

Summer 6-15-2016

# SOCIAL MEDIA DISRUPTIVE CHANGE IN HEALTHCARE: RESPONSES OF HEALTHCARE PROVIDERS?

Edin Smailhodzic

*University of Groningen, e.smailhodzic@rug.nl*

Albert Boonstra

*University of Groningen, albert.boonstra@rug.nl*

David Langley

*TNO, david.langley@tno.nl*

Follow this and additional works at: [http://aisel.aisnet.org/ecis2016\\_rip](http://aisel.aisnet.org/ecis2016_rip)

---

## Recommended Citation

Smailhodzic, Edin; Boonstra, Albert; and Langley, David, "SOCIAL MEDIA DISRUPTIVE CHANGE IN HEALTHCARE: RESPONSES OF HEALTHCARE PROVIDERS?" (2016). *Research-in-Progress Papers*. 17.  
[http://aisel.aisnet.org/ecis2016\\_rip/17](http://aisel.aisnet.org/ecis2016_rip/17)

This material is brought to you by the ECIS 2016 Proceedings at AIS Electronic Library (AISeL). It has been accepted for inclusion in Research-in-Progress Papers by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# **SOCIAL MEDIA DISRUPTIVE CHANGE IN HEALTHCARE: RESPONSES OF HEALTHCARE PROVIDERS?**

*Research in Progress*

Smailhodzic, Edin, University of Groningen, Groningen, The Netherlands,  
e.smailhodzic@rug.nl

Boonstra, Albert, University of Groningen, Groningen, The Netherlands,  
albert.boonstra@rug.nl

Langley, David, TNO, Groningen, The Netherlands, david.langley@tno.nl

## **Abstract**

*Social media represent specific types of technologies that are end-user driven and end-users are able to drive disruptive change giving little time to organizations to react. With rapid and powerful emergence of social media communities in healthcare, this sector is faced with new and alternative avenues to the traditional healthcare provision. These are offered from both firm-hosted and patient-hosted social media health communities. But, what are the effects of these developments on the healthcare providers and how do they react to different social media disruptive changes? To address these important questions, we draw on the disruptive innovation and information processing perspectives to explore the effects of social media disruptive change on business models, strategic responses and social media strategies of healthcare providers. We conceptualize social media as disruptive innovation and explore yet unknown differences in effects from firm-hosted and patient-hosted social media health communities. In this way, we address recent calls for research on social media and business models as well as go beyond traditional topics in healthcare information systems (IS) research, which were focused on privacy, interoperability and resistance to change. We plan to conduct our research through survey of healthcare providers in different healthcare systems.*

*Keywords: social media, disruptive innovation, healthcare.*

## **1 Introduction**

In the most cited definition, social media are described as Internet-based applications built on technological and ideological foundations of Web 2.0, which enable the creation and exchange of user generated content (Kaplan and Haenlein, 2010). Typical social media include blogs, microblogs, social networking sites, wikis and video or content sharing sites (Piskorki and McCall, 2010). Since their emergence, social media have become very popular and have changed the ways in which we communicate, create ideas and conduct business. In fact, social media represent one of the most transformative impacts of information technology on businesses (Aral et al. 2013). For example, social media are directing the ways in which firms conduct their activities in marketing and human resources (Aral et al. 2009; Archak, 2010). In addition, social media are also changing the ways in which firms collaborate and innovate (Dong and Wu, 2015). Moreover, some evidence suggests that the social media even redefine entire industries such as news publishing and retail (Byers et al. 2012; Karimi and Walter, 2015).

This implies that the social media represent disruptive innovation. Disruptive innovations have a potential to disrupt existing and create new markets displacing existing technologies (Christensen, 1997) Theory posits that new disruptive technologies get introduced by entrants who intentionally compete with incumbents. At first, entrants offer an inferior product or service. Eventually, they rise and established incumbents get pushed out of the market. Given these characteristics of disruptive innovation, we argue that social media represent disruptive innovation. However, social media are specific in the sense that they represent end user-driven technologies. Such technologies follow bottom-up rather than top-down approach in the use and adoption of technology (Boudreau and Robey, 2005). In particular, social media initiatives follow this bottom-up approach (Vaast, 2010). In this way, social media enable cooperation and creation of products, services and ideas amongst individuals without hierarchical control of firms. This implies a different pattern path of innovation and firms have to react to unknown phenomena (Kaganer and Vaast, 2010). Hence, new digital “disruptors” such as social media may affect businesses and disrupt markets in unplanned and unintentional ways (Dewan and Ramaprasad, 2014; Downes and Nunes, 2013). Yet, there has been little research on social media in the context of disruptive innovation (Laurell and Sandström, 2014).

Social media may in particular play a pivotal role in the healthcare domain. On the one hand, healthcare domain represents an unique context characterized by rigid hierarchies and strong norms about who should be providing medical information (Fichman et al. 2011). There is an information asymmetry between care providers and patients, financial arrangements between insurers and healthcare providers making individuals insensitive to the price of care, and the healthcare sector is heavily regulated (Agarwal et al. 2010). On the other hand, social media communities have emerged as powerful platforms in the healthcare domain (Kane et al. 2009). There is also an increasing trend in patients’ utilization of social media to self-organize to share information and care amongst each other about their medical condition and treatments (Fichman et al. 2011). Such activities challenge the status quo in medical field and there is a lot of anecdotal evidence and propositions that social media will transform the healthcare delivery as we know it (Hawn, 2009; KPMG, 2011). This is especially the case for behaviour-based chronic conditions such as a diabetes in which social media enable an easy way for patients to exchange and transfer the knowledge between each other, which may disrupt current healthcare provision (Hwang and Christensen, 2008).

However, current research on social media in the lead IS journals focus on the user behaviour with a lack of attention to the behaviour of firms (Haahr, 2014). Thus, we know little about how social media are transforming businesses and how they strategically respond (Aral et al. 2013). In this line, Loebbecke and Picot (2015) call for research on the effects of digital initiatives on business models while Agarwal et al. (2010) and Fichman et al. (2011) call for the research on this topic in the healthcare domain. To address this gap and respond to the calls for research, we explore effects of social media disruptive change on business models, strategic responses and social media strategies of healthcare providers. Accordingly, we pose the following research question:

*To what extent does social media disruptive change affect business models, strategic responses and social media strategies of healthcare providers for diabetes care?*

Our contribution is multi-fold. Firstly, we move beyond user behaviour research and answer recent calls for research on social media and business models (Aral et al. 2013; Loebbecke and Picot, 2015). Secondly, we conceptualize social media as disruptive innovation and make the distinction between the firm-hosted and patient-hosted social media communities as two distinct sources. In this way, we provide a better understanding of the effects of end-user technologies on firms (Kaganer and Vaast, 2010). Thirdly, we contribute to health IS research by going beyond traditional topics such as privacy concerns, interoperability and resistance to change (Romanow et al. 2012) and address recent calls for research on the role of social media in healthcare and how healthcare providers respond to it (Agarwal et al. 2010; Fichman et al. 2011).

## **2 Theory and hypotheses**

### **2.1 Disruptive innovation theory and social media**

Disruptive innovation theory explains how incumbents get disrupted by entrants. Entrants introduce products, services or business models that are simpler, cheaper and more convenient, initially having lower performance than those offered by incumbents or targeting previously unaddressed customers and thus creating a new market (Christensen, 1997; Christensen and Raynor, 2003; Markides, 2006). Although basic premise of the theory is that entrants rise and incumbents fail (Christensen, 1997), the incumbents do not always fail, but sometimes adapt (Chesbrough, 1999) and disruptive innovations may be introduced by both entrants and incumbents (Sood and Tellis, 2011). Govindarajan and Kopalle (2006) define a disruptive innovation as an innovation that offers a different set of characteristics and performance attributes, which is an unattractive combination for mainstream customers at the time the innovation is introduced. In particular, Govindarajan and Kopalle (2006) suggest that disruptive innovation should be a) inferior on the attributes that mainstream customers value b) offer new value propositions to attract new customer segment c) be sold at lower price and d) penetrate the market from niche to mainstream.

According to this perspective, we argue that social media use in healthcare is a disruptive innovation. Social media are neither a product nor a service, but the set of Internet applications that offer value through connecting users who can share information. Yet, social media meet the conditions of being a disruptive innovation as it is: a) inferior on the attributes that mainstream patients value (e.g. physical contact with doctor); b) it offers new value propositions. As social media features affordances such as editability, visibility, persistence and association (Treem and Leonardi, 2012), this offers a number of new values for patients. For example, they can easily edit and build on work of their peers to help each other (i.e. editability), post the content that others can see and build on (i.e. visibility), access the content even after the users who posted content go offline (i.e. persistence) and they can make relationships with other peers and doctors (i.e. association). In this way, social media provides new values such as online contact with peers and doctors, building self-help networks, increasing the knowledge and accessing it at any time (Antheunis et al. 2013; Maloney-Krichmar and Preece, 2005; Ziebland and Wyke, 2012); c) it is sold at lower price (e.g. low subscription fee) or even free (e.g. Facebook groups); d) It penetrates the market from niche to mainstream. For example, *PatientsLikeMe* was initiated as a small social media health community for ALS patients, but it grew to one of the largest online health communities covering many diseases, running their own clinical trials, and selling data to third parties (Wicks et al. 2010). Therefore, social media offer patients with an opportunity to use it as an alternative solution compared to offline interactions with their healthcare providers (Chung, 2013).

### **2.2 Hypotheses development**

In the healthcare context, providers can operate through three business models, namely solution shops, value-adding process businesses, and facilitated user networks (Hwang and Christensen, 2008). In the solution shops, healthcare providers act as experts and solve complex problems for patients. Activities focus on discovering what patients want and meeting their demands. In this way, services may be unique for each patient, which makes them high in price. Information asymmetry between the two parties – a healthcare provider and a healthcare user – is an important characteristic of this business model (Laffey and Gandy, 2009). In the value-adding process businesses, the focus is on transforming resources into higher value outputs, such as a restaurant does with raw ingredients. In this model, the goal is to achieve highly efficient processes to deliver high quality products and services at a lower cost. This model has become more popular in the healthcare industry which is increasingly looking for ways to reduce costs. Healthcare providers are working on matching their resources and processes with their value propositions, thus reducing healthcare costs and making healthcare provision more efficient. For example, healthcare providers organize the delivery of home care through a standardized means of delivery (Boonstra et al. 2011). In the facilitated user networks, both healthcare users and healthcare providers can deliver and receive things to and from each other. In this business model, a party that creates value and makes a profit is the one that facilitates such a network and enables operations between users.

We focus on diabetes care, which is behaviour-based chronic condition managed mainly by primary care (Saudek, 2002). In the primary care, prevailing business model is the solution shop (Hwang and Christensen, 2008). Therefore, we focus only on the distinction between the two business models, namely solution shops and facilitated user networks. According to disruptive innovation theory (Christensen, 1997) we see healthcare providers as incumbents while social media communities may be seen as entrants. When firms do not face any disruption, they operate in their traditional way (Christensen, 1997), which in terms of the healthcare provision refers to the solution shop model (Hwang and Christensen, 2008). With this in mind, we envisage that the healthcare providers will be mainly operating with the solution shop model if there is no disruptive change experienced. Accordingly, we expect the healthcare providers who experience low level of social media disruptive change to operate through solution shops. On the other hand, we expect healthcare providers who experience high level of social media disruptive change to operate through facilitated user network model. Given this, our first hypothesis is:

*H1: The greater the social media disruptive change, the greater is pursuit of the facilitated user network as business model.*

Social media as end-user technology creates uncertainty and organizations have to respond to it before they have a clear vision of what it is and how it can be applied (Kaganer and Vaast, 2010). Given this uncertainty, healthcare providers have to rely on their information processing. Information processing theory explicitly states that firms are structured around information and information flows in an effort to reduce uncertainty (Galbraith, 1973; Tushman and Nadler, 1978). Uncertainty represents a difference between the information required to do a task and the information that organization already possess. In order to be effective, firms attempt to find a perfect match between their information processing needs and their processing capabilities (Tushman & Nadler, 1978). According to this perspective, firms can operate in two ways when faced with uncertainty. They can either develop buffers to reduce the effects of uncertainty, which is referred to as *buffering* strategy. This means that the firms protect by trying to control their environment rather than to adjust to the environment. Hence, firms aim to prevent external stakeholders to have influence on their actions. The other way to deal with the uncertainty is to increase organizations' information capacities and thus reduce uncertainty. Firms then attempt to adapt and conform to the expectations of external stakeholders. This is done through *bridging* strategy. The healthcare sector is traditional and heavily regulated (Fichman et al. 2011) and there are more stakeholders in the healthcare who decide on adopting innovation than in other industries (Mantzana et al. 2007). Hence, healthcare providers often show resistance towards information technologies (Bhattacharjee and Hikmet, 2007). Therefore, we expect that the healthcare providers will be more likely to buffer when they do not experience high level of disruptive change. Accordingly, they

will respond with bridging only when the level of disruptive change they experience increases. Hence, our hypothesis 2:

*H2: The greater the social media disruptive change, the greater is pursuit of the bridging as the strategic response.*

In addition to the strategic responses of buffering or bridging, we expect that the providers will also respond with their social media use. In particular, incumbents (i.e. healthcare providers) can also introduce disruptive innovation (Sood and Tellis, 2011). Earlier evidence shows that the healthcare providers started using social media (Van de Belt et al. 2012). However, it is at an early adoption state and the reach is limited (Thackeray et al. 2012). Hence, in line with the arguments on organizational information processing, we expect the healthcare providers to intensify their use of social media with the level of the disruptive change they experience. Thus, our hypothesis:

*H3: The greater the social media disruptive change, the more intensive social media strategy of providers is.*

We not only argue that social media in healthcare is the disruptive innovation, but also make a distinction between firm-hosted social media communities and patient-hosted social media communities as two sources of this change. Whereas both meet the conditions of being disruptive innovation, firm-hosted social media communities are usually set up by commercial parties that generate revenues by offering commercial services to patients or make money from advertising as *Dlife* (Hwang and Christensen, 2008). Other examples may include social media enabled networks that sell data to third parties such as *PatientsLikeMe* (Wicks et al. 2010). Such examples can be defined as entrants to the market as they provide simpler, more convenient and lower-cost services to patients. Patient-hosted social media communities do not have such commercial goals and may be simply networks established by patients to help their fellow sufferers (Greene et al. 2011). Typical example of such patient-hosted social media communities are *Facebook* groups that patients set up themselves to share information and care amongst each other (Kofinas et al. 2014). Yet, these patient-hosted social media communities extend traditional healthcare delivery (Swan, 2009), thus also indicating the source of social media disruptive change. This implies that social media firm-hosted social communities may be easier to identify as a direct competitor than patient-hosted social media communities. Differences between the two and their comparison with the characteristics of disruptive innovation as proposed by Govindarajan and Kopalle (2006) are illustrated in the table 1.

Disruptive innovation dimensions Govindarajan and Kopalle (2006)	Firm-hosted social media health communities	Patient-hosted social media health communities
Inferior on the attributes that mainstream customers value.	Inferior on offer of physical contact with doctors, but may be an option included in the business model (Metzler and Eurich, 2012)	Inferior on offer of physical contact with doctors (Colineau and Paris, 2010)
Offer new value propositions to attract new customer segment.	Offers communication with both other patients and doctors (Miller and Tucker, 2013)	Mainly offers communication with patients (Chiu and Hsieh, 2012)
Sold at lower price.	Either sold through subscription or generate profits from advertising (Allison, 2009)	Completely free (Colineau and Paris, 2010)
Penetrate the market from niche to mainstream.	Penetrates the market from niche (Wicks et al. 2010)	No market intentions although it can develop a niche, for example <i>Facebook</i> group for a single disease (Greene et al. 2011)

Table 1. Differences between firm-hosted social media communities and patient-hosted social media communities.

The incumbents usually do not enter markets early and wait until their position is endangered by entrants and the type of entrant is important for reactions of the incumbents (Diekhof, 2015). In line with this and above described differences, we expect that the effect of social media disruptive change coming from firm-hosted social media communities will be stronger than from patient-hosted social media communities. Hence, we hypothesize:

*H4a: The relationship between the social media disruptive change and the use of facilitated user network will be stronger when the disruptive change comes from firm-hosted than patient-hosted social media communities.*

*H4b: The relationship between the social media disruptive change and the pursuit of bridging will be stronger when the disruptive change comes from firm-hosted than patient-hosted social media communities.*

*H4c: The relationship between the social media disruptive change and the intensity of social media strategy will be stronger when the disruptive change comes from firm-hosted than patient-hosted social media communities.*

When technology is new, actors often act according to their perception of the technology (Gal and Berente, 2008). Thus, decisions makers often rely on their subjective perceptions and representation in comprehending social media (Kaganer and Vaast, 2010). Given recent proliferation of social media communities in the healthcare (Kane et al. 2009), we expect that the effect of social media disruptive change will depend on perceptions of the healthcare providers, which we define as subjective threat. This implies that the response to threat will depend on perceptions of situation and perceived competence of individuals who make decisions. Hence, decision makers within healthcare providers may judge it either as risk or opportunity. Therefore, we argue that the decisions makers (i.e. healthcare providers) will differ in the extent to which they see social media as a subjective threat. For example, the event categorization of top managers, in particular when they perceive them as threats influence the direction of their organizational actions (Chattopadhyay et al. 2001). Thus, we expect that these differences will moderate the relationship between the extent of social media disruptive change and responses of the healthcare providers. In particular, we argue that the relationship between the two will be stronger when the subjective threat as seen by healthcare providers is high, as stated in the hypotheses below:

*H5a: The relationship between the social media disruptive change and the use of facilitated user network will be stronger when the subjective threat of social media is high than when it is low.*

*H5b: The relationship between the social media disruptive change and the pursuit of bridging will be stronger when the subjective threat of social media is high than when it is low.*

*H5c: The relationship between the social media disruptive change and the intensity of social media strategy will be stronger when the subjective threat of social media is high than when it is low.*

Furthermore, we make a distinction between different healthcare systems. Healthcare systems can be divided in three basic types (Besley et al. 1994), namely with private financing and delivery, public financing and delivery and public financing with substantial private delivery. In general, public sectors tend to face lower incentive to introduce innovation (Damanpour and Schneider, 2009) and they tend to face more difficulties in doing it (Lunt et al. 2014). In addition, public sector is less exposed to competition, thus enjoys monopoly to certain extent. Therefore, we expect the type of healthcare system will influence the effect of social media disruptive change. In particular, we expect the relationships to be strongest in the healthcare system that is mostly private compared to mostly public system. Accordingly, we hypothesize:

*H6a: The relationship between the social media disruptive change and the use of facilitated user network will be stronger in mostly private than in mostly public healthcare system.*

*H6b: The relationship between the social media disruptive change and the pursuit of bridging will be stronger in mostly private than in mostly public healthcare system.*

*H6c: The relationship between the social media disruptive change and the intensity of social media strategy will be stronger in mostly private than in mostly public healthcare system.*

We illustrate our conceptual model in the figure 1 below:

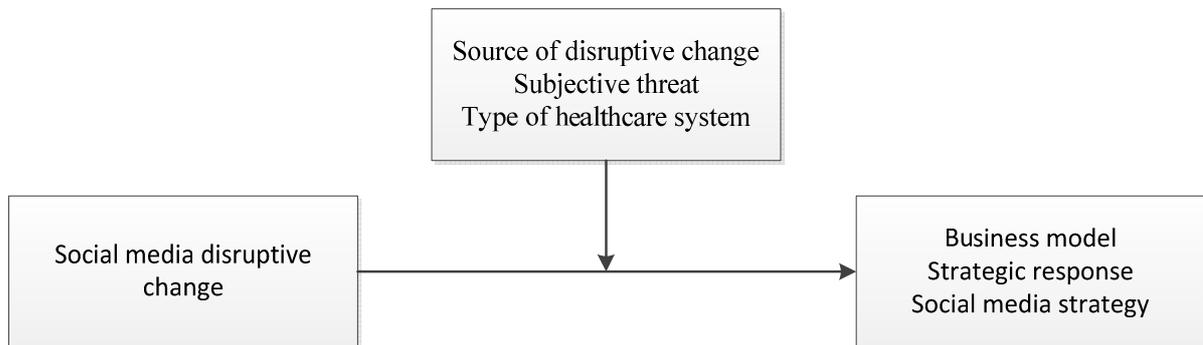


Figure 1. Conceptual model.

### 3 Methods

#### 3.1 Data and procedure

To test our hypotheses, we will conduct matched survey amongst healthcare providers in diabetes sector. This involves collecting data from two different sources in the survey, namely hospital managers and IT managers. In addition, we will collect data from social media communities for one of the variables. This help us to reduce common method bias. Hence, we follow good practice of earlier survey research in IS (Leidner et al. 2010; Tallon and Pinsonneault, 2011). To increase the response rate amongst healthcare providers, we will offer the respondents with an opportunity to receive summary of our findings. In order to distribute our survey, we will approach the associations of healthcare providers in the field of diabetes and have our survey distributed through this channel, which would increase our response rate. Furthermore, we will send email reminders after two weeks asking non-respondents to complete it. Once we finalize data collection, we will control for non-response bias with t-test as well as for common method bias with Harman’s test (Podsakoff et al. 2003). What follows below is the description of measures with proposed scales that will be refined through the interviews. To measure our concepts, we will rely on a 7-point Likert scale if not indicated otherwise. Using 7-point scale allows us to capture refined interpretations of the phenomena as experienced by respondents and going beyond 7 points on the scale does not improve scale reliability (Krosnick and Presser, 2010).

**Independent variables:** *Social media disruptive change.* We will ask the hospital managers to reflect on social media disruptive change they experienced. This captures the extent to which social media affect healthcare providers. To capture all potential effects of social media disruptive change completely, we adapt the measure of Bode et al. (2011). Example questions include the extent to which healthcare providers experienced in costs and price of their services, quality of core services and revenues.

**Moderating variables:** To capture the *type of healthcare system*, we will create a categorical variable and code each of the systems in the country where we conduct the survey.

**Subjective threat:** To measure the subjective threat, we will ask the hospital managers on social media potential. Example questions will include perceptions on growth potential of social media in healthcare and threats/opportunities of social media in regards to losing number of patients.

**Source of disruptive change:** We will ask the providers to indicate the source of disruptive change they experienced. In particular, we will ask them to rate both firm-hosted and patient-hosted social media communities. In order to provide clear understanding of the differences, we will rely on the results of our pre-test and give well known examples of both types of the communities.

**Dependent variables:** *Business models* measure will capture the extent to which providers operate through solution shops and facilitated user networks. Although they represent independent approaches, they are not mutually exclusive. Therefore, we will measure both and we compiled initial questions, which will be refined further during the interviews with diabetes experts.

**Strategic responses:** To measure strategic responses of firms, we will capture the activities that healthcare providers conducted in response to social media disruptive change. To do so, we will measure bridging and buffering activities and adapt the scale of Bode et al. (2011). To capture the buffering, we will use questions such as to what extent did the providers establish closer relationships with social media platforms and encourage their staff to participate in such communities.

**Social media strategies:** To measure intensity of social media strategies, we will ask IT managers to reflect on the number of employees in managing social media and calculate ratio of these employees and total number of employees. We will also independently collect social media data to determine how many social media communities providers have and what is the intensity of communication/involvement in these social media communities. Thus, we will use two sources for this variable.

**Control variables:** We will control for the *size* and *ownership of providers*. To measure the size, we will use number of employees the provider has. To measure the structure of ownership, we will create dummy variable with two categories, namely private and public.

## 4 Conclusion and future steps

This research departs from existing literature by proposing social media as disruptive innovation and proposing a study that relies on the framework of disruptive innovation (Christensen, 1997). In this way, we consider a disruptive change by addressing the role of social media, which has been neglected in the literature on disruptive innovation (Laurell & Sandstrom, 2014). Furthermore, we look at the disruptive change that may brought by the end users, in this case patients through the use of social media health communities. This represent a contribution to this stream of literature as earlier research on disruptive innovation focuses on disruptions brought about by other firms (Christensen and Raynor, 2003). Moreover, we plan to conduct a study in healthcare context, which has experienced high proliferation of social media (Kane et al. 2009) and IS scholars have called upon research in this context (Agarwal et al. 2010; Fichman et al. 2011). In this way, we hope to contribute to the literarutre on health information systems.

In regards to future steps, we are first planning to conduct interviews with diabetes healthcare experts and conduct a desk research on the organization of healthcare systems. This will provide us with understanding of the structure of different healthcare systems in regards to diabetes care. Moreover, it will enable us to properly select the systems in which full scale study will take place. We will also conduct interviews with experts on social media and innovation to refine our measures. We will pay special attention to the differences between firm and patient-hosted social media communities. Following this, we are planning to conduct a pre-test of our model in the context of Netherlands. We will conduct pre-test with general practices. This pre-test will help us to refine scales for our measures and confirm construct validity. In addition, it will provide us with initial empirical evidence on proposed relationships. Following this, we will revise our measures and conduct a full study in the context of three healthcare regimes.

Once the survey is complete, we are going to independently collect data on social media use by the healthcare providers who participated in the survey. These data will be collected only for the respondents for which we receive complete questionnaires and that do not contain missing values. In particular, we will collect data on types of social media they use based on Kaplan and Haenlein (2010) categorization of social media and the intensity of the use.

## References

- Agarwal, R., G.G. Gao, C. DesRoches and A.K. Jha (2010). "The digital transformation of healthcare: Current status and the road ahead." *Information Systems Research* 21 (4), 796-809.
- Allison, M. (2009). "Can web 2.0 reboot clinical trials?." *Nature biotechnology* 27(10), 895-902.
- Antheunis, M.L., K. Tates and T.E. Nieboer (2013). "Patients' and health professionals' use of social media in health care: Motives, barriers and expectations." *Patient Education and Counseling* 92 (3), 426– 431.
- Aral, S., C. Dellarocas and D. Godes (2013). "Social media and business transformation: A Framework for research." *Information Systems Research* 24 (1), 3–13.
- Aral, S., L. Muchnik and A. Sundararajan (2009). "Distinguishing influence-based contagion from homophily-driven diffusion in dynamic networks." In: *Proceedings of the National Academy of Sciences of the United States of America*. USA, p. 21544–21549.
- Archak, N. (2010). "Money, glory and cheap talk: analyzing strategic behavior of contestants in simultaneous crowdsourcing contests on TopCoder. Com." In: *Proceedings of the 19th international conference on World Wide Web*. Raleigh: USA, p. 21–30.
- Besley, T., M. Gouveia and J. Drèze (1994). "Alternative systems of health care provision." *Economic policy*, 200-258.
- Bhattacharjee, A. and N. Hikmet N (2007). "Physicians' resistance toward healthcare information technology: a theoretical model and empirical test." *European Journal of Information Systems* 16 (6), 725-737.
- Bode, C., S.M. Wagner, K.J. Petersen and L.M Ellram (2011). "Understanding responses to supply chain disruptions: Insights from information processing and resource dependence perspectives." *Academy of Management Journal* 54 (4), 833-856.
- Boonstra, A., M. Broekhuis, M.V. Offenbeek and H. Wortmann (2011). "Strategic alternatives in telecare design: Developing a value-configuration-based alignment framework." *Journal of Strategic Information Systems*, 20 (2), 198–214.
- Boudreau, M.C. and D.Robey (2005). "Enacting Integrated Information Technology: A Human Agency Perspective." *Organization Science* 16 (1), 3-18.
- Byers, J.W., M. Mitzenmacher and G. Zervas (2012). "The Groupon Effect on Yelp Ratings : A Root Cause Analysis." *Work* 10 (10), 1-21.
- Chattopadhyay, P., W.H. Glick and G.P. Huber (2001). "Organizational actions in response to threats and opportunities." *Academy of Management Journal* 44(5), 937-955.
- Chesbrough, H. (1999). "Arrested development: the experience of European hard disk drive firms in comparison with US and Japanese firms." *Journal of Evolutionary Economics* 9 (3), 287-329.
- Chiu, Y. C. and Y.L. Hsieh (2012). "Communication with fellow cancer patients: Writing to be remembered, gain strength, and find survivors." *Journal of health psychology*, 18 (12), 1572-1581.
- Christensen, C. M. (1997). *The innovator's dilemma*. Boston: Harvard Business School Press.
- Christensen, C.M. and M.E. Raynor (2003) *The innovator's solution, creating and sustaining successful growth*. Boston: Harvard Business School Press.
- Chung, J.E. (2013). "Social interaction in online support groups: Preference for online social interaction over offline social interaction." *Computers in Human Behavior*, 29 (4), 1408–1414.
- Colineau, N. and C. Paris (2010). "Talking about your health to strangers: understanding the use of online social networks by patients." *New Review of Hypermedia and Multimedia* 16(1-2), 141-160.
- Damanpour, F. and M. Schneider (2009). "Characteristics of innovation and innovation adoption in public organizations: Assessing the role of managers." *Journal of Public Administration Research and Theory* 19 (3), 495-522.
- Dewan, S. and J. Ramaprasad (2014). "Social Media, Traditional Media, and Music Sales." *MIS Quarterly* 2 (3), 101-121.
- Diekhof, J. (2015). "Do entrants increase incumbents' innovation activity? Escaping the lock-in, stimulating technological change and the transition towards environmentally friendly vehicles." *Journal of Innovation Economics & Management* (1), 101-137.

- Dong, J.Q. and W. Wu (2015). "Business value of social media technologies: Evidence from online user innovation communities." *The Journal of Strategic Information Systems* 24 (2), 113–127.
- Downes, L. and P.F. Nunes (2013). "Big bang disruption." *Harvard Business Review* 91 (3), 44–56.
- Fichman, R.G., R. Kohli and R. Krishnan (2011). "The role of information systems in healthcare: Current research and future trends." *Information Systems Research* 22 (3), 419–428.
- Gal, U. and N. Berente (2008). "A social representations perspective on information systems implementation: Rethinking the concept of 'frames'." *Information Technology & People* 21 (2), 133–154.
- Galbraith, J.R. (1973). *Designing Complex Organizations*. Boston: Addison-Wesley.
- Govindarajan, V. and P.K. Kopalle (2006). "The usefulness of measuring disruptiveness of innovations ex post in making ex ante predictions." *Journal of Product Innovation Management* 23(1), 12–18.
- Greene, J.A., N.K. Choudhry, E. Kilabuk and W.H. Shrank (2011). "Online social networking by patients with diabetes: A qualitative evaluation of communication with Facebook." *Journal of General Internal Medicine* 26 (3), 287–292.
- Haahr, L. (2014). "Wrestling with Social Media on Information Systems' Home Ground." In: *Proceedings of 5th Scandinavian Conference on Information Systems, SCIS 2014*. Ringsted, Denmark.
- Hawn, C. (2009). "Report from the field: Take two aspirin and tweet me in the morning: How twitter, facebook, and other social media are reshaping health care." *Health Affairs* 28 (2), 361–368.
- Hwang, J. and C.M. Christensen (2008). "Disruptive innovation in health care delivery: a framework for business-model innovation." *Health Affairs* 27 (5), 1329–1335.
- Kaganer, E. A., & E. Vaast (2010). "Responding to the (almost) unknown: Social representations and corporate policies of social media." In: *Proceedings of International Conference on Information Systems (ICIS)*. St. Louis: USA.
- Kane, G.C., R.G. Fichman, J. Gallagher and J. Glaser (2009). "Community relations 2.0." *Harvard Business Review* 87 (11), 45–51.
- Kaplan, A.M. and M. Haenlein (2010). "Users of the world, unite! The challenges and opportunities of Social Media." *Business Horizons* 53 (1), 59–68.
- Karimi, J. and Z. Walter (2015). "The Role of Dynamic Capabilities in Responding to Digital Disruption: A Factor-Based Study of the Newspaper Industry." *Journal of Management Information Systems* 32 (1), 39–81.
- KPMG International. (2011). Increasing importance of social media in healthcare. URL: <http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Issues-monitorhealthcare/Documents/im-healthcare-october-2011.pdf> (visited on 09/20/2015).
- Krosnick, J. A. and S. Presser (2010). "Question and questionnaire design." *Handbook of survey research* 2, 263–314.
- Laffey, D. and A. Gandy (2009). "Applying Stabell and Fjeldstad's value configurations to E-commerce: A cross-case analysis of UK comparison websites" *Journal of Strategic Information Systems* 18 (4), 192–204.
- Laurell, C. and C. Sandström (2014). "Disruption and Social Media — Entrant Firms As Institutional Entrepreneurs." *International Journal of Innovation Management* 18 (3).
- Leidner, D.E., D. Preston and D. Chen (2010). "An examination of the antecedents and consequences of organizational IT innovation in hospitals" *Journal of Strategic Information Systems* 19 (3), 154–170.
- Loebbecke, C. and A. Picot (2015). "Reflections on societal and business model transformation arising from digitization and big data analytics: A research agenda." *The Journal of Strategic Information Systems* 24 (3), 149–157.
- Lunt, N., M. Exworthy, J. Hanefeld and R.D. Smith (2014). "International patients within the NHS: A case of public sector entrepreneurialism." *Social Science & Medicine*, 124, 338–345.
- Maloney-Krichmar, D. and J. Preece (2005). "A multilevel analysis of sociability, usability, and community dynamics in an online health community." *ACM Transactions on Computer-Human Interaction* 12 (2), 201–232

- Mantzana, V., M. Themistocleous, Z. Irani and V. Morabito (2007). "Identifying healthcare actors involved in the adoption of information systems." *European Journal of Information Systems* 16 (1), 91–102.
- Markides, C. (2006). "Disruptive innovation: in need of better theory." *Journal Of Product Innovation Management* 23(1), 19-25.
- Mettler, T. and M. Eurich (2012). "A "design-pattern"-based approach for analyzing e-health business models." *Health Policy and Technology*, 1(2), 77-85.
- Miller, A. R. and C. Tucker (2013). "Active social media management: the case of health care." *Information Systems Research* 24(1), 52-70.
- Piskorski, M. J. and T. Meccall (2010). "Mapping the social Internet." *Harvard Business Review* 88, 7-8.
- Podsakoff, P. M., S.B MacKenzie, J.Y. Lee and N.P. Podsakoff (2003). "Common method biases in behavioral research: a critical review of the literature and recommended remedies." *Journal of applied psychology* 88(5), 879.
- Romanow, D., S. Cho and D. Straub (2012). "Riding the Wave: Past Trends and Future Directions for Health IT Research." *MIS Quarterly* 36 (3), 3-10.
- Saudek, C. D. (2002). "The role of primary care professionals in managing diabetes." *Clinical Diabetes* 20 (2), 65-66.
- Sood, A. and G.J. Tellis (2011). "Demystifying Disruption: A New Model for Understanding and Predicting Disruptive Technologies." *Marketing Science* 30 (2), 339–354.
- Swan, M. (2009). "Emerging patient-driven health care models: an examination of health social networks, consumer personalized medicine and quantified self-tracking." *International journal of environmental research and public health* 6 (2), 492-525.
- Tallon, P.P. and A. Pinsonneault (2011). "Competing Perspectives on the Link Between Strategic Information Technology Alignment and Organizational Agility: Insights from a Mediation Model." *MIS Quarterly* 35 (2), 463–486.
- Thackeray, R., B.L. Neiger, A.K Smith and S.B Van Wagenen (2012). "Adoption and use of social media among public health departments." *BMC Public Health* 12 (1), 242.
- Treem, J.W. and P.M. Leonardi (2012). "Social Media Use in Organizations: Exploring the Affordances of Visibility, Editability, Persistence, and Association." *Communication Yearbook* 36, 143–189.
- Tushman, M.L. and D.A. Nadler (1978). "Information Processing as an Integrating Concept in Organizational Design." *Academy of Management Review* 3 (3), 613–624.
- Vaast, E. (2010). "The spread of new technology practices in a network of practice: Social media among non-profit professionals." In: *Proceedings of the 70<sup>th</sup> Academy of Management Conference*. Montreal: Canada.
- Van de Belt, T.H., S.A. Berben, M. Samsom, L.J. Engelen and L. Schoonhoven (2012). "Use of social media by western European hospitals: Longitudinal study." *Journal of Medical Internet Research* 14 (3), 61.
- Wicks, P., M. Massagli, J. Frost, C. Brownstein, S. Okun, T. Vaughan, R. Bradley et al. (2010). "Sharing health data for better outcomes on Patientslikeme." *Journal of Medical Internet Research*, 12 (2), 19.
- Ziebland, S. and S. Wyke (2012). "Health and illness in a connected world: How might sharing experiences on the internet affect people's health?." *Milbank Quarterly* 90 (2), 219-249.