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TESIS DOCTORAL / DOCTORAL DISSERTATION

THE ROLE OF SOCIAL NETWORKS IN THE DIFFUSION OF INNOVATIONS: THE CASE OF THE BASQUE COUNTRY HEALTH REFORM

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EL ROL DE LAS REDES SOCIALES EN LA DIFUSION DE INNOVACION: EL CASO DE LA REFORMA SANITARIA VASCA

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El Rol de las Redes Sociales en la Difusión de Innovación:

El Caso de la Reforma Sanitaria Vasca

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ABSTRACT

This dissertation examines the role played by social networks in the diffusion of innovation in the healthcare environment, particularly the impact of social networks in the implementation of a challenging health reform, the Strategy to Tackle Chronic Diseases (STTC), that was conducted in the Basque Country during the IX Legislature (2009-2012). It also analyzes the mediating effect of commitment between social networks and the implementation of the STTC healthcare reform.

Using network theory and institutional logic, this dissertation presents a mixed method case study based on the top management level population (231 managers) of the Basque Country Health Service. Results reflect the equidistant balance between the benefits and detriments of network centrality on the STTC implementation. On the contrary, proximity has an effect, based on access to the main champion of the change process versus a member of the top management team. The qualitative section below provides a detailed explanation for understanding these effects.

Previous research has analyzed the role of middle management on healthcare implementations and the impact of selected champions on an innovative implementation process. This investigation explores the influence of top management´s social networks at the initial stage of a change reform and reveals the strategic importance of a unique champion of innovation as the main trigger for change. This dissertation has implications for healthcare innovations in other countries with similar socioeconomic conditions.

To the future in my life: Danel and Bera Cuchí Eguiguren

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LIST OF ABBREVIATIONS

AIC	Akaike Information Criterion
ANT	Actor Network Theory
AVE	Average Variance Extracted
BC	Bias-corrected
CCM	Chronic Care Model
CFA	Confirmatory Factor Analysis
EFA	Exploratory Factor Analysis
ERP	Enterprises Resource Planning
IEMAC- ARCHO	Instrumento de Evaluación de Modelos de Atención a la Cronicidad (Assessment of Readiness for Chronicity of Healthcare Organizations)
MSEM	Multilevel Structural Equation Modeling
NFI	Normed Fit Index
NPM	New Public Management
RMSEA	Root Mean Square of Approximation
SEM	Structure Equation Modeling
STTC	Strategy to Tackle Chronic Diseases
TQM	Total Quality Management

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GENERAL INTRODUCTION

The technological revolution in the second half of the 20th century ushered in modern technologies and artificial intelligence, but the "human factor" remains the key driver behind business and technological advances. So long as organizations are composed of human beings, the human psyche, with its unpredictable and complex reasoning, will determine the fate of organizations and their projects. Understanding how people interact with each other has thus become a crucial subject (Cohen & Prusak, 2001). In the 15th century, the Medici family used economic, marriage, and patronage networks to dominate the governance of the Florentine Renaissance state (Padgett & Ansell, 1993). This study analyzes contemporary interpersonal social networks that keep organizations together. Examining face-to-face and digital formats, I show how social networks affect the diffusion and adoption of innovative managerial practices.

In organizational environments with a high component of interdependence, such as health services, the quality and frequency of social relationships becomes more important because of the care factor and personal contact (Black & Fitzgerald, 2018). Social networks positively affect health, as has been demonstrated by the decrease of morbidity/mortality rates and the improvement of mental health conditions (Ferlander, 2007; Martire & Franks, 2014; Smith & Christakis, 2008; Sluzki, 2010). Because social capital affects individual health, this study examines social networks of top healthcare managers and their effect on preventative health policies and treatment of patients.

European health systems face complex challenges, such as the current Coronavirus pandemic which has paralyzed the world and established a before-and-after point in society. Other challenges include ensuring equitable access with financial security, using resources efficiently, and integrating primary care with acute care — all necessary in overcoming adversities such as this latest pandemic.

Considerable investment has been employed in developing healthcare systems in Europe, resulting in a tendency to resist major healthcare reforms due to the high sunk costs (Oliver & Mossialos, 2005). In the case of Spain, the 1978 constitution provided the framework to decentralize the country´s health system by ceding relevant powers to the 17 regional governments and the two autonomous cities. Since 1981 this has resulted in a considerable transfer of responsibilities to the regional autonomies, in areas such as financing, planning, and management of healthcare. The overwhelming priority has been cost containment combined with expenditure reduction (Chipman, 2015); however, recent efforts have used preventative healthcare to attend to an increasingly aging population (Ardley, McManus & Floyd, 2013; Healey & Kuehn, 2011).

In terms of organizational dynamics, the healthcare sector reflects typical professional bureaucracy in which a group of professionals, in this case doctors, maintain institutional boundaries that can hamper knowledge transfer to other professionals such as nurses and specialists. The role of networks in this sector, therefore, becomes especially relevant in influencing knowledge transfer, as clinical decisions are based on heterogeneous knowledge and perspectives, requiring continuous interaction among different professional categories. In a

scenario shaped by institutional boundaries, central positions that occupy brokerage positions between different networks should contribute to knowledge diffusion (Ferlie, Fitzgerald, Wood & Hawkins, 2005; Taselli, 2015).

Furthermore, a meta-analysis of healthcare articles from 1980 to 2016 (Miech, Rattray, Flanagan, Damshroder, Schmid & Damush, 2018) identifies the presence of a champion, an opinion leader playing an active role in the diffusion of innovations as the main factor contributing to the success of a change program (Ferlie et al, 2005; Flodgren, Parmelli, Doumit, Gattellari, O´Brien, Grimshaw & Eccles, 2010). Scholars have examined champions of innovation by investigating leadership impact on managing communities of innovation. An extensive field of research (Alali & Salim, 2013; Coakes & Smith, 2007; Hendy & Barlow, 2012; Jørgensen, Scarso, Edwards & Ipsen, 2019; Ranmuthugala, Cunningham, Plumb, Long, Georgious, Westbrook, Braithwaite, 2011) has focused on the impact that the combined actions of selected champions have on the innovative STTC implementation process. In the healthcare field, an organizational form dedicated to innovation is illustrated in healthcare “communities of practice.”

In the context of the regional health system in operation in the Basque Country, this dissertation investigates the impact that social interactions among the managers of the Basque Country Healthcare System have had on the STTC implementation of the strategy set by the Regional Minister. Although there is extensive literature on the role of middle management in change and innovation in the healthcare sector (Chuang, Jason & Morgan, 2011), knowledge dispersal from the top of the hierarchy is currently understudied. The extensive literature on nurses’ social networks (Currie & Procter, 2005) has not explored the social

networks of top management — the people responsible for setting the healthcare strategies that must spread down through the organizations.

This research focuses on the issues of network centrality and proximity to the head champion (Regional Minister of Health) who was the visionary of the healthcare reform. Examining the social networks of the entire population of top management of the Basque Country Health Service, this empirical study spans 31 health organizations, examining the network cohesion of each organization and its effect on implementing major health reform over the past three decades. Furthermore, because social networks nourish characteristics which promote a climate for change and innovativeness (Christensen, 2006; Vakola, Tsaouis & Nikolau, 2004; Zohar & Tenne-Gazit, 2008), this inquiry analyzes the mediating role of commitment on network features and change STTC implementation.

Finally, this dissertation contributes to the literature on social networks in public administration in the healthcare sector by proposing a model that takes into consideration the perspective of the top management team in a major health reform, integrating organizational/business dynamics with the political agenda. Results identify the importance of prioritizing network proximity to the main champion versus network centrality in the initial stage of the reform.

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INTRODUCCIÓN GENERAL

La revolución tecnológica en la segunda mitad del siglo 20 ha derivado en el uso de tecnologías modernas e inteligencia artificial, pero el “factor humano” sigue siendo el elemento conductor clave tras los avances empresariales y

tecnológicos. Mientras las organizaciones estén compuestas de seres humanos, la psique humana, con su complejo e impredecible razonamiento, seguirá determinando el destino de las organizaciones y sus proyectos. El conocimiento sobre cómo la gente se relaciona con los demás se ha convertido, por tanto, en un tema crucial (Cohen & Prusak, 2001). Ya en el siglo XV la familia Medici usaba las redes económicas, matrimoniales y de mecenazgo para dominar la gobernanza del estado florentino en el renacimiento (Padgett & Ansell, 1993). Este estudio, por tanto, analiza las redes sociales interpersonales contemporáneas que mantienen unidas a las organizaciones. Examinando en profundidad los formatos presenciales y digitales, muestro como las redes sociales afectan la difusión y adopción de prácticas de gestión innovadoras.

En los entornos organizativos con un componente alto de interdependencia, como los servicios sanitarios, la calidad y la frecuencia de las relaciones sociales cobran un gran protagonismo debido al factor del cuidado y contacto personal (Black & Fitzgerald, 2018). Resulta que las redes sociales afectan positivamente la salud, tal como se ha demostrado en el descenso de ratios de morbilidad/mortalidad y en la mejora de las condiciones sanitarias mentales (Ferlander, 2007; Martire & Franks, 2014; Smith & Christakis, 2008; Sluzki, 2010). Debido al efecto de las redes sociales en la salud a nivel individual, esta investigación examina las redes sociales de los altos cargos de la red sanitaria vasca y su efecto en las políticas de prevención sanitarias y en el tratamiento de los pacientes.

A un nivel más global los sistemas europeos sanitarios afrontan retos complejos, como la actual pandemia del Coronavirus que ha paralizado el mundo

y establecido un antes y después en nuestra sociedad. Otros retos incluyen la garantía de un acceso al sistema sanitario equitativo con seguridad financiera, usando los recursos eficientemente e integrando la atención primaria con la hospitalaria — lo necesario para superar adversidades tales como esta última pandemia.

En Europa se ha realizado una inversión considerable en el desarrollo de los sistemas sanitarios, resultando en una tendencia la oposición a reformas sanitarias importantes debido a sus elevados costes a fondo perdido (Oliver & Mossialos, 2005). En el caso de España, la constitución de 1978 proporcionó el marco para descentralizar el sistema nacional de salud del país a los servicios sanitarios regionales de las 17 comunidades autónomas y dos ciudades, autónomas también. Desde 1981 se ha realizado una considerable transferencia de responsabilidades a las autonomías en áreas como la financiación, planificación y gestión de la atención sanitaria. La gran prioridad ha sido la contención junto la reducción de gastos (Chipman, 2015); sin embargo, esfuerzos recientes se han canalizado en la prevención sanitaria para atender las necesidades de una población cada vez más envejecida (Ardley, McManus & Floyd, 2013; Healey & Kuehn, 2011).

En términos de dinámicas organizativas, el sector sanitario refleja la típica burocracia en la que un grupo de profesionales, en este caso médicos, mantienen límites institucionales que pueden obstaculizar la transferencia de conocimiento a otros profesionales, como enfermeras y expertos sanitarios. El rol de las redes sociales en este sector, por tanto, cobra especial interés porque influye en la transferencia de conocimiento, ya que las decisiones clínicas se

basan en el conocimiento y perspectivas heterogéneas, requiriendo la continua interacción entre diferentes categorías profesionales. En un escenario moldeado por barreras institucionales, las posiciones centrales que ejercen de intermediadoras entre diferentes redes deberían contribuir a la difusión del conocimiento (Ferlie, Fitzgerald, Wood & Hawkins, 2005; Taselli, 2005).

Asimismo, un análisis de artículos sanitarios desde 1980 a 2016 (Miech, Rattray, Flanagan, Damshroder, Schmid & Damush, 2018) identifica la presencia de un impulsor, un líder de opinión que juegue un rol activo en la difusión de innovaciones, como el factor principal que contribuye al éxito de la implementación del cambio (Ferlie et al, 2005; Flodgren, Parmelli, Doumit, Gattellari, O´Brien, Grimshaw & Eccles, 2010). Los académicos han estudiado las figuras de los impulsores de innovación investigando el impacto de su liderazgo al dirigir comunidades de innovación. Un extenso campo de investigación (Alali & Salim, 2013, Coakes & Smith, 2007; Hendy & Barlow, 2012; Jørgensen, Scarso, Edwards & Ipsen, 2019; Ranmuthugala, Cunningham, Plumb, Long, Georgious, Westbrook, Braithwaite, 2011) se ha centrado en el impacto que las acciones combinadas de impulsores de innovación seleccionados tienen en el proceso de implementación de la innovación. En lo que concierne al ámbito sanitario, la estructura organizativa dedicada a la innovación queda reflejada en las “comunidades de práctica”.

En el contexto del sistema sanitario de salud en el País Vasco, esta investigación aborda el impacto que las interacciones sociales entre los gerentes del sistema sanitario vasco han tenido en la implementación de la estrategia marcada por el Consejero de Sanidad y Consumo. A pesar de la extensa

literatura sobre el rol de los mandos intermedios en la gestión del cambio e innovación en el sector sanitario (Chuang, Jason & Morgan, 2011), en la actualidad se ha estudiado poco la dispersión del conocimiento desde la parte superior de la jerarquía de la organización a los niveles inferiores. En la extensa literatura, por ejemplo, sobre las redes sociales de las enfermeras (Currie & Procter, 2005) no se ha explorado el impacto de las redes sociales de la alta gerencia—los responsables de establecer las estrategias sanitarias que deben diseminarse a través de los diferentes niveles de las organizaciones.

Este estudio se enfoca, por tanto, en los constructos del grado de centralidad y proximidad al principal impulsor del cambio (Consejero de Sanidad) que fue el visionario de la reforma sanitaria vasca. Centrándose en las redes sociales de la población total de los cargos directivos del servicio vasco de salud, esta investigación aborda 31 organizaciones sanitarias, examinando la cohesión social de cada organización y su efecto en la implementación de la mayor reforma sanitaria vasca de las últimas tres décadas. Además, considerando que las redes sociales alimentan las condiciones que promocionan un ambiente propicio al cambio y la innovación (Christensen, 2006; Vakola, Tsaouis & Nikolau, 2004; Zohar & Tenne-Gazit, 2008), este trabajo analiza también el rol mediador del compromiso en los aspectos de las redes sociales y en la implementación del cambio.

Finalmente, esta investigación contribuye a la literatura en redes sociales en el ámbito sanitario en la administración pública, proponiendo un modelo que considera la perspectiva del equipo de la alta dirección en una reforma sanitaria de calado e integrando las dinámicas organizativas y empresariales con la

agenda política. Los resultados indican la importancia de priorizar la proximidad al principal impulsor de la innovación versus el grado de centralidad en la etapa inicial de la reforma.

CHAPTER 1: INTRODUCTION

Current estimates show that 30% of children may survive to the age of 100, whereas a century ago the corresponding figure was less than 1% (Bengoa 2012). However, this notable rise in life expectancy carries with it a probable rise in the incidence of chronic disease, which will not be confined to the elderly. In the Basque Country, data for 2010 showed that 38% of the population were living with some type of chronic illness and predict that by 2040 the number of those over 65 living with chronic disease will have doubled. Roughly 91% of those over 61 are attended by their doctor an average of 7.7 times each year and 80% of those visits are due to chronic illnesses, accounting for 77% of healthcare costs (Bengoa 2012, 2013).

Furthermore, the global economic crisis that began in 2008, hitting Spain especially hard, had an adverse effect on the funds available for managing regional healthcare. Prior to the crisis the growth in regional healthcare spending hovered around 8%. Since 2009 — and regardless of increased demand due to chronic illnesses — the level of funding available remained, at best, static. Currently, the Coronavirus pandemic has revealed weaknesses in the organization and structure of a health system which has not been updated for three decades (Bengoa, 2012; Chipman, 2015).

In 2009, with a backdrop of economic crisis and ever heavier demand on services as a result of the growing number of chronically sick, the regional health department of the Basque Government initiated their Strategy to Tackle Chronic Disease (STTC). The fragmented healthcare system proved unable to provide continuity of care for the chronically ill and to support patients in managing their

illness. The STTC aimed to establish complete treatment for the chronically ill, multi-pathological elderly, and other vulnerable people — the main generators of health demands and those mainly affected by pandemics such as the Coronavirus (Bengoa, 2020). Such a change entailed alterations to the relationship between patients and the Basque health system and included a commitment to better care for the chronically sick, improvements to the managerial structure, examination of the roles of patients and the health care service, and patients' opinions regarding the quality and overall efficiency of the system. However, the pace of introducing the STTC changes amongst the different areas (hospitals, health and community centers, regions) was variable with some units wholeheartedly accepting the new philosophy and practices while others lagged behind.

This study of STTC strategy in the Basque Country is grounded in a long tradition of organizational research on diffusion of new managerial practices (e.g., Coleman, Katz, & Menzel, 1957; Dodd, 1955; Zucker, 1977). It contributes to the literature on adopting management practices (Kim & Chang, 2009; Peng, Zhang, Fu & Tan, 2014; Van Duivenboden & Thaens, 2008; Vigoda-Gadot, Shoham, Schwabsky & Ruvio, 2005) by including new ideas, practices, and processes in a healthcare setting.

Researchers in a variety of disciplines have long been interested in the diffusion of both technological and management innovation within organizations (Abrahamson, 1991; Ahuja, Lampert, Curba & Tandon, 2008; Davis & Greve, 1997; Palmer, Deveraux & Zhou, 1993; Westphal, Gulati & Shortell, 1997). Extant research on diffusion processes has provided two main explanations to account

for the adoption of new managerial practices. First, a technical rationality approach suggests that organizations adopt new organizational practices to achieve technical or efficiency improvements. This action rests on an economic model and considers organizational decision-makers as rational actors motivated by economic performance (e.g., Katz & Shapiro, 1987; Merton, 1940; Simon, 1955; Taylor, 1911; Teece, 1980; Weber, 1946).

Second, an institutional view focuses on a specific social context, arguing that organizations are reliant on social relationships that must demonstrate their legitimacy and strength to other relevant organizations and stakeholders. This theory holds that organizations develop within highly structured environments and consequently adopt rational working methods that have been institutionalized by society (DiMaggio & Powell, 1983; Meyer & Rowan, 1977; Powell & DiMaggio, 1991). Tolbert and Zucker (1983) suggested that early adopters of innovation pursue technical efficiency, whereas late adopters are driven by legitimacy concerns. More evidence for this two-stage model came from a study of the diffusion of Total Quality Management (TQM) in U.S. hospitals (Westphal et al.1997). While early adopters were motivated by efficiency concerns, late adopters wanted to appear legitimate after most organizations had already adopted the practice. Nevertheless, recent research has suggested that the desire for legitimacy is compatible with the desire to improve economic performance (Kennedy & Fiss, 2009).

Any theory of diffusion must specify the mechanisms that drive organization members to adapt to the conditions of the environment, a homogenization process called isomorphism (DiMaggio & Powell, 1983; Zhou & Delios, 2012).

Extant research, however, has paid little attention to the mechanisms and interpersonal factors related to diffusion of innovations in organizations. This study contributes to our understanding of isomorphism and diffusion in the healthcare context by analyzing the social networks of top management teams. Based on the healthcare reform undertaken by the Ministry of Health and Consumer Affairs during the 2009-2012 legislature of the Basque government, this study examines the mechanisms of adoption of new managerial practices in the Basque Country, including the mediating role of commitment. Health organizations are mainly composed of practitioners, nurses, and other support staff, meaning that the most important implementation challenges are managerial rather than technical. Consequently, the social networks of top managers are a key factor in the adoption of new managerial practices across the different organizational units.

The dataset includes 200 top managers and 31 key personnel at the individual management level, as well as organizational-level effects (22 organizations). To better interpret the results, the statistical analysis is complemented with a qualitative study conducted with 20 of the most significant managers in the STTC implementation of the reform.

CAPÍTULO 1: INTRODUCCIÓN

Hace un siglo menos del 1% de la población alcanzaba los 100 años. Sin embargo, en la actualidad los pronósticos vaticinan que el 30% de los recién nacidos alcanzarán esa edad (Bengoa, 2012). Este aumento de la esperanza de vida conlleva una mayor probabilidad de sufrir nuevas enfermedades crónicas que no son exclusivas de los ancianos. De hecho, datos del 2010 mostraron que en el País Vasco el 38% de la población sufría algún tipo de enfermedad crónica y se estima que este porcentaje se duplique en el 2040 en pacientes crónicos mayores de 65 años. Asimismo, a partir de los 61 años casi el 91% de la población acude a su médico una media de 7.7 veces al año y el 80% de la interacción con el sistema sanitario está vinculada a pacientes crónicos, que generan el 77% de los gastos sanitarios (Bengoa, 2012).

Además, la devastadora crisis económica global, particularmente notable en España desde 2008 ha afectado los presupuestos previstos de los gobiernos locales responsables de la gestión pública sanitaria. Hasta el 2008 el ratio de crecimiento del gasto en sanidad en el País Vasco era aproximadamente el 8%. Sin embargo, desde el 2009, a pesar de la creciente demanda ligada a las enfermedades crónicas, la financiación de los presupuestos permaneció inalterada, siendo éste el mejor escenario posible. Actualmente, la pandemia del Coronavirus ha revelado las deficiencias en la organización y estructura del sistema vasco de salud, dado que no se había actualizado durante los últimos 30 años (Bengoa, 2012; Chipman, 2015).

En consecuencia, en 2009, dentro de un contexto caracterizado por la crisis económica y el aumento progresivo de la demanda de recursos sanitarios debido

al incremento de enfermos crónicos, el Consejero de Sanidad y Consumo del Gobierno Vasco decidió lanzar una ambiciosa y trascendental transformación del sistema de salud denominada Estrategia de Crónicos. Dicha reforma era necesaria para corregir las carencias de un sistema fragmentado que se había mostrado incapaz de aportar la gestión apropiada para garantizar la continuidad de cuidados de los enfermos crónicos y de ofrecer el apoyo a los pacientes para gestionar mejor su enfermedad y prevenir otras dolencias. El objetivo de la estrategia de crónicos era establecer un tratamiento completo y seguimiento posterior de los enfermos crónicos, pacientes mayores pluripatológicos y colectivos vulnerables que son los mayores solicitantes de los servicios sanitarios y los más perjudicados en eventualidades como la pandemia del Coronavirus (Bengoa, 2020).

Este proceso de cambio implicaba reformas estructurales en la interacción de los ciudadanos vascos con su sistema de salud. También conllevaba la mejora en el cuidado del paciente crónico, reformas en la gestión para mejorar la sanidad y calidad de vida, una revisión de los roles de los pacientes y de los profesionales sanitarios y finalmente una reconsideración de la eficiencia del sistema sanitario vasco. No obstante, la implementación de la Estrategia de Crónicos en las diferentes organizaciones (regiones, hospitales, centros de salud) fue heterogénea. Mientras algunas unidades adoptaron por completo la filosofía y práctica de la estrategia, otras fracasaron en aceptar y adoptar los principios de gestión que la fundamentan.

Esta investigación se basa en la larga tradición investigadora sobre la difusión de nuevas prácticas de gestión (e.g., Coleman, Katz, & Menzel, 1957; Dodd,

1955; Zucker, 1977). Contribuye a la literatura respecto a la adopción y difusión de nuevas prácticas empresariales (Kim & Chang, 2009; Peng, Zhang, Fu & Tan, 2014; Van Duivenboden & Thaens, 2008; Vigoda-Gadot et al, 2005) aportando nuevas ideas, procedimientos y procesos en el ámbito sanitario.

Investigadores de diversas disciplinas han estado siempre interesados en la difusión de innovación tecnológica como de gestión en las organizaciones (Abrahamson, 1991; Ahuja, Lampert, Curba & Tandon, 2008; Davis & Greve, 1997; Palmer, Deveraux & Zhou, 1993; Westphal, Gulati & Shortell, 1997). La investigación vigente en procesos de difusión ha aportado dos explicaciones principales sobre la adopción de nuevas prácticas en las organizaciones. Primero, un enfoque técnico racional sugiere que las organizaciones adoptan nuevas prácticas para obtener mejoras técnicas o de eficiencia. Esta manera de proceder se fundamenta en el modelo económico y considera a los tomadores de decisiones actores racionales motivados por el desempeño económico (Katz & Shapiro, 1987; Merton, 1940; Simon, 1955; Taylor, 1911; Teece, 1980; Weber, 1946).

Segundo, el enfoque institucional se sustenta en la perspectiva sociológica y argumenta que las organizaciones están inmersas en una red de relaciones sociales que les imponen parecer legítimas y poderosas de cara a su competencia, socios, proveedores y demás colaboradores. La teoría institucional argumenta que las organizaciones evolucionan hacia ambientes sumamente estructurados que les empujan a adoptar las prácticas y procedimientos que hayan sido racionalmente institucionalizados en la sociedad (DiMaggio & Powell, 1983; Meyer & Rowan, 1977; Powell & DiMaggio, 1991). Tolbert y Zucker (1983)

sugirieron que los innovadores tempranos buscan la eficiencia mientras los innovadores tardíos se mueven por motivos de legitimación. Más evidencia sobre este modelo de dos fases queda reflejada en el estudio de Westphal et al (1997) sobre la difusión de Total Quality Management (TQM) en hospitales de U.S. Mientras la motivación de los innovadores tempranos era la eficiencia, la de los innovadores tardíos era la de aparecer legítimos una vez que el resto de las organizaciones hubieran adoptado las nuevas prácticas. No obstante, estudios recientes en este campo han sugerido que las motivaciones para parecer legítimo son compatibles con las de alcanzar mejoras en el rendimiento económico (Kennedy & Fiss, 2009).

Cualquier teoría de difusión debe especificar los mecanismos que conducen a los miembros de la organización a adaptarse a las condiciones del contexto, cuyo proceso se denomina isomorfismo (DiMaggio & Powell, 1983; Zhou & Delios, 2012).

Las investigaciones actuales en este ámbito, sin embargo, han prestado poca atención a los mecanismos y factores interpersonales relacionados con la difusión de innovaciones en las organizaciones. El siguiente estudio, por tanto, contribuye al conocimiento del fenómeno del isomorfismo y de difusión en el contexto socio sanitario a través del análisis de las redes sociales en los equipos de alta dirección. Basándose en la reforma sanitaria lanzada por el Consejero de Sanidad y Consumo del Gobierno Vasco en la IX legislatura de 2009 a 2012, esta investigación pretende analizar los mecanismos en la implementación de nuevas prácticas de gestión en el País Vasco, incluyendo el rol moderador del compromiso en la adopción de nuevas prácticas. Las organizaciones sanitarias están

principalmente formadas por médic@s, enfermer@s y demás profesionales de apoyo, siendo los retos de la implementación más de carácter organizativo y de gestión que técnicos. En consecuencia, las redes sociales de los niveles directivos se convierten en un factor clave en la adopción de nuevas prácticas a través de la red del sistema vasco de salud.

La base de datos incluye 200 directores y 31 profesionales de apoyo directos a nivel individual, y también 22 organizaciones a nivel organizativo. Para una mejor interpretación de los resultados, los análisis estadísticos se complementan con un estudio cualitativo conducido con 20 de los directores más significativos y relevantes en la implementación de la reforma sanitaria.

CHAPTER 2: THEORY AND HYPOTHESES

Organizational Change

A popular theoretical framework for studying the implementation of new managerial practices is institutional theory (Dimaggio & Powell, 1983; Scott, Ruef, Mendel & Caronna, 2000; Scott, 2004, 2010). Institutional theory argues that the adoption of new management practices is driven mainly by the social environment in which organizations operate. Organizations adopt new practices because of pressures emanating from the external environment. In addition, compliance and convergence inside an organization can be induced by the desire to conform to isomorphic pressures. Compliance refers to a positive shift towards agreement with isomorphic pressures; while convergence, which can occur without compliance, refers to the degree of conformity that is attained over time by organizations operating in the same area. Structure and process appear more

sensitive to institutional pressure for change while basic elements, such as strategy and culture, demonstrate a greater resistance to outside influences (Ashworth, Boyne & Delbridge, 2007).

Institutional theory has evolved into a more cognitive perspective that suggests that individual action is not a mere reaction to rules, norms, and obligations, but is influenced by the perceptions that people have about the situation (Brinton & Nee, 1998; Ingram & Clay, 2000; Ingram & Silverman, 2002; Lewis, Cardy & Huang, 2019; March & Olsen, 2008). Scott (2001) notes: "Compliance occurs in many circumstances because other types of behavior are inconceivable; routines are followed because they are taken for granted as 'the way we do these things'" (p.57). A new institutionalism has replaced determinism with a view of interaction between contextual forces and agency dynamics, such as the radical public health reforms that occurred in the 80s and 90s in Western societies. Referred to as New Public Management (NPM), these initiatives attempted to overcome inefficiency and over-large operations by employing market- and profit-based management models (Amis & Aïssaoui, 2013; Blomgren, 2003; Kippist & Fitzgerald, 2012; Kirkpatrick, Dent & Jespersen, 2011; McNulty & Ferlie, 2002).

This new institutionalism addresses the influence of individual perceptions and decisions in the global course of events. Human decision-making is determined by the urgency of the situation (Starke, 2010) and is influenced by the “organization´s internal dynamics such as interests, values, power dependencies, and capacity for action” (Greenwood & Hinings, 1996, p. 1032). The new institutionalism highlights the importance of the interplay between contextual and agency factors in the process of organizational transformation and change. For

example, Greenwood and Hinings (1996) advance a model of radical change in organizations that considers the interplay between market forces and the institutional context (exogenous factors) and the specific working practices within the organization in terms of power relations, interests, values, and competences (endogenous factors). The relationship between these two sets of factors is key for an effective transformation of the organization.

According to Greenwood and Hinings (1996), the influence of agency seems to be greater than that of institutional theory. They assert that change within an organization is due more to endogenous accelerated dynamics, for example, group dissatisfaction with current internal working practices, than to external influences exerted by the market or outside institutions. As a result, organizational change will only occur if the desire for change is accompanied by supportive power structures and the possibility of action (McNulty & Ferlie, 2004).

The first force, supportive power structures, allows replacement activities in an organization. Managers must be able to implement changes. In this view, agents of change are key figures. They are “organizational” entrepreneurs who initiate divergent changes (business models that deviate from the predominant one) and play an active role in the process of transformation. Note that “while all institutional entrepreneurs are initiators of change, all change agents are not institutional entrepreneurs” (Battilana, Leca & Boxenbaum, 2009, p. 68).

The second force for organizational change, capacity for action, presupposes that the organization has the ability, resources and methodologies to achieve the desired change and is willing to make them available to ensure success. The concept of “network dynamics” refers to the processes and flows of information,

such as social networks, that ensure Implementation of the new vision. They serve as an information disseminator that contributes to institutional isomorphism, especially in institutional environments affected by information opacity. Therefore, when social networks supersede formal institutional relationships, they can contribute to, and be affected by, the constant change of the institutional environment (Blom-Hansen, 1997; Low, 2010; Zhou & Delios, 2012).

For these reasons, this investigation explores how social networks facilitate the implementation of new managerial practices in an institutional healthcare context. The study focuses on how senior managers´ social networks affect the adoption of a new strategy to tackle chronic diseases (STTC), including behavioral practices among managers and healthcare workers. In addition, the study explores the mediating effect of commitment on the implementation of new management practices. Figure 1 shows an overview of the model.

[Insert Figure 1 About Here]

The Role of Social Networks

Individual decision-making is affected by a network of interactions and relationships that influence and shape behavior in an organization (Borgatti & Cross, 2003; Kennedy & Fiss, 2009; Smith, Halgin, Kidwell-López, Labianca, Brass & Borgatti, 2014). The social networks of managers affect diffusion of new management processes. When managers come from different units and organizations, social networks become the channels through which institutional

forces are applied (Coleman, 1988). To examine the role of social networks in the diffusion of management practices, I rely on Actor Network Theory (ANT) (Cresswell, Worth & Sheikh, 2010; Latour, 1991). This sociological theory explores the construction and transformation of socio-technical networks that result in disruptive innovation or change. It is based on a constructivist approach that presumes the perception of reality and knowledge creation are based on own experiences (Alt, 2018). ANT provides a guide for studying how people, things, and ideas become connected and grouped in a larger unit (Cho, Mathiassen & Nilsson, 2008). The theory considers the world as a continuous interaction of networks that can include human and non-human entities (Papadopoulos, Radnor & Merali, 2011). An actor is "the source of an action regardless of its status as human or non-human" (Creswell et al, 2010, p. 2). The development of a network is altered when any actor, human or otherwise, is added to or subtracted from a network (Creswell et al, 2010). Thus, ANT addresses a constructivist lacuna and explains heretofore unknown power dynamics in healthcare organizations.

ANT theory in the healthcare arena examines the active role of objects in innovation — as the result of continuous chains formed by the associations of human and non-human elements that co-evolve (Latour, 1991). For example, consider the implementation of a new Enterprise Resource Planning (ERP) system in a Swedish emergency hospital, where a traditional radiology paper-based system was replaced by an electronic one (Cho et al, 2008). The new system, which connected the radiology department to all clinics via an electronic patient record system, was expected to bring a major improvement. Nurses and

secretaries believed that the ability to view and discuss patients' x-rays with the physicians added value to their role. Physicians, however, perceived the innovation as a threat that challenged their traditional work practices because it transferred part of the responsibility for information processing to nurses. Only when a physician who supported the management project became involved did the rest of his colleagues accept the change. The enthusiastic physician was able to transmit to his peers the benefits of the ERP system based upon their specific needs and priorities. Therefore, genuine change only occurred after a realignment of professional and departmental networks. The interaction between different professional groups and the technology across organizational boundaries explains the evolution and transformation of power relations during an implementation process (Cho et al, 2008). Moreover, players´ social status has an influence on their attitude to change because it affects their opinion of the environment and the availability of the necessary resources (Battilana et al, 2009).

To better understand actors' social positions, I use Social Network Proximity, which describes the frequency and intensity of social interactions among social network actors (Wejnert, 2002). When actors interact frequently and develop intense social relationships, they tend to develop similarity of opinions and attitudes regarding different organizational factors (c.f., Pastor, Meindl & Mayo, 2002) facilitating the diffusion of managerial practices. When many social network actors are connected to one another, the result is a cohesive and complex network structure with multiple connections among individuals. Dense networks have been shown to facilitate the sharing of complex information that is necessary

for the adoption of new managerial practices (Nahapiet & Goshal, 1998; Obstfeld, 2005; Roxenhall, 2013; Tortoriello, Reagans & McEvily, 2012). Dense and homogeneous networks tend to offer contacts that view the world in a similar way (Perry-Smith & Shalley, 2003; Reagans & McEvily, 2003; Sosa, 2011). Additionally, strong network ties are useful for the transmission of a type of informal knowledge that is hard to categorize or can only be obtained through experience. The frequency of interaction in densely interconnected ties leads to a learning process that becomes a dialogue, and this facilitates the implementation of processes that involve integrated and cohesive information. By contrast, weak ties are the most appropriate manner to transmit simpler types of knowledge (Hansen, 1999, 2002; Reagans & McEvily, 2003; Roxenhall, 2013) because they are cheaper to maintain and allow people to expend more energy on the development of new weak ties or to focus on their main project (Levin & Cross, 2004). One interviewee noted that in the presence of “informal relationships with no conflict of egos, the strategy Implementation has been successful.”

Studies in the healthcare arena are unique because members of the network share insular language (frameworks, schemes, and terminology). Such homogeneity can lead to complications when colleagues need to communicate with outsiders (Hansen, 2002; Tortoriello et al, 2012). However, Cross-unit knowledge transfers can be challenging.

Furthermore, the successful implementation of new managerial practices tends to be initiated and sponsored by a champion (Battilana & Casciaro, 2012; Dombrowski, Kim, Desouza, Braganza, Papagari, Baloh & Jha, 2007; Fernandez

& Rainey; 2006; McNulty & Ferlie, 2004). Champions of innovation are willing to take risks, can maximize organizational resources to attain their vision, remain goal driven, and above all are totally aware of the context boundaries (Dombrowski et al, 2007; Howell, 2005; Howell & Higgins, 1990; Jenssen & Jørgensen, 2004; Wejnert, 2002). Champions personally identify with the implementation and dynamically promote it through informal networks, even risking their position to guarantee success. This is the result of strong convictions in their beliefs and a solid commitment to the organization (Howell & Higgins, 1990). Like entrepreneurs, champions use social networks and communication skills to obtain the commitment of others in the organization (Battilana et al, 2009; Castel & Friedberg, 2010; Howell, Shea & Higgins, 2005; Jenssen & Jørgensen, 2004).

In the context of the Basque Country Healthcare reform, the Regional Minister and his top management team can be considered champions of innovation. They developed a strategy for the entire region, sponsored change, allocated resources for implementation, and actively promoted the new managerial practice during the legislature. Considering the prominent role of the main champion of innovation (the Regional Minister), I expected that managers from health organizations who had close interactions with him would hold strong positive attitudes towards STTC strategy. Moreover, the qualitative information obtained from key managers of the reform reveals a consensus about the charisma and communication skills of the Regional Minister as well as dissemination of the program. The inertia of the previous organizational structure was shaken by the champion's efforts to implant motivation into the lower levels of all the structures

of the Basque Country Health organization. This discussion suggests my first hypothesis:

Hypothesis 1: The greater the social network proximity of the healthcare managers to the champion of innovation (Regional Minister of Health and Consumer Affairs), the higher the level of implementation of the STTC strategy.

Network research focuses on relations between actors rather than the attributes of actors. Implementation of ambitious projects usually depends on the informal leaders´ structural position in the social network (Brass & Burkhardt, 1993; Ibarra, 1993). More central individuals tend to be perceived as powerful and popular, with a consequent positive effect on team performance, and they usually occupy top management positions as a result of their influence and impact on their organizations (Balkundi & Kilduff, 2006).

Central actors in the social network play important roles in the diffusion of innovations because they are connected to many different members and become critical intermediaries in the transmission of information (Gibbons, 2004; Ibarra, 1993; Perry-Smith, 2006; Sparrowe, Liden, Wayne & Kraimer, 2001). This idea was first proposed in 1948 by Bavelas as a tool to analyze the human communication element in the equation between a network's structural centrality and the impact it had on group interaction and outcomes (Freeman, 1979). It examines the paths radiating from a particular actor that allow them to gain a strategic advantage over others (Pappas & Wooldridge, 2007; Uddin, Hossain &

Wigand, 2014); it also measures their proximity to actors with close relations to central actors. Central individuals — usually considered opinion leaders by the rest of the network — have more contact with all members of the network and can reach out to them. Consequently, centrality is usually calculated by the size of an individual´s network (Burt, 1980; Grosser, López-Kidwell & Labianca, 2010; Venkataramani, Green, Schleicher, 2010) or by the number of other direct contacts.

Social network studies have shown that in addition to possessing knowledge, centralized change agents increase their ability to disseminate social and technical knowledge facilitating the creative process and the implementation of innovations (e.g., Peng et al, 2014; Wu, 2015). This results in innovation diffusion as a fundamental factor of organizational competitive advantage (Battilana et al, 2009; Nahapiet & Goshal, 1998; Obstfeld, 2005; Peng et al, 2014; Wu, 2015). The combination of the knowledge and experience of different parties resulting in the exchange of explicit and tacit knowledge is driven by social networks and is determinant for the development of new intellectual capital (Wang, Wang & Liang, 2004). For example, Capello and Faggian (2005) showed that social networks had a positive impact on the innovative capacity of firms who hired employees from other organizations and initiated a closer collaboration with customers and suppliers. The probability that a particular member of the network will accept new ideas is mainly determined by the member's position in the network (Wejnert, 2002). The least-connected network members are usually the last ones to adopt innovations (Battilana & Casciaro, 2012; Battilana et al, 2009; Burt, 1980). Actors who hold central roles in the network are more efficient and decisive than those

in peripheral positions, due to their better access to information and greater control over resources (Burt, Kilduff & Taselli, 2013; Ibarra, 1993; Stevenson & Greenberg, 2000; Wejnert, 2002).

Network centrality is a key factor in the innovation of administrative procedures that require a higher degree of boundary spanning (Ibarra, 1993). Managers at the center of information flows in one department are informed about different practices, solutions, problems, and preferences in other departments and are consequently more likely to initiate change (Hansen, 2002; Ibarra, 1993; Venkataramani et al, 2010; Wong & Boh, 2014). In addition, the power and influence provided by their central position fosters their positive attitudes towards the adoption of new managerial practices (Stevenson & Greenberg, 2000). Thus, actors with a high degree of centrality benefit from their access to indirect network connections (Smith, Halgin, Kidwell-López, Labianca, Brass & Borgatti, 2014). For this reason, highly centralized networks exert considerable pressure on their members to share common practices, thus increasing homogeneity and constraining independent behavior (Rodan & Galunic, 2004; Wong & Boh, 2014). Centrality fosters creativity as it combines different social circles and their respective domain-relevant knowledge. In addition, in a study of a large electronics company, Hansen (2002) proved that divisions with a high degree of centrality obtained more knowledge from other divisions and completed their projects more quickly than in teams with diffused networks. Extrapolating to the implementation of the STTC strategy, a central privileged position provides managers with potential for action and recognized status which contributes towards their positive attitudes and commitment to execution (Stevenson &

Greenberg, 2000; Wang, Rodan, Fruin & Xu, 2014).

The literature is divided on the virtue of centrality in innovation diffusions. In some cases centrality facilitates implementation, but in other cases hurts it. On one hand, network centrality allows managers to connect with numerous and diverse actors for a broad information overview and strategic opportunities. Managers will have more chances to successfully champion a new service or product if they have linkages to powerful contacts in top management. In addition, centrality allows managers to control how information is communicated, a necessary condition to gain cooperation from the rest of the network to implement divergent strategic initiatives. This is especially important in the transmission of tacit knowledge, which is not easily shared and codified, and which requires a high degree of influence of managers over contacts in the network (Pappas & Wooldridge, 2007). In addition, holding a central position has an important influence over the ability to gain advantage over resources and to attain promotion and receiving recognition (Burt et al, 2013; Pappas & Wooldridge, 2007; Stevenson & Greenberg, 2000). This advantage does not necessarily arise from privileged access to information. In fact, the agency factor is crucial here because the benefits of network centrality rely on the individual's ability to employ intellectual and emotional skills to make use of the information received (Battilana et al, 2009; Burt et al, 2013; Peng et al, 2014).

On the other hand, centrality might not be as beneficial for the emergence of new ideas. Central managers seem to function in an endogamous ecosystem composed of their regular contacts and may disregard valuable information from peripheral actors (Perry-Smith & Shalley, 2003; Schilling & Phelps, 2007; Tang &

Ye, 2015). In addition, central managers may be more constrained than peripheral actors in taking action, as they need to protect personal relationships and reputation to maintain the network status while being linked to a number of obligations, such as returning favors, that restrain their free capacity (Pappas & Wooldridge, 2007). Furthermore, disconnected contacts have more access to diverse knowledge, as they link with professionals of assorted backgrounds, work experiences, and resources, fomenting creativity in the network (Tang & Ye, 2015). Marginally-located actors also can be proactive in adopting controversial innovations because they are less fearful about losing credibility with the rest of the network community. In fact, to avoid the limitations of homogeneity, the presence of some weak ties is necessary (Perry-Smith & Shalley, 2003). Reagans & McEvily (2003) argue that teams that combine internal cohesion with external networks full of structural holes appear to be the most productive. Even though peripheral actors may have to work harder and depend on others to reach key contacts, they can move more freely through the network because they have fewer obligations to others (Stevenson & Greenberg, 2000). Their outsider location obliges them to create interdependence relations, especially with actors in boundary-spanning positions who act as brokers (Floyd & Wooldridge, 1997; Pappas & Wooldridge, 2007; Rodan & Galunic, 2004). In contrast, the ecosystem of central actors, concentrated among a few individuals, is based on a dependency dynamic rather than on interdependence. A lower level of cooperation, which is frequent in centralized networks, affects the group performance (Sparrowe et al, 2001). Therefore, I present the following hypotheses.

Hypothesis 2a: The higher the degree of social network centrality of the healthcare managers, the higher the level of implementation of the STTC strategy.

Hypothesis 2b: The higher the degree of social network centrality of the healthcare managers, the lower the level of implementation of the STTC strategy.

The Mediating Role of Commitment

I expect that commitment to the STTC strategy plays a significant role in the relationship between network variables and the implementation of the STTC strategy in the context of the healthcare reform in the Basque Country. The organizational change literature reveals the importance of attitudes towards change to ensure the necessary affective commitment for the implementation of any reform (Elias, 2009; Herold, Fedor, Caldwell & Liu, 2008; Lines, 2004; Michaelis, Stegmaier & Sonntag, 2010; Vakola, Tsaouis & Nikolau, 2004). Attitudes include consistency of individual perceptions and ideas, along with an inclination to comply with the surrounding environment (Vakola et al, 2004). In particular, an attitude of commitment has been widely studied in relation to organizational change (Elias, 2009; Michaelis, Stegmaier & Sonntag, 2009; Vakola & Nikolau, 2005). Commitment refers to the intensity of an individual´s identification and engagement with the specific organization (Alas & Vadi, 2006; Avolio, Zhu, Koh & Bhatia, 2004; Meyer & Allen, 1991; Vakola et al, 2004).

Employees with a high level of organizational commitment develop strong positive attitudes towards the adoption of new managerial practices (Vakola et al, 2004).

Change programs often require substantial time and resources from managers and subordinates. When subordinates are committed towards common goals, they display higher levels of effort and persistence that accelerate the speed of the implementation process. For instance, a study of German researchers´ professional and personal networks revealed that in terms of the commitment bond between employer and employee, 45% of the variance was accounted for by the degree of trust and the amount of information released relating to the change, and 21% of the variance in the employee's need for change (Van den Heuvel, Schalk & Van Assen, 2015).

Empirical evidence shows the importance of attitudes towards change in the healthcare industry. Degeling & Carr (2004) evaluated a hospital reform in Australia, using a survey about staff members' values and attitudes regarding the content of the reform. While clinicians and their managers took an individualistic view of clinical performance, the nursing staff and their managers viewed the concept of health provision from a more collective and organizational perspective. This divergence between the two roles resulted in the clinicians´ rejection of harmonized clinical work and team-based service. Nurses, however, accepted the reform because it echoed NPM guidelines, applied private-sector practices, and identified the expertise of nursing staff not only in terms of care but also for administrative capabilities. Therefore, nurses' attitudes were more positive about the guidelines set by the new processes and models (Blomgren, 2003).

In this type of organizational change process, nurses played an intermediary role crucial for the adoption of new managerial practices — more than a broker's role, given that it contributed to the transformation of ideas and knowledge dissemination (Howells, 2006). Their strategic intermediary role compensated for the established limitations related to the clinical nursing role in the health reform. In addition, some studies have shown the implementation process is strengthened when context or special circumstances alter the attitudes of key actors. For example, when doctors are involved in strategic decisions and in changes to key organizational processes, they demonstrate greater support for change (Lines, 2004; Spurgeon, Mazelan & Barwell, 2011). I therefore expected that positive attitudes and commitment towards the STTC strategy would translate into higher levels of STTC implementation, and that commitment towards STTC strategy would mediate the relationships between proximity to the champions of innovation, centrality in the social network of healthcare managers, and the Implementation of the STTC strategy.

Because individual attitudes are partially formed by processing the attitudes and beliefs of surrounding people (Christensen, 2006; Salancik & Pfeffer, 1978), I conducted a detailed analysis between attitudes and social networks. To explore how social networks affect commitment to change, I analyzed the impacts of an individual's centrality and proximity to the champion of change.

The positive relationship between network proximity and commitment has often been replicated in the social network literature (see Borgatti & Cross, 2003; Brass, Galaskiewicz, Greve and Tsai, 2004). Frequent communication and exposure to similar ideas makes people develop similar mental frameworks to

assess their work environment and similar attitudes towards the organization.

In the case of the Basque Country Healthcare reform, I expect that healthcare managers who communicated frequently with the top leaders championing the reform would develop similar attitudes towards the STTC strategy. Managers with access to a large amount of useful information about the STTC strategy would experience less uncertainty and might be more open to the strategic change. Frequent communication also indicates a role of a key collaborator in the health reform.

The STTC strategy is designed to filter through to lower levels of the organization via frequent, strategically scheduled interactions among the top management team. This continuous interaction provides managers with the right knowledge at the right time and with a positive reinforcement of their commitment to the new strategy and a perceived need for change (Tang & Ye, 2015; Van den Heuvel et al, 2015). Accordingly, I hypothesize that:

Hypothesis 3: The level of commitment of the healthcare managers toward the STTC strategy mediates the relationship between their Social Network Proximity to the champion of innovation and the implementation of STTC practices.

I also argue that commitment mediates the relationship between social network centrality and the implementation of STTC practices. Some studies propose that central individuals develop negative attitudes towards the adoption of new organizational practices and are less likely to support change. Literature

on the diffusion of innovation (Rogers, 1995) contends that central actors are less likely to adopt changes because they hold a view of preserving the status quo (Stevenson & Greenberg, 2000; Tang & Ye, 2015), due to obligations attached to the endogamic dynamics. Furthermore, significant organizational practices alter the power balance in the organization (Brass & Burkhardt, 1993), and central individuals might develop a negative view of the practices because they see their status threatened.

In contrast, other authors have argued that managers who occupy a central position in the communication network might develop positive attitudes towards change. Given their access to more information, these managers serve as gatekeepers and controllers of information (Brass & Burkhardt, 1993; Mehra, Dixon, Brass & Robertson, 2006; Stevenson & Greenberg, 2000) who hold greater prestige and recognition within the organization (Brass, 1984; Wong & Boh, 2014; Venkataramani et al, 2010). This advantageous structural position bestows on them an aura of power based on privileged control of information and resources, and their capacity and authority to implement changes (Brass & Burkhardt, 1993; Burkhardt & Brass, 1990; Peng et al, 2014). In essence, the boundary-spanning managers who broker contacts between disconnected but strategic network actors enjoy a powerful position with tactical influence. As they can connect disconnected contacts, they usually have access to the latest market and technical developments (Obstfeld, 2005; Pappas & Wooldridge, 2007).

In fact, several studies confirm that centrality precedes power (Krackhardt, 1990; Brass et al, 2013). Consolidation of the credibility and trust shown in managers encourages them to develop more positive attitudes towards change

and to implement innovations. In addition, recent literature confirms that centrality comes first, followed by others' perception of the leader's charisma — a sequence that helps actors improve team performance (Balkundi, Kilduff & Harrison, 2011; Brands, Menges & Kilduff, 2015). Because of their role visibility and access to information, central managers can better connect with subordinates, manage resource flows, and promote and implement their ideas. Their greater influence (both formal and informal) may help them create a keen sense of belonging and buy-in (Lee, Choi, Kim & Chong, 2007; Tang & Ye, 2015; Wong & Boh, 2014).

In both cases, I hypothesize that attitudes towards STTC practices mediate the managers' positions in the social network and the level of implementation of the STTC practices in their organizations. Therefore:

Hypothesis 4: Managers´ level of commitment toward STTC mediates the relationship between network centrality in the social network of healthcare managers and the implementation of STTC practices.

CHAPTER 3: METHOD AND MEASUREMENT

Research Context

This study focuses on a healthcare reform that took place in the Basque Country in 2009-2012. This program was named *Strategy To Tackle Chronicity* (STTC). At that time, the Basque health system had not been overhauled for three decades, despite demographic and epidemiological changes.

The global economic crisis that began in 2008, hitting Spain especially hard, had an adverse effect on the funding available for regional health services. Prior to the crisis, the growth in regional healthcare spending hovered around 8%. Since 2009 and even with increased demand due largely to chronic illnesses, the level of funding available remained, at best, static or even reduced. Also, it was discovered that 55% of patients were receiving incorrect treatment and that 50% of prescriptions and medication were not being taken according to instructions (Bengoa 2012).

The Basque Ministry of Health and Consumer Affairs decided to initiate a far-reaching reform to cut back on spending and raise the quality of services. The aim of this overhaul was to provide a health system that focused on increasing patient participation and responsibility for their own medical treatment while at the same time offering all the necessary back-up from a medical team, and to highlight the importance of preventative medicine.

The new plan proposed many changes in the Basque health system relating to organizational coordination, culture and the use of technology. To facilitate these far-reaching changes the plan was broken down into five different areas: a population action plan; chronic disease prevention; patient responsibility and autonomy; care continuity, and the needs of chronic patients (see Nuño-Solinís, Vázquez-Pérez, Toro & Hernández-Quevedo, 2013). The program reviewed the roles of patients and healthcare professionals along with their vision of the health system, resulting in a reevaluation of efficiency. In addition, major changes were made to the culture and composition of the organization and also to its use of

technology platforms by the gradual roll-out of fourteen strategic plans introduced in 2009 (for greater detail, see Appendix A).

The complexity of this new healthcare model demanded sophistication on the part of management to guarantee that healthcare professionals and users took on a more strategic role. The transition required significant cultural change in these areas: giving citizens more power of involvement and opportunities to exercise greater influence over the system; the development of leadership qualities amongst local healthcare workers and the fostering of collaborative networks, fomenting a proactive approach to improvements to the system; and expanding a culture of program review.

During the implementation process, one of the biggest challenges was to spread the vision throughout the various levels of the organization, bypassing hierarchical links. The task facing the senior management of the Basque Health Council was to gain the backing of middle management which, in turn, would help to guarantee support from the basic levels of the system, linking their performance to the general aims of the STTC strategy (c.f., Yang, Zhang & Tsui, 2010). This reform sought to disseminate the leader´s vision throughout the organization.

To implement these changes, organizational units were grouped into eleven Integrated Local Healthcare Systems, or Micro-systems. The logic was that an effective health system should operate at a geographically localized level. A micro-system is made up of all health workers that treat a specific population. In this context “health workers” comprise all those working in primary, specialized, sub-acute, and mental health; it also includes public health organizations as well

as schools, NGOs, patient associations and social services entities. Figure 2 shows the network of health care organizations in the Basque Country.

[Insert Figure 2 About Here]

The new program employed a decentralized model of leadership and autonomous decision making at a local level. For this fresh approach to take hold in the local organizations, health professionals and managers had to be supported in achieving improvements. Managers provided healthcare professionals at the bottom level with the responsibility to implement the changes, along with time to analyze and experiment. They shared management information so that staff could assess their own activity and draw conclusions about effectiveness. The bottom-up focus, in conjunction with the top-down approach, provided autonomy and space for local health professionals and managers to adapt the system to local needs at an operational level, where interaction takes place between health care workers and patients and where the relevant agents of change can be identified. Transformational changes arise from the base up, for example, through contact with patients and the identification of unresolved problems. For this reason, the Basque Country launched the "Innovation from Clinical Professionals Project" that encouraged clinicians to suggest ideas for improving the quality of care, clinical processes, and daily practice routines. Ideas that gained approval received methodological support (e.g., research methodology and system processes), procedural support (e.g., follow-up) and financial funds to extend the best results to all levels of care. The

combination of a top-down and bottom-up approach requires a communication flow within the organization that empowers the bottom-up approach by providing easier access to information via modern technologies (Bengoa, 2012). Typically with this type of reform, the desired cascading and bypass effects to disseminate the leader´s vision throughout the organization are affected by the existing degree of power distance and collectivism in the organization. However, in this case, given the high degree of power distance and an insufficient level of collectivism due to the inertia of bureaucracy, the opposite scenario presented itself.

Sample and Procedure

The sample for this study consists of 231 healthcare managers, 200 top managers that comprise the entire Basque Country healthcare management network in northern Spain, and 31 of their close collaborators.

These 231 managers work in 31 organizations that include 22 direct patient care units (hospitals and primary care units) and nine management and administration units which are responsible for establishing strategy and guidelines and monitoring the healthcare organizations that provide direct assistance to patients. Although the STTC strategy guidelines were disseminated throughout the whole Basque Country Health network, the new policies and patient care practices of the STTC strategy were only implemented in the 22 organizations that deal directly with patients. For this reason, I used the entire sample of 231 managers to obtain the network measures, but I calculated the STTC implementation results with the sample of 176 managers working in these 22 direct-care units since these managers could evaluate the impact of the STTC

strategy on their patients.

The Basque Country Healthcare Network provides basic care for health and social services to a total population of more than two million inhabitants distributed in the three Basque provinces, by order of population density: Vizcaya, Guipúzcoa, and Alava. They are organized into 11 integrated healthcare micro-systems, which cover primary care, specialized care, sub-acute care, and mental health in a particular geographical area. Organizations within a micro-system collaborate with other external agents, such as public health regions, socio-health agents, the private sector, associations, and other local community agents. The sample represents the entire population of managers and organizations. The managers are led by the top management team of the Department of Health, including the Minister of Health and Consumer Affairs, the Deputy Minister of Health, the Deputy Minister for Quality, Innovation and Research, and the General Director of the Basque Country Health Service. This group is the executive arm for policies established by the department. Managers include:

- Managing Directors of main hospitals and their closest teams consisting of the Medical, Financial, Personnel, and Nursing Directors, with the same corresponding distribution for the Deputy Directors. The same structure applies to the community hospitals.
- Provincial Primary Care Managers and their respective teams.
- Provincial Office Managers (provincial intermediaries between the Health Department and the health organizations).
- Management team of the Basque Health Service.
- Management team of the Health Department.

The STTC implementation period lasted one term of the Legislature. At the end of that governance period, the 231 managers completed an in-person survey (Appendix C) about their workplace social networks, their opinions on their level of commitment to the STTC strategy (section 2 of Appendix C), and the level of STTC implementation in their organizations (section 3 of Appendix C). The response rate was 100%, corresponding to the total population of managers in the Basque Country Healthcare System at the time. I examined the degree of interconnectivity (frequency and closeness of contact) managers had with the rest of the management force. The objective was to capture the total overview of social networks of the managers within the healthcare system.

Measures

Social Network Measures. To assess the managers' social networks, I designed a survey for the Basque Country Health Service to evaluate the frequency and closeness of contact with other managers using a 5-point scale:

Blank: "I do not know or interact with the person"

1: "I know the person"

2: "I know the person and interact occasionally"

3: "I know the person well and interact frequently"

4: "I know the person well and interact very often (almost daily)"

Following Borgatti, Everett, and Johnson (2013), the resulting information was placed onto a spreadsheet creating an adjacency 231x231 matrix that reflected

both managers' social network relationships within their working units and their relationships outside their organizations. This matrix provided the raw data from which the social network measures of proximity to the champion and centrality were computed. The raw data from the adjacency matrix was analyzed using the social network software package UCINET 6 (Borgatti et al, 2013). This software package analyzes large-scale networks and calculates many different social network indexes, including the measures of social network proximity to the champion of innovation and social network centrality.

First, to measure social network proximity to the champion of innovation, I used the degree of interaction with the main champion promoting the STTC strategy (Ministry of Health and Consumer Affairs).

Second, to measure social network centrality, I used UCINET's measure of network centrality. The UCINET program calculates three different measures of network centrality: network centrality (total number of contacts in the network), betweenness centrality (number of times a manager is included in paths that link any two members of the network), and closeness centrality (total average of the shortest distances linking a manager to all managers in the network). Network centrality best captures the idea of information flows linking managers directly to one another. I computed network centrality as the mean between in-degree and out-degree measurements (incoming ties to a manager and outcoming ties to the rest of the network) (see Borgatti, et al, 2013; Uddin et al, 2014; Venkataramani et al, 2010).

Commitment to the Healthcare Reform Strategy (STTC). To assess the commitment of managers towards the Healthcare Reform, I created a 14-item

scale to ask about the STTC strategy towards chronic patients in the Basque Country. Raters used a 5-point scale to describe their own behaviors to support the STTC strategy, from 1 (“almost never”) to 5 (“almost always”). Sample items include: “I encourage my team to overcome the problems of implementing the Strategy,” and “When difficulties arise in implementing this strategy, I play an active role.” The reliability (Cronbach´s alpha) of the scale is .96.

Implementation of the Healthcare Reform Strategy (STTC). To assess the degree of implementation of the STTC strategy in each of the health care centers, I used the Assessment of Readiness for Chronicity in Healthcare Organizations (IEMAC-ARCHO), which is an assessment instrument designed to perform a self-assessment of the degree of implementation of chronic care models. It was developed by the MacColl Institute for Health Care Innovation. This is the most popular instrument used to assess the degree of implementation of chronic care models. Nuño, Fernández, Mira, Toro & Guilabert (2013) provide a detailed description of the instrument. The IEMAC-ARCHO survey is composed of six dimensions relating to the six elements of the Chronic Care Model (CCM): the organization of the healthcare system, the community, the provision of care, patient self-care, decision-making tools, and information systems. See Appendix B for a full account of the assessment instrument.

Based on this instrument, I collected data from three different sources. First, I collected the data from the formal appraisal conducted by an external auditor that evaluated the degree of implementation of the STTC strategy using the IEMAC-ARCHO instrument and methodology. This auditor has experience with the instrument and conducts evaluations worldwide on the implementation of chronic

care methods. The evaluations are compiled into an overall index of implementation that provides a general assessment of the degree to which the organization has implemented a CCM.

Second, I used a short version of the IEMAC-ARCHO instrument to create a 16-item survey to assess the degree of implementation in the health care centers. I used this survey to ask healthcare managers to evaluate the degree to which 16 key healthcare policies and practices are applied in their own organization. These practices are related to patient management and the healthcare model and are the most representative of the STTC strategy. Some examples of items include “Patients are educated about the prevention and treatment of their illness”, “Preventive healthcare is prioritized over the treatment of illness” and “The organization promotes preventative healthcare.” The entire survey version appears on Appendix C, section 3.

Third, I asked seven external judges who worked at the central administrative office and were closely involved in the implementation of the strategy to assess the degree of implementation of the strategy in each of the health care organizations using the same 11 items.

Even though the healthcare organizations that comprise the Basque Country Healthcare System include a total of 31 organizations, the full STTC strategy was implemented only in the 22 organizations that offer direct assistance to patients. The other nine organizations have administrative and coordinating responsibilities.

Control Variables

I introduced controls for organizational size, measured by the number of employees, as it may have fomented innovation adoption due to the benefits of the economies of scales applied to increasing sizes (Kimberly & Evanisko, 1981) or, alternatively, generated the opposite effect due to the structural inertia related to a bigger size (Zhou & Delios, 2012). I also controlled for managers´ organizational tenure because newer members might be unfamiliar with their peers´ networks and therefore reluctant to solicit information from them (Borgatti & Cross, 2003). However, in this specific case, study managers from previous legislatures that had pursued a different political agenda might not support STTC guidelines or STTC implementation.

Qualitative Data

In addition to the quantitative analyses, I conducted semi-structured interviews with 20 managers who were directly involved in the strategy Implementation. The interviews were tape-recorded and transcribed; interviews included the Minister of Health and Consumer Affairs; the Deputy Minister of Health; the Deputy Minister for Quality, Innovation, and Research; the General Director of the Basque Country Health Service; and the most significant directors in the Implementation of the reform. The interviews (Appendix D) covered three sections: internal organization (six questions), social networks (three questions), and leadership (four questions). Analysis yielded unexpected findings about the specific political agenda, the environmental context, cultural values, the individual organizational setting, and the impact of social networks on the level of strategy

STTC implementation.

Analytical Technique

The analytical strategy of this research involves using social network analysis, multilevel analysis with individual-and group-level data analysis, as well interpretative analysis based on verbal responses to open questions in 20 interviews with the most relevant managers of the STTC implementation. I summarize in this section the different analytical techniques:

Social network Analysis. I included social network data from the full set of 231 managers. The responses to the social network surveys were translated into a 231x231 matrix of individual frequency of interactions. One individual included in the matrix is the champion of innovation. I used the UCINET social network analysis program (Borgatti et al, 2013) to analyze the social network data and compute the measures of (1) social network proximity to the champion and (2) individuals´ social network centrality. Using these two measures at the individual level, I created a matrix of 31x31 at the organizational level that included the average frequency of interactions among the managers of any two organizations in the organizational network. If managers in organization frequently interact with the champion of innovation, the organization will have a high score in network proximity to the champion. Similarly, if managers in organization A frequently interact with managers in other organizations, they will have a high score in organizational network centrality.

Multilevel Analysis. Since the dependent variable, implementation of the STTC strategy, is an organizational level variable, while the independent and mediating variables are individual-level variables, I used a multilevel modeling

strategy. However, one of the problems with traditional multilevel modeling strategies is that they do not accommodate independent and mediating analysis with level-2 (organizational) outcomes and might produce biased estimates of between- and within-level components of indirect effects (see Preacher, Zyphur & Zhang, 2010, 2011). To overcome these limitations, most researchers have aggregated the individual data to conduct the analyses at the group or organizational level. This is a valid strategy, but it results in reduced sample sizes, and it can lead to loss of power and biased beta coefficients. More recently, however, some authors have provided an alternative method to overcome these shortcomings with the development of Multilevel Structural Equation Modeling (MSEM) (Aguinis and Molina-Azorín, 2015; Gonzalez-Roma and Hernandez, 2017; Muthén and Asparouhov, 2008; Preacher et al, 2010, 2011). MSEM does not require the dependent variable to be measured at level 1 (individual), but it can be measured at a higher level. The assumption here, however, is that for any mediation model involving at least one level 2 variable, the indirect effect can exist only at the between-level. It is only the variability and relationships at level-2 of analysis that are estimated and interpreted.

In this research, I conducted both types of analyses, first using aggregation and path analysis and then using the MSEM model of Muthén & Asparouhov (2008) that is implemented in MPlus. In addition, I also provide the results of the traditional approach of testing for mediation suggested by Baron and Kenny (1986) that uses a series of regression equations. The three methods have advantages and disadvantages, and by using the three approaches, I expect to provide a more robust test to the hypothesized model. Therefore, I conducted (1)

regression equations in SPSS 2) a path analysis with factor scores in AMOS followed by (2) a Multilevel Structural Equation Modeling (MSEM) in MPlus to evaluate the four hypotheses, taking as unit of analysis the organization.

1.- *Regressions*. Baron and Kenny (1986) suggest a strategy for testing mediation models that includes a series of regression equations and a criterion to assess the mediation effect. The conditions that must be met to support mediation are that (1) the independent variables show significant influence in the dependent variable, (2) the independent variables show significant influence in the mediating variable and (3) when the independent and mediator variables are entered together in the regression equation, the mediator shows a significant effect, and the effect of the independent variables disappears (full mediation) or is significantly reduced (partial mediation).

2.- *Path Analysis with Factor Scores*. Structure Equation Modeling (SEM) is a statistical modeling technique frequently used in the behavioral sciences in which the theoretical model is represented with path coefficients between factors. However, it has a disadvantage of requiring a large sample size. For that purpose, researchers often use a 2-step procedure in which they first calculate factor scores from latent variables and then conduct a path analysis with the observed variables. In this study, the sample size is only 22 organizations and there is a potential to lose power and obtained biased results. To minimize these effects, I conducted a path analysis with factor scores (Devlieger and Rosseel, 2017) that minimizes the misspecifications of the model and has more advantages over SEM. I obtained the factor scores in SPSS by conducting a factor analysis and saving the factor scores.

3.- *Multilevel Structural Equation Modeling (MSEM*). In order to provide a more robust analysis of the data, I also conducted MSEM analysis using MPlus (Muthén & Aspaorouhov, 2008; Preacher et al, 2010, 2011). This multilevel analysis strategy aims to reduce the "gap" between the individual and organizational levels and to provide an analysis that better adjusts to the managerial reality under study (Molina-Azorín et al, 2019).

MSEM has gained importance in organizational research in the last few years due to its ability to bridge the micro-macro gap in studies with different levels of analysis. In addition, recent analytical developments in MSEM have contributed to the increase of its use in multilevel mediation modelling (Preacher, Zyphur & Zhang, 2010; Yao & Chang, 2017). Following the premises of literature on multilevel (Aguinis & Molina-Azorín, 2015; Molina-Azorín, Pereira-Moliner, López-Gamero, Pertusa-Ortega & Tarín, 2019; Preacher et al, 2010; Yao & Chang, 2017), if a business episode is intrinsically multilevel, the analytical technique should reflect the same multilevel circumstances. Considering this research is originally based on interactions (social networks and commitment constructs) occurred at the individual level 1, that derive into outcomes (STTC implementation) at the organizational level 2, MSEM adjusts to the hierarchical disparity. The principal contribution of MSEM modeling for mediation analysis is that it can differentiate constructs and effects into within and between group levels to provide a more robust analysis of indirect effects between these two hierarchical positions. In addition, a strength of MSEM is the capability to divide the total variance of the lower-level variable in the equation into within-organizational and between-organizations components. The components of

these two different hierarchical levels are assumed to be uncorrelated to each other, and only the between-organizational variances are considered to test the relationship between the lower-level variables (networks variables and commitment in the case under study), and the organizational dependent variable, STTC implementation (Yao & Chang, 2017).

4.- *Qualitative analysis*. I conducted a qualitative analysis in parallel with 20 of the most determinant managers for the implementation of the STTC strategy. Their testimonials provided valuable explanations for understanding the rationale of the social network dynamics of the Basque Country Health Service. Furthermore, the content of the interviews demonstrated the complexity and uniqueness of the case under study.

Reliability and Validity of the Measurement Model

In order to evaluate the reliability and validity of the model, I conducted a Confirmatory Factor Analysis (CFA) on the constructs of managers´ commitment and ratings of implementation (see Table 1). I followed the Fornell and Larcker criteria (1981) that considers that the Cronbach´s alpha of every construct should be equal to or higher than 0.70, and the average variance extracted (AVE) should be equal to or higher than 0.50.

[Insert Table 1 About Here]

First, I conducted a CFA with one factor model with all the items of STTC implementation and commitment directed to one latent variable. It provided a

higher chi-square value than the selected model with two factors (commitment and STTC implementation). The one-factor model including all items in a single latent variable proved to be a worse fit of the data than the two-factor model with commitment and implementation as two different latent factors. The model with 1-factor structure [$X^2(209) = 969.94$ p <.00, CFI = .70, RMSEA = .15, NFI = .64; AIC = 1101,94] versus the 2-factor structure [$X^2(151) = 477.89$, p < .000, CFI = .84, RMSEA = .11, NFI = .79; AIC = 178.44] showed a poor fit with the data. The AVE measure for commitment was greater than .80, although it was only .40 for implementation, which partially met the recommended standards (Barclay, Higgins & Thompson, 1995; Rasoolimanesh, Roldán, Jaafar & Ramayah, 2017). The Cronbach´s alpha, however, for commitment and implementation were quite acceptable, .96 and .91 respectably. I also tested another dimension of reliability, discriminant validity, which is an indicator that shows to what extent a construct is different from other constructs (Hair, Hult, Ringle & Sarstedt, 2017). One measure to confirm discriminant validity is the cross-loadings analysis to assess if the constructs share more variance with their items than with other constructs (Barclay et al, 1995; Cording et, al, 2008). The results show that items load more on the construct they measure than in the rest of the constructs. The squared root of AVE for commitment is 0.80 (p<.01) and for managers´ self-assessment of implementation is 0.62 (p>.01). The correlation between the factors is 0.51 (p>.01). Therefore, discriminant analysis is confirmed.

Aggregation of individual scores

In order to run the regression equations and the path analysis at the organizational level, I needed to validate the aggregation of individual responses

to the organizational level.

Commitment to Healthcare Reform. To justify the aggregation of ratings commitment to the STTC strategy, I computed the multi-item inter-rater agreement index ($R_{WG(J)}$) (James, Demaree & Wolf, 1993; see also Lebreton & Senter, 2008). The average $R_{WG(J)}$ index for the commitment scale of all the organizations was .88. Similarly, the average intra-class correlation coefficient (Burke, Landis & Burke, 2017; Shrout & Fleiss, 1979) for the organizational level was .89, all organizations being statistically significant beyond the $p<.01$ level except one (Araba Mental Health Regional Network). These results suggest a high degree of agreement (Lebreton & Senter, 2008) and good reliability (Shrout & Fleiss,1979) among managers' commitment within each organization. I therefore computed the average commitment of managers at the organizational level.

***Implementation of the STCC Strategy*.** The three measures of STTC implementation were collected at different levels of analysis and I needed to obtain a single measure of the implementation at the organizational level. The first measure was already an organizational level measure. It consisted of a general index of implementation evaluated by the auditor company using the IEMAC survey. The second measure was an individual assessment of the managers from each health care center. In order to justify aggregation, I computed the multi-item interrater agreement index ($R_{WG(J)}$) (James et al, 1993; Lebreton & Senter, 2008). The average $R_{WG(J)}$ organizational index for the commitment scale was .88. I also computed the intra-class correlation coefficients (Bartko, 1976), whose average organizational result was .73, being statistically

significant beyond the p<.01 level in 19 of the 22 organizations. These results suggest strong agreement (Lebreton & Senter, 2008) among managers' commitment within each organization, with the inter-rater agreement findings being more conclusive than the intraclass correlation coefficients. I therefore computed the second measure of implementation at the organizational level by aggregating the ratings of the managers for each organization.

Finally, I also collected additional information from seven independent judges familiar with the STTC implementation process. I asked seven government officials from the central administrative office who had the most comprehensive knowledge of the STTC implementation to evaluate the degree of implementation in each organization. I calculated the degree of agreement among the seven judges using the same indexes as the commitment and implementation scales. Results show an average multi-item inter-rater agreement index of .85 and an average intra-class correlation coefficient of .95. The correlations ranged from .85 and .99 and were statistically significant beyond the p<.01 level, suggesting a high level of agreement.

Once I obtained the three STTC implementation measures at the organizational level, I computed an overall index of implementation for each organization by running a factor analysis in SPSS (see Table 2) and computing the factor score. This method results in more accurate path coefficients as it has more advantages over SEM in the case of small sample sizes (Devlieger & Rosseel, 2017).

[Insert Table 2 About Here]

CHAPTER 4: RESULTS

Descriptives

Table 3 shows the descriptive statistics and correlation matrix at the individual level. Network proximity to the champion shows a strong and positive association with network centrality (r=.59, p<.01), and a statistically significant correlation with organizational tenure (r=-.17, p<.01) and commitment (r=.29, p<.01). In contrast, network centrality has a statistically negative significance with commitment (r=-.30, p<.01). Finally, a strong and positive correlation is found between commitment and the evaluation of the STTC implementation.

[Insert Table 3 About Here]

Furthermore, Table 4 shows the descriptive statistics and correlation matrix at the organizational level. Tenure in the organization has a significant and positive association with network centrality (r=.69, p<.01). In addition, network proximity to the champion is positively related to network centrality (r=.50, p<.05) and commitment has a positive correlation with the evaluation of the STTC implementation.

[Insert Table 4 About Here]

Test of Hypotheses

The theoretical model that I proposed in this thesis hypothesized that social network measures influence the implementation of the STTC strategy through the

mediation of health care managers´ commitment. To test this model, I followed a three-part strategy using (1) a series of regressions following Baron and Kenny´s (1986) approach, (2) a factor score path analysis and (3) Multilevel SEM following Muthén & Asparouhov (2008).

Table 5 shows the results of the regression analysis. The findings in Model 2, with commitment as the dependent variable, indicate that the network effect of proximity to the champion (β=.43, $p<.05$) is positive and statistically significant. In addition, in Model 2, with implementation as the dependent variable, the effect of network proximity to the champion (β=.44, $p<.05$) has also a significant and positive effect on implementation. Therefore, Hypothesis 1 that postulates the positive impact of the social network proximity of the healthcare managers to the champion of innovation (Regional Minister of Health and Consumer Affairs) on the level of the STTC strategy implementation is supported. In contrast, the results reported in Table 5 do not indicate a significant effect of network centrality on commitment and implementation, respectively. Therefore, neither hypothesis 2a nor 2b are supported.

[Insert Table 5 About Here]

Regarding the mediation effect of commitment between the network variables and the STTC implementation, the results indicate a full mediation effect of commitment between network proximity to the champion and implementation. Following Baron and Kenny (1986), the full mediation is achieved when “the independent variable has no effect on the dependent variable when the mediator

is controlled" (p. 1177). As shown in Table 5, proximity to the champion indicates a statistically significant beta coefficient predicting commitment (b=.43, p<.05) and implementation (b=.44, p<.05). However, with the inclusion of commitment in the regression equation to predict implementation, the previous direct and significant effect from network proximity, in Model 2, disappears, while the beta coefficient of commitment remains statistically significant (β=.37, p<.05). Hence, Hypothesis 3 is supported. In contrast, none of the coefficients for network centrality shows statistically significant impact on commitment or implementation. Thus, Hypothesis 4 is not supported.

In sum, the regression analysis, as demonstrated in Figure 3, supports the hypotheses for the effect of proximity on the implementation of the STTC strategy, but not the impact of network centrality on implementation.

[Insert Figure 3 About Here]

Table 6 shows the results of the factor score path analysis to identify the direct and indirect effects between the network variables and the adoption of the STTC strategy. I conducted the bias-corrected (BC) bootstrap method technique (2000 resamples) to calculate the bootstrapping confidence intervals of standardized regression coefficients. This method is a non-parametric approach to effect-size estimation that makes no assumptions about the shape of the distribution of the variables or the sampling distribution (Preacher & Hayes, 2004; Zhao, Lynch & Chen, 2010). It also allows to generate standard errors and t-statistics to evaluate the statistical significance of the path coefficients (Henseler, Ringle & Sarstedt,

2015; Rasoolimanesh et al, 2017; Wu, 2015) and also provides the most rigorous confidence intervals (Cheung & Lau, 2008).

Table 6 shows that proximity to the champion of innovation has a nonsignificant direct effect to the implementation of the STTC strategy. However, the total effect between these two variables is positive and significant (β= .43, p <.05) with the following 90% bias corrected confidence interval (.08, .65). Therefore, Hypothesis 1 is supported, confirming that the greater the social proximity of the healthcare managers to the champion of innovation, the higher the level of STTC implementation of the STTC strategy in their organization.

[Insert Table 6 About Here]

In contrast, table 6 also shows a negative direct effect between network centrality and the implementation of the STTC strategy. Despite results showing an apparently significant effect (β= -.30, p-value < .10), the following 90% bias corrected confidence interval (-.56, .05) confirms a negative nonsignificant relationship between these two variables. These results corroborate the nonsignificant correlation of the total effect of network centrality on STTC implementation, with the following 90% bias corrected confidence interval (-.96, 06). Hence, none of Hypotheses 2a and 2b are not supported and a clear conclusion cannot be drawn regarding the impact of network centrality of the healthcare managers on the level of adoption of the STTC strategy in their organization.

These findings reflect the equidistant balance between the benefits and detriments of network centrality, shown in the literature, on the advance of strategic STTC implementations or innovations in organizations. They are consistent with theoretical arguments that centrality might be counter-productive to implementing STTC practices as privileged access to information is undermined by the advantages that peripheral positions offer, such as freedom of movement and independence from the dominant coalition of the social network. On the other hand, the concentration of information provided by the privileged network might explain the lack of evidence towards a clear positioning on this aspect.

Hypotheses 3 and 4 proposed that commitment mediates the relationship between social network variables (proximity and centrality) and managers´ adoption of the STTC strategy. Table 6 shows the results of the factor score path analysis. I conducted the bias-corrected (BC) bootstrap method technique to test the linkages of the mediating model. The results show there is a standardized indirect effect from proximity to the champion of innovation on STTC implementation (β=.14, $p < .05$), with the following 90% bias corrected confidence interval (.02, 44). Due to the indirect mediated effect of proximity to the champion on STTC implementation, when proximity to the champion goes up by one standard deviation, STTC implementation goes up by 0.14 standard deviations. Thus, the results support Hypothesis 3 showing that the level of commitment of healthcare managers to the STTC strategy mediates the relationship between their social network proximity to the champion of innovation and the adoption of STTC practices in their organization.

By contrast, the results do not support the mediating model of commitment between network centrality and STTC implementation. The bias-corrected (BC) bootstrap method technique shows a 90% confidence interval (-.29, .10), which confirms the non-significant relationship between both variables. Therefore, Hypothesis 4 cannot be confirmed, as the level of commitment of healthcare managers to the STTC strategy does not mediate the relationship between centrality in the social network and the adoption of STTC practices in their organization.

In sum, the results of the factor score path analysis reveal in Figure 4 the significant relationship between network centrality and the STTC implementation, while no significant relationship is found between network centrality and the STTC implementation.

[Insert Figure 4 About Here]

Finally, Table 7 shows the results of the Multilevel Structure Equation Modeling (MSEM). It shows a direct and strong positive significant effect from network proximity to the champion to commitment (β=1.66, p <.001) (*Path* “a”) and a modest, but still a positive significant effect between commitment and the level of implementation of the STTC strategy (β=5.60, p <.10) (*Path* “*c*”). In contrast, findings reveal a negative nonsignificant direct effect from network proximity to the champion to the STTC implementation. Therefore, Hypothesis 1 is not confirmed.

Despite the insignificant direct effect between proximity to the champion and STTC implementation, the significant relationships between proximity to the champion and STTC implementation (*Path* “a”) and commitment and STTC implementation (*Path* “c)” suggest a possible mediator effect of commitment between both variables. Following the premises of Preacher and Hayes (2004) and Zhao, Lynch & Chen (2010), that the presence of significant indirect effects is valid evidence of indirect mediation even in the absence of significant direct effects, I thus tested the mediation of commitment in the relationship between proximity to the champion and the STTC implementation. The un-standardized indirect effect (β=9.33, p<.10) of proximity to the champion to STTC implementation with the mediation effect of commitment was calculated as the product of *Path* “a” (.1,66) and *Path* “c (5.60) from the previous regression models. This new “*ac”* parameter obtained in Mplus rendered support to Hypothesis 3. Results indicate that due to the mediator effect of commitment, the greater the social network proximity of the healthcare managers to the champion of innovation (Regional Minister of Health and Consumer Affairs), the higher their level of implementation of the STTC strategy.

[Insert Table 7 About Here]

Next, I examined the relationship between network centrality of the healthcare managers and the level of STTC implementation. Findings show a nonsignificant direct effect (β=.00, n.s.) from network centrality to commitment (*Path* “b”) and a negative nonsignificant direct effect (β=-.01, n.s.) from network centrality to

implementation. Therefore, none of Hypotheses 2a and 2b cannot be confirmed. No significant relationship, thus, was found between the social network of the healthcare managers and their level of implementation of the STTC strategy.

Furthermore, the lack of significance in *Path* “b” suggests the insignificant result of the mediating effect of commitment between network centrality and STTC implementation. The product of this path with *path* “c”, Commitment to STTC Implementation, confirms the nonsignificant indirect effect of commitment between centrality and STTC implementation. Therefore, Hypothesis 4 is not supported.

In sum, the results of the MSEM analysis, shown in Figure 5, rendered support for the significant relationship between proximity to the champion through the mediation of commitment and the STTC implementation and corroborate the findings obtained in two previous analyses.

[Insert Figure 5 About Here]

In conclusion, the analyses reveal the greater importance of being closer to the champion of innovation rather than in a strategic central network position for the promotion of the STTC implementation.

QUALITATIVE ANALYSIS

In addition to the quantitative analysis, I conducted interviews with 20 managers who played key roles in implementing the STTC strategy. Analysis of these interviews illustrates the logic behind the quantitative results. This narrative informs key aspects of the research questions, such as the strategic role of the main champion of innovation, and further explains the unexpected quantitative results in terms of centrality and the strategic importance of peripheral organizations for the STTC implementation.

In addition, the qualitative analysis also provides a plausible explanation for the negative correlation between organizational network centrality and the level of STTC implementation of the STTC strategy that emerged during the quantitative analysis. Firstly, the top management team of the Basque Country Health Service carries a weight and influence that affects the relationships of the social networks of the ecosystem of the Basque Country Health Service. The interviews reveal that, given strong links with external agents, some peripheral organizations may be more strategically placed than the central organization, a determinant factor for the STTC implementation. Secondly, clear differentiation between the roles of hospitals, primary care, and nursing also affected the level of commitment and STTC implementation of the strategy. Peripheral organizations that played a greater role in primary care and nursing (local primary care centers and medium-and long-term hospital stays) had a stronger disposition towards STTC Implementation than larger, more centrally located hospitals.

Furthermore, this qualitative analysis shows the consensual opinion of managers regarding the importance of the champion's role in implementing the strategy, as well as structural problems posed by the Basque Country Health Service mechanisms that hindered a health reform of the STTC magnitude.

1. Weight and Influence of the External Organizations on the Basque Country Health Service

Although the network variables measured social networks within the Basque Country Health Service ecosystem, 16 out of 20 interviewees (80% of respondents) emphasized the importance of expanding their social networks to other departments and ministries of the Basque Government, such as the department of Social Affairs which is dependent on the Ministry of Social Affairs and Employment, and the Ministries of Education and Industry. Also, in a society as fragmented as the Basque Country, the community ecosystem included organizations outside the health area, such as public institutions, local and regional councils, the third sector (schools, professional bodies, and patient associations), nursing homes, residences, and insurance companies. In terms of business innovation, the Minister of Health and Consumer Affairs disseminated the STTC strategy in the field of industry and established alliances with this sector and with technology centers. In fact, according to the Minister for Quality, Innovation, and Research, one of its two main tasks was to "convey the strategy regarding chronic patients to other interested parties and stakeholders who were not directly connected to health issues, that is to say, those in industry, technology centers, other Basque government departments, non-Basque government departments, and structures linked to innovation."

For this reason, the strong influence of external agents can explain the negative correlation between the centrality variable and the STTC Implementation. The Basque Country Health Service ecosystem has organizations located at the periphery, but these have strong connections with organizations external to the scope of Basque Country Health Service that might have facilitated the STTC implementation of the STTC reform. The head of the Office of Chronicity Strategy who was central to the STTC implementation of the STCC strategy in the Basque Country Health Service network reflected that the interaction with external agents was as important as that with internal agents:

> However, you look at it, here in our community, there are many entities that work with health issues, and we must work with them. They represent the social element: the institutions, the town halls, local councils, the third sector, associations, education departments, etc. We talk about looking for cost-effective programs and looking for allies at the local level. So, to think that only those directly connected to the health sector are responsible for it is simply unreal. There are many more agents in society who work with health issues and sometimes their actions are much more effective than those of the health system itself. Therefore, it is crucial that we form alliances with these various agents and together come up with effective joint action plans.

According to interviewees, the IX Legislature created an important integration, dialogue, and collaboration with other government departments related to the

health field, specifically with the Department of Social Affairs. Despite the involvement of health associations, professional bodies, medical and nursing associations, the Academy of Medical Sciences, and the Academy of Nursing Sciences, the STTC strategy did not receive expected support. According to the Director of the Basque Country Health Service, “the coordination with the unions has been almost zero, and they have not given it any support because they have not understood the STTC strategy and are simply focused on other things.”

Thirty percent of those interviewed stressed the importance of interacting with other health organizations and public institutions at a national and international level, with the dual objective of disseminating the STTC strategy and finding strategies and practices to inspire the STTC strategy STTC implementation.

2. Differentiation between Hospital, Primary, and Nursing Care

Another significant element of STTC implementation of the STTC strategy is the differentiation between hospital and primary care and the role of nurses. According to 12 out of 20 interviewees (60% of respondents), the professionals most motivated in implementing the STTC strategy were the primary care professionals. For many years this group had focused on improving coordination with hospitals for a more patient-centered approach. By contrast, the larger hospitals dealing with acute cases followed a more industrial process within the established borders of their particular centers and without opening themselves up to the outside community. According to the Vizcaya Territory Director:

> The primary care environment was already committed to doing this. The importance of working together with the specialized level was recognized

> a long way back; that is to say that we have talked about coordination protocols and since I have been in the job we have been getting together about it. When I was at the Hospital de Cruces we got together with the Uribe region and we were doing things and starting to talk about the necessary coordination relating to the concept of care continuity.

Hospitals treating acute cases differ from those dealing with medium-and long-term admissions that serve several local areas and collaborate with primary care professionals. The deputy minister of Health added the following in this regard:

> A hospital at Cruces [Bilbao] or a hospital of Donosti [San Sebastián] is viewed as a Hospital, the medical culture is very specialized and therefore there is not the same sense of collaboration with primary care as there can logically be with a regional hospital.

Professionals in acute care hospitals viewed primary care as a threat that took away their patients. They saw greater collaboration with primary care as a strategy that decreased power and control over their own patients. As the managing director of the Bidasoa hospital indicated:

> There are all kinds of resistance, particularly with some specialties. They view the fact that they might lose patients as a threat: that these patients might be returned to primary care, and they call into question the need for

the work that you are doing here. So yes, in some specialized areas we have noticed this resistance.

In addition, the day-to-day work in a hospital is so intense and absorbing that looking outside is difficult unless it is imposed from above. Consequently, the benefit of the STTC strategy was clearer to those already connected to primary care.

The interviewees also indicated that nurses were more amenable to the STTC strategy STTC implementation. Nurses tended to be more flexible, had been working with chronic patients over a longer period, and anticipated a more attractive professional role with greater clinical status and a more comprehensive approach to patients. As a result, although primary care organizations did not enjoy a privileged position in terms of centrality in the Basque Country Health Service network, they should have been more inclined to implement the strategy than the large hospitals even though the latter were situated at the center of the Basque Country Health System network.

3. Importance of Proximity to the Champion

In relation to proximity with the champion of the STTC strategy (the Minister of Health and Consumer Affairs), 15 out of 20 interviewees (75% of respondents) highlighted the transformative leadership and vision of the Minister regarding the reform. They considered that the involvement of the champion, his perseverance, and his detailed following of the activities and discussions relating to the STTC strategy had been decisive. They also appreciated that the Minister had participated in many forums and meetings, listened to what everyone had to say,

and intervened in the discussions with an inspiring approach to the benefits of the STTC strategy.

Moreover, the interviewees considered the Minister an ideological and charismatic leader who had launched his vision of the STTC strategy, posed a different objective to a future reality, and established mechanisms for the rest of the organization to move forward. Throughout the legislature he had encouraged a collective effort, acting on the belief that grand ideas to nurture the strategy would come from the bottom up. A statement from the Director of the Kronigune Research Institute illustrates this perception:

> The leadership of the Minister has been fundamental for the adoption of the reform. Clearly he has acted as I feel a leader should act, as someone who sets a completely new goal, who envisages a reality that does not yet exist, and who establishes the mechanisms for others to move towards that new reality. In this sense, he is leading, coordinating, and ordering in a distinct way. His vision, from my point of view, is about something that does not exist, not about something already in place and simply managing it better. He says, “I want to reach this goal that does not yet exist; how do we achieve something that does not yet exist? Come on, let’s go there together.” In this sense it is clear that his leadership has been supremely important.

Most interviewees mentioned the transformational leadership of the champion and the importance of proximity in implementing the strategic lines of the reform.

Few interviewees mentioned a centralized network position in the organization, access to information, or privileged resources to carry out the strategy.

4. Difficulty of Implementing the STTC Strategy

The complexity of the Basque Country Health Service mentioned by eight out of 20 interviewees (40% of respondents) may explain the lack of significant correlation between the network variables and the STTC implementation of the strategy.

Interviewees indicated that the Basque Country Health Service's deep-rooted and classic culture did not favor change. Its mechanisms were designed to be bureaucratic and extremely hierarchical, with management controls based purely on economic information—meaning that nothing but the yearly budget had to be transmitted. Given this scenario, it was difficult to create a space for new strategic dialogue about the STTC strategy.

In addition, the organization of the Basque Country Health Service itself holds little centralized power: a few people at the center have responsibility for 35,000 people. Given its extensive experience and recognized quality management, the organization was positioned to understand and guide the strategic change. STTC implementation proved supremely difficult, however, due to the Basque Country Health Service's hierarchical, bureaucratic, and rigid stance. In the words of one interviewee, to alleviate the resistance, it would also be necessary to establish a clear system of incentives to reward professionals who helped. In addition, the Deputy Minister for Quality, Innovation, and Research concluded, "The Basque Country Health Service is a machine designed to make management controls

based purely on economic information. Therefore, it is extremely difficult at this moment to articulate a more strategic discourse."

A representative from the Office of Chronicity Strategy (OEC) noted that:

> …a change to these characteristics would require at least a decade, and the real problem lies with the middle managers, heads of services, the whole middle management structure. Perhaps primary care is a more fertile ground, but at the hospital level it takes a lot of effort to involve the managers.

Likewise, the rigidity and hierarchy of the Basque Country Health Service mechanisms, according to six out of 20 interviewees (30% of respondents), had resulted in communication problems connected to the dissemination of the strategy throughout the whole network. Interviewees saw a lack of coordination in transmitting the new strategic lines in a transversal manner to the new middle managers of the organization. According to the Deputy Minister for Quality, Innovation, and Research, the organization:

> …was not prepared to communicate, to reach the blood of so many different cells. It is as if we had four large veins when what was needed was a capillarity of communication that had to be created. And, of course, changing strategy, changing the model, and at the same time creating that capillarity in my opinion required a huge effort. What we have probably noticed is that the STTC implementation has been more problematic than

> we expected, but not because the discourse was difficult to understand, but because it was hard to reach the last level and that the responsibility of this last level regarding the process had been taken for granted.

Unlike an innovative organization with distributed leadership, a hierarchical organization like the Basque Country Health Service has a very narrow chain of communication, and a transversal chain of communication to reach the lowest levels of the organization was never created. Strategic work was done to energize those at the base, and efforts focused on both the center and the periphery of the organization, but no intermediate chain disseminated the strategy.

Communication problems resulted from the two-headed attitude of the Steering Committee of the Ministry that undoubtedly affected the dissemination of the STTC strategy. Six out of 20 respondents (30% of interviewees) — the managers with the greatest responsibility in the organization — mentioned that two strands had never been aligned: the strategy involving STTC Implementation and innovation, and the health management mechanisms of Basque Country Health Service. Theoretically, there was only one organization, but in practice there were two distinct and parallel discourses. This dichotomy was responsible for much confusion because the Basque Country Health Service was particularly focused on economy, financial management, and information systems, and was less attuned to the changes proposed by the STTC strategy.

These comments were corroborated by one of the deputy ministers who saw lack of a “real team spirit.” Greater coordination between the areas of strategy and innovation would have improved the STTC implementation. On the one hand,

the Basque Country Health Service's management believed that any improvement should be planned from the center; on the other hand, the Regional Minister of Health and Consumer Affairs believed that professionals at the local level could create their own organization within the global framework of the Basque Country Health Service. According to him, a "revolutionary change" had occurred to the leadership concept within the STTC strategy, as people realized that "the manner in which we have led has been more important than the content we have been leading."

CHAPTER 5: DISCUSSION

This study examines the relationship between social network variables, specifically, the proximity to the head champion of the STTC healthcare reform and the centrality position in the network of healthcare managers, and the level of STTC implementation of the STTC strategy. It also analyzes whether the level of commitment of the healthcare managers serves as a mediating mechanism between the social network variables and the STTC Implementation.

The results conducted at the individual level in SPSS and at the organizational level provide support for the mediating role of commitment between social networks and STTC implementation. The multilateral analytical approach comprised of the combination of three methods (regression equations, path analysis with factor scores and multilevel structural equation modeling) confirms that proximity to the champion influence the level of implementation of STTC practices via the commitment of the top managers of the Basque Country Health Service. However, the nonsignificant relation between organization centrality network and the STTC implementation indicates the equidistant balance between

the benefits and detriments of centrality indicated in the literature. Hence, it has not been possible to obtain a clear position on this aspect. For this reason, the qualitative study is of interest to elucidate the nuanced contributions of centrality to strategy implementation. Most interviewees emphasized the importance of collaborating with organizations external to the Basque Country Health Service to obtain useful knowledge and necessary resources for the STTC Implementation. Organizations in the periphery of the network might feel less pressure to maintain the status quo and be more ready to adopt policies to accommodate the needs of other external stakeholders.

Moreover, the opinions of the interviewees must be taken into account: they maintain that in an organization as bureaucratic, hierarchical, and conservative as the Basque Country Health Service, a cultural change of such magnitude would require at least a decade — certainly longer than the four years of a legislature. Interviewees believed that an intermediate chain could have disseminated the strategy from the top to the lowest levels of the organization.

These findings have important implications for empirical research. Previous literature on the STTC implementation of an innovation to reduce health disparities proves that middle managers´ commitment to STTC implementation facilitated the implementation of the Chronic Care Model in their health centers (Birken, Lee, Weiner, Chin, Chiu & Schaefer, 2013, 2015; Chuang, Jason & Morgan, 2011). Moreover, via the commitment mediation effect, the individual and organizational analyses confirm the relevance of being close to the main champion, the person who holds the vision and goals of the STTC strategy, in guaranteeing a higher rate of STTC implementation. Because the STTC strategy

health reform was based on the personal vision of the Regional Minister of Health and Consumer Affairs, top managers needed to frequently interact with him. Furthermore, interviewees generally agreed that the main champion's leadership was fundamental in the STTC implementation of the STTC strategy since he was the visionary of the strategy and the greatest motivator of change.

Regarding the non-significant results of the centrality construct, the literature on social networks is divided about the relationship between network centrality and STTC implementation. Some theorists have found that at the organizational-level, actors involved in innovations tend to hold more central positions than the rest (Roxenhall, 2013; Tsai & Goshal, 1998). Several studies have found a negative effect of cohesive social networks on innovation and creativity (Pappas & Wooldridge, 2007; Perry-Smith & Shalley, 2003; Schilling & Phelps, 2007; Sparrowe et al, 2001; Tang & Ye, 2015). According to Perry-Smith and Shalley (2003), centrality, characterized by a network of strong ties, constrains autonomy and leaves little space for creativity and innovation. Decades ago, Granovetter (1973) argued that weak ties provide access to crucial information and are better than stronger ties in building creativity and innovation. However, extensive literature confirms a positive relationship between diversity networks and innovation (Akrich, Callon & Latour, 2002; Perry Smith, 2006, Rodan & Galunic, 2004).

Diverse networks affect innovation because of the endogamic nature of central networks and the dependency of being strongly trapped in a network. The qualitative analysis shows that the organizational base must be activated to generate new forms of patient care. During the STTC Implementation, the major

aim was to establish ongoing care as a priority, a decisive break with the previous healthcare system which focused on acute episodes. Managers were thus encouraged to leave their “comfort zone” and do things differently, under the premise that diversified networks connect individuals from a variety of social circles who may contribute to a broader outlook than the one provided by endogamic cohesive networks.

Another stream of academic thought stresses the benefits of combining cohesive networks with diverse networks rich in structural holes, especially in alliances or collaborations among different organizations (Michelfelder & Kratzer, 2013; Rost, 2011; Tiwana, 2008). This type of network uses “ambidextrous collaboration” to generate ideas (exploration) along with a cohesive network to integrate and implement them (exploitation). The context described by Michelfelder and Kratzer (2013), Rost (2011) and Tiwana (2008) consists of alliances amongst organizations and contractual collaborators, similar to the institutional environment of the STTC reform with its strong connections among the Health Department, the Basque Country Health Service, and the organizations at their periphery. Based on the insights provided by the qualitative study, this investigation reflects the convenience of applying a diverse network with plenty of weak ties in the early years of STTC implementation. Considering that initially the priority was to disseminate the strategy and obtain inspiration, the connection with external agents from the health micro-system was determinant. The interviewees stressed the importance of organizations at the periphery of the Basque Country Health Service ecosystem.

This investigation emphasizes the importance of tempo when choosing the best network for innovation diffusion. An innovation of the STTC implementation passes through different phases that may well require focusing on different types of networks at different stages. My results confirm a study by Byosiere, Luethge, Vas & Salmador (2010) that selection of an appropriate organizational network should be based on the type of knowledge to be diffused and the institutional context (Cao, Simsek & Jansen, 2015; Carnabuci & Diószegi, 2015; Mors, 2010). In the STTC reform, guidelines were more explicit than tacit as they were not complex or difficult to codify for the target audience, which was composed of competent clinicians and other professionals with ample experience in healthcare. The initial challenge was not related to clarity of discourse but rather to the difficulty of reaching the furthest level of the health network and having it assume responsibility for the process. As indicated by the Deputy Minister for Quality, Innovation, and Research, it was more challenging to disseminate the discourse of the STTC strategy to the bottom level of the organization than to ensure that all audiences understood it. In terms of organizational change, Tenkasi & Chesmore (2003) found that the transfer of complex knowledge requires strong ties between two parties. Therefore, tacit knowledge, which is difficult to codify or articulate, is better transmitted through a cohesive network rather than a loose one with abundant holes and boundary-spanning positions (Byosiere et al, 2010; Hansen, 1999; Reagans & Mc Evily, 2003; Roxenhall, 2013; Smedlund, 2009).

This study highlights the importance of the figure of the main champion of innovation to disseminate the strategy throughout the entire network.

Furthermore, the lack of conclusive results on the impact of network centrality on the STTC implementation, and the interviewees´ feedback, suggest the use of disperse networks initially (exploration phase) along with a cohesive network of strong ties at subsequent stages (exploitation phase) to consolidate the STTC implementation process (Byosiere et al, 2010; Carnabuci & Diószegi, 2015).

Expanding on studies in the fields of industry and research, this investigation joins the body of work on the significance of social networks for knowledge diffusion and innovation in the health sector (Mikhailova, 2018; Battilana & Casciaro, 2012; Cho et al, 2008; Swan, Scarbrough & Robertson, 2002, Taselli, 2015; and Westphal, 1997). The present study extends previous work on social networks in the health sector by comparing innovation impact with proximity to the main champion as well as the actors' social position, such as centrality. In the dissemination of the STTC reform, the findings of the study highlight the importance of establishing a network that allows for easy access and frequent contact with the main champions of innovation. In addition, interviewees considered the transforming leadership of the champion and proximity to him more important than the network position in the organization.

The results of this study, therefore, have implications for top managers. In the case of health STTC implementations based on explicit premises but with a high component of innovation and creativity and subject to a limited timeframe, as in the case of the STTC reform, I suggest the launch of internal organizational communication and dissemination mechanisms to ensure that the vision of the champion of innovation engulfs all managerial levels. Furthermore, the qualitative analysis has confirmed the value of initially establishing connections with

organizations outside the main health service that in turn provide knowledge and value to the regional health ecosystem.

In the initial time frame of a strategic STTC implementation, proximity to the main champion contributes more to adoption than does a central position in the network. In the STTC reform, interviewees saw the minister as a charismatic leader who launched his own vision and articulated it clearly to all levels of the organization. The Director of the Kronigune Research Institute felt that the minister launched a vision of healthcare that did not previously exist and then established mechanisms to build it. His leadership — and proximity to him that inspired others — formed the basis for innovation.

The STTC rollout carried a strong time directive, with changes targeted during a 3½ year legislative term. The testimonials of the interviewees indicate that a network with abundant weaker ties facilitated the desired communication capillarity across different health organizations. This network was cost-efficient and still provided knowledge management benefits from actors in the network. Furthermore, the study reveals that top managers can exploit the benefits provided by their proximity to the main visionary of the reform. A clear system of incentives could compensate professionals for supporting an STTC implementation strategy, as recommended by one interviewee. Ultimately, to encourage faster change in a rigid organization such as the Basque Country Health Service with its 35,000 employees, a health reform of such magnitude requires creative, risky, and ambitious management interventions more typical of private companies than of public administrations.

Limitations and Further Research

One constraint in capturing the STTC Implementation was the time frame, limited to the duration of the IX Legislature (3½ years). STTC continuation was not guaranteed, in light of possible political change at the governance board level that could renew or reverse positions. According to the interviewees, given the size and rigidity of the Basque Country Healthcare System, a transformation of such magnitude might require more than a single legislative term, maybe even a decade, to consolidate the communication map and the necessary channels to spread the reform to all levels of the organization. From an institutional perspective, based on Tolbert and Zucker´s (1983) two-stage model of early adopters motivated by technical gains and later adopters motivated by social benefits (Kennedy and Fiss, 2009), a longer period for investigation would have shed light on the transition process between the two phases.

Although this study included the entire population of individual health care managers, the organization–level network is composed only of organizations with direct patient contact. Thus, information was captured on an individual basis from the entire top management population (231 surveys) and aggregated on an organizational basis, creating a smaller sample that decreases the statistical power of the study.

One surprising result of the study was how top-down and bottom-up approaches needed to combine to reach middle management. This research reveals a need for more research at the middle-management level.

Due to the prolonged time required for a transformation of these characteristics in a rigid organization such as the Basque Country Health Service, a longitudinal

study could assess progress every five years, with a minimum margin of a decade, in order to reach robust conclusions.

Because the Basque Country Health System is similar to other health systems in Northern Ireland, Scotland, and the Netherlands, this study of innovation could identify necessary pulleys of change to transform current health services worldwide. As nations search for sustainability within current economic and demographic contexts, analysis of the STTC constructs can be applied to other European regions and other continents.

In the case of Europe, for instance, four types of social welfare models exist with their own caseloads based on a particular type of public health finance and management model.

1. Continental Model: France
2. Anglo-Saxon Model: United Kingdom
3. Mediterranean Model: Italy
4. Nordic Model: Sweden

The four systems share the same challenges to ensure the long-term sustainability of the public health system in an unfavorable economic and social climate — not to mention during a pandemic like the Coronavirus, which poses a massive challenge to all European health systems.

As healthcare systems across the globe advance, this study provides insight into soft aspects like communication and social networks, which appear difficult to measure but affect the success of STTC implementation. Future empirical

research could extend this study to a cross-comparison among European regions working with a similar dynamic than the Basque Country Health Service. The experience of the Basque Country in linking the political agenda and the impact of social networks to the development of health and social services at the local level can serve as a reference for future worldwide health policy STTC implementations.

CHAPTER 6: CONCLUSION

This investigation contributes to the literature on both social networks and institutional theory. First, it enlarges the body of work on social networks to include proximity to the main champion in important transformational organizational processes.

This study shows that a unique champion of innovation wields major influence, taking responsibility for propagating the vision and diffusing it through the organization. In addition, this investigation unveils the effects of cohesive versus loose networks at the initial stage of a strategic STTC implementation.

Findings reveal a significant relationship between proximity to the main champion and the STTC Implementation when the mediator effect of commitment is present, whereas proximity to the rest of the Steering Committee (three top managers) did not reveal a significant relationship with the STTC Implementation. These results confirm that proximity to a champion affects the change process. Champions customize their message to the target audience (Howell, 2005) and use rhetoric to engage an emotional response from the target audience (Green, 2004). In the case of the STTC strategy, the champion's passion and rhetorical skill magnified the effect of proximity.

Regarding centrality, the interviewees´ feedback demonstrates that change management processes requiring a rapid diffusion of explicit versus tacit knowledge throughout all network levels may benefit more at an initial stage from a diffuse network with loose ties than a cohesive network with strong ties. Extant literature has analyzed the role of middle management on innovation healthcare STTC implementations (Ferlie et al, 2005; Plsek & Wilson, 2001); this study

focuses on the influence of top management´s social networks at the initial stage of a change reform, a crucial time for ensuring its success. These findings can be applied to similar sectors characterized by strong political and regulatory institutions and immersed in a more individualistic, rather than collective, culture.

This investigation further analyzes social networks through institutional logic and rhetoric. At the beginning of a diffusion process, the types of messages and their manner of transmission will shape practices and consolidate legitimacy. As new practices are institutionalized, the prevalence of arguments for change declines. Institutional theory posits that individuals' readiness for change is the result of a social interaction process whereby individuals are influenced by others who shape their mindset and decision-making process (Amis & Aïssaoui, 2013; Green, 2004).

Previous research indicates that the institutional context influences the type of network most appropriate for the stimulation of innovation (Yang, Hu, Wu & Xie, 2019). Kraft and Bausch (2018) state that in strong political and regulatory environments such as the healthcare field, diverse networks are more beneficial for innovation than cohesive networks. The results of this study reinforce this argument.

The past 50 years have brought significant changes to the healthcare sector in terms of beliefs and processes. Policies and guidelines provide hospitals with standard services to patients, but social networks affect the adoption of new clinical and administrative practices (Currie & Guah, 2007). Reforms are necessary to confront health challenges like the current Coronavirus pandemic. For instance, the Strategy to Tackle Chronic Diseases enables remote monitoring

of the chronically ill — identifying who they are, where they live, and what medication they are taking — and maintains patient contact during times when emergency services are saturated. Such controls have an added benefit during a pandemic because chronically ill or elderly patients are already on the radar and using telematic help while remaining safely at home. Given that an epidemic emerges every three or four years (Bengoa, 2020), the flow of information and communication (social networks) in the health network is key to confronting pandemics and other adversities that may arise.

CAPÍTULO 6: CONCLUSIÓN

Esta investigación contribuye a la literatura de redes sociales y teoría institucional. Primero, profundiza las investigaciones realizadas en redes sociales al incluir la proximidad al principal impulsor de la innovación en importantes transformaciones de procesos organizativos.

El estudio muestra que un único impulsor de innovación ejerce una mayor influencia, tomando la responsabilidad de propagar la visión de la reforma y difundirla a través de la organización. Además, esta investigación ensalza los efectos de redes cohesionadas versus esparcidas en la fase inicial de la implementación estratégica.

Los resultados revelan una relación significativa entre la proximidad al principal impulsor de la innovación y la implementación de la estrategia de crónicos, siempre que el efecto mediador del compromiso esté presente, mientras que la proximidad al resto del comité de dirección compuesto de los tres directivos más relevantes no ha revelado una relación significativa con la implementación de la estrategia. Estos hallazgos confirman que la proximidad al

mayor impulsor de la innovación afecta el proceso de cambio. Los impulsores del cambio customizan su mensaje en función del público objetivo (Howell, 2005) y usan la retórica para captar una respuesta emocional de su audiencia (Green, 2004). En el caso de la estrategia de cronicidad, la pasión del impulsor de innovación y sus habilidades de retórica magnificó el efecto de proximidad.

Respecto a los resultados de centralidad, en base a la información recibida en las entrevistas se deduce que los procesos de gestión del cambio que requieren una rápida difusión de conocimiento explícito y no tácito a través de todos los niveles de la red se pueden beneficiar más en un estado inicial de una red dispersa compuesta de lazos sueltos que de una red cohesiva con conexiones fuertes.

La literatura vigente ha analizado el rol de las direcciones intermedias en las implementaciones de innovación sanitarias (Ferlie et al, 2005; Plsek & Wilson, 2001); este estudio se centra en la influencia de las redes sociales de la alta dirección en la etapa inicial de una reforma estratégica, el momento crucial para garantizar su éxito. Los resultados se pueden aplicar a sectores similares al sanitario, caracterizados por instituciones fuertemente politizadas y reguladas e inmersas en una cultura más individualista que colectiva.

Asimismo, este estudio desarrolla el análisis de las redes sociales bajo la premisa de la lógica institucional. Al comienzo de un proceso de difusión el aspecto discursivo sobre el contenido de los mensajes y la manera de transmitirlos desempeña un papel vital en moldear las prácticas y consolidar su legitimidad. Una vez que las nuevas prácticas se institucionalizan, la prevalencia de argumentos por el cambio declina. La teoría institucional plantea que la

disponibilidad hacia el cambio de los individuos es el resultado del proceso de interacción social en el que los individuos son influidos por otros, que moldean su actitud y proceso de toma de decisiones (Amis & Aïssaoui, 2013; Green, 2004).

Investigaciones previas indican que el contexto institucional influye el tipo de red más apropiada para la estimulación de la innovación (Yang, Hu, Wu & Xie, 2019). Kraft y Bausch (2018) manifiestan que en los contextos fuertemente politizados y regulados, como el sector sanitario, las redes dispersas son más beneficiosas que las cohesionadas para el impulso de la innovación. Los resultados de este estudio confirman este argumento.

En los últimos 50 años ha habido cambios significativos en el sector sanitario en términos de creencias y procesos que legitiman las prácticas. Normativas y reglamentos proveen a los hospitales con una guía estandarizada de servicios para los pacientes, pero las redes sociales afectan la adopción de nuevas prácticas clínicas y administrativas (Currie & Guah, 2007). Las reformas son necesarias para afrontar retos sanitarios como la pandemia actual del Coronavirus. Por ejemplo, la Estrategia de Cronicidad permite la monitorización remota de los enfermos crónicos — identificar quienes son, donde viven y que medicación están tomando — y mantener el contacto con el paciente en las ocasiones en las que los servicios de emergencia estén saturados. Estos controles aportan un valor añadido durante las pandemias porque los enfermos crónicos o pacientes ancianos ya están identificados en el radar y usando ayuda telemática mientras permanecen seguros en su casa. Considerando que una epidemia puede surgir cada tres o cuatro años (Bengoa, 2020), el flujo de

información y comunicación (redes sociales) en la red sanitaria es clave para confrontar las pandemias y otras adversidades que puedan surgir en el futuro.

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Table 1

Commitment and Implementation Items: Confirmatory Factor Analysis

Items	Commitment factor	Implementation factor
Com 1: I am familiar with the main elements of the Basque strategy for chronic patients	**.786**	.021
Com 2: I agree with the main elements of the Basque strategy for chronic patients	**.807**	.118
Com 3: I apply the principles of the Basque strategy for chronic patients	**.870**	.160
Com 4: I am a strong advocate of the Basque strategy for chronic patients	**.823**	.151
Com 5: The Basque strategy for chronic patients affects my daily work	**.826**	.071
Com 6: My superiors take the Basque strategy for chronic patients into account when taking decisions.	**.655**	.233
Com 7: I believe that the Basque strategy for chronic patients has a positive effect on the Basque Health System	**.682**	.143
Com 08: I make an effort to achieve the goals of this strategy	**.867**	.113
Com 09: I am actively involved in the implementation of this strategy	**.905**	.068
Com 10: I encourage my team to overcome the problems of implementing the strategy	**.879**	.138
Com 11: When difficulties arise in implementing this strategy, I play an active role	**.853**	.179
Com 12: When problems arise in its implementation, I consult those who might provide assistance	**.808**	.164
Com 13: I make attempts to activate appropriate others to assist in the implementation of this strategy	**.809**	.227
Com 14: I attempt to activate key personnel in the implementation of this strategy	**.837**	.165
Impl 01: It designs individualized and patient-centered treatments	.176	**.625**
Impl 02: We work as a team, sharing information and resources	.194	**.604**
Impl 03: We work in an integrated manner with other departments and levels	.143	**.640**
Impl 04: Patients are given autonomy	.126	**.675**
Impl 05: Nurses play an active role in social health care	.036	**.669**
Impl 06 We work in an integrated manner with other organizations	.133	**.670**
Impl 07: Patients are educated about the prevention and treatment of their illness	.130	**.720**
Impl 08: Preventative health care is prioritized over the treatment of illness	.056	**.694**
Impl 09: The use of new techniques is maximized in the individual treatment of patients	.054	**.560**
Impl 10: The organization promotes preventative health care	.179	**.604**
Impl 11: Patients are listened to attentively	-.016	**.765**

Com= Commitment; Impl= Implementation

Table 2

Factor analysis for the three measures of implementation

	Factor 1
1.- Auditing IEMAC scores	.591
2.- External Judges	.815
3.- Self-Assessment of Implementation	.717

Table 3

D*escriptives and correlation matrix at the individual level*

Variable	Mean	1	2	3	4	5
1. Tenure in the organisation	*21*	–				
2. Network Proximity to the champion	*1.48*	-.17**	–			
3. Network network centrality	*165.44*	.02	.59**	–		
4. Commitment	*4.12*	-.01	.29**	-.30**	_	
5. Implementation evaluation (self-assessment)	*3.61*	.032	.02	.03	.42**	–

*p<.05; **p<.01. Descriptive Statistics and Pearson Correlation Coefficients at Individual correlations (N=231, correlations with implementation N = 176).

Table 4

Descriptives and correlation matrix at the organizational level

Variable	Mean	SD	1	2	3	4	5	6
1. Tenure in the organisation	*21.39*	*3.91*	_					
2. Size	*1087.09*	*1047.12*	-.01	_				
3. Network Proximity to the champion	*2.09*	*.36*	-.13	-.13	_			
4. Network network centrality	*903.11*	*304.13*	-.12	.69**	-.50*	_		
5. Commitment	*4.12*	*.36*	-.16	-.20	.21	-.16	_	
6. Implementation evaluation (Factor Score)		[1]	-.03	-.40	.16	-.36	.51*	_

*p<.05; **p<.01. Descriptive Statistics and Pearson Correlation Coefficients at organizational level correlations (N=22).

[1] Not aplicable for these value as they are in standardized format.

Table 5

Results from regression analysis

	Commitment to STTC		**Implementation**		
Variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Tenure	-.17	-.19	-.09	-.09	-.02
Size	-.08	-.06	-.38**	-.26	-.37
Network Proximity		.43*		.44*	.28
Network Centrality		-.14		-.14	.02
Commitment					.37*
adjR^2	*0.06*	*0.20*	*0.06*	*0.20*	*0.27*
F	*1.65*	*2.27**	*1.65*	*2,60**	*2.62**
ΔR^2		*0.19*		*0.20**	*0,10*
ΔF		*2.10*		*2.60*	*2.81+*

N=22 organizations. +p<.10, * p<.05, **p<.01

Table 6

Results from factor score path analysis

						90% Confidence Interval	
Paths	**β**	**S.E.**	**C.R**	**p-value**	**Sig.**	**Lower Bound**	**Upper Bound**
Total Effects							
IMP ←--- PTC	.434			.01	*	.083	.652
IMP ←--- CD	-.444			.045	n.s.	-.965	.068
Direct Effects							
COM ←--- PTC	.444	.192	2.311	.021	*	.133	.700
COM ←--- CD	-.154	.192	-.802	.423	n.s.	-.477	.403
IMP ←--- COM	.334	.190	1.757	.079	*	.005	.622
IMP ←--- PTC	.287	.188	1.527	.127	n.s.	-.030	.533
IMP ←--- CD	-.302	.170	-1.776	.076	n.s.	-.566	.058
Indirect Effects							
IMP←--- COM←--- PTC	.149			.051	*	.028	.444
IMP←--- COM←--- CD	-.052			.485	n.s.	-.297	.103

N=22; *p<.10**p<.05; Sig. indicates a significant direct effect at 0.10; n.s.: not significant. COM = Commitment; PTC = Proximity to Champion; CD = Centrality Degree; IMP = Implementation

Table 7

Results from MSEM Analysis

Between Level	**β**	**S.E.**	**Est./S.E.**	**p-value**	**Sig.**
Direct Effects					
COM ←--- PTC	1.66	.54	3.04	.00	***
COM ←--- CD	.00	.00	.30	.38	n.s.
IMP ←--- COM	5.60	.3.61	1.55	.06	*
IMP ←--- PTC	-7.17	8.76	-.81	.20	n.s.
IMP ←--- CD	.001	.003	-.38	.34	n.s.
Intercepts					
IMP	-9.36	2.67	-3.50	.00	***
COM	1.14	.46	2.44	.00	***
Indirect Effects					
IMP←--- COM←--- PTC (a*c)	9.33	6.62	1.40	.07	*
IMP←--- COM←--- CD (b*c)	.00	.02	.29	.38	n.s.

N=167; *p<.10**p<.05; ***p<.01; Sig. indicates a significant direct effect at 0.10; n.s.: not significant. COM = Commitment; PTC = Proximity to Champion; CD = Centrality Degree; IMP = Implementation

Figure 1

Hypothesized Research Model

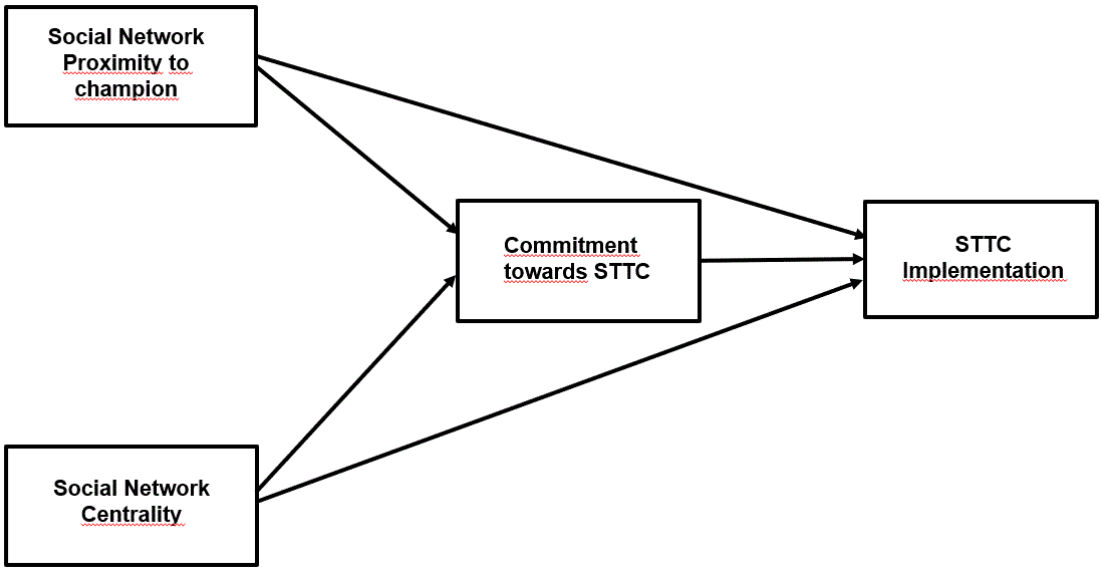
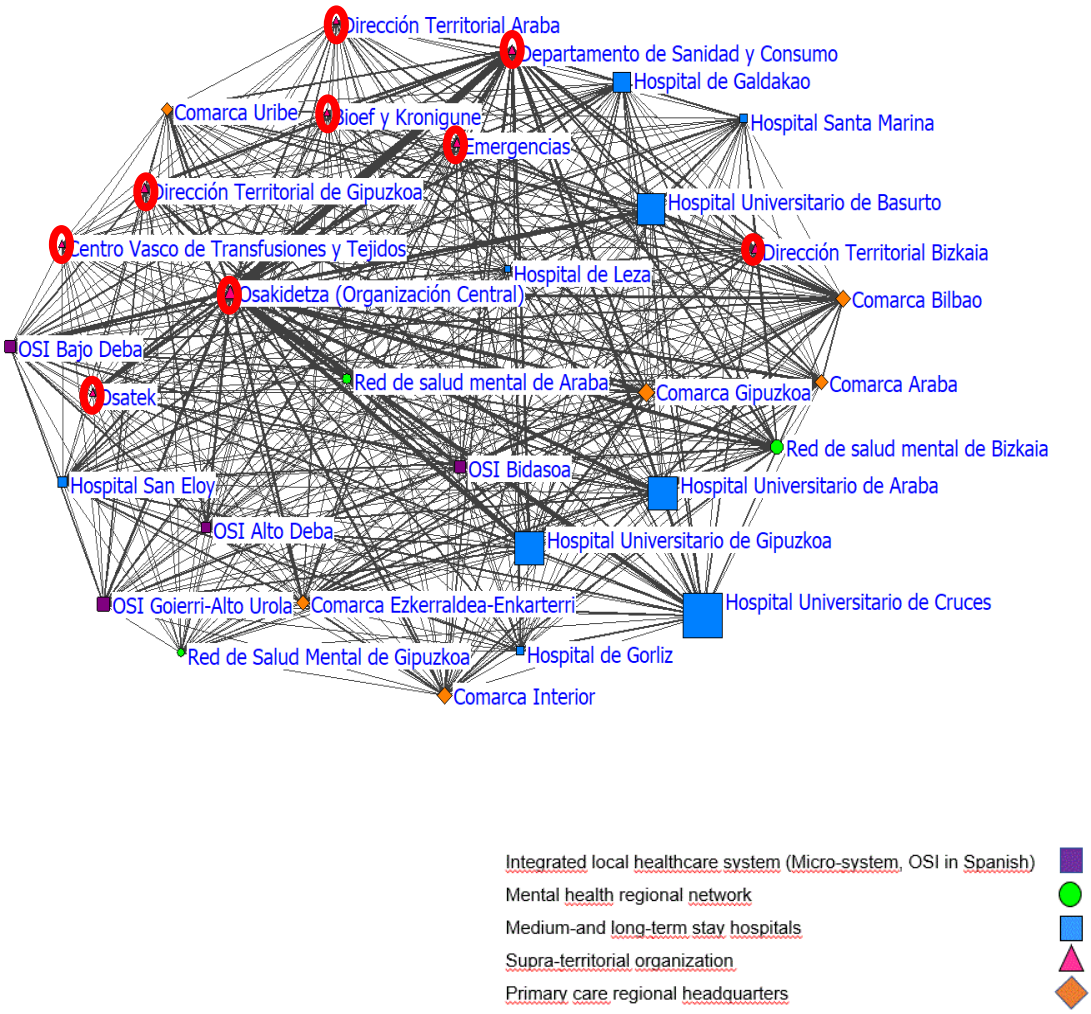


Figure 2

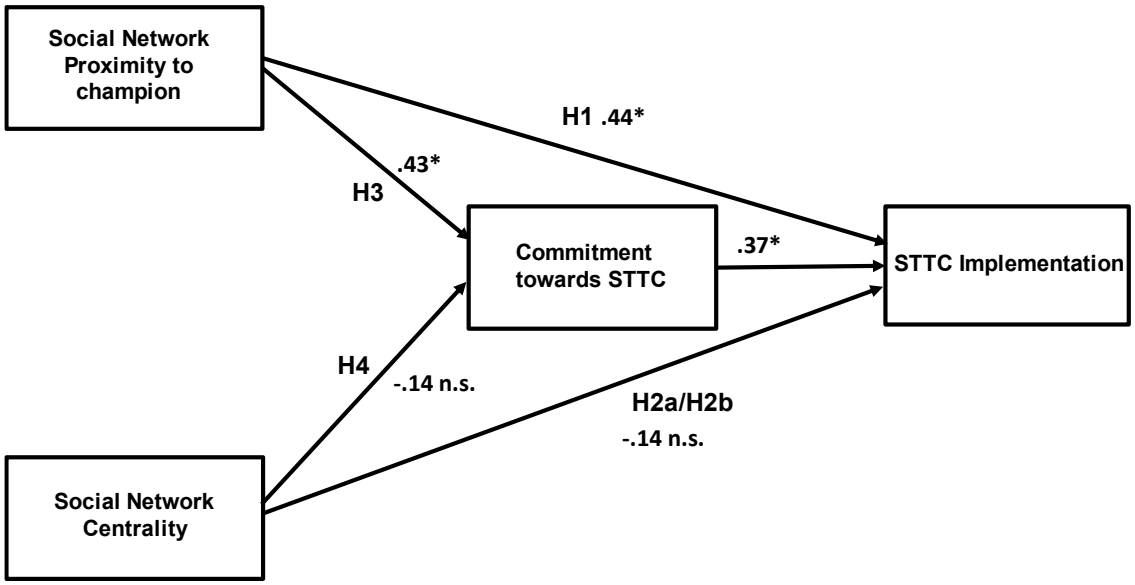
The 31 health care organizations of the Basque Country Health Network



Note: The organizations marked in red are not considered in the sample as they do not provide direct assistance to patients.

Figure 3

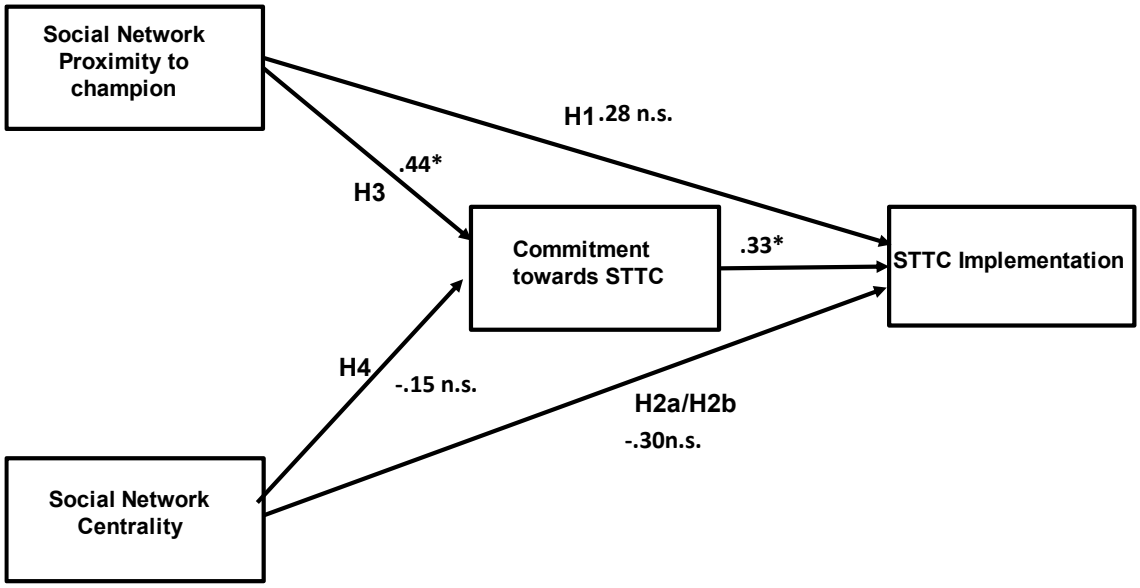
Results from regression analysis



N=22.; * p<.05, ** p<.01; n.s.: not significant

Figure 4

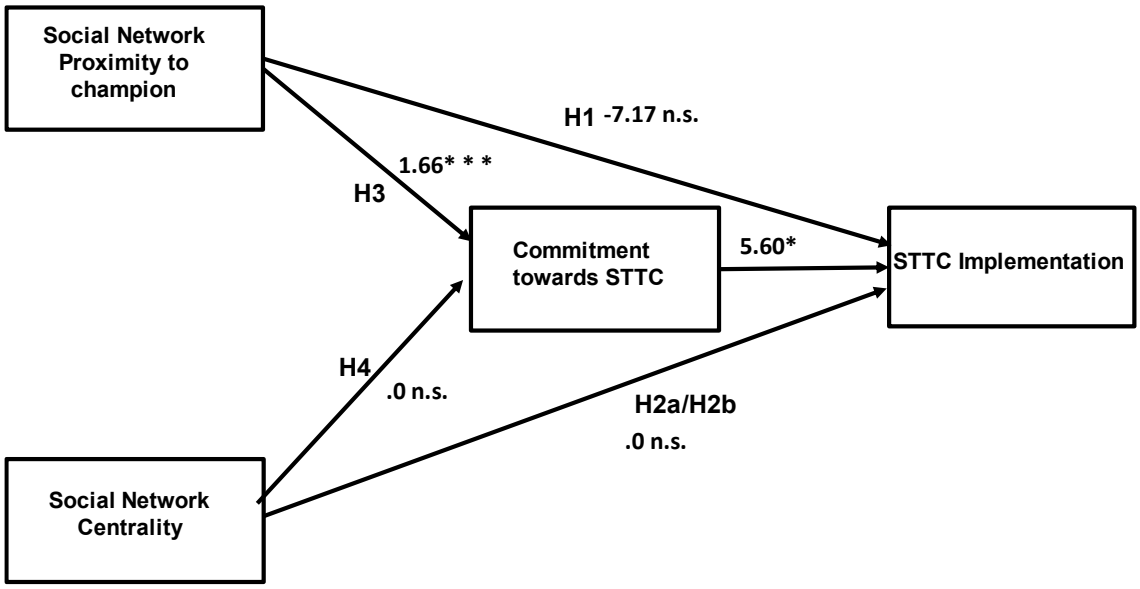
Results from factor score path analysis



N=22.; * p<.05, ** p<.01; n.s.: not significant

Figure 5

Results from MSEM analysis



N=22.; * p<.05, ** p<.01; n.s.: not significant

APPENDIX

A. The Strategy to Tackle Chronic Illness (STTC) includes 14 Strategic Projects described in Bengoa (2010, 2012).

Population Health Management

1. "Stratification and targeting of the population" (Bengoa, 2012, p. 25))

Stratification is commonly used to calculate the classification of future medical demands on a health service as well as the degrees of complexity and co-morbidity. It allows the system to classify patients into groups according to the morbidity of the prevalent pathologies and consequently offer specifically targeted proactive care.

2. "Prevention and promotion" (Bengoa, 2012, p. 26)

The Public Health Act is designed to stem the evolution of chronic illnesses and ease the lives of those already suffering from them, protecting them from developing related conditions. For this to be successful, collaboration with local community players, such as local governing bodies, old people's homes, schools, etc. is essential.

3. "Patient empowerment/autonomy" (Bengoa, 2012, p. 27)

Active patients are well-informed about their condition and accept responsibility for playing an active role in treatment. For this to happen, patients need both face-to-face and tele-contact with a medical team. For this reason, the Basque health department drew up plans for self-management education as well as the organization of a computerized network for connecting active patients to each other.

Continuity of Care

4. **"The creation of a network of activated and connected patients by the associations of chronic Patients using web 2.0 technologies**" (Bengoa, 2010, p. 41)

The network enables chronic patients to interact with others in similar situations to provide mutual support for managing not only their medical conditions but also patient well-being, involving family, social, and emotional factors.

The network is based on Web 2.0 technology and there are plans to extend the platform to unite all associations that are related to the social aspect of healthcare.

5. **"Integrated Electronic Health Record"** (Bengoa 2012, p. 31)

Osabide is an electronic medical records program which stores the medical records of all patients registered at any level within the Basque health system.

6. **"Integrated Care"** (Bengoa, 2012, p. 38)

Given the need to improve the overall system and to enable it to function more efficiently, particularly regarding the delivery of integrated care and continuity, initiatives were introduced to address all levels of organization — macro, meso and micro. At the macro level Integrated Healthcare Organizations were created (OSI in Spanish); at the meso level Population Intervention Plans were set up to define a roadmap for the micro-systems; and at the micro level 38 bottom-up Integrated Care Projects were instigated which, if successful, would be extended to cover the rest of the micro-systems.

7. **"Development of Sub-acute Hospitals"** (Bengoa, 2012, p. 37)

To improve the treatment, recovery, and rehabilitation for chronic patients, a new care model of sub-acute hospitals with closer community ties was launched regionally.

8. "Advanced nursing competencies" (Bengoa, 2010, p. 47)

To better provide for chronic patients, the role of nurses was redefined as one of greater responsibility.

9. "Coordination with social healthcare" (Bengoa, 2012, p. 35)

Guidelines were set up to alleviate the pressure on health and social care due to increased demand and to reform their organization to guarantee a more consistent and sustainable coordination that would enable chronic patients to be cared for at home.

10. "Funding and Service Agreements" (Bengoa, 2012, p. 33)

To accelerate the pace of micro-system reform new ways of financing healthcare providers were needed. These involved a gradual change towards a system of awarding funds to the relevant executive territories based on the risk factors of their specific populations and their health outcomes. It also encouraged better horizontal communication with and between suppliers, especially with regard to decision-making and mobilizing resources to achieve shared goals.

Adapted Interventions

11. "Osarean: A Multichannel Health Service Centre" (Bengoa, 2012, p. 29)

The aim of Osarean is to facilitate communication between patients and families and the Basque health system by the use of technology: telephone, e-mail, video-conferencing, TV, and on-line networks and platforms, thus enabling

primary care to be delivered remotely without physical visits to health centers.

12. **“Electronic prescriptions (e-prescriptions)”** (Bengoa, 2012, p. 35)

Electronic prescriptions were developed for primary and specialist health care thus improving patient safety by avoiding adverse effects and inappropriate prescriptions. In addition, the 60% reduction in the duplication of medicines implied a significant saving.

13. **“Creation of Centre of Research for Chronicity (Kronigune)” (Bengoa, 2010, p. 55)**

Kronigune undertakes research into the best techniques to deal with challenges arising from chronicity and expands both local and global knowledge for innovation in management performance for health systems.

14. **“Innovation from healthcare professionals (Bottom-up innovation projects)”** (Bengoa, 2012, p. 39)

The Department of Health and Consumer Affairs set up alternative funding channels to motivate experimentation at the lowest rungs of professional healthcare. Furthermore, Program Contracts (service agreements) were introduced linking service organizations´ financing to the delivery and STTC implementation of new professional projects at any level of the micro-system.

B. IEMAC Survey

The IEMAC/ARCHO is an assessment instrument designed to perform a self-assessment of the degree of implementation of chronic care models that was developed by the MacColl Institute for Health Care Innovation. The IEMAC questionnaire approaches the organization as a system, examines evidence to formulate interventions, and promotes development through on-going assessment and the new ideas for the care for chronic patients. It identifies the degree of STTC implementation of strategies. As a change management tool for clinicians, managers, and health and social professionals, it provides a tool for comparing similar organizations and provides guidelines for planning, resource allocation, and organizational changes required for the desired chronicity scenario.

The questionnaire covered the following six dimensions:

1. “Organization of the health system” (p. 14): implementing health policies relating to leadership, strategic frameworks, and funding schemes.
2. “Community health” (p.21): connecting the top-level strategy with different health communities and stakeholders.
3. “Healthcare model” (p. 25): defining interaction and integration process models among healthcare communities (e.g., primary versus specialized care).
4. “Self-management” (p. 34): creating support for patients to manage their own care.

5. “Clinical Decision Support” (p. 40): creating shared guidelines to support clinical decision-making.
6. “Information systems” (p. 44): determining the STTC implementation of integration processes and communication objectives.

In addition, 27 components stem from the six dimensions, and 75 interventions emanate from the components. The following example of Dimension 1 illustrates the three levels of classification:

1. “Dimension 1: Organization of the health system” (p. 14)

1.1. “Leadership commitment” (p.15)

1.1.1. “Explicit visions of the chronic care model transmitted by the leaders” (p. 15)

The following describes the second level of 27 components that proceed from the six dimensions.

“Dimension 1: Organization of the health system” (p. 14)

1.1. “Leadership commitment” (p. 14)

1.2 “Strategic framework” (p. 14)

1.3 “Population-based approach” (p. 14)

1.4 “Evaluation, improvement, and innovation” (p. 14)

1.5 “Funding scheme” (p. 14)

1.6 “Social and healthcare policies” (p. 14)

“Dimension 2: Community health” (p. 21)

2.1 “Community health strategies” (p. 21)

2.2 “Alliance with community stakeholders” (p. 21)

2.3 “Connecting the patient to community resources” (p. 21)

“Dimension 3: Healthcare model” (p. 25)

3.1 “Patient-centered care” (p. 25)

3.2 “Professional competencies” (p. 25)

3.3 “Multidisciplinary teamwork” (p. 25)

3.4 “Integration and continuity of care” (p. 25)

3.5 “Active patient follow-up” (p. 25)

3.6 “Innovation in interactions between patients and professionals” (p. 25)

3.7 “Clinical management of chronic disease and incentive schemes” (p. 25)

“Dimension 4: Self-management Support” (p. 34)

4.1 “Patient assessment for self-management” (p. 34)

4.2 “Structured therapeutic education” (p. 34)

a. “Psycho-social activation of the patient and mutual support” (p. 34)

b. “Tools to facilitate self-management” (p. 34)

c. “Shared decision-making” (p. 34)

“Dimension 5: Clinical Decision Support” (p. 40)

5.1 “Protocols and shared guidelines” (p. 40)

5.2 “Continued education and training” (p. 40)

5.3 “Consultancy and liaison” (p. 40)

“Dimension 6: Information systems” (p.44)

6.1 “Information for management and clinical practice” (p. 45)

6.2 “Integration of patient clinical data” (p. 46)

6.3 “Communication of clinical information between professionals” (p. 47)

Source: Contel, J.C., Fernández, P., Guilabert, M., Mira, J.J., Nuño, R., Solas, O., & Toro, N. (2011). *IEMAC-ARCHO. Assessment of Readiness for Chronicity in Health Care Organizations*. Fundación Vasca de Innovación e Investigación Sanitarias (BIOEF), Universidad Miguel Hernández (UMH), Merck Sharp & Dohme (MSD). Retrieved from www.iemac.org

C. Survey for 231 Managers of the Basque Country Health Service and Department of Health and Consumer Affairs

Survey on Social Networks

Name: _____

Position: _____

Organization: _____

This survey forms part of the evaluation process of the STTC implementation of the Strategy towards Chronic Patients during the present Legislature. The purpose of the survey is to discover the role played by social networks and the impact of leadership styles on the STTC implementation of the strategy. The information gathered will help to give us a deeper understanding of these intangible elements in the current process of change.

The survey is divided into various sections in which information is solicited on your workplace social networks, your opinions on various aspects of the program, as well as your views relating to the leadership of the main health Organizations in our micro-systems.

Your answers will be kept strictly confidential. It would be very useful for us to find out what role social capital plays in implementing health programs and practices. Your individual responses will be grouped according to organizations and only aggregated data will be made public.

Section 1: Social Networks

The successful STTC implementation of health policies in a community depends largely on the ability of organizations and health centers to share information and learn from each other's experiences. In this section we are interested in finding out the degree of interconnectivity between the leadership of the principal organizations of the Basque Country Health System (*Basque Country Health Service*). Although an exhaustive list would be unmanageable, we have attempted to include a majority of the managers and key personnel belonging to these organizations. Below, we ask you to indicate the degree to which you interact with the managers on the list (including those of your own organization) using the scale given. This represents your workplace social network.

Enter a number from 1 to 4 next to those people with whom you frequently exchange work-related information and who are important sources of support, or whom you contact when you need some information on procedures or the STTC implementation of health policy. If you do not know or exchange information with a certain person on the list, leave the space blank. We have also added some blank spaces at the end where you can include names which do not appear on the printed list.

Blank	**1**	**2**	**3**	**4**
Do not know or interact with the person	Know the person	Know the person and interact occasionally	Know the person well and interact frequently	Know the person well and interact very often (almost daily)

DEPARTMENT AND BASQUE COUNTRY HEALTH SERVICE

Department of Health and Consumer Affairs

1.- Name 1 _____
2.- Name 2 _____
etc _____

Basque Country Health Service (Central Organization)

1.- Name 1 _____
2.- Name 2 _____
etc _____

VIZCAYA

Dirección Territorial de Sanidad y Consumo

Name 1 _____
Name 2 _____
etc _____

Comarca Interior

Name 1 _____
Name 2 _____
etc _____

Comarca Ezkerraldea-Enkarterri

Name 1 _____
Name 2 _____
etc _____

Red de Salud Mental de Vizcaya

Name 1 _____
Name 2 _____
etc _____

Emergencias

Name 1 _____
Name 2 _____
etc _____

Hospital Universitario de Basurto

Name 1 _____
Name 2 _____
etc _____

GIPUZCOA

Dirección Territorial de Consumo

Name 1 _____
Name 2 _____
etc _____

Hospital Universitario Donostia

Name 1 _____
Name 2 _____
etc _____

Red de Salud Mental Guipúzcoa

Name 1 _____
Name 2 _____
etc _____

OSI Goierri – Alto Urola

Name 1 _____
Name 2 _____
etc _____

ALAVA

Dirección Territorial de Sanidad y Consumo

Name 1 _____
Name 2 _____
etc _____

Hospital Universitario de Araba

Name 1 _____
Name 2 _____
etc _____

Hospital Galdakao-Usansolo

Name 1 _____
Name 2 _____
etc _____

Hospital Universitario de Cruces

Name 1 _____
Name 2 _____
etc _____

Osatek

Name 1 _____
Name _____
etc _____

Hospital de Leza

Name 1 _____
Name 2 _____
etc _____

Comarca Araba

Name 1 _____
Name 2 _____
etc _____

Section 2: Commitment to STTC Strategy

Instructions: This section contains a series of questions about the strategy towards chronic patients in the Basque Country. Using the scale below, indicate how often you express the following opinions and conduct to your team:

1 ***Almost never***	**2** ***Rarely***	**3** ***Sometimes***	**4** ***Usually***	**5** ***Almost always***

1.	I am familiar with the main elements of the Basque strategy for chronic patients	1 2 3 4 5
2.	I agree with the main elements of the Basque strategy for chronic patients	1 2 3 4 5
3.	I apply the principles of the Basque strategy for chronic patients	1 2 3 4 5
4.	I am a strong advocate of the Basque strategy for chronic patients	1 2 3 4 5
5.	The Basque strategy for chronic patients affects my daily work	1 2 3 4 5
6.	My superiors take the Basque strategy for chronic patients into account when taking decisions	1 2 3 4 5
7.	I believe that the Basque strategy for chronic patients has a positive effect on the Basque Country Health System	1 2 3 4 5
8.	I make an effort to achieve the goals of this strategy	1 2 3 4 5
9.	I am actively involved in the STTC implementation of this strategy	1 2 3 4 5
10.	I encourage my team to overcome the problems of implementing the strategy	1 2 3 4 5
11.	When difficulties arise in implementing this strategy, I play an active role	1 2 3 4 5
12.	When problems arise in STTC implementation, I consult those who might provide assistance	1 2 3 4 5
13.	I make attempts to activate appropriate others to assist in the STTC implementation of this strategy	1 2 3 4 5
14.	I attempt to activate key personnel in the STTC implementation of this strategy	1 2 3 4 5

Section 3: STTC implementation of STTC Strategy

Instructions: This section contains a series of characteristics about the innovative climate and the attitudes towards health in your organization. Using the scale below, indicate with a circle the degree to which these characteristics apply to or describe your organization.

1	**2**	**3**	**4**	**5**
Not at all	***Hardly***	***Somewhat***	***Quite a lot***	***A lot***

1.	It designs individualized and patient-centered treatments	1 2 3 4 5
2.	We work as a team, sharing information and resources	1 2 3 4 5
3.	We work in an integrated manner with other departments and levels	1 2 3 4 5
4.	Patients are given autonomy	1 2 3 4 5
5.	Nurses play an active role in social healthcare	1 2 3 4 5
6.	We work in an integrated manner with other organizations	1 2 3 4 5
7.	Patients are educated about the prevention and treatment of their illness	1 2 3 4 5
8.	Preventative healthcare is prioritized over the treatment of illness	1 2 3 4 5
9.	The use of new techniques is maximized in the individual treatment of patients	1 2 3 4 5
10.	The organization promotes preventative healthcare	1 2 3 4 5
11.	Patients are listened to attentively	1 2 3 4 5

Section 4: Your Personal Data

1. Gender: ☐ Male ☐ Female 2. Age ☐

3. Nº of years working for the organization ☐

4. Years in current position ☐

5. Years as a manager (in charge of subordinates) ☐

6. Years of experience in the health sector ☐

7. Years of experience in the private sector ☐

8. If you have spent time training or working abroad, please indicate country and duration of stay.

_____

_____

_____

9. Educational level: ☐ Basic secondary education ☐ High School education ☐ Diploma ☐ Undergraduate degree & MSc ☐ Doctorate

10. If you have attended university, please indicate your degree specialty ☐

11. If you have attended a course specializing in health issues, please indicate the specialty

_____

_____

Source: Eva Eguiguren´s thesis data capture

D. Questions for the Interviews

Internal

1. Please describe the experience relating to the adoption of the strategy towards chronic patients in your organization.
2. What stage are you at now in implementing the strategy?
3. What implications has the sanitary reform had on: the organization; management, yourself?
4. Any change confronts a process of resistance. What have been the main barriers? How have they been overcome? What has worked well and what has not?
5. Which groups or roles have been the most important?
6. Technology: to what extent has the adoption of the reform affected technology?

Social Capital

All innovation in the health system is influenced by a series of relations with other organizations and associations.

1. How have relations with other departments and organizations influenced the STTC implementation of the strategy?
2. In your opinion, what influence have the micro-systems had on the adoption of the strategy?
3. For example, in your case, who have you discussed and talked to most about the issues when you needed advice and information?

Leadership

1. What role has the leadership of the organization played in the adoption of the reform?
2. What have you most lacked?
3. Have you felt supported in the STTC implementation of the proposed change in your sphere of the organization?
4. In the future, when you look back on the experience, how do you think you will remember it?

Source: Eva Eguiguren´s thesis data capture