How Companies Can Modify R&D to Integrate Social Media Activities into the New Product Development Processes

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Abstract
Over the past decade, open innovation achieved enormous amount of attention both, from scholars and practitioners. This research considers one aspect of open innovation i.e. customer innovation through social media, and delves deeper into companies’ practices that efficiently integrate information from social media into New Product Development (NPD) processes. This study adopts mechanism of coordination method to explore how moving from traditional product development to open innovation affects changes in R&D. This investigation finds four important factors companies focus on while integrating social media into NPD processes. The factors are, namely, (1) frequent interaction with customers, (2) open information flow, (3) building a unit for coordinating activities, and (4) dividing R&D into units for tackling issues related to ideation, concept development, and actual product building separately.

Keywords: Social media, R&D, New Product Development, co-creation, open innovation

1 Introduction
For a long time vertically integrated R&D was the most commonly used model for developing new products. While products and services were developed within the company, customers were treated as passive users. But with the emergence of open innovation (Chesbrough et al., 2006), customers are now being actively included in new product development processes (NPD), and are treated as value co-creators within the company.

In the past decade, open innovation became a hot topic among management scholars. Vrande et al., (2010) presented different areas of open innovation research, which include open innovation in SMEs, open innovation and competition patterns, the role of
individuals in open innovation, the relationship between open innovation and entrepreneurship in determining the innovation performance, and how firms can profit from large scale form of open innovation.

One field of open innovation is customer innovation. Even though co-creation in customer innovation has been known for more than 15 years, companies have adopted it on a larger scale only recently. In the traditional NPD process, the product was created within an organization, but now social media platforms, such as Facebook, Twitter, blogs and virtual forums, have paved ways for companies to reach their customers in the online environment, thereby increasing the pace of product development through continuous customers collaboration.

Customer collaboration with an open innovation approach is considered as an antithesis to the traditional vertically integrated model of R&D where products are developed internally (Schroll and Mild, 2011). Thus, with the increased application of open innovation activities, some scholars have also started questioning the role of internal R&D (Schroll and Mild, 2011).

Even though open innovation and co-creation have attracted a lot of attention from scholars, it’s not yet clear how R&D is adjusted to employ open innovation in general and customer innovation in particular. The above uncertainty leads us to the research question of this paper:

*How are companies adjusting their internal NPD activities in order to handle collaboration with their customers through social media?*

- *How is the structure of R&D department affected?*
- *What are the new processes being integrated within NPD processes?*

To tackle these questions we looked into the theory of ‘mechanism of coordination’ within organizations to explain structural changes in R&D department processes. This research is based on qualitative data collected through interviews with product developers, managers and social media experts from leading companies (consumer products, retail & insurance) in India.

## 2 Literature Review

The nature of global economic growth has been changing due to the speed of innovation, rapidly evolving technology, shorter product lifecycles and a higher rate of new product development. The complexity of innovation has increased the amount of knowledge readily available to organizations (Plessis, 2007). Despite the role of knowledge as a key component for continuous innovation, the practice of dedicated knowledge management to support innovation has not yet become fully accepted in firms (Chapman and Magnusson, 2006). This is due to the difficulty of integrating knowledge management into the process of innovation (Xu et al., 2010). Open innovation requires even more sophisticated approach to knowledge management, as knowledge can be acquired from different sources including customers, governmental agencies, third parties, and even competitors.

Some studies have already examined the implementation of open innovation within organizations from different perspectives. Herzog & Leker (2010) looked into the organizational culture and documented that there are different innovation cultures required for closed and open innovation. Kuschel (2008) investigated the ecosystem of products within companies and found the significance of information infrastructure in contextualizing the ecosystem and thereby supporting open innovation. Wincent et al., (2009) researched how the network governing boards should be organized in order to improve the innovative position of network participants. Bergman et al., (2009) introduced group decision support systems complementary to the development process, which also acts as supplementary tools for knowledge creation in open innovation.
Despite these past studies, there remains a gap with respect to the implementation of open innovation activities within companies. Chesbrough & Appleyard (2007) argue that the biggest challenge for firms is overcoming the limitations of traditional business strategies. They need to integrate strategic approaches that address both the inside-out and the outside-in processes of open innovation (Giannopoulou et al., 2010). Hence, open innovation requires a different mindset and a wide set of new capabilities within companies (Vrande et al., 2010). More empirical research is needed concerning strategy, organizational culture, organizational structure and human factors that support open innovation (Vrande et al., 2010).

To answer the research question this study focuses on one aspect of open innovation, i.e. customer innovation, taking place within a social media environment. This study also examines the organizational changes occurring within the R&D department after the integration of social media into its innovation processes.

2.1 Social media

A social media environment can be described as a highly interactive platform where individuals & communities share, co-create, discuss, and modify user-generated content (Piller et al., 2012). Social media includes social networks like Facebook and Twitter, blogs, and virtual forums amongst others. Companies active in social media platforms track discussions, comments, feedbacks, beliefs and innovative ideas related to new & existing products & services.

Approaches to harvest product-related knowledge form social media platforms can be much more sophisticated than the simple process of gathering customers’ feedback. For example, customers can be given design tools and asked to implement their ideas using those tools. For such collaboration to be successful users have to be motivated, data gathered from the users needs to be managed and social media platforms have to be tracked for customer activity. All of these activities require integration of collaboration practices within R&D processes and methods. So if managers decide to adopt a certain “open” strategy they need to modify the current organizational structures & processes and at the same time develop the relevant capabilities that will help in executing this strategy (Giannopoulou et al., 2010).

2.2 Mechanisms of Coordination

Companies typically have separate functions, teams and individual roles specifically designated for the ‘inside-out’ process (Mortara & Minshall, 2011) to gather innovative ideas and coordinate the process. Martinez & Jarillo (1989) found the mechanisms of coordination used by multinational organizations varying from the most ‘formal and structural’ to the most ‘informal and subtler’ ones.

In order to understand structural changes in an R&D department that uses customer knowledge acquired from social media, this research views the R&D department through the mechanism of coordination lens.

A mechanism of coordination can be described as an administrative method used to integrate different units within an organization (Martinez & Jarillo, 1989). There is a pressing need to incorporate Mechanisms of coordination in organizations as they have different administrative & functional units, which require concerted coordination effort in order to be effectively operational (Martinez & Jarillo, 1989).

There are 8 mechanisms of coordination divided into two groups – structural or formal, and informal. They are namely (1) departmentalization, (2) centralization, (3) formalization, (4) planning, and (5) output control belonging to the first group, while (6) cross-departmental relations, (7) informal communication, and (8) socialization belonging to the second group (Martinez & Jarillo, 1989).
3 Methodology
This research finds qualitative research appropriate for open innovation and follows past open innovation researchers who have adopted a case study approach (Vrande et al., 2010).

For the purpose of this research, a qualitative exploratory study was conducted. A semi-structured questionnaire was prepared with questions relating to social media usage and changes in product development in the chosen companies in India. Major companies in different consumer products and insurance segments – market leaders in India using social media actively for product development - were contacted in search of suitable interviewees. In order to draw more insights people in different roles (with varied responsibilities) were shortlisted. The profiles ranged from social media experts (who tracked important ongoing trends), to product development experts (who documented product development specific activities), and even included other experts involved in social media activities in marketing, sales & services (who followed service development related activities in social media platforms). All the interviewees were either employees of the firms or were working as third parties for the firms.

Overall ten people were interviewed. Six of them were from five different social media consultancies working for various organizations – while two were associated with different insurance companies, two were third party product design specialists, one was a freelancer for different kitchenware projects, and another worked for a home appliance firm. Refer table 1.

<table>
<thead>
<tr>
<th>Position</th>
<th>Organization</th>
<th>Type of business</th>
</tr>
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<tbody>
<tr>
<td>Senior social media consultant</td>
<td>“Social world”*</td>
<td>Social media consultancy</td>
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<tr>
<td>Social media consultant</td>
<td>“Social world”*</td>
<td>Social media consultancy</td>
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<td>Social Media manager</td>
<td>“Media for all”*</td>
<td>Social media consultancy</td>
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<tr>
<td>Social Media technical and functional consultant</td>
<td>“Breakthrough”*</td>
<td>Social media consultancy, and tool development</td>
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<tr>
<td>Social media expert</td>
<td>“Other side”*</td>
<td>Social media consultancy</td>
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<tr>
<td>Social Media Expert</td>
<td>“We know the answers”*</td>
<td>Social media consultancy</td>
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<tr>
<td>Product designer</td>
<td>Freelancer</td>
<td>Kitchenware products</td>
</tr>
<tr>
<td>Product designer</td>
<td>“Groundbreaking house”*</td>
<td>Home appliances</td>
</tr>
<tr>
<td>Regional area manager</td>
<td>“Safe”*</td>
<td>Non-life Insurance</td>
</tr>
<tr>
<td>Insurance product manager</td>
<td>“Security for you”*</td>
<td>Health and Life insurance</td>
</tr>
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Table 1: Interviewees
*Organization names are changed

The interviewees explained their viewpoints with the help of several examples. For instance, the social media experts made key observations about companies that have been successful in using social media in NDP process. Both the product design specialists and the insurance product manager talked about how they integrated social media processes within their respective organizations. A regional area manager with an insurance company stated that they had plans to implement activities with customers through social media in the next quarter. They hoped to start implementing changes to efficiently handle the process of co-creation. None of the participants were willing to reveal the identity of their firms and hence to maintain confidentiality, this research has changed the names of all companies. But the authors are aware of the company details.

Interviews were on an average around half an hour in length. All interviews were recorded, transcribed, and coded. Interviews were analyzed bearing in mind the
mechanisms of coordination, which were taken into account to understand the changes in R&D structure & processes related to NPD. Data Analysis was conducted in two main steps. First, coding was performed to identify coordination mechanisms for the companies that adopted social media. Based on data analysis, three co-ordination mechanisms were found – (1) departmentalization, (2) centralization, and (3) cross-departmental relations (see table 2 for examples). The next step involved analyzing interviews based on the derived mechanisms. While data categorized under departmentalization category was analyzed based on structural changes, data attributed to centralization mechanism was analyzed taking into account the department’s layout involved in social media activities, and data labeled as cross-department relations was evaluated on the basis of the information flow within departments.

<table>
<thead>
<tr>
<th>Type</th>
<th>Departmentalization</th>
<th>Centralization</th>
<th>Cross-department relations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quotes</td>
<td>“it fits under NPD as part of at very beginning stage for collecting insights.”</td>
<td>“it is controlled by one team, like a corporate marketing or corporate communication”</td>
<td>“There has to be free flow of information between each department”</td>
</tr>
</tbody>
</table>

Table 2: Initial coding categories and examples

4 Results
In this section, this research examines the role of social media in the company’s NPD in general and re-structuring of R&D. The study starts by explaining why social media is an important part in product development. It also examines how social media is being used in the context of NPD, the changes it brings about in R&D practices and organizational structures, and finally dissects the reasons that prevent firms from integrating social media into their NPD and R&D processes.

4.1 Reasons for social media starting to play an important role
This research has observed the increasing popularity of customer collaboration through social media. There has always been a huge scope for social media integration. As traditional market research methods were not able to capture target market insights, customers’ presence online forced companies to deploy communication tools for continuous online collaboration.

“10 years ago I hardly used to share 10 things in a week, as the only thing I could do was to go to a telephone booth and call someone, but now as I have a device and plenty of different applications that facilitate communication, I am able to share maybe 22 updates per day. Traditional marketing research was done using a very small data sample. How can 1.1 billion people be represented by lets say 7000 people? Now Facebook can give me a data sample of 91 million people in India. You can listen to that in real time and you can get 20000 feedbacks everyday” – mentioned by a “Breakthrough” consultant responsible for social media activities

The idea for new products needs to come first. In many cases the idea, whether it is radical or incremental innovation, is derived from the unsatisfied market in the form of complaints, suggestions or new concepts.

“The need for the new product comes from some kind of market feedback. It’s not that we sit in office and think up something.” – “Safe” manager (Regional Area Manager actively involved in Social Media)

Online communities created by social media users providing feedback and suggestions motivate companies’ to participate in social media activities. Communication with the customers on social media platforms doesn’t end after the first stage i.e. getting the idea.
Companies interact whenever they have the possibility to interact with their customers for feedback.

“You take different sketches and you upload to different design websites. There are user design specific websites like "behance", and a design forum called “design in India” specific to India. “Design community in India” is a very closely related community; you can get insights and can get feedbacks form that site and is the first intervention in social media, during the concept generation. After the concept is generated then again you are going for online interaction. When marketing and sales approves the concept, then we build the CAD and build something we just call the product renders. When these renders are done, they are circulated through internal regional managers. These regional managers later circulate feedbacks to us. There is also a survey done on colors (e.g. festive colors or the color of the month). Our products are distributed all over the India, so we developed India specific colors.” – freelance product designer for kitchenware products taking responsibility for activities happening on the online platform

When time-to-market becomes crucial for technology products, the design concept moves directly to the sales department and at this stage the interaction with the customers is not terminated. In fact customers are used as testers and based on their feedback, companies improve products as fully functioning solutions.

“We follow AGILE model of product development. We quickly build something and putting online. And we keep on doing alpha testing, beta testing, everything while it is still online. We start selling and we keep making it better. And that is how most of the technology products are today built. Marketing pace is so fast, you can never make it good enough to go.” – “Breakthrough” consultant who performs as social media technical and functional consultant.

4.2 Changes in NPD related activities

Centralization

For dealing with activities related to social media either a new organizational unit is created or an already established unit becomes responsible for such activities.

“Mostly it’s lead by one team. In some cases there is a corporate marketing team, which collects information and passes to the branding team and customer service teams. In some cases, there is social media team and some companies are also coming up with chief social media officer. But the best model what we have seen is, that there is one central social media team, which has its team members working for the different departments, loosely connected to all these departments. It can be that some departments do not have a representative for social media, but those departments are connected to the social media team. Social media team act as a moderator.” – “Breakthrough” consultant

Maturity of the brand plays an important role in deciding the structure of the social media team, (the team being formed either internally or formed with external social media experts). Bigger companies have more rigid structure, where departments have clear and strict responsibilities. The type of social interaction depends on the size of the company and the way in which knowledge is accumulated over the years.

“Which departments will interact with social media agency depends on maturity of the brand. If it were not a mature brand then there would be an entire chain of departments involved. A slightly more mature brand - the marketing team will be talking to this social media agency. With an even more matured brand – PR team and the marketing team take the responsibility. The most mature brand will create their own agency, develop tools and will have an interaction with all of the departments.” – “Media for all” manager
Cross-department relations

The more rigidly the organization is structured, the more time is needed to take a decision and initiate some actions. However, in a competitive environment with fast product development cycles, time is a crucial resource.

“If it is a very flexible organization then almost every department will be involved to some extent in the social media activities. In case it is very structured organization with the closed attitude, then there is a rigid information flow from one department to another, which involves a lot of time. On the other hand if the departments are closely related, customer information, customer support interaction are used, analyzed, conclusions are drawn and passed to other departments. There has to be a free flow of information between each department and maintain that there is no redundancy. The more departments that are connected to social media, stronger is the online space, and there will be free flow of information among all of them” – “Other side” expert

Social media experts form a ‘‘social team” and each member is assigned a particular department ensuring that the online knowledge flows from the social media team to their respective departments on continuous basis.

“Each department has a social media champion who is a part of this team managing a social media project. So this is the guy who takes initiatives and talks about them in the team. This guy is involved in social media activities, but works within other department too.” – “Media for all” manager

An instance where the entire firm becomes more open, has a user centric approach and has a willingness to share information.

“Senior management also brings lot of insights into the product, for example international flavors. My CEO travels a lot and has family based all over the world. What happens is that e.g. when a new mixer is launched, the CEO sends a link to look up motivating that these kinds of things need to be developed. This entire interaction happens on a Facebook page. I along with the marketing guys can view those Facebook posts.” – freelance product designer

Departmentalization

The ideas for the product design and features come from the market and not from the R&D department. Later these ideas are converted into concept and developed as products. Due to this reason, firms are trying to departments into separate units in such a way that there is a unit that researches the market, a unit that develops the product idea and a unit that develops the real product based on the generated idea.

“Part of the ideation happens first. Till recently we had the technical departments, which used to design the product and now we have separated R&D department. For example, one department designs the product and later refers to the respective technical department. The technical department later develops the actual product based on their technical knowledge and legacy knowledge, ultimately saving a lot of time. Then you can start your publicity by telling the market about this new product and start selling it.” – “Safe” manager

Another unit responsible for tracking customer satisfaction and the co-creation procedure is playing an important part in product development.

“There should be one more very important tool for identifying the grievances. There are clients who satisfied with your explanation, but there are grievances that might not get solved. For example, we have a policy conditions that states the limitations for compensation available for a particular case –e.g. disease. A customer will understand the limitation of his compensation while signing the policy, but then he might not be happy with it. He may have a grievance still, he may publish it through
the social media and probably generate a discussion on this issue. The complaint is not over, the file is not closed at that point of time.” – “Safe” manager

4.3 Issues preventing from usage of social media more frequently

There are concerns, which doesn’t allow firms to fully rely on social media while developing the product. One concern is the intellectual property issue.

“In the same property is getting leaked therefore conceptions are circulated cautiously and not on a regular basis. But at the same time we can generate the ideas and concepts in a different way. For example, we can make an idea; get a feedback about kitchen equipment, without its body embedded completely inside the kitchen platform.” – freelance product designer

Some types of products need to be observed in reality to receive proper feedback on material, texture, etc. In this case social media is of no use.

“We go to the shop and demonstrate our product to get a feedback. If a consumer likes the product, he wants to touch it, feel it, operate it and see how it works.” – freelance product designer

Another issue is that the target users are not yet online and observing only consumers that are in social media might not give right insights.

“Our target consumer for kitchen appliances are mostly housewives and they are not very ‘online proactive’.” – freelance product designer

Customers themselves are not willing or motivated to interact in all phases of NPD.

“When the product reaches somewhere in the middle of product development phase, in a very crucial kind of a period, you cannot interact with the consumers. But interaction with consumers in all phases would give us an advantage in making less mistakes, in improving the products and making new products that is exactly designed for the consumer” – freelance product designer

Limited resources that company have needs to be allocated wisely.

“Before you launch a product you are no one. You are absolutely no one, no one is talking about you and no one is giving you a feedback or giving you anything. But you can keep a close track of competition before even entering that space. However, you need to take a decision whether you want to spend a lot of time looking at the competition before you launch or just concentrate on building the product based on the limited resources we have. But once the product is in the market, you can’t take away your eye from the competition at all.” – “Breakthrough” consultant

5 Discussions and Conclusion

Open innovation and especially co-creation is an important topic both for scholars and for practitioners. More and more companies are trying to implement online co-creation strategies into their processes. However, still no evident practices have emerged on how to efficiently utilize the open innovation in NPD. Therefore this research has explored various company practices coping with social media integration into NPD. This study focuses on structural changes in companies’ R&D structure. This research aims at providing insights rather than generalizing.

After analyzing the interviews, results are categorized into three possible structural changes that affect departments related to NPD after the integration of social media.

Firstly, social media does not cause structural changes. Companies treating social media as an additional communication tool reach out to the customers to collect their grievances. Based on Willcocks et al. (2013) findings related to the initial phases of technology adoption, (where new technology is used to replace old one) the processes around the technology to capitalize its potential are not changing.
Secondly, changes are related to the addition of one more departments that is responsible for social media activities, coordination and for distributing of information to separate departments (please see figure 1). Even though collaboration among departments is encouraged, there is still a clear division of responsibilities between different units. However having a social media unit strengthens the cross-departmental relationship. Departments have a representative for managing social media activities and the same representative co-ordinates with other departments satisfying the centralization mechanism. Such integration help establish information flow within the company, eventually creating higher interest towards social media related activities.

**Figure 1: establishment of social media coordinating unit**

Third type relates to a completely new product/service development, where the structure is modified to bring ideas from the users (please see figure 2). This study finds that companies in order to better use resources divide their R&D into multiple units. Different units are used for managing different activities, for e.g. gathering market needs, forming concept and implementing the concept to develop real product. Moreover, this research observes that once firms leave behind the traditional product development model and adopt social media, they tend to engage with their customers more frequently. Some of the observed companies even try to get customers feedback during every stage of product development.

**Figure 2: separation of product development and intense interaction**

Additionally, this research highlights some barriers towards tighter integration of social media in NPD. Schroll & Mild (2011) reveal that open innovation complements the
existing vertical R&D processes. This study showcases that the culture of the customer involvement through social media defines the R&D practices of the firm - specifically, to those firms who decide to stay away from social media. Moreover, Huizingh (2011) notices that success of open innovation depends on internal and external environment. Internal context relate to company’s demographics and strategies. Demographics are mainly studied with regard to the company size: large versus small. This research enriches this discussion with the findings, which reveal that success of innovation can be affected by maturity of the brand and the structure of social media management unit. Lesser the maturity of the brand, lesser is the departments’ interaction with social media unit. The flexibility of the organization also plays a crucial role. The more flexible organization is, the more departments are involved in a communication with the social media unit.

Finally, this research observes a new user behavior pattern. In traditional product development there are five phases varying from ideation to go-to-market (Nambisan, 2002). This study finds that users are willing to participate in the firsts and the last stages, however they are not motivated to contribute in to the middle stages of product development.

As a practical contribution, this study showcases some insights, which can be useful for companies willing to adjust their internal processes to integrate social media more efficiently. This study argues that dividing the R&D into separate units for different purposes, where one unit is responsible for gathering and evaluating ideas from social media, while another is responsible for implementing them in practice, allows the firm to gradually integrate social media into NPD. Moreover, developing a unit responsible for social media activities, for communicating and coordinating social media knowledge among departments is a factor crucial for NPD.

This paper has some limitations, which could be addressed for future research. Firstly, all companies in which interviews were conducted are based in India and studies on innovation and social media related practices in different countries might produce different insights. Secondly, this research addresses only limited amount of products and services, thus future research could look into different products and services as well as different industries. Finally, this research points to the practices regarding how firms are dealing with social media leading to successful NPD and not towards any measurements, thus future research could be based on developing and testing hypothesis.

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References


