How MyData is Transforming the Business Models for Health Insurance Companies

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Abstract. This paper discusses the potential impacts of MyData in healthcare business, more precisely occupational health insurance companies, and how the coming of MyData will transform the business models and the whole logic of value creation and capture of health insurance businesses. These companies have traditionally acted alone and relied on organization-centric business models. Through an empirical study, we demonstrate how these organizations are now heading towards acting as active members of collaborative health service ecosystems.

Keywords: Business model, MyData, personal data, occupational health, insurance business.

1 Introduction

Within the past years, the use of data in the healthcare sector has become increasingly important. People are embracing a future healthcare system that allows them to control and share their personal health information for receiving improved personalized care. The adoption of cloud technologies and mobile devices, for instance, enable novel ways to generate, access, and manage personal health data. People voluntarily agree vast amounts of personal data to be stored and utilized by companies in exchange of services. For the use of personal health data, the MyData paradigm has therefore emerged to address to strengthen digital human rights while simultaneously opening new opportunities for businesses to develop personal data-driven services. MyData refers to an approach that seeks to transform the current organization-centric system to a human centric-system to use personal data as a resource that individuals themselves can access, control and share based on mutual trust. MyData both enables and requires active collaboration among healthcare businesses for fulfilling the human-centric service perspective through technological solutions. A shared MyData infrastructure enables decentralized management of personal data, improves interoperability, eases to comply with tightening data protection regulations, and allows individuals to change service providers without proprietary data lock-ins [1].

The continuing growth in personal data is thus paving way for data-driven business solutions. Sharing individual's data between actors is crucial especially in preventive healthcare services. This kind of collaboration is seen as a way to differentiate from competition, requiring new kinds of collaborative business models. Because MyData is only becoming for business use through technological and regulatory developments, there is a clear research gap in studying how MyData-based collaboration is projected in business models. The aim of this study is to increase knowledge on the business potential of MyData in the field of occupational healthcare, in the case of health insurance companies. Sharing and use of data between health professionals – including insurance companies – could contribute to increased health and wellbeing through preventive healthcare, and result in e.g. lowered insurance costs, bringing added value to the individual client. How MyData eventually impacts the insurance business, is thus a very topical and relevant question. Building on business model literature, the research question of this study calls, *how MyData is transforming health insurance companies' business models?*

The paper first discusses the theoretical foundations on business models in data-driven business. It then dives deeper into MyData as a human-centric approach to healthcare. Research methodology and the empirical case are described next. The study ends with discussing research results, findings and conclusions.

2 Toward Data-Driven Business Models

One of the buzzwords of contemporary business is the concept of business model [2], [3]. Previous literature has described and defined business models in various ways, such as a structure, an architecture or a business frame; a representation of a firm's relevant interactions and activities [4]. Although scholars are debating on a unanimous definition for the concept, the common view nevertheless is that business models act as pathways to fulfill unmet needs, profitability and the promise of service ([4] that will lead to competitive advantage [5],[2]. Thus, business models are to "create and capture value in an inimitable way and through rare and valuable resources that are utilized efficiently" [6]. This means that a business model is a system of specific activities conducted to satisfy the perceived needs of the market, as well as specifying who does what (whether it is the firm or its partners), and how do these activities link to each other. From collaborative perspective, a business model also acts as a system of interconnected activities that determine the way the company does business with its customers, partners and vendors [7].

Business models are often imposed by technological innovation that creates the need to bring discoveries to market, and the opportunity to respond to unmet customer needs [5]. Stemming from this background, the concept of data-driven business model has emerged to address connectivity issues, the Internet of Things, and Big Data [8]. [9] define data-driven business models as business models that rely on data as a key resource. According to [9], the source for this data can be either internal or external, the offering can consist of data itself, information or non-data product or service. Revenues can consist of, e.g. sale, licensing or subscriptions, but their definition does not consider data sharing and re-use [8], as implied in MyData paradigm. According

to research conducted by [8], in current data-driven business, data sharing is still uncommon, to which this research this research contributes to contribute to from business model perspective.

Still, using data has become as a necessity for many organizations in order to remain competitive or survive in their field [10]. In healthcare, the most successful services should place the sensing and supporting technologies around the needs of individuals in a manner that is highly personalized and makes the person as a driver of his own health and wellbeing. The key challenges of integrating personal data are both data availability from different silos, and consumer protection laws that currently hinder data usage especially in the health sector. Recently, open source solutions around modern web interfaces or database solutions have started to break the data silos from different sectors. This has resulted in "API Economy" [11], which means that companies separately create revenues through application programming interfaces (APIs) - either licensing, use-for-fee or other monetization models - very much on personal data sets. An aggregator model on the other hand emphasizes the controlling role of a central organization. In open business environment, a shared MyData infrastructure enables decentralized management of personal data, makes it easier for companies to comply with tightening data protection regulations, and allows individuals to change service providers without proprietary data lock-ins [1]. MyData model means that organizations are moving from traditional, technology and aggregator models towards a human-centric data management approach.

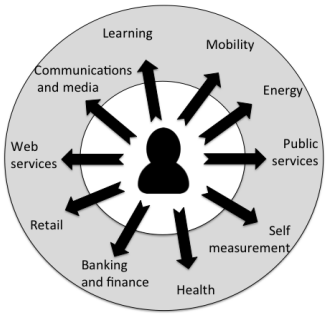

Fig. 1. MyData model (adapted from [1].

In the traditional "structureless" API economy, there is no clear infrastructure or platform in place for controlling and organizing the use of data in a logical manner. Organizations do not systematically collaborate, and the ecosystem is governed by closed business models. Aggregating data control would make life easier for organizations and individuals, but different aggregators do not have a built-in incentive to develop interoperability between them. In this model, there is an ecosystem in place, however, it is a closed system, dominated by large corporations. Compared to the aggregation model, MyData is a resilient model because it is not dependent on a single organization, but works as a shared open infrastructure [1], thus relying on open innovation approach. MyData can been seen as a way to convert data from closed silos into an important, reusable resource. It can be used to create new

services that help individuals to manage their lives. The providers of human-centric services can therefore create new data sharing based business ecosystems and new business models, leading to economic growth to the society as whole [1].

Thus, business models can be seen as the focal firm's boundary-spanning transactions with external parties [2]. Indeed, collaboration of the focal firm with its network can be considered as one of the main functions of the business model. This approach is well captured in the MyData paradigm, yet it brings a lot of challenges for organizations to realign their current strategies and business models. As [12] state, the transformation of an existing business brings special challenges on business models. Business model transformation is about transforming an existing organization through repositioning the core business and adapting the current business model into the altered market place [6], [12]. With the emergence of data sharing and the control of individuals over their health data will transform healthcare business. This means shifting away from the transactional fee-for-service model towards a strategic value-based care [13]. It provides an opportunity to "better understand their true customer, the patient-consumer; tailor products to meet their needs; and to capture a high share of distinct customer subsets who will pay for and be loyal to their brand" [14].

However, transforming an organization requires a lot of commitment from the management, as the old ways of doing things may become a challenge [15]. The activities and logic related to the new business model may be incompatible with the status quo [16]. Therefore, business models should always be evaluated and calibrated against the business context in order to find an optimal fit with the environment [5]. Business models become fully comprehensible for firms only through action in the business context where they emerge [12].

According to [14], the main actionable strategies driving the transformation of health insurance companies start with 1) developing partnerships with right parties, moving away from volume towards limited partnerships and innovative treatment pathways. 2) Predictive care paths, when correctly executed, are the true offerings for future hospitals and physicians. Insurance businesses can play a key role in building such collaborations that have the power to achieve measurably better health outcomes at lower overall costs. In the 3) systematic transformation, payers will have a significant role to play in bridging the divide that is between providers and patients [14]. Thus, it is important to be aware that business model creation in start-ups is a different process from business model transformation within established firms [12].

It is also important to acknowledge that a firm does not have to bind itself to a single business model, but should, in fact, experiment with several simultaneously [17]. During the transformation process, it is not clear what the new business model will be like, but by experimenting the data needed to justify the transformation can be gained. The search for a new business model thus often requires a period of co-existence for the current and the new model(s) [16]. However, although the business model as an actionable concept includes an underlying assumption of a process, academic research has not widely addressed the issues related to business model transformation [12].

3 Methodology, Data Collection and Analysis

As this study seeks to gain an in-depth understanding of the mechanisms of change in an organizational setting, an action-based research methodology was applied for data collection [18]. [19] suggest that action research is a valuable method to study dynamic and turbulent environments. As MyData paradigm shift is still to come, the method enables researchers to get close to the business reality as of now, and thus foster the development of deep and rich insights of the complexities within (data-driven) decision-making [20] in the context of MyData.

The data utilized in this study is part of a wider research project on healthcare service ecosystem, Digital Health Revolution DHR2. The primary data was collected from ten in-depth interviews with insurance company representatives and stakeholders related to the insurance business during 2016 (Table 1). We intentionally selected both insurance players and their stakeholders in order to understand the business of insurance players from different perspectives. In addition, early 2017, the data collected from the interviews was further elaborated during a joint 3h workshop with insurance companies and their stakeholder ecosystem to validate the identified impact of MyData on business models. All the interviews and workshop material was recorded and transcripted.

Table 1. Data collection of the study.

Company	Key business area	Interviewee	Duration
SME	Technology provider	CEO	106 min
Health provider	Healthcare	Development Director	45 min
Insurance player	Banking, finance, healthcare	Chief actuary	60 min
SME	Wellness training	CEO and Director of Intl. Growth	75min
SME	Wellness training	Two personal trainers	45 min
Insurance player	Insurance	Business developer	35 min
Insurance player	Insurance	Manager	45 min
Large company	Mobile network operator	Innovation Manager	45 min
Large company	Technology provider	Head of Ecosystems Research	73 min
SME	Technology provider	CEO	56 min

In the data analysis, statements were identified, sorted and structured to identify impacts of MyData to healthcare insurance companies. The business model wheel [6] was used as a tool to analyze the data derived in order to thematically identify the potential impact and use of MyData on healthcare insurance business, as this tool helps to identify the points of action and collaboration in a simplistic manner. The template addresses the following elements: 1) what, comprising offering, value proposition, customer segments, and differentiation, 2) how, covering key operations, basis of advantage, mode of delivery, and selling and marketing, 3) why, describing base of pricing, way of charging, cost elements, and cost drivers, and 4) where are all these items located, internally or externally to the firm, as each part of the business model can be executed through collaborating with outside partners [6]. This template is depicted in Figure 2.

4 Findings

In exploring how MyData will potentially impact the business models of health insurance companies, we thematically categorized our interview findings and mapped them together with the themes discussed during the joint workshop. The results are summarized in Figure 2, and discussed in more detail below through business model elements, where collaboration is addressed in all components.

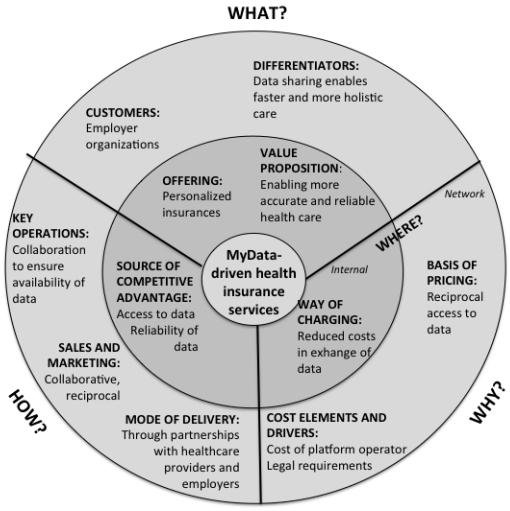

Fig. 2. MyData-driven health insurance business model.

4.1 Business Opportunities of MyData

New type of access to human-centric data provides a novel possibility for insurance companies to take a bigger role in preventive healthcare field. The aim for insurance companies is to help their end customers to live more healthy and safe life, which will also support insurance business to decrease the compensation costs related to chronic disease and accidents. In this new field, insurance companies see that *"Our role is not anymore just to buy compensation, it is more to help to make sure that everything is fine with individual".* At a concrete level, insurance companies consider that *"Mydata approach will offer us new opportunities to give better and updated information for example about the value of their property or risks for future accidents and the like."* But, MyData is seen to enable also a more general approach to wellbeing, as *"As soon as end users buy from us we can start to offer the services that helps them to improve their health and life style"*. This is based on some initial work insurance companies have conducted in the field, such as "*We have noticed in our research that it is important to offer bonus or some price for people when they are changing their life style"… "smoking is a good example, if you get 3000 if you stop it perhaps people will do it"*. This indicates that in the future system the insurance companies can be characterized more as a service providers than as a player that buys compensations of

general risks or issues that already have occurred.

4.2 Value and Competitive Advantage of MyData for Insurance Business

What. MyData was seen to enable extended and novel offerings based on collaborative use of data: "*the data sharing would make it possible that both insurance company and doctor sees the same information and we could serve the individuals better".* Also new players will emerge to collect and analyze data. First, insurance companies aim to use data to achieve close to real-time customer insights to better align themselves with customers for better services. Value could be captured especially in situations when a person has been using one service provider for 10 years and then decides to change. "*that could be the case in which the end user could do some effort to be able to transfer information easily*". Secondly, insurance companies could base the costs of insurance on real, not estimated, situations. This means that people with high-risk profile will have bigger costs whereas those who are living healthy life could get some compensation. Costs would be based on a person's lifestyle and activity level, which is not currently possible due to legal regulations. Thirdly, with MyData, insurance companies could offer a feeling of safety, such as using data from sensors and devices to detect likelyhood for potential accidents. Early risk detection services can be an opportunity for the insurance business. "… *if we could use the sensor and personal data with the permission of end user to check that there is something wrong with the car tire and it is better to fix it before a long journey*".

Insurance services can also be customized based on the data. For example, in many cases the insurance companies are supporting groups in employee organizations. "*The use of Mydata approach will especially change the role of employer organizations in the occupational health business sector during the next 10 years of time*". Indeed, employer organizations were seen as a core player who would benefit from the transformation to MyData enabled healthcare most: "*In the new Mydata based model, the employee organizations should be able to better take into account the coping, energy level, wellbeing and health of their own employee*s" Other important players in this new business model could be banks, food stores, aviation industry, utilities and housing companies.

How. Utilizing collaborative networks were identified as the key strategic approach in MyData, as it is not possible to build open access to data open business or innovation models." "*We have opened the interfaces and helped developers to build interfaces and open data sources*." "*we have organized hackathons that targeted to give developers a possibility to use their data as a basis for new application development*." However, insurance companies mentioned that there is a key player, an operator, missing in this field who could take the responsibility of data sharing and offer the needed collaboration interfaces. Supporting customers to decide which data to share is important in Mydata transformation. Without an operator in place, it might be difficult for insurance companies to get access to the personal data without legal problems. Insurance companies have interest to lead this but their challenge is that it could be seen scary from citizen perspective.

Insurance companies aim to develop rapid data usage as source of competitive

advantage: "*the faster we can use the data either as a service or information or to do better pricing the better we can manage in the business compared to our competitors*". Combining personal data with environmental data like cars or housing, insurance players could maximize the probability of customers finding products that they want to buy. It was also mentioned in the interviews that data usage is not only a competitive advantage but must-to-have for insurance players in the future if they want to survive: "*The basic model in which we just send bills and compensations does not work anymore in the current digital world. If we cannot use the data we will stay behind in the insurance marke*t".

Why. From revenue perspective, the individual was highlighted as the most important player in the future MyData-driven business: In the new insurance business model, individuals can get discounts of their insurance if they are improving their lifestyle. At the same time the assumption was that the insurance companies should pay less compensations on chronic diseases and accidents. However, insurance companies do not yet have evidence that the costs actually decrease if data is better used. One approach could be reciprocical data sharing among within the collaborative network that includes also the end customer: *"I think some players are ready also to buy the data from individuals"*. Equally, "Y*ou need to buy if you want to get the valuable services based on your data*". Help is needed from other players such as individuals, developer organizations and data operators. Who owns the data and has the right to use or sell the data within MyData –based collaborative networks is a key issue.

5 Discussion and Conclusions

It seems that data-driven business models will be mandatory in future insurance business. It will open new opportunities for new services and therefore help insurance players to stay as a significant player in the preventive healthcare business. It was evaluated that the key players who will buy new MyData based services are individuals and employee organizations who will clearly financially benefit from new data-driven services. The way to achieve MyData transformation is to open the interfaces and organize hackathons to help developers to build solutions. This means that in order to attract and retain customers, insurance companies can offer lowered prices for those who voluntarily share their health data. This results in lowered income in the form of insurance payments (the higher the risk indicators, the more one has to pay), but equally lowers the amounts of compensations paid to individuals. Thus in general both losses and profits will decrease. The results of the study thus indicate that the use of personal data, and the coming of MyData will dramatically transform the business models of health insurance companies from transaction-based to service based business. This has also important policy implications for data regulations and legislation, as consent and control on the use of personal data is a central aspect of MyData, in terms of how for-profit companies can utilize it for business gain.

Through addressing an emergent phenomenon, this study contributes to business model literature, and especially on data sharing within data-driven business models.

Thus, this study also contributes to data based aspects of sharing economy discussion as well. The main limitations relate to empirical validity. As MyData yet is a still a paradigm, the results of this study still address the potential use and implications, and cannot be validated through large scale empirical studies. Similarly, as the project took place among occupational healthcare sector, the implications on revenue models and competitive advantages for organizations involving also public institutions and healthcare provides. Hence, larger scale future scenario work would be useful to validate the business potential of MyData, especially from regulations and legislation points of view. We are yet to see, if the findings of this study will become the reality of health insurance business soon enough. In the meanwhile, further research on the design and orchestration on networks around MyData would be extremely valuable, especially from the point of view of MyData operator business. Moreover, the voice of the individual consumers from user driven innovation perspective could contribute to human-centric data management.

Acknowledgments. The authors would like to acknowledge DHR2 – Digital Health Revolution – project consortium.

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