"Getting the Two to Dance" - How Intra-Organizational Readiness Fosters Collaboration Quality between Hospitals and Health Insurance Providers

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According to the health-value chain concept, collaborations can optimize the interaction processes between actors of healthcare systems. This paper focuses on assessing the perceived inter-organizational collaboration quality between Swiss hospitals and health insurance providers and on assessing its influencing intra-organizational factors.

A conceptual framework is proposed to understand the perceived quality of collaboration and applied on a survey with Swiss hospital/insurance employees. The results from a regression analysis support the hypotheses on intra-organizational readiness factors: for practitioners it is recommended to increase the three readiness dimensions Proficiency, Willingness and Empowerment, as they play a major role on the perceived collaboration-quality.

INTRODUCTION

According to Zepeda (2012), providing healthcare has become very complex and technically sophisticated. It is often necessary to involve simultaneously many different specialized providers to provide high standard care. Unfortunately, these providers often work in silos merely focusing on their own purposes. This focus leads to less than optimal performance and high costs for the whole system. De Vries & Huijsmann (2011) stressed that many healthcare providers have realized that an adoption of a holistic value chain view is crucial to delivering effective and efficient care. A fundamental philosophy behind the value chain concept is that optimizing the whole chain simultaneously leads to better results for the end-customer patient than optimizing the individual elements of the system (Porter & Teisberg, 2006). As typically there is no single player controlling the entire chain, this holistic approach can only occur through voluntary collaborations and alliances between the players (Burns & Wharton School Colleagues, 2002).

Although the rationale for collaboration along the health chain is clearly provided, the specific implementation in the healthcare sector is often problematic (de Vries & Huijsman, 2011). The interactions between hospitals and health insurance providers are complex, resulting in long, costly processes. Between the two players, numerous medical and administrative data is continuously exchanged, decisions regarding the treatment of patients are vividly discussed, and negotiations about monetary issues are conducted. According to the concept of the health value chain, the processes in this interface should be radically reduced (Pitta & Laric, 2004). As is known from similar cases in the manufacturing industry, this interface improvement is not possible with unilateral initiatives. To maximize the performance of the interface, collaborative optimization initiatives are required.

Therefore, we argue that it is equally imperative for practitioners and researchers to be able to assess the inter-organizational collaboration quality between hospitals and health insurance providers to understand performance gaps. Furthermore, we need to better understand the factors influencing this collaboration quality. Consequently, the main research question of this paper is as follows:

"How does intra-organizational readiness foster inter-organizational quality of collaboration between hospitals and health insurance providers?"

The findings will help hospitals and health insurance providers focus on the proper areas to develop their collaboration towards a true health value chain.

This paper is structured as follows. In the next section, we will provide a short overview of the current interactions between Swiss hospitals and health insurance providers. Based on the literature findings in the third section, in the fourth section, we develop a conceptual model of the impact of the variables of interest on the collaboration quality. An empirical study (survey sample of 60 Swiss professionals from hospitals and health insurance providers) is conducted to validate the postulated model. Thereafter, we discuss the results and their managerial implications.

STATUS QUO OF THE INTERACTIONS BETWEEN SWISS HOSPITALS AND HEALTH INSURANCE PROVIDERS

The vast majority of Swiss healthcare costs occurs with 37.5% in the hospitals (Bundesamt für Statistik, 2014). Due to continuously increasing costs, in 2012, Switzerland introduced a reimbursement system based on diagnosis-related groups (DRG) for the inpatient sector (De Pietro et al., 2015). In Switzerland, coverage is ensured through health insurance providers, which are the most important payers in the system. The approximately 50 Swiss health insurance providers fund 35.8% of the total health expenditure (De Pietro et al., 2015). Some of the core activities of health insurance providers are to negotiate base rates, review whether the patient and the planned therapy are covered and assess the healthcare providers' invoices. Although the government covers a portion of inpatient costs, the base rates are directly negotiated between hospitals and health insurance providers, stressing the importance of the health insurance provider's behavior in the overall healthcare system's cost. This paper focuses on the interactions between hospitals and health insurance providers; these are often unknown to the patients but highly relevant for the overall performance of the health care system. To better understand the thereafter measured construct, perceived Quality of Collaboration, it remains imperative to understand the current interactions between both players. One can divide these interaction processes into the following two groups: strategic level and operational level (Angerer, Liberatore, Muschick, et al., 2016).

The strategic level primarily addresses the negotiation of prices and rates. The most important negotiation is the definition of the DRG-base rates. To minimize the expenses for negotiating base rates between the 50 health insurance providers and the 112 acute care hospitals, nearly all health insurance providers have allied into two buying syndicates. In addition to the negotiation of base rates, the buying syndicates also negotiate prices for outpatient services. Private insurance rates, product innovations and additional collaborations are negotiated individually between each hospital and each insurance firm. As strategically important as these interactions are, they only occur a few times per year; therefore, the second activities group is more relevant to the focus of this paper.

The operational level contains the following three main activities that have a much higher frequency: coverage confirmation, invoice verification and payment execution. When a patient enters a hospital for inpatient care, hospitals must request coverage from health insurance providers. For special treatments, or if the patients' hospitals must submit a comprehensive request, the health insurance must decide whether the planned treatment is appropriate and will be covered (Angerer, Liberatore, Muschick, et al., 2016). After the treatment, health insurance providers must verify the invoice and decide whether they accept or reject the invoice. Ultimately, the health insurance providers execute the invoice payment, and the hospital receives its money. With more than 1.35 million inpatient cases (Bundesamt für Gesundheit, 2014a), the processes on the operational level lead to countless interactions between the organizations; these still primarily occur by letters, fax, and phone calls.

Overall, the importance and frequency of interactions between both players, particularly on the operational level, are often underestimated by patients. For each executed patient treatment, there are dozens of persons involved in the background extensively communicating with each other. A well-designed interface between both players can significantly reduce the cost and time requirement and improve the process quality. The optimization of the hospital-health insurance provider interface can only occur as a collaborative effort from both players; this is essential for a well-functioning health value chain, a concept that will be presented in the next chapter.

CURRENT STATE OF RESEARCH ON HEALTH VALUE CHAINS

We focused our literature search on the following three aspects:

- The description of the health value chain approach and its expected benefits
- The implementation difficulties of it in the healthcare setting
- Research gaps in this field.

The Health Value Chain Concept and its Benefits

The original concept of the Value Chain by Michael E. Porter (1991) focuses on the successive value creation processes in an organization. Products and services flow between individual departments of an organization; these add value to the products and services. Value is defined by the end-user, the customer. This concept of the value chain can also be applied across different organizations to model the value creation process across several tiers. This concept is also referred to as a value chain or as a supply chain system.

The health value chain concept addresses the entire value chain system of healthcare, which consists of different actors who are directly and indirectly involved in the provision of services in a health system. In addition to the use of the term "health value chain", "value based care" is often used. According to Burns et al. (2002), the health value chain can be divided into the following five main areas in which organizations have similar tasks: cost carriers (e.g., insured patients), fiscal intermediaries (e.g., health insurance providers), providers (e.g., hospitals), intermediary trade (e.g., pharmacies) and manufacturers (e.g., medical device producers). The interfaces between these individual participants represent potential break-up points in the treatment process; these must be avoided to accomplish a smoothly running value chain.

It must be remembered that every participant involved has responsibility for the entire value added since a failure at one point in the process chain can jeopardize the success of the whole value network (Pitta & Laric, 2004). For example, a false diagnosis can lead to an unnecessary intervention, which causes additional costs for the health insurance provider. The efficient management of value creation across all levels of care would thus have both positive monetary effects and positive effects on patient safety. However, the health value chain concept also creates benefits for the individual stakeholders. An intensified collaboration within a health value chain means that all actors work together to achieve a common goal. Instead of a wasteful competition between individual companies in different vertical tiers, whole value chains compete with each other (Behzad, Moraga, & Chen, 2011). In this ideal setting, each

company can focus on adding value to the patient journey, thus making its health value chain more attractive than the others.

In many case studies, the adaptation of the health value chain approach has shown significant benefits. For example, de Vries and Huijsman (2011) depict the implementation of integrated care programs that have decreased resource utilization and improved healthcare quality. In some other cases, the collaborations between care providers, physicians and patients have resulted in success stories with positive effects for patients regarding the treatment coordination and the improved information flow between patient and physician, and the quality increases throughout the entire process (Bundesamt für Gesundheit, 2014b; GS1 & Economiesuisse, 2015). In summary, the health value chain promises an increase in efficiency and effectiveness for patients and all actors involved in the value creation process (Pitta & Laric, 2004; Urban & Streak, 2013; Zepeda, 2012).

The Implementation Difficulties

Collaborations along the supply chain have had very impressive results in other industries outside healthcare (see for example Cao, 2007; Felde, 2004; Ralston, 2014). The evidence of significant competitive advantages and cost reductions are well-documented (McKone-Sweet, Hamilton, & Willis, 2005). However, in healthcare, we do not observe a major implementation of these concepts; the adoption rate is slow (Kahan & Testa, 2008; McKone-Sweet et al., 2005). De Vries and Huijsman (2011) stress that there are several healthcare industry specific roadblocks inhibiting the implementation of the health value chain in practice. In the following, we will focus on the following two major roadblocks: the transfer of value chain concepts from an industrial setting to healthcare and the current overall low management maturity level in healthcare.

The transfer of concepts from the manufacturing industry to the healthcare sector is difficult. Modern healthcare delivery systems are characterized by a high level of complexity due to an enormous number of different organizations and professions involved in patient treatment processes (Zepeda, 2012). Rana and Gregory (2012) stress that the healthcare system embodies certain characteristics (like regulatory restrictions) that require a tailored management approach. Furthermore, it is worth remembering that a medical treatment is a service and therefore inherits its characteristics. For example, the patient is a co-producer of the service "medical treatment". The patient is physically directly involved in the treatment process and thus has a higher expectation for highly customized service. In addition, the demand for medical services is subject to considerable fluctuations (Pitta & Laric, 2004). Therefore, higher variety and variation in demand increases the complexity of a health value chain.

A second major roadblock observed is the overall low management maturity level in the healthcare industry, particularly regarding process design. This statement can be well illustrated for Switzerland by a study surveying 519 healthcare employees from Swiss hospitals, where their management capabilities showed major space for improvement (Angerer, Auerbach, & Früh, 2012). These results were also confirmed in a study by the Swiss Federal Office of Public Health among Swiss patients (Bundesamt für Gesundheit, 2014b). The participants complain of the lack of coordination and an insufficient sharing of information between patients, doctors and other organizations in the Swiss healthcare system. One main objective of Swiss healthcare managers should therefore be to increase their management readiness to improve the overall system's performance.

The health value chain consists of many players with differing goals and complex inter-actions (Burns & Wharton School Colleagues, 2002), making it difficult to determine where to focus the research. Porter and Teisberg (2006) state that health insurance providers should play a central role in the health value chain as long-term agents of the patient. Health insurance providers decide on the reimbursement of individual services, consolidate patient-related data from service providers and thus could play the central role of a case manager. Health insurance providers could coordinate the activities of the different actors vertically and horizontally along the health value chain. Health insurance providers would ensure a seamless, timely exchange of information and guarantee the continuity of patients' treatment. These two performance outcomes could be measured as indicators for the quality of inter-organizational collaboration in a health value chain. Due to their potential pivotal role in a health value chain, we

decided to focus our research on the interaction between the health insurance providers and the costliest player in the health system, the hospitals.

The success factors of collaborations in general have been the focus of many studies (Perrault, McClelland, Austin, & Sieppert, 2011; Premkumar & Ramamurthy, 1995; Rubio-Valera et al., 2012). A literature review conducted by Krathu et al. (2015) of 177 publications on inter-organization collaboration revealed dozens of factors that have a causal effect on the performance of collaborations. Some of these factors are related to the interactions between them (e.g., communication processes), some focus on softer relationship elements (e.g., trust, loyalty), some are technical (e.g., IT capabilities), and some are related to the individual behavior of managers (e.g., top management support). However, very few studies have focused on the collaboration between hospitals and health insurance providers. The few papers on this interface tend to focus on product innovations (e.g., Urban & Streak, 2013) or on technical aspects (e.g., Born, Carbajal, Smith, Wallace, & al, 2004). To the best of our knowledge, there is no study focusing on the daily operational interactions between hospitals and health insurance providers and their influencing factors. Hence, the primary focus of this study is to close this research gap.

As the influencing factors of collaboration success are unknown, it is difficult to derive recommendations for the roles and behaviors of individual managers. What managers' actions in the hospitals and health insurance providers should be to increase the likelihood of collaboration success remains unclear. The health value chain concept is abstract and on a very high level, leading to a practitioner's need for guidance. While Porter and Teisberg (2006) broadly define the basic steps to transform the interface between healthcare players, the specific details remain unclear. In other healthcare fields, researchers have provided much more specific guidance. Furthermore, in the Lean healthcare management field, for example, there is a better understanding of the readiness factors for organizations to optimize their processes (e.g., Al-Balushi et al., 2014; Hellström, Lifvergren, & Quist, 2010), clear recommendations on how to conduct Lean initiatives (e.g. Barnas, 2011; Breuer, 2013) and information on what the exact roles of managers should be (e.g., Mannon, 2014; Mazur, McCreery, & Rothenberg, 2012; McAlearney & Butler, 2008). Consequently, these research concepts on intra-organizational optimization will serve as orientation in the next chapter to create a conceptual model of inter-organizational collaboration. Together with a better understanding of the antecedents of collaboration quality, our objective is to derive managerial advice on the successful fostering of the health value chain concept.

CONCEPTUAL FRAMEWORK

The so-called PWE-Model (Proficiency, Willingness and Empowerment) has been used to measure the readiness and success likelihood of intra-organizational process optimizations in hospitals (Angerer & Früh, 2013; Angerer & Meier, 2016). The model was originally developed by organizational psychologists Kurt Lewin (1963) and later enhanced by von Rosenstiel et al. (2005). The underlying behavioral theories state that the employees' actions are influenced by individual personality factors and by the situational context that can be grouped into three factors.

Proficiency describes the skills and knowledge of the employees who help to analyze and improve operational processes. In addition, Proficiency measures the employees' knowledge on the current collaboration initiatives and processes with the other actors. The items used to assess the perceived Proficiency level have been based on the healthcare process optimization sources (e.g., Angerer, Liberatore, & Brand, 2016; Poksinska, 2010; Poole & Mazur, 2010). In this paper, this construct is used to measure whether the employees have adequate competencies on how to conduct intra-organizational collaborations. Willingness, as the second factor of the model, assesses the perceived motivational readiness of employees. Willingness measures employees' individual motivation to have quality collaborative interaction with the other agents in the value chain. Another important aspect is assessing the value the agents perceive in having a strong personal relationship with the employees from the other organization. The items in our survey are based on the findings from the comprehensive study by Krathu et al. (2015) on inter-organizational success factors. Empowerment, as the last dimension of the model,

describes the management style and the quality of leadership. The implemented items were derived from the traditional leadership literature on incentives schemes and participative management (e.g., Bass, 1999; Proctor & Doukakis, 2003; Shortell, Bennett, & Byck, 1998).

The underlying considerations of the PWE model led to the following hypotheses:

H1: A higher level of perceived Proficiency leads to a higher perceived quality of inter-organizational collaboration between hospitals and health insurance providers.

H2: A higher level of perceived Willingness leads to a higher perceived quality of inter-organizational collaboration between hospitals and health insurance providers.

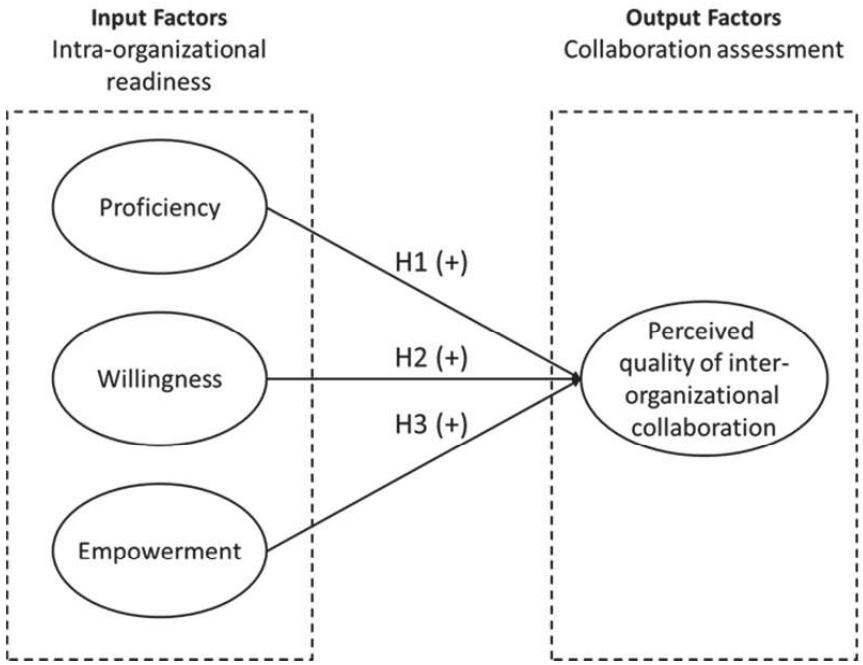
H3: A higher level of perceived Empowerment leads to a higher perceived quality of inter-organizational collaboration between hospitals and health insurance providers.

We also expect a different management maturity level between hospitals and health insurance providers. This expectation can be explained considering the business raison d'être of both players. While for hospitals, addressing the interface between them and the health insurance providers is only a secondary administrative task, it is one of the crucial core processes of health insurance providers. Consequently, our last hypothesis is as follows:

H4: Hospitals have lower levels of intra-organizational readiness (perceived Proficiency, Willingness and Empowerment) than insurance providers.

Figure 1 shows the hypotheses in the conceptual framework of this study.

FIGURE 1
CONCEPTUAL FRAMEWORK OF INTRA-ORGANIZATIONAL READINESS AFFECTING THE PERCEIVED QUALITY OF INTER-ORGANIZATIONAL COLLABORATIONS.



STUDY DESIGN

Based on the proposed conceptual framework, an online questionnaire was developed. The questionnaire was distributed among healthcare employees working on the interface between hospitals and health insurance providers. The survey included a total of 18 items. To ensure intersubjective uniformity, we selected a verbal rating scale using a fit rating (Moosbrugger & Kelava, 2007). The items were measured on a 5-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree).

The survey was conducted between April and July 2015 in Switzerland. Selected persons addressing the processes between hospitals and health insurance providers from 15 hospitals and 15 health insurance providers were invited to complete the survey. Of these individuals, 29 health insurance employees (48%) and 31 hospital employees (52%) completed the questionnaire. The respondents were between 22 and 62 years old with a mean age of 43.5 years.

The items were based on the previous PWE-model; the questions were based on the existing study by Angerer et al. (2012) and adapted to the inter-organizational context. The items were categorized in the PWE logic. Of the 18 items, 6 referred to the dependent variable (perceived Quality of Collaboration), and 12 referred to the independent variables (perceived Proficiency, Willingness and Empowerment). To evaluate the dependent variable, the subjects were questioned about the relationship and the accessibility between their organization and their counterpart (hospital or health insurance provider). Thereafter, the subjects were required to assess the collaboration quality regarding the three main operative interfaces (coverage confirmation, invoice verification, and payment execution) and their overall satisfaction with the interface. Each of the 3 independent variables contained 4 items. The variable perceived Proficiency contains items that evaluate how well staff is trained, informed and guided in their work at the interface. The variable perceived Willingness contains items that the subjects needed to evaluate how they interact with their counterpart. The variable perceived Empowerment contains items that refer to the approach of the organizations` leaders in collaboration matters with their counterparts. The items are shown in Table 1.

TABLE 1
QUESTIONNAIRE ITEMS (EXEMPLARY FOR HEALTH INSURANCE PROVIDERS; TRANSLATED FROM GERMAN)

Perceived Empowerment	Mean of the variables V_1-V_4
v_1	For the managers of our company, a collaborative relationship between the hospital and health insurance is of great importance.
v_2	Our incentive systems encourage my willingness to collaborate well with the hospital departments.
v_3	Our management actively supports collaboration between our company and hospitals (e.g., events, workshops, and projects).
v_4	Suggestions to improve collaboration between health insurance providers and hospitals are encouraged by my superiors.
Perceived Proficiency	Mean of the variables v_5-v_8
v_5	Our organization has a concept including guidelines and instructions for collaboration with hospitals.
v_6	In our department, there is sufficient knowledge about aspects of collaboration with hospitals.
v_7	I am well aware of the current existing collaborations between our organization and individual hospitals.
v_8	We have training on processes or interfaces (e.g., billing process) with hospitals.
Perceived Willingness	Mean of the variables v_9-v_12
v_9	Wherever possible, I try to avoid conflicts in the collaboration between my organization and the hospitals.
v_10	I try to collaborate well with the people who work on behalf of the hospitals.
v_11	I try to establish a good relationship with the contact persons in the hospital.
v_12	I try to improve the workflow between our company and hospitals as much as I can.
Quality of Collaboration	Mean of the variables v_13-v_18
v_13	How do you rate the collaborative relationship?
v_14	How do you rate the mutual accessibility?
v_15	How do you rate the coverage confirmation processes?
v_16	How do you rate the payment execution processes?
v_17	How do you rate the invoice verification processes?
v_18	How do you rate the collaboration as a whole?

As recommended in the literature (Atteslander, 2010; Moosbrugger & Kelava, 2007), a pre-test with 4 healthcare representatives, two each from hospitals and two from health insurance providers, was conducted. In accordance with the recommendation of Moosbrugger & Kelava (2007), the pre-test subjects were interviewed to evaluate the validity and reliability of the survey.

To ensure the internal consistency of our measurements, we estimated Cronbach's alpha values for all scales based on multi-item indices as recommended by Moosbrugger and Kelava (2007). The scale's reliabilities for the measures are reported in Table 2.

TABLE 2
THE INPUT AND OUTPUT FACTORS RELIABILITY ESTIMATED BY CRONBACH'S ALPHA

Factors	N	Count of Items	Cronbach's Alpha
Independent: Perceived Proficiency	60	4	.709
Independent: Perceived Willingness	60	4	.903
Independent: Perceived Empowerment	60	4	.822
Dependent: Perceived Quality of Collaboration	39	6	.849

The Cronbach's alpha for all multi-item indices were above the threshold recommended (i.e., 0.7) and did not exceed 0.95 (Brosius, 2008). The scale for the dependent variable "perceived Quality of Collaboration", which contains 6 items, reported a Cronbach's alpha of 0.849, which is rated superior. The scale for the independent variables varied from 0.709 to 0.903; each contains 4 items. Perceived Proficiency achieved a Cronbach's alpha of 0.709, which is acceptable. The value for perceived Empowerment was 0.822, which is high; the Cronbach's alpha for perceived Willingness achieved 0.903, which is excellent. The descriptive statistics are shown in Table 3.

TABLE 3
DESCRIPTIVE STATISTICS FOR THE INPUT AND OUTPUT FACTORS

Factors	N	Minimum	Maximum	Mean	SD
Independent: Perceived Proficiency	60	1.00	5.00	3.196	.826
Independent: Perceived Willingness	60	1.00	5.00	4.392	.768
Independent: Perceived Empowerment	60	1.00	5.00	3.683	.851
Dependent: Perceived Quality of Collaboration	60	1.00	4.50	3.531	.612

According to Tabachnick and Fidell (2007), logical and statistical problems may occur when independent variables are excessively highly correlated. When the bivariate correlations among independent variables are above 0.7, multicollinearity is likely to become a problem (Tabachnick & Fidell, 2007). To avoid biases caused by multicollinearity, we tested our data for correlations of the independent variables in accordance with Pearson. Consequently, no correlation exceeded the threshold of 0.7. Although the test above shows no evidence of mul-ticollinearity, it is necessary to double-check by examining the tolerance statistic and the variance inflation factor (VIF) when running a regression (Allison, 1999). The check of the tolerance and the VIF shows that there was no evidence for multicollinearity. As postulated by Backhaus, Erichson, Plinke & Weiber (2010), all variables had a tolerance above 0.2 and a VIF clearly below 5. Perceived Empowerment shows a tolerance of 0.516 and a VIF of 1.939; Perceived Proficiency shows a tolerance of 0.564 and a VIF of 1.771. Perceived Willingness shows a tolerance of 0.759 and a VIF of 1.317. Based on these results, we conclude that no collinearity occurs among the independent variables.

RESULTS

To test the three postulated hypotheses, we conducted a multiple regression to test the influence of perceived Empowerment, Proficiency and Willingness on the perceived Quality of Collaboration. The variables were all interval-scaled and nearly normally distributed; thus, the requirements for a multiple regression were provided. Table 4 shows the results of the regression analysis.

TABLE 4
REGRESSION RESULTS

	B	SD	β	t-Value
Constant	.732	.289		2.532*
Perceived Proficiency	.303	.076	.409	3.995**
Perceived Willingness	.256	.070	.321	3.638**
Perceived Empowerment	.192	.077	.268	2.501*
R^2	.669			
Adjusted R^2	.652			

Notice. $N = 60$. Dependent variable: Perceived Quality of Collaboration. *$p \leq .05$; **$p \leq .01$ (two-sided).

The regression supports the three hypotheses, H1 to H3. All three independent variables have a significant positive impact on the perceived Quality of Collaboration. Perceived Proficiency (P = .000), perceived Willingness (P = .001) and perceived Empowerment (P = .015) are significant. The three dependent variables explain 67% of the variance (R2 = .669), which is a strong effect. The standardized coefficients show that perceived Proficiency (β = .409) has the strongest effect on the perceived Quality of Collaboration, followed by perceived Willingness (β = .321) and perceived Empowerment (β = .268).

To test the fourth hypothesis, we analyzed whether the readiness values between hospitals and health insurance providers differs significantly. Thus, we split the dataset into 2 subsamples (hospital or health insurance provider). The descriptive statistics for this analysis are shown in Table 5.

TABLE 5
DESCRIPTIVE STATISTICS FOR HEALTH INSURANCE PROVIDERS AND HOSPITALS, SEPARATELY

Readiness Factors	N	Minimum	Maximum	Mean	SD
Perceived Proficiency					
Health Insurance Providers	29	1.00	5.00	3.414	.841
Hospitals	31	1.50	4.50	2.992	.771
Perceived Willingness					
Health Insurance Providers	29	1.00	5.00	4.371	.868
Hospitals	31	2.75	5.00	4.411	.676
Perceived Empowerment					
Health Insurance Providers	29	1.00	5.00	3.793	.928
Hospitals	31	1.50	5.00	3.581	.773

The analysis shows that the mean perceived Proficiency level of health insurance providers is indeed 0.42 above the mean of hospitals. This difference is significant at a .05 level. (P = .047). In matters of perceived Willingness, hospitals show a slightly higher mean (0.04), but the difference is not significant (P = .84). In matters of perceived Empowerment, the mean of health insurance providers is 0.21 above the mean of hospitals, but the difference is again not significant (P = .338). Therefore, hypothesis 4 can only be partially accepted.

DISCUSSION OF RESULTS

Proficiency – Perceived Proficiency has a significant, direct effect on the perceived Quality of inter-organizational collaboration. This effect was the strongest of the three measured readiness dimensions. The managerial implications are straightforward. Our results imply that hospitals and health insurance providers should invest more in their collaboration capabilities. As the absolute level of this dimension was the lowest of all three, this investment appears to be a priority undertaking. A closer examination of the items in this dimension reveals specific recommendations. First, managers should develop clear concepts and long-term strategies on how to collaborate with hospitals/healthcare insurance providers. Second, the employees should be trained on how to efficiently design and manage processes. Finally, a very powerful approach from our own project experience is to increase the understanding of the processes of the other value chain counterparts. This increase can be achieved by having regular (on-site) meetings, where each side explains their processes and clarifies their motivations for designing them as they are. This process significantly facilitates a following joint interface optimization initiative. It is worth noting that, in our study, the health insurance provider's perceived Proficiency maturity level is higher than the hospitals (Hypothesis 4), therefore making the recommendations presented more important for hospital managers.

Willingness – The second hypothesis could also be supported, meaning the higher levels of perceived Willingness tends to lead to higher levels of perceived Quality of Collaboration. In absolute values, the maturity level of this dimension is the highest of the three PWE factors; this is excellent news for both players. This observation leads to the conclusion that the few numbers of strong collaborations we observe in the Swiss health value chain are not caused by the low willingness of the players. Both sides are interested in having a high-quality relationship and smooth inter-organizational processes. The following important item in this dimension shows how these desires can be achieved: with a positive individual attitude of each individual employee in both institutions when interacting with the other side. As trivial as this appears, this principle is repeatedly not followed in practice. Employees must understand that each time they address another individual from the other institution, this must be conducted in a spirit of mutual respect. This human, professional attitude is the first building stone of trust between the two companies that is required for larger collaborative projects between the players, as stressed in several research papers (e.g., Krathu et al., 2015; Nielsen, 2004; Tschannen-Moran, 2001). In summary, because the maturity level of willingness is already high, the main derived implication for decision makers is to view this attitude as a superior opportunity to initiate more ambitious collaboration endeavors, as previously achieved.

Empowerment – The third hypothesis was also confirmed, showing that is worthwhile to strive for high levels of empowerment to achieve better collaborations, as suggested by researchers (Harris, 2005). The influencing effect of this perceived readiness factor on the dependent variable was the weakest of the three dimensions. In our opinion, it would be erroneous for managers to neglect this dimension. In contrast, this is the dimension with the strongest implications for managers' daily behavior. To understand this statement, it is worthwhile to remember that the inter-organizational optimization of the interface is not much different than the intra-organizational optimization of processes. A typical Swiss hospital with overburdened employees is useful for illustrating this statement. When the individual physician and nurse know that improving processes is important (high level of willingness), and when they possess the know-how to execute an optimization (high level of proficiency), this does not guarantee the occurrence of process optimization initiatives (Angerer et al., 2012). One of the main issues why these

initiatives remain rare is that employees lack the spare time to implement them. This situation is catch-22. Employees are wasting their time with poorly arranged processes; therefore they have no time to improve their processes. This vicious circle can only be broken by managers leading improvement initiatives and empowering their employees.

We observe three key activities for managers to increase the empowerment maturity level. First, managers should be quality role models and proactively approach the other partners in the value chain, creating the basis for inter-organizational trust. Second, managers are well advised to introduce internal incentive schemes and provide the required resources to foster a collaboration culture for their employees. Third, as soon as the first success stories of inter-organizational collaborations have been created, these should be broadly and frequently communicated to create a sustainable collaboration spirit among the entire organization, as suggested by the traditional change-management literature (Kotter, 1995).

Limitations and further research

Any interpretation of our study results must include the following limitations. First, it is necessary to consider limitations due to our sample consisting exclusively of Swiss organizations. Consequently, generalization to international health value chains must be made with caution. The second limitation arises from the cross-sectional design of our study. Because we measured our constructs at the same point in time, it is not possible to view the direction of causality. Third, the measurement of all dimensions relies only on qualitative data as provided by the surveyed persons. Therefore, this research does not study the actual, objective performance of collaborations but only the perceived performance. Therefore, future research could attempt to implement the quantitative performance data of the health value chain to make better statements on the impact of strong collaborative interactions.

CLOSING SUMMARY

Decision makers in healthcare are well advised to seek further opportunities to increase the competitiveness of their organizations in an increasingly tougher business environment. The concept of the health value chain attempts to replicate the success of other industries by smoothening interfaces towards other players through collaborations. In this paper, we show that high levels of perceived Proficiency, Willingness and Empowerment are, as hypothesized, correlated with perceived Quality of Collaboration. While the willingness maturity level is already high in Swiss hospitals and health insurance providers, the empowerment and particularly the proficiency maturity has major space for improvement. Our results, therefore, imply that decision makers should first measure their readiness level on all three mentioned dimensions and then, second, take appropriate measures to increase them. The presented survey as a tool to measure intra-organizational readiness and the derived managerial implications in this paper can be an initial step towards the first real life implementation of the health value chain vision, with qualitative and economic benefits for everyone.

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