for corporations and companies that operate

telecommunications networks. One of its strategic objectives was to promote greater interactivity with the customer. In this sense, one of the company's actions was the implementation of customer relationship processes (Customer Relationship Management).

3.3.2. The context of company B

The focus for that organization was to enhance customer relations but company B has many challenges as for example the lack of customers' transactional data. Another point was the company B's need to develop data capture mechanisms and establishment of a process of interactive dialog with customers. Additionally, organization B aimed to create marketing pieces that could transmit the values of the brand.

To support this initiative, company B started to invest in WEB tools as a means to capture customers' data. The company's CRM manager mentioned during the interview that:

> "the Internet has important characteristics, such as low cost, interactivity, the possibility of measuring results and universal access, which make it fundamental to CRM processes."

Company B wants to explore the interactivity with customers. Interactivity allows a greater richness in the relationship with customers and creates new paradigms for designing products and services.

The historical evolution of the adoption of the web tool is showed in Table 1.

- Tools: Data capture process in the Web.
- Applied technology: DHTML in the website homepage.

Dynamic HTML, or DHTML: with it, a webpage can dynamically be modified in the workstation, without the need of new accesses to the web server.

Company B is improving the accuracy of decisions about an "ideal design." Real-time computation allows stimuli to become dynamic, interactive, and more informative.

3.3.3. Main results - 2007

- Full integration between online and offline actions to capture customers' data
- Improved processes of e-mail sending (for example, definition of the best weekday/time to send the e-mails)
- Average monthly growth of 35-40% in the records capture rate;
- Incorporation of customers' suggestions into the product development process;
- Reduction in contact costs per customer by 62% since the beginning of the project.

3.4. Cases analysis

According to the theoretical framework, company A has applied IT tools to improve customer relationship and uses their IT resources aiming to generate the diffusion of information and innovations through social networks. As discussed by Rogers (1995), potential customers are exposed to innovations and are convinced that they should adopt them through processes in which participants create and share information with other participants in order to improve mutual understanding. The tools adopted by company A are aligned with what some authors have been researching on information diffusion. The studied company has adopted social networks as a potential action field, seeking a sense of integration. According to Armstrong and Hagel (1996), the notion of community has been the heart of the Internet. For many years, scientists have used the Internet to share data, to collaborate in research and to exchange messages. In essence, the researchers form an interactive research community that exists in the virtual form. In the present context, it can be observed that company A has sought a merge between virtual networks and communities through the e-symposia and e-forums. Company B adopted the web as a means to capture customer data so as to understand their needs, as discussed by Urban (2000). Dahan and Hauser (2001) say that information technology transforms both the

Table 1. Historical evolution of case B.

Year		
2005	**2006**	**2007**
In 2005, the company's scenario was as described below. The company had many problems that affected customer interaction, among which: • Non-consolidated data; • Multiple data sources; • Absence of integration; and • Local campaigns	• Development of a regional campaign platform; • Automation tools and reports; • Data sources integration; and • One view of the customer	Recurrent marketing campaigns • Technical improvement in the platform; • Statistical analyses and reports; • Improved process of capture of customers' data; and • Integration of contact points

internal product development process in the organizations and the external interactions with potential customers of new products. Analyzing case B under the light of the theory discussed by Dahan and Hauser (2001), it was observed that company B has been incorporating customers' suggestions into the product development process. The web has enabled company B to establish an interaction channel with customers and to observe the attributes that are more intensively sought in certain products. Tapscott and Williams (2007) emphasize the importance of collaborative tools. The authors state that collaboration is a crucial competence for the integration of customers' needs to create value. This is what company B has prioritized with the implementation of the e-business tools. The main result that company B mentioned is the fact that it can rapidly capture customers' suggestions in the product development process. Company B is aligned to Dahan and Hauser (2001) when three capabilities of web-based customer input are discussed. Case B shows that the company improved process of capture of customers' data and integration of contact points.

The preliminary results allowed the identification of enablers and tools for supporting the development of a new service/product as well as the results achieved by the companies. Company B reduced contact costs per customer by 62% since the beginning of the project and improved customer relationship. Both cases indicated that the proposition of this study can be accepted.

4. Conclusions

The preliminary results allowed the identification of IT-based enablers and tools for supporting the development of a new service/product as well as the identification of the components that are used during the innovation cycle of a product creation in the New Economy. It was also observed that customers begin to include business as a feature of life choice, not a separate factor – consumer created content becomes part of the business (salesforce.com, open source). The cases showed the rise of networked individualism, virtual community, social networks that allow diffusion of innovations. Although the results from just two case studies can be considered limited, virtual

Table 2. Comparative analysis of cases A and B.

Description	Case A	Case B
Virtual Communities (VCs) Armstrong and Hagel (1996; 2003)	Development of websites for holding e-Symposia, e-Forums and Virtual Visits, aiming at the creation of social networks and communities, in order to disseminate information and exchange ideas;	Does not use virtual communities;
Duta and Segev (1999) – Model " MarketSpace"	Interactivity & Connectivity – promotes knowledge exchange, allowing for interaction with lecturers in other countries, groups access, and located meetings. In addition, virtual promotion and connections with other doctors become possible.	Interactivity & Connectivity provides a way to enrich sparse databases and quickly feed in information on new products.
Urban (2000) Rogers (1995)	Company B has been aligned to Rogers (1995). The web allows creating social networks as promoters of the diffusion of information and innovations of the organization.	Urban (2000) mentioned the method of capturing unmet customer needs by observing customer interactions; Company B has incorporated customers' suggestions into the product development process according to the main results mentioned by managers
Kwak (2001)	Company A is aligned to Kwak (2001). One of the company's strategic objectives is to improve customer relationship. Thus, the company's main initiatives are related to the identification of customers who influence opinions and the definition of actions in order to involve them;	Company B is aligned to Kwak (2001). Using a variety of bots to rate different items, provides a way to enrich sparse databases and quickly feed in information on new products. In that case, the Web Sites Learn to Make Smarter Suggestions;
Results	E-symposium promotes knowledge exchange, allowing for interaction with lecturers in other countries, groups access, and located meetings.	Reduction in contact costs per customer by 62% since the beginning of the project. Incorporation of customers' suggestions into the product development process;

customer methods can emerge as an integral component in product development practices. Web offers an even longer-lasting advantage: a powerful, low-cost means of integrating customer feedback into all phases of product development. The speed, convenience, interactivity, and worldwide coverage of the Internet match the requirements of the different activities in the new product development process, which involves uncertainties and risks and requires firms to take into account the customer's views and to introduce their new products in the market fast. The advent of the Internet has transformed many industries and redefined their rules of competition. Old rules still exist, but they have also given way to new channels and infomediaries (Internet-based intermediaries), and changed the nature of relationships between businesses and between businesses and their customers. Given the current trends, the Internet influence will continue to grow into the foreseeable future as businesses collaborate with suppliers and partners; source, produce and distribute products and services globally. Findings from this study tend to agree on the potential benefits of applying web tools in product development. However, disappointments have also been expressed by academics that web tools have not yet been practiced to the point of maximizing their potentials. In both cases, the tool is based on each company's Portal. Web-based interaction between customers and producers offer new promising ways of bringing customers into the company right to where the value creation begins – in new product development. However, the high potential of virtual customer integration practical application is limited. In order to improve and detail this analysis, it would be interesting for more investigations to be conducted, since this study focused on only two cases studies. Future studies should deepen the main conclusions of the present paper. In short, the Web can help to reduce the uncertainty and cost of new product introductions by allowing more ideas to be concept tested in parallel. As a continuation of this study, further and refined empirical research will help reveal deeper insights into the potential of the web as way to improve interaction with customers in the new product development process.

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