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TESIS DOCTORAL

INTERNATIONALIZATION DYNAMICS AND CLUSTER COMPETITIVENESS:

A COMPREHENSIVE FRAMEWORK FOR REGIONAL GROWTH WITH A MARKETING COOPERATION APPROACH

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PART 1A: RESUMEN EXTENSO

Propósito de la Tesis

Esta tesis explora el proceso de internacionalización y su papel fundamental en el crecimiento y desarrollo de empresas e industrias, enfocándose en los impactos regionales. Examinar los beneficios y desafíos intrincados de la internacionalización desde múltiples perspectivas enfatiza la necesidad de las empresas de ingresar estratégicamente a mercados extranjeros y gestionar con destreza las complejidades de la expansión global. El estudio también profundiza en aspectos clave de la internacionalización de clústeres, incluyendo cómo la proximidad geográfica y no espacial de las firmas, los esfuerzos de marketing colaborativo y la inteligencia de marketing de exportación afectan su alcance global. Esta tesis busca finalmente mejorar y expandir los modelos actuales de proximidad y cooperación, proporcionando nuevas perspectivas que pueden refinar estrategias y políticas para apoyar el crecimiento y la sostenibilidad de los clústeres industriales.

Temas Investigados

- Palabras Clave de la Internacionalización de Clústeres: Identificar palabras clave prevalentes y sus tendencias de uso durante diez años.

- Proximidad e Innovación: Explorar la relación entre las proximidades no espaciales y su impacto en la innovación dentro de los clústeres.

- Inteligencia de Mercado de Exportación: Examinar cómo las organizaciones de clústeres generan y difunden inteligencia de mercado de exportación y el papel de las proximidades no espaciales en este proceso.

- Marketing Ecológico: Para investigaciones futuras, resaltar la interacción entre la cooperación y el marketing verde, centrándose en la sostenibilidad y la innovación.

Esta tesis tiene como objetivo modificar y expandir los modelos existentes de internacionalización de clústeres, proporcionando valiosas ideas para mejorar las estrategias y políticas que apoyan el crecimiento y la competitividad internacional de clústeres e industrias.

Estructura de la Tesis

La tesis está estructurada en dos secciones principales (A y B), cada una con propósitos distintos para apoyar el examen general de la internacionalización de clústeres. La Sección A también se divide en dos partes. La Parte A1 contiene un Resumen de la Tesis que recapitula los principales hallazgos, Agradecimientos de contribuciones y apoyo. La Parte A2 establece un marco fundamental, desarrollándose a lo largo de varios

capítulos: comienza con una Introducción que describe el contexto de la investigación, los objetivos y la estructura, seguido por una Revisión de la Literatura que examina la investigación existente y establece hipótesis. A continuación, el capítulo de Metodología describe los métodos de investigación empleados en las primeras cuatro etapas de la tesis (Investigación 1 a 4). Una sección de Resultados presenta luego contribuciones teóricas y hallazgos empíricos. La Conclusión encapsula las percepciones clave. Posteriormente, un modelo conceptual integral (Investigación 5) propone implicaciones teóricas y direcciones futuras. La sección concluye reconociendo limitaciones y más oportunidades de investigación futura.

La Sección B consolida y reflexiona sobre el trabajo presentado, incluyendo Apéndices que contienen cuestionarios de investigación y un informe sobre una estancia de investigación en la Universidad de Teherán.

Objetivos Clave

Desarrollo del marco

Esta tesis explora las complejidades del proceso de internacionalización y su impacto en la internacionalización de clústeres, enfatizando el papel de la proximidad geográfica y no espacial en el aumento de la competitividad y el fomento de la innovación dentro de los clústeres. Se basa en obras influyentes de Andersen (1993). Se extiende a análisis adicionales por académicos como Porter (2000) y Hutchinson et al. (2009), quienes discuten las estrategias que los clústeres emplean para expandirse y mantener una ventaja competitiva a nivel internacional. Además, este estudio adopta la definición de clústeres de Porter como grupos de empresas interconectadas y ubicadas cercanamente, e instituciones relacionadas (Porter, 1998; 2000). El marco de clúster apoya y requiere colaboración empresarial, mejorando las capacidades innovadoras y la ventaja competitiva al facilitar el intercambio de conocimientos y recursos (Brink, 2018; Gove, 2011). Este análisis integral subraya el papel crítico de la internacionalización de clústeres en la navegación de las complejidades de la expansión global.

Antes de presentar cualquier teoría o modelo, el autor busca entender los problemas de internacionalización del clúster y los factores influyentes. Inicialmente, la investigación explora el campo en evolución del análisis de contenido y la revisión

bibliométrica, empleando tecnologías avanzadas para mejorar las metodologías cualitativas tradicionales, como señalan Martínez-Fernández et al. (2012) y Muñoz-Leiva et al. (2012). El cambio hacia enfoques inteligentes de minería de texto, que simplifican significativamente el proceso de investigación, es destacado por Weismayer y Pezenka (2017) y apoyado adicionalmente por Ding et al. (2001) en su discusión sobre la creciente utilidad del análisis bibliométrico. Empleando análisis de palabras clave, este estudio disecciona el tema de la internacionalización de clústeres, identificando palabras clave predominantes y sus trayectorias durante la última década. Las preguntas de investigación profundizan en las tendencias de palabras clave dentro de la literatura, con el objetivo de determinar las palabras clave predominantes, su densidad y centralidad, y cómo su aplicación ha evolucionado a lo largo de los diez años. Este detallado análisis bibliométrico, que comenzó seleccionando revistas académicas de primer nivel basadas en factores de impacto y obteniendo artículos de 2009 a 2019 a través de Google Scholar, emplea software NVIVO y SciMAT para el análisis de datos. Los hallazgos de este análisis informan el desarrollo de un marco teórico que integra principios de marketing con estrategias para la internacionalización de clústeres. El primer paso de esta tesis destaca cómo los clústeres, definidos como agregaciones geográficas de empresas e instituciones interconectadas, aprovechan la proximidad para mejorar el aprendizaje, la innovación y el desarrollo regional. Esta proximidad

facilita el intercambio de conocimientos y recursos y contribuye al dinamismo económico de una región atrayendo inversiones, mano de obra calificada y competitividad.

En consecuencia, la fase subsiguiente implica delinear con precisión las relaciones entre las diversas dimensiones de proximidad antes de introducir un modelo original y completo. A pesar de que los avances tecnológicos reducen la importancia de la distancia geográfica entre empresas, los clústeres regionales siguen manteniendo una ventaja competitiva debido a la naturaleza multidimensional de la proximidad. Estudios refuerzan este concepto indicando que la proximidad geográfica por sí sola es insuficiente para alcanzar objetivos de sostenibilidad y transformaciones de sostenibilidad corporativa (Albert-Cromarias & Dos Santos, 2020; Kuch, 2017). Una comprensión más profunda de las diversas dimensiones de la proximidad, especialmente aspectos no espaciales como los cognitivos, organizacionales, sociales e institucionales, es esencial para evaluar el éxito de los clústeres y promover la innovación (Boschma, 2005; Joensuu et al., 2015; Ruiz-Ortega et al., 2021; Ernst et al., 2022). En conclusión, esta fase de la tesis explora todas las posibles relaciones entre diferentes dimensiones de la proximidad no espacial diseñando cuatro modelos separados (Figura 1)

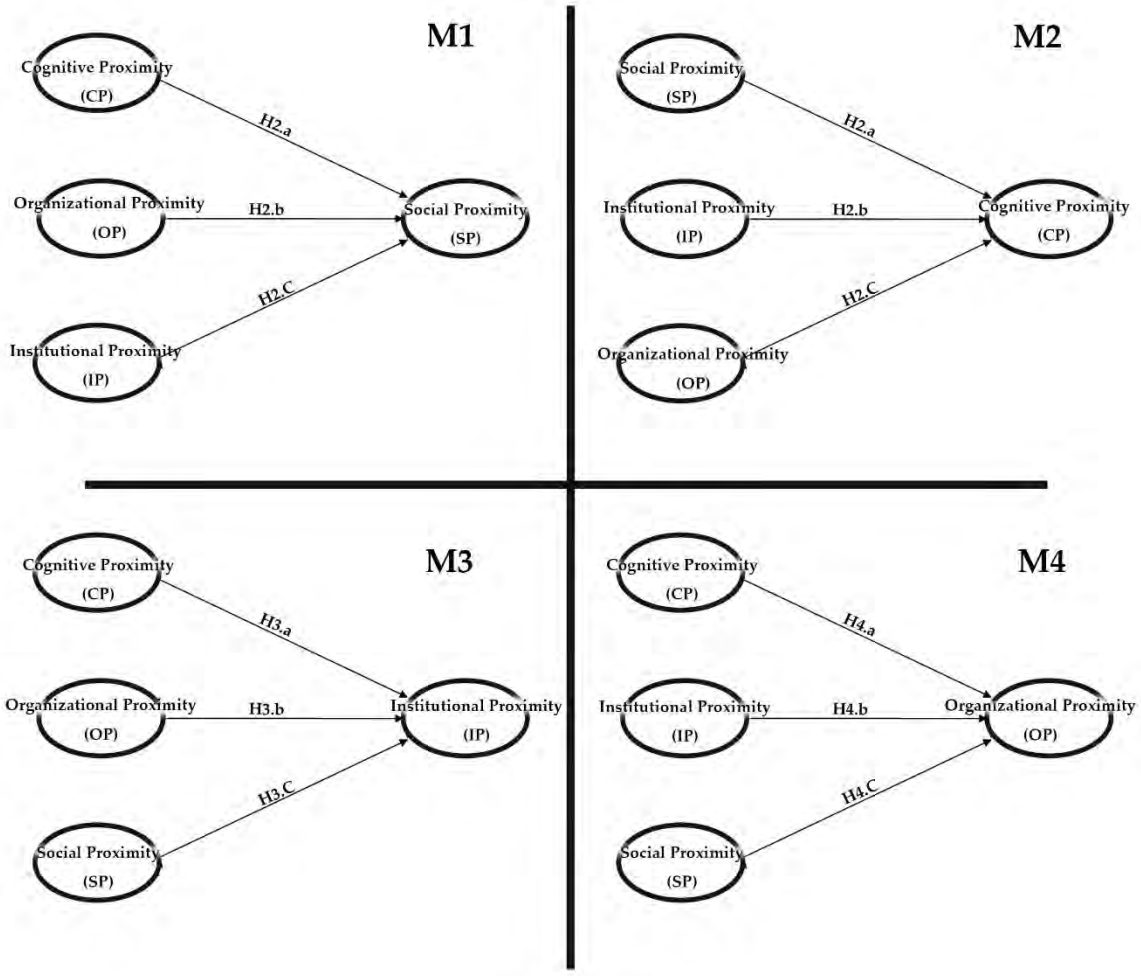

Figure 1- La relación entre proximidades no espaciales

En el tercer paso, esta tesis analiza a fondo el papel de la proximidad dentro de los clústeres, centrándose principalmente en cómo influye en las estrategias de marketing y cooperación que ayudan en actividades exitosas de exportación y en el proceso de internacionalización más amplio. El modelo central de esta tesis profundiza en los

aspectos complejos de la internacionalización de clústeres, enfatizando el papel crucial de la Inteligencia de Mercado de Exportación (EMI, por sus siglas en inglés) en potenciar el rendimiento internacional de las Pequeñas y Medianas Empresas (SMEs). Este estudio avanza investigaciones previas integrando y refinando modelos existentes, sirviendo como un recurso vital para gerentes de clústeres, formuladores de políticas y académicos. Específicamente destaca la importancia estratégica de adaptar políticas a contextos económicos locales para maximizar su impacto, un principio apoyado por la Comisión Europea (2007).

Además, este estudio analiza de manera única diversos clústeres europeos facilitados por la Plataforma de Colaboración de Clústeres Europeos (ECCP). Esta inmersión profunda proporciona percepciones valiosas y desplaza el enfoque analítico de los miembros individuales del clúster a las organizaciones que lideran estos clústeres. Para resumir, esta sección de la tesis se adentra en el papel de las organizaciones de clúster en promover iniciativas colaborativas e intercambio de conocimientos. Proporciona percepciones más profundas sobre la dinámica de la internacionalización de clústeres y la generación y diseminación de EMI. Esta exploración destaca la necesidad de más

investigaciones para examinar estos aspectos a fondo (Figura 2).

Figure 2- Marco conceptual del modelo principal de la tesis.

Después de abordar las preguntas planteadas en las secciones principales, el siguiente paso es explorar direcciones futuras de investigación y refinar los modelos introducidos. Los capítulos finales analizan de manera exhaustiva y comprensiva la colaboración en marketing sostenible, estableciendo un marco estratégico para potenciar la investigación futura y mejorar el modelo principal de la tesis. Comienza con una extensa investigación preliminar para definir las direcciones de investigación futuras, destacando la interacción esencial entre la cooperación y el marketing ecológico en medio de un enfoque global en la sostenibilidad.

La cuarta fase confirma que integrar estrategias de marketing con esfuerzos colaborativos es crucial para avanzar en la sostenibilidad (Barman et al., 2023). Sin embargo, algunas empresas priorizan las ganancias individuales sobre el bienestar

colectivo, lo que puede obstruir los esfuerzos de conservación ambiental y desarrollo sostenible (D'Attoma & Leva, 2020). En consecuencia, las políticas macroeconómicas actuales exigen cada vez más la colaboración corporativa para alcanzar los objetivos de sostenibilidad, subrayando los beneficios de las estrategias de marketing ecológico cooperativo.

Esta sección de la tesis se extiende a un análisis bibliométrico exhaustivo desde 1990 hasta 2023, basado en datos del Web of Science, analizando 575 artículos en 291 revistas y conferencias líderes utilizando el software VOS viewer. Este análisis proporciona percepciones cuantificables sobre los paradigmas de investigación en evolución, instando a académicos y formuladores de políticas a desarrollar estrategias de marketing sostenible innovadoras que incorporen modalidades cooperativas para fomentar prácticas sostenibles. El estudio identifica tendencias emergentes y términos clave en la literatura sobre cooperación y marketing ecológico, reconociendo publicaciones y académicos significativos y destacando la urgencia de promover el comportamiento del consumidor sostenible y mejorar los esfuerzos cooperativos (Dangelico & Vocalelli, 2017).

Finalmente, esta tesis doctoral resume la investigación realizada e introduce un modelo conceptual para guiar futuras investigaciones en este campo. Esta sección

subraya la integración de la sostenibilidad ambiental en los modelos centrales de la tesis, reflejando su creciente importancia en las discusiones contemporáneas sobre internacionalización, cooperación y marketing, con revisiones de la literatura que resaltan la necesidad de iniciativas de marketing ecológico y promoviendo la participación corporativa para la sostenibilidad holística (Dangelico & Vocalelli, 2017). La tesis también explora cómo las relaciones entre empresas y las proximidades contribuyen a la innovación colaborativa, especialmente bajo las presiones competitivas del marketing verde, lo que requiere un análisis matizado del impacto de estas proximidades en la Cooperación de Marketing ecológico (GMC) (Boschma, 2005; Porter, 2000; Dangelico & Vocalelli, 2017) (Figura 3).

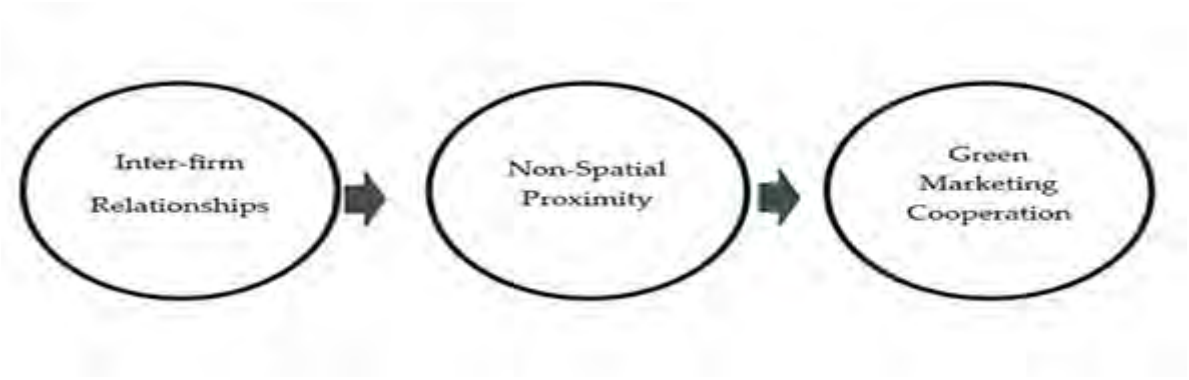

Figure 3- El marco conceptual para futuras investigaciones.

Metodología de la tesis

Esta tesis doctoral emplea metodologías diversas para abordar sus objetivos, preguntas de investigación e hipótesis, incluyendo enfoques cualitativos y cuantitativos.

Revisión Bibliométrica Basada en Palabras Clave

El primer estudio utiliza una revisión bibliométrica basada en palabras clave para desarrollar una comprensión integral de la internacionalización de clústeres. Este método implica analizar la frecuencia de uso de palabras clave, revisar la literatura y mapear las relaciones entre los documentos seleccionados para evaluar la naturaleza y el alcance de estas relaciones a lo largo del tiempo. El estudio emplea SciMAT, una herramienta avanzada de mapeo científico, para realizar análisis dentro de un marco longitudinal. La investigación sigue una metodología de ocho pasos para recopilar y analizar palabras clave de artículos seleccionados, asegurando una revisión exhaustiva de la literatura.

La recopilación de datos involucró la identificación de las principales revistas de marketing y gestión de negocios internacionales utilizando el SCImago Journal Rank (SJR). Los artículos se seleccionaron en función de su relevancia para las preguntas de investigación e hipótesis, y se utilizaron palabras clave como "internacionalización" y "clúster," junto con sus sinónimos, para filtrar los artículos. El estudio analizó 152 artículos publicados en revistas de alto nivel, categorizando 585 palabras clave en 113

ítems. SciMAT se utilizó para la clasificación y el mapeo de palabras clave, proporcionando un análisis detallado de las relaciones entre las palabras clave y su evolución a lo largo del tiempo. Este enfoque ofrece un marco robusto para comprender las dinámicas de la internacionalización de clústeres y establece la base para los modelos principales en la tesis.

Análisis Cuantitativo de Organizaciones de Clústeres

Esta tesis se centra en los gerentes de clústeres regionales a través de dos estudios de investigación cuantitativos utilizando una única fuente de datos para enfatizar los atributos únicos de sus clústeres. Los datos se recopilaron de miembros de la Plataforma de Colaboración de Clústeres Europeos (ECCP) a través de una encuesta en línea distribuida a 1087 organizaciones de clúster. Se recibieron 99 respuestas válidas de 21 países europeos, reflejando una amplia gama de industrias. Además de preguntas sobre información demográfica y características del clúster, la encuesta principal comprende 28 preguntas. Se empleó una escala Likert de 7 puntos para evaluar los principales ítems del cuestionario. Esta tesis utilizó el modelado de ecuaciones estructurales (SEM) para analizar los datos recopilados. Además, la encuesta incluyó una pregunta inicial para

seleccionar exclusivamente clústeres regionales y cuatro preguntas al final para recopilar información demográfica, como país, industria emergente, nivel y tamaño del clúster.

El primer estudio cuantitativo (Investigación 2) exploró la relación entre la proximidad no espacial e incluyó cuatro modelos distintos para evaluar estas influencias. En consecuencia, esta sección utilizó solo la parte del cuestionario diseñada para medir estos cuatro factores.

La tercera fase de la tesis (Investigación 3) constituye la sección principal. Busca entender cómo la proximidad no espacial influye en los clústeres en la generación y diseminación de inteligencia de mercado de exportación a través de la cooperación de marketing. Este modelo empírico empleó escalas integrales para medir la proximidad social, cognitiva, institucional y organizacional, junto con la cooperación de marketing y la generación y diseminación de inteligencia de mercado de exportación. Los hallazgos ofrecen percepciones sobre cómo los líderes de clúster pueden mejorar la inteligencia de mercado de exportación y reforzar los esfuerzos de internacionalización.

Análisis Bibliométrico para Explorar la Cooperación en Marketing Ecológico

El cuarto estudio explora la relación entre la cooperación y el marketing verde a través de un análisis bibliométrico para mejorar el análisis y la interpretación de los datos de

investigación. Este estudio realizó un análisis de citas de 575 artículos y revisiones accesados a través de la base de datos Web of Science, mapeando el panorama de investigación sobre marketing verde y cooperación. Los datos se analizaron utilizando el software VOSviewer para un mapeo bibliométrico avanzado, identificando temas de investigación actuales y emergentes, así como publicaciones influyentes.

La metodología de esta tesis combina enfoques cualitativos y cuantitativos para analizar de manera integral la internacionalización de clústeres, la inteligencia de mercado de exportación y la cooperación en marketing verde. Al emplear herramientas bibliométricas avanzadas e integrar tecnologías de software, la investigación ofrece marcos y modelos robustos que mejoran la comprensión de estos fenómenos complejos, proporcionando valiosas ideas para gestores de clústeres, responsables de políticas y académicos.

Hallazgos de la Tesis

Internacionalización de Clústeres y Análisis de Palabras Clave

La tesis comienza examinando las tendencias académicas y el uso de palabras clave relacionadas con la internacionalización de clústeres durante la última década. Utiliza el análisis bibliométrico para identificar temas y tendencias críticas en la literatura desde 2009 hasta 2018. La investigación destaca la importancia del capital social, las estrategias globales y los diferentes tipos de clústeres en la dinámica de los clústeres. Los hallazgos clave resaltan un cambio temático de palabras clave tradicionales como "Red," "Ubicación," y "Global" a temas emergentes como "Tipo de Clúster," "Capital Social," y "Desarrollo." Este cambio indica un enfoque creciente en la integración de la cooperación, la innovación y el rendimiento dentro de los clústeres, al tiempo que se abordan cuestiones contemporáneas como el cambio climático y el capital social.

El análisis revela las palabras clave más utilizadas, incluyendo "Red," "Ubicación y Distancia," "Global," "Capital Social," "Desarrollo," y "Tipo de Clúster." Estas palabras clave ilustran las áreas de enfoque principales en la investigación sobre la internacionalización de clústeres, mostrando un compromiso sólido con la dinámica de clústeres, factores espaciales y aspectos sociales de las redes empresariales. Durante dos períodos distintos (2009-2013 y 2014-2018), se observó un cambio notable en la

centralidad y densidad de las palabras clave, con temas más recientes ganando prominencia. El análisis bibliométrico, un método cuantitativo utilizado para analizar patrones y tendencias en la literatura académica, también establece una relación significativa entre el marketing y la cooperación dentro de la internacionalización de clústeres, indicando sus roles interconectados en la mejora del rendimiento y la competitividad de los clústeres.

Proximidades No Espaciales y Rendimiento de los Clústeres

La tesis profundiza en el impacto de las proximidades no espaciales, que se refieren a factores sociales, cognitivos, institucionales y organizativos, en el rendimiento de los clústeres. A través de métodos de bootstrapping, identifica interacciones significativas entre estas proximidades, revelando una red compleja de relaciones (Figura 4). El estudio encuentra que:

- La Proximidad Cognitiva y la Proximidad Organizativa influyen significativamente en la Proximidad Social, sugiriendo que la forma en que piensan los individuos y cómo están estructuradas las organizaciones afectan las relaciones sociales dentro de los clústeres.

- La Proximidad Institucional impacta fuertemente en la Proximidad Cognitiva, indicando que las estructuras formales y las regulaciones moldean los enfoques cognitivos.

- La Proximidad Organizativa afecta significativamente a la Proximidad Institucional, destacando la profunda interconexión entre los comportamientos organizativos y los marcos institucionales formales.

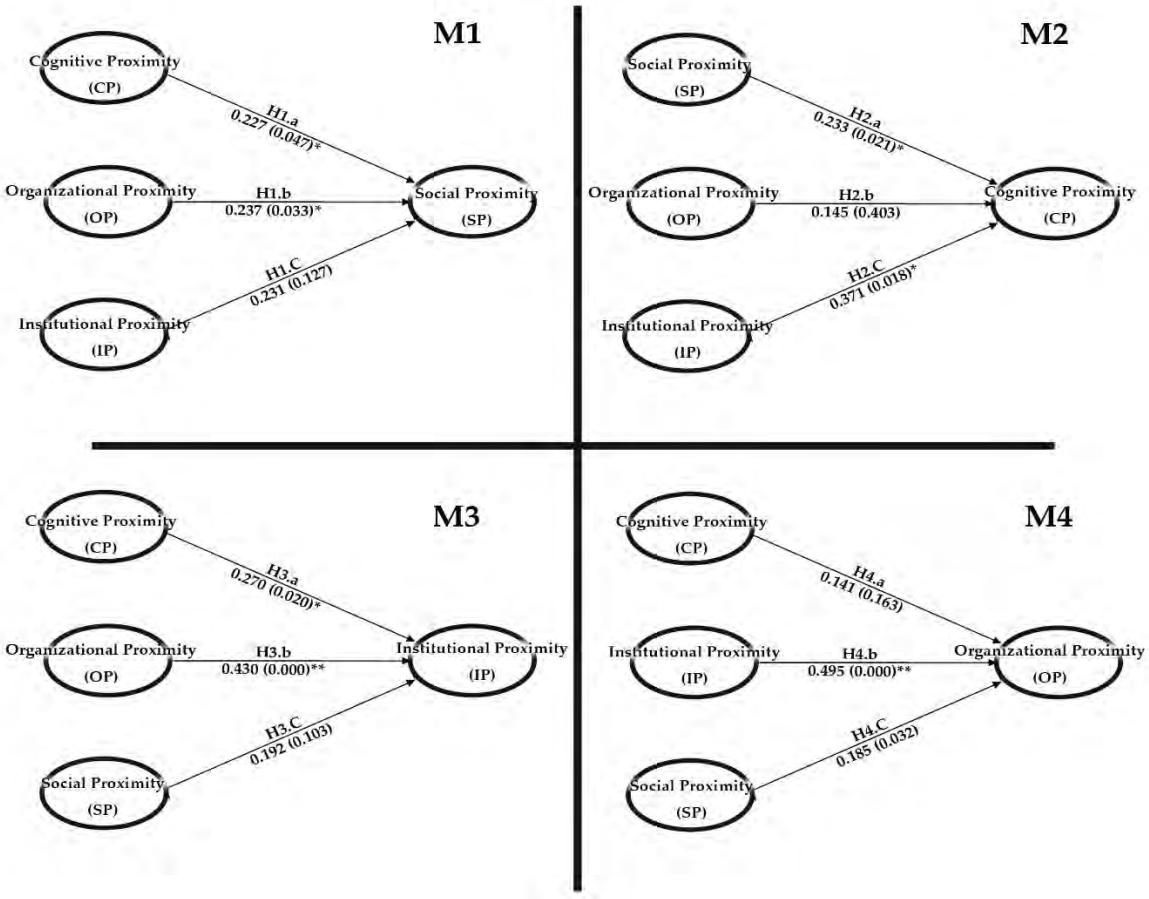

Figure 4- Non-spatial proximity relationships summary

Estos hallazgos subrayan la naturaleza intrincada de las dimensiones de proximidad y sus efectos interdependientes dentro de los clústeres. La Proximidad Social emerge como un factor crucial que influye en la proximidad cognitiva y organizativa, mientras que la proximidad institucional y organizativa muestra una influencia bilateral robusta. La investigación sugiere que, aunque algunos tipos de proximidad no influyen significativamente entre sí, comprender estas interacciones es un desafío fascinante y crucial para mejorar la sostenibilidad y el rendimiento de los clústeres.

Cooperación en Marketing e Inteligencia de Mercado de Exportación (EMI)

Basándose en los hallazgos anteriores, la tesis explora el papel de las proximidades no espaciales en la facilitación de la cooperación en marketing y en la generación y difusión de inteligencia de mercado de exportación (EMI) dentro de los clústeres (figure 5). El estudio destaca los roles críticos de la proximidad social y la proximidad institucional-organizativa en la mejora de la cooperación en marketing. Los hallazgos clave incluyen:

- La Proximidad Social mejora la cooperación al construir confianza y facilitar la comunicación, lo cual es crucial para generar y difundir EMI a través de actividades de investigación de mercado.

- La Proximidad Institucional-Organizativa apoya la colaboración promocional, ayudando a alinear esfuerzos en la ejecución de estrategias de mercado.

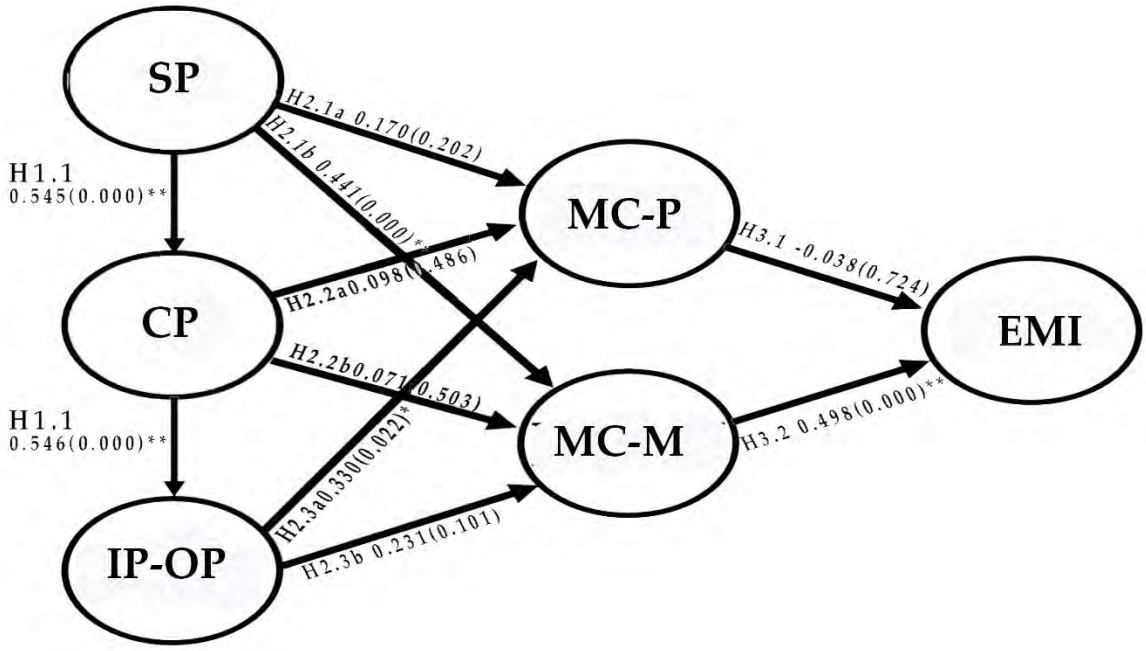

Figure 5- Non-spatial proximity, Marketing cooperation, and Export marketing intelligence

Los líderes de clústeres a menudo ocupan posiciones críticas en la gestión de clústeres y son vitales en la gestión de los esfuerzos de marketing colectivo. Juegan un papel crucial en aprovechar las proximidades no espaciales para mejorar los procesos de EMI. El estudio enfatiza que la cooperación en marketing dentro de los clústeres, influenciada

por las proximidades social e institucional-organizativa, es esencial para mantener la competitividad en los mercados globales. Los hallazgos también destacan la influencia selectiva de estas proximidades en diferentes tipos de cooperación en marketing, sugiriendo que las estrategias de internacionalización efectivas a menudo combinan estos elementos para optimizar la visibilidad externa y las sinergias internas.

Marketing Verde o Ecológico y Cooperación

Luego, el autor realizó un análisis bibliométrico utilizando herramientas avanzadas como VOSviewer para identificar brechas para la futura expansión de nuestro modelo. Este análisis ayudó a mapear las tendencias emergentes y los temas clave en la literatura de marketing verde, enfatizando la integración de estrategias económicas con consideraciones ambientales. La investigación identifica un creciente interés académico en la cooperación de marketing verde, especialmente en campos como ingeniería, ciencias ambientales y economía empresarial, con áreas de enfoque clave que incluyen "gestión de la cadena de suministro verde", "sostenibilidad", "productos verdes" y "desempeño ambiental".

Estos hallazgos resaltan la creciente relevancia de la cooperación de marketing verde como un área de estudio significativa, subrayada por un enfoque creciente en la sostenibilidad y la gestión ambiental en las prácticas empresariales. Además, el estudio

muestra el potencial transformador de la IA en revolucionar las metodologías de investigación tradicionales, proporcionando percepciones más profundas sobre la dinámica en evolución del marketing verde y la cooperación. Esta perspectiva optimista alienta un enfoque proactivo hacia la investigación y la innovación futuras.

Limitaciones e Implicaciones de la Investigación

Este estudio sirve como una exploración inicial de la relación entre las dimensiones no espaciales de la proximidad y la Inteligencia de Mercado de Exportación (EMI) a través de la Cooperación en Marketing en organizaciones de clústeres, ofreciendo ideas novedosas y reconociendo ciertas limitaciones. El alcance del análisis se centra principalmente en las percepciones dentro de las organizaciones de clústeres en lugar de en las empresas individuales, lo que puede limitar la granularidad de las ideas. Además, los hallazgos pueden no ser universalmente aplicables a diferentes industrias, lo que requiere análisis específicos de cada sector para tener en cuenta las dinámicas particulares de cada industria. Metodológicamente, la dependencia de percepciones y datos auto informados podría introducir sesgos, lo que sugiere la necesidad de pruebas empíricas de los modelos propuestos desde la perspectiva de los miembros de los clústeres.

La investigación futura debería investigar cómo los miembros de los clústeres generan y difunden EMI, examinando las implicaciones directas e indirectas en estos entornos. Es necesario un examen matizado de cómo el nivel de relaciones interempresariales modera las dinámicas entre la proximidad no espacial, la Cooperación en Marketing y la EMI. Extender la investigación más allá de las organizaciones de clústeres a análisis de empresas individuales podría ofrecer ideas más detalladas sobre estas relaciones. Investigar la aplicabilidad de los hallazgos en diferentes industrias, posiblemente adoptando un enfoque intercultural o interindustrial, podría enriquecer la comprensión de estas relaciones. Los estudios futuros deberían centrarse en la efectividad de los marcos regulatorios en la supervisión de las afirmaciones de marketing verde, el papel de las actividades de impacto colectivo y el avance de los productos verdes dentro de la cadena de suministro. Explorar estrategias educativas cooperativas para aumentar la conciencia del consumidor sobre productos verdes, comportamientos de consumo sostenible y el papel de la Responsabilidad Social Corporativa (RSC) dentro de los marcos de colaboración en marketing sería beneficioso. Probar modelos en entornos agrupados y no agrupados podría descubrir dinámicas distintas influenciadas por la proximidad geográfica. Utilizar diversas fuentes de datos y herramientas analíticas avanzadas como el Modelado de Ecuaciones Estructurales (SEM) puede mejorar la solidez y aplicabilidad de los hallazgos. Se recomienda un muestreo exhaustivo y un diseño detallado de

cuestionarios para medir efectivamente varias dimensiones de proximidad y Cooperación en Marketing Verde (GMC).

Al abordar estas limitaciones y seguir las direcciones de investigación sugeridas, los estudios futuros pueden ampliar significativamente el marco teórico establecido por esta tesis. Además, pueden proporcionar estrategias prácticas para que los gestores implementen iniciativas efectivas de marketing verde, aprovechando la cooperación basada en clústeres y el cumplimiento normativo. Esto podría revolucionar el desarrollo de las organizaciones de clústeres y las estrategias de marketing, llevando a prácticas más sostenibles y amigables con el medio ambiente.

Direcciones de investigación futuras

En esta sección, la tesis sintetiza sus logros y limitaciones para proponer un modelo conceptual integral destinado a guiar futuros estudios sobre la dinámica de cooperación en clústeres dentro de las iniciativas de marketing verde. Además, se identifican áreas esenciales para futuras investigaciones, ofreciendo una hoja de ruta para la exploración continua.

Los estudios primarios en esta tesis han desempeñado un papel crucial en la identificación de una brecha crítica en la investigación. Han demostrado que aún se

necesita una imagen más precisa de la formación de diferentes dimensiones de proximidad en los clústeres, allanando el camino para futuras investigaciones. Al probar este modelo conceptual, se pueden explorar cómo diferentes relaciones entre empresas (afiliación, coordinación, colaboración y redes estratégicas) moldean y mejoran las proximidades no espaciales (dimensiones sociales, cognitivas, institucionales y organizativas). Nuestras explicaciones destacan cómo comprender la calidad de estas relaciones es esencial para fomentar una cooperación práctica en el marketing verde (Figura 6).

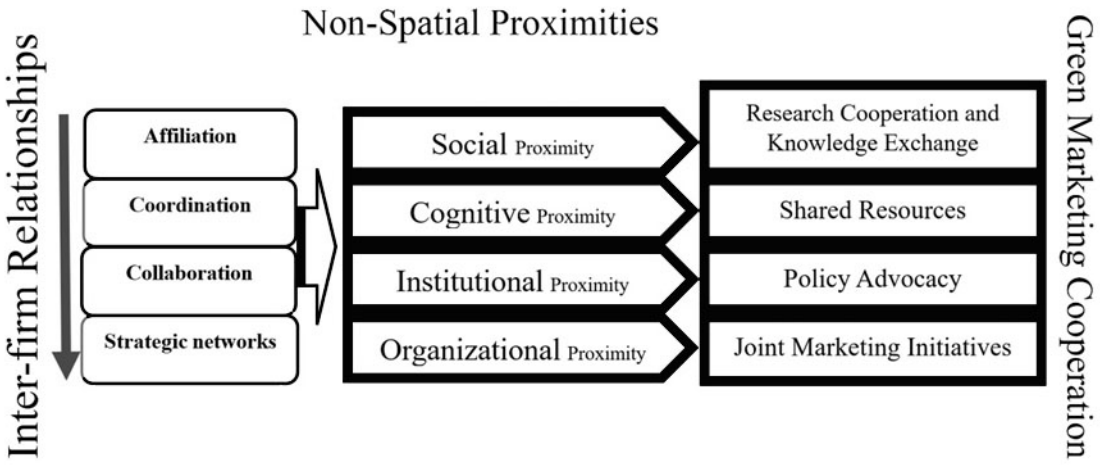

Figure 6-Marco conceptual para futuras investigaciones.

Aunque esta tesis presenta nuevos hallazgos sobre la relación entre proximidad y colaboración en marketing verde, la expansión de los modelos originales para incluir la

sostenibilidad es altamente significativa a la luz de los desafíos globales contemporáneos. Nuestro modelo conceptual facilita un examen más profundo del impacto de varias dimensiones de proximidad en la cooperación. Cada dimensión—social, cognitiva, institucional y organizativa—facilita de manera única diferentes aspectos de la colaboración. Este modelo debe ser probado empíricamente dentro de las organizaciones de clústeres para validar las interconexiones entre proximidades no espaciales y comportamientos cooperativos. Esta validación puede llevarse a cabo en entornos agrupados y no agrupados para comprender el papel de la proximidad geográfica en las dinámicas de cooperación.

Además, se pueden probar nuestro modelo en diferentes industrias y examinar los impactos variados de las dimensiones de proximidad y las relaciones entre empresas en la cooperación en marketing verde. Al abordar estas áreas, se puede proporcionar una comprensión más profunda de los factores que influyen en la cooperación y ofrecer orientación práctica para mejorar las prácticas de sostenibilidad a través de dinámicas efectivas de clústeres.

PART 1B

1. INTRODUCTION

1.1. Research Justification

The internationalization process and its impact on the growth and promotion of companies and industries has long been a subject of academic inquiry (Andersen, 1993). Internationalization is embodied in a multidimensional strategy that can be analyzed from diverse perspectives to reveal its intricacies and advantages. For instance, a primary consideration is that companies must prioritize access to foreign markets on their strategic agenda to achieve internationalization. This approach may facilitate companies' access to new markets and acquire new product customers, yet the process is complex. During internationalization, companies must surmount obstacles while leveraging their specialized attributes and identity traits, augmenting their collaborative capacities, and capitalizing on heightened adaptability (Hutchinson et al., 2009).

However, the complexity of this issue intensifies when firms endeavor to internationalize collectively, aiming to stimulate growth across an entire region (Albert-Cromarias & Dos Santos, 2020). International success and coordination with global markets in concentrated industries pose significant challenges, especially in the context of regional success and the attainment of collective advantages. This complexity has made

internationalization a significant concern among regional policymakers in the past decade (ECCP, 2021). Notably, eminent scholars in concentrated and clustered enterprises have recognized the expansion into international markets as a strategy to overcome the limitations of their theories, such as the constraints of local markets' size and knowledge currency (Porter M., 2000). This rationale likely supports the recommendation, even in developed nations, that access to global markets should be a priority for concentrated industries and local clusters, highlighting the intricate nature of internationalization (Serrano et al., 2023).

Drawing upon the foundational Marshall–Arrow–Romer (MAR) approach of the early 20th century and further elaborated by Porter's theory of clusters in 1998, numerous scholars in geographic economics have explored the benefits of firm agglomeration for interactive learning, innovation, and regional development, as noted by Geldes et al. (2015). Porter (2000, p. 16) characterizes clusters as geographical aggregations of interlinked companies, specialized suppliers, service providers, and firms in related sectors, along with associated institutions (for example, universities, standards agencies, and trade associations), within a specific domain that engage in both competition and cooperation.

This conceptualization highlights the significance of proximity and location within the field of geographic economy. For instance, Brink (2018) demonstrated that geographical concentration enhances the expert workforce's skill set. Furthermore, the presence of such experts and their formal and informal interactions are instrumental in enriching the scientific knowledge base of regional entities and enhancing organizational effectiveness, as identified by Janney and Gove (2011).

Furthermore, suppliers perceive the market as sufficiently favorable to introduce their products, and various industries and companies encounter fewer challenges in securing the necessary raw materials, thereby gaining competitive advantages (Liao, 2010). As industries and companies expand, there is an infusion of knowledge and information within the clusters, enabling even smaller start-ups to benefit from this wealth of knowledge and information (Jia et al., 2017). Successful clusters gain credibility and popularity, attracting a skilled workforce, suppliers, domestic and international investors, and customers. These elements collectively enhance the regional economy, fostering innovation and competitive dynamics (Porter, 2000). Consequently, notwithstanding the development of various conceptual frameworks about cluster internationalization, a substantive requirement exists for further scholarly investigation to refine and augment these models (Jankowska & Główka, 2016; Albert-Cromarias & Dos Santos, 2020).

The content analysis is a foundational step for profoundly comprehending the topic and identifying gaps and trends within the subject matter (Martínez-Fernández et al., 2012; Muñoz-Leiva et al., 2012). This qualitative methodology is universally recognized as a valid analytical framework for conducting scholarly reviews (Weismayer & Pezenka, 2017). While the outcomes derived from these qualitative approaches are notable, their application demands significant time and effort. In recent developments, researchers have significantly advanced by employing technology-driven "intelligent text mining approaches," which markedly reduce the requisite effort and time (Weismayer & Pezenka, 2017, p. 1758).

Consequently, bibliometric analysis has garnered increased recognition as a qualitative method that offers realistic insights into the content and structure of a research domain (Ding et al., 2001; Weismayer & Pezenka, 2017). Advances in technology have simplified the process of conducting bibliometric reviews of literature, rendering it less cumbersome than in the past. Modern computational text analytic tools have enhanced the efficiency of this qualitative analytical approach (Cobo et al., 2012).

Various techniques can be applied within these analytical tools in a bibliometric review context. Muñoz-Leiva et al. (2012) identified keyword analysis as a particularly prevalent method for such quantitative explorations. This research method involves

utilizing the primary keywords suggested by authors in each article to determine relevant items and their association with the principal subject of cluster internationalization.

Therefore, the initial phase of this thesis is dedicated to conducting a literature review on cluster internationalization. The goal is to develop a thorough framework, pinpointing the most frequently employed sub-factors, elucidating their interconnections, and tracking their progression over a designated timeframe. In alignment with the stated objectives, the research poses the following inquiries:

- Which keywords prevail in the literature concerning the internationalization of clusters?

- Regarding their density and centrality, how have these keywords been collectively utilized?

- Over the ten-year chosen period, how has the application of these keywords changed?

In 2019, the keyword bibliometric analysis methodology was segmented into distinct phases to address the research queries effectively. Initially, the SCImago Journal Rank (SJR) was utilized to delineate the top 30 academic journals within marketing and management. The prestige of these journals was ascertained by examining their Journal

Citation Reports (JCR) impact factors. Subsequently, an advanced search via Google Scholar was conducted to identify articles featuring keywords pertinent to cluster internationalization, covering the period from 2009 to 2019.

The investigation analyzed the content of the selected articles through NVIVO software, aggregating 584 keywords as proposed by authors across 152 papers. In the final step, the research delineated two 5-year intervals for analyzing the compiled data, employing the SciMAT software for this analytical process (Cobo et al., 2012).

Subsequently, building upon the knowledge acquired from the preliminary phase and explicitly focusing on elevating the significance of marketing—as it aligns with the doctoral discipline this thesis is associated with—this dissertation will proceed to delineate its theoretical framework. Furthermore, it will undertake an empirical evaluation within an appropriately chosen context. Hence, the core models of this thesis are centered around the concepts of proximity and cooperation, particularly within the marketing realm, in addition to exploring the function of cluster organizations in the export sector.

Despite the diminishing significance of geographical locations due to advancements in technology and communication, regional clusters continue to represent a competitive advantage within a region (Albert-Cromarias & Dos Santos, 2020). The rationale behind

this assertion has been extensively elaborated upon by geographic economists (Geldes et al., 2015; Chumnangoon et al., 2023). However, more recent studies have validated that the traditional and specific aspect of proximity, namely geographical proximity—which pertains to the physical distance between firms—is progressively diminishing in importance, as indicated by references (Geldes et al., 2015; 2017; Chumnangoon et al., 2023;). Kuch (2017) asserts that while geographical proximity is necessary, it alone cannot fulfill sustainability objectives and facilitate corporate sustainability transformation.

Consequently, a comprehensive understanding of the various types of proximity and their interrelations is imperative before assessing the impact of proximity on the success of clusters, especially concerning corporate sustainability (Joensuu et al., 2015; Ruiz-Ortega et al., 2021; Ernst et al., 2022). In this context, Boschma (2005) posited that innovation requires additional dimensions of proximity beyond the geographical, suggesting that local clusters could offer an optimal foundation for such multidimensional proximity. Accordingly, he delineated four supplementary categories of proximity that transcend geographical considerations, designated as "non-specific proximities," or more accurately referred to as "non-spatial dimensions of proximity": cognitive (CP), organizational (OP), social (SP), and institutional (IP) dimensions, thereby expanding the conceptual framework for understanding the dynamics of cluster success and innovation.

Numerous studies have sought to link firms' non-spatial proximities with various outcomes, including innovation (Boschma, 2005; Geldes et al., 2017), knowledge exchange (Geldes et al., 2015; Chumnangoon et al., 2023), and corporate sustainability (Joensuu et al., 2015; Bartolacci et al., 2020; Ruiz-Ortega et al., 2021; Ernst et al., 2022).

Despite these efforts, the intricate relationships between different proximity dimensions remain insufficiently clarified. Boschma (2005) provided an extensive overview but failed to detail the interplay among these dimensions. Similarly, Geldes et al. (2015) explored the link between firms' proximity and marketing cooperation, identifying certain connections among non-spatial proximity dimensions and calling for further empirical examination of these dynamics. This part of the thesis aims to address this gap by explicitly addressing the following question:

- Considering proximity's pivotal role in fostering innovation (Boschma, 2005), what is the nature of the relationship among non-spatial proximity?

The second research phase of this thesis develops a detailed framework to guide future research on the role of different types of proximity in fostering non-technological innovation within cluster organizations. To this aim, the study carefully constructs four specific scenarios to examine proximity's social, cognitive, organizational, and

institutional dimensions. This approach provides a nuanced analysis of how these dimensions interrelate and their potential effects on innovation.

Based on the insights gathered from the investigation, the findings refine and expand the existing models in the cluster internationalization domain. Indeed, leveraging the evidence collected, this study is a valuable resource for cluster managers, economic and regional policymakers, and scholars alike. This groundwork paves the way for introducing the primary model, which aims to synthesize these insights into a coherent framework that can further inform and enhance strategies for cluster internationalization.

However, the European Commission (2007) Delineates a strategic approach for fostering the internationalization of enterprises, underscoring the necessity for policies and programs to be closely aligned with local contexts to maximize their effectiveness within the local economic framework. This alignment not only simplifies the implementation process but also generates synergies, necessitating the engagement of all pertinent stakeholders in formulating policies and programs. Moreover, local initiatives and practices must cater to the burgeoning need for enhanced skills and knowledge, thereby supporting the expansion of Small and Medium-sized Enterprises (SMEs) into international markets (Commission, 2007). Considering these strategies, the academic community has increasingly focused on export activities, recognizing them as a

fundamental pillar of internationalization (Holmlund et al., 2007). However, despite advancements in comprehending export-oriented behaviors, there remain several areas within this domain that require further elucidation (İpek & Bıçakcıoğlu-Peynirci, 2020).

In today's fiercely competitive global landscape, precise knowledge about target markets cannot be overstated for companies aiming to maintain and excel in their long-term export strategies (Katsikea et al., 2019). A deep understanding of the intricacies of various markets enables businesses to customize their offerings and operations to align with consumer demands, thereby securing a competitive edge in the international arena (Navarro et al., 2010). Furthermore, contemporary export policies are pivotal in influencing regional economic growth and industrial advancement (Navarro-García et al., 2016).

In response to the challenges presented by global market volatility, scholars have advocated for market intelligence as a groundbreaking tool to safeguard and enhance firms' competitive standings in the future. Bose (2008) contends that intelligence is derived from the precise acquisition, organization, and analytical processing of information, serving as a vital competitive asset across various business domains, including export activities (Navarro-García et al., 2016).

Consequently, export operations can leverage intelligence capabilities to forecast accurately, bolster competitive strengths, and devise effective future strategies (Jermsittiparsert et al., 2019). Export intelligence spans from market orientation towards the international market, encompassing the generation, dissemination, and responsiveness to Export Intelligence (Cadogan et al., 2002; Cadogan et al., 2016). Chung (2012) identified Export market responsiveness as a direct outcome of export intelligence generation and dissemination processes. Given the focus of this research on cluster managers, the study specifically examines the generation and dissemination of Export Market Intelligence.

Despite the acknowledged importance of market intelligence in enhancing firms' international performance (Williams & Chaston, 2004), this bibliometric analysis confirms that its exploration within the context of cluster internationalization has yet to be explored. To date, comprehensive studies that simultaneously address the dynamics of proximity, cooperation, marketing, collective knowledge, and internationalization within cluster organizations are absent. This gap highlights a critical need for further research to delineate the prerequisites for Export Market Intelligence in such settings.

This investigation differentiates itself from preceding studies through several critical dimensions. Initially, it conducts an extensive analysis across many clusters,

distinguished by variations in economic status, dimensions, sectors, and geographical positioning. Affiliated with the European Cluster Collaboration Platform (ECCP), these clusters embody a broad spectrum of European nations, each at disparate levels of economic maturity (ECCP, 2021), offering a comprehensive dataset for scrutiny. In deviation from conventional methodologies that prioritize the analysis of cluster members, this study directs its focus toward the organizations at the helm of these clusters. These cluster organizations, responsible for leadership and management, are instrumental in facilitating collaborative endeavors and the exchange of knowledge among members, thus engendering an environment conducive to the collective growth and competitive edge of all entities involved (ECCP, 2021). While recognizing certain constraints, this innovative approach is poised to give cluster managers profound insights. For example, Salvini and Galina (2022) highlighted how exploration alliances depend on non-spatial proximities, particularly emphasizing the importance of cognitive and social dimensions without organizational alignment. This thesis also gathers data from the central organizations that lead the clusters instead of collecting it from each member entity individually. Thirdly, where previous inquiries might have restricted their scope to a single or a couple of clusters, this study broadens its purview to encompass an array of clusters within varied economic, cultural, and normative milieus. By undertaking this extensive analysis, the research aspires to furnish a more layered

comprehension of the dynamics influencing cluster internationalization, unveiling patterns and insights that may need to be clarified in research with a more limited scope.

In pursuit of this objective, the core section of this dissertation integrates insights from preceding sections and extends the theoretical frameworks developed by Geldes et al. (2015; 2017) To elucidate the processes of Export Market Intelligence generation and dissemination within cluster organizations. Moreover, this research investigates the nexus between non-spatial dimensions of proximity (social, cognitive, institutional, and organizational) within clusters and marketing cooperation in generating and disseminating Export Market Intelligence among cluster organizations. Consequently, this section puts forward the following questions:

- How do Cluster Organizations perceive the impact of non-spatial proximity on marketing cooperation within the cluster?
- What is the correlation between the Export Market Intelligence generated and disseminated by cluster organizations and the non-spatial proximity of firms within these clusters?
- Through what mechanisms do cluster leaders facilitate the generation and dissemination of Export Market Intelligence via marketing cooperation?

After finding the answer to all the above questions, this thesis concentrates on future research directions and the development of models previously introduced, with the final sections providing a detailed analysis of collaboration in green marketing. This analysis outlines a strategic approach to further research and refine the thesis's primary model.

Therefore, it was crucial to conduct thorough preliminary research to establish the correct focus for future studies. Understanding how cooperation and green marketing interact is vital in the growing global focus on sustainability. Collaboration is a powerful strategy in sustainable business practices; it enables firms to share knowledge, resources, and advocacy efforts. This cooperation serves as a catalyst, promoting sustainable practices, spurring innovation, and guiding consumer behaviors toward an eco-friendly future. The central thesis of this dissertation is that merging marketing strategies with collaborative efforts is a complex but rewarding challenge. This merger requires extensive exploration and represents an innovative way to enhance sustainability (Barman et al., 2023).

Green marketing represents a departure from traditional marketing by urging businesses to align their marketing efforts with environmental responsibility and profitability. Through strategic collaborations with consumers focused on sustainability, companies can craft marketing strategies that address environmental concerns while

remaining profitable. These sustainable collaborations help reduce the costs associated with eco-friendly practices and ensure consumer needs are met, emphasizing the importance of prioritizing values beyond mere profitability (Polonsky, 2008; Shi et al., 2022; Barman et al., 2023; Singh et al., 2023; Zhang et al., 2023). The Green Marketing Mix concept further highlights the market presence of eco-friendly products. It indicates consumer willingness to pay a premium for environmentally beneficial features, suggesting that collaborative efforts in green marketing could provide advantages over competition alone (Dangelico & Vocalelli, 2017).

Nevertheless, it is disheartening to note that some firms still prioritize individual gains over collective welfare, which can obstruct efforts toward environmental conservation and sustainable development (D'Attoma & Leva, 2020). Today, macroeconomic policies increasingly require corporate collaboration to meet sustainability goals, underscoring the benefits and necessity of cooperation in green marketing. Research by Dangelico and Vocalelli (2017) on green marketing strategies highlights the significance of sustainable brand strategies, closed-loop supply chains, and careful advertising, emphasizing the urgency of advancing green marketing practices to promote sustainable consumer behavior and enhance cooperative efforts.

As an extension of this thesis, this segment charts critical scholarly inquiries into the relationship between cooperation and green marketing from 1990 to 2023, based on data from the Web of Science database. This includes a bibliometric analysis of 575 research and review articles published across 291 journals and leading conferences, utilizing the VOS viewer software. This analysis aims to provide quantifiable insights into evolving research paradigms within this field, suggesting that scholars and policymakers focus on developing innovative green marketing strategies that incorporate cooperative modalities to foster sustainable practices.

Additionally, this thesis evaluates the use of artificial intelligence, particularly large language models (LLMs) such as ChatGPT, to determine their effectiveness in assisting researchers in gaining a basic understanding of the subject matter, aiding in research mapping, and conducting initial studies. This innovative application of AI in academic research underscores its potential to improve the efficiency of literature reviews and initial research methods.

This bibliometric study poses several crucial questions, aiming to explore all aspects of green marketing collaboration thoroughly:

What emerging trends or patterns are evident in the literature concerning cooperation and green marketing?

Which keywords or terms related to cooperation and green marketing have gained significance in recent literature?

Which publications and scholars are most frequently cited in cooperation and green marketing, and what new insights do they provide?

How can AI, specifically ChatGPT, assist researchers in conducting bibliometric analyses?

Given the importance of environmental sustainability in contemporary discourse and the insights gleaned from two literature reviews in the fields of internationalization, cooperation, and marketing, the decision has been made to incorporate environmental sustainability into the primary models of this thesis for future research. Establishing green marketing initiatives and promoting corporate engagement is crucial for fostering economic, social, and environmental sustainability performance (Dangelico & Vocalelli, 2017). Scholarly research has explored the roles of inter-firm proximity (Boschma, 2005) and cooperation (Porter, 2000) as precursors to collaborative innovation. Despite the competitive nature of marketing, where firms often compete, marketing cooperation is recognized as an innovative solution to enhance collective performance (OECD, 2005). The complexity added by the emergence of green marketing (Dangelico & Vocalelli, 2017)

necessitates a nuanced investigation to understand how relationships and proximity among firms significantly affect Green Marketing Cooperation (GMC).

Systematic research linking proximity to innovation underscores the critical role of firms' proximity (Boschma, 2005; Lazzeretti & Capone, 2016; Albert-Cromarias & Dos Santos, 2020). Historically, geographical proximity was essential in clusters (Porter, 1998) and crucial for collaboration (Katz, 1994). This fact highlights the need to delve into regional economics literature to understand how clusters continue to drive development and performance in regions, even as the role of geographical proximity diminishes (Geldes et al., 2015).

Balancing proximity is essential, as both excess and deficiency can pose challenges. Non-spatial proximity dimensions are crucial in clusters (Boschma, 2005), where the coexistence of cooperation and competition forms the basis for cluster formation (Porter, 2000). Effective communication among actors is vital for fostering cooperation, particularly in marketing (Wang & Krakover, 2008).

The relationship between proximity, cooperation, and green marketing, a relatively new area, calls for further research. The existing theories on the correlation between proximity and innovation need revision as they often diverge from empirical findings (Geldes et al., 2015, 2017). Despite the focus on competitive collaboration, the intricacies

of non-spatial proximity and their interplay require additional theoretical exploration (Albert-Cromarias & Dos Santos, 2020).

Conflicts due to the inherent coexistence of competitive and cooperative behaviors influence firms' engagements with rivals (Tiessen & Linton, 2000; Baruch & Lin, 2012). The quality of inter-firm relationships plays a pivotal role in marketing cooperation (Wang & Krakover, 2008; Bailey & Koney, 2000), an area that remains relatively under-researched. This study adopts a comprehensive definition of green marketing, considering social, cultural, and environmental responsibilities (Dangelico & Vocalelli, 2017) and expands to include cooperation marketing (Wang & Krakover, 2008).

This part of the thesis sets the stage for future studies on the impact of varying cooperation levels and proximity dimensions on green marketing efforts. It raises critical questions about the quality of inter-firm relationships, their influence on non-spatial proximities, and whether different proximity dimensions similarly impact cooperation in green marketing. This framework serves as a tool for assessing the role of business networks or clusters in green marketing and sustainability performance.

1.2. Research Objectives

The main objective of this thesis is to examine the internationalization process and its impact on the growth and promotion of regionally focused companies and industries. This issue has attracted the attention of regional policymakers and academics for decades. This research examines the multidimensional strategy of internationalization from different perspectives to explore its complexities and benefits. The content highlights the necessity for focal firms to prioritize foreign market access and manage the inherent complexities of international expansion, including overcoming barriers and leveraging unique characteristics and collaborative capabilities.

This thesis further examines the concept of collective internationalization efforts to stimulate regional growth. It points out the challenges and complexities in concentrated industries and the importance of such strategies for regional policymakers. It uses fundamental economic theories, such as the Marshall-Arrow-Roemer approach and Porter's cluster theory, to discuss the current benefits of cluster organizations for innovation, knowledge transfer, and regional development.

However, this study's objective extends beyond the descriptions above and is delineated across various specific aims. This thesis is guided and substantiated by an experimental investigation, the outcomes of which are anticipated to be disseminated

through a sequence of scholarly publications. Table 1 clarifies this thesis's objectives and the scholarly works intended to undergird this doctoral dissertation.

Table 1. Objective description

No.	Specific objectives	Related Publication
1	First, through an extensive literature review and bibliometric analysis, this study aims to develop a comprehensive framework that demonstrates the dynamics of cluster internationalization, including the role of all relevant factors in increasing clusters' competitiveness and international success.	Article 1 (published) https://doi.org/10.5295/cdg.211483mr
2	Second, evaluate the relationships between the four types of non-spatial proximities: social, cognitive, institutional, and organizational.	Article 2 (Published) https://doi.org/10.3390/su142012976
3	The preliminary model of this thesis seeks to help understand how clusters can effectively generate and disseminate export market intelligence and foster innovation and competitive dynamism in regional economies. The model also examines the impact of non-spatial adjacencies on marketing cooperation within clusters and how cluster leaders can generate and disseminate export market intelligence. By analyzing different clusters in different economic situations and geographical locations, this research aims to provide insight that can inform cluster managers,	Article 3 (Under review)

	policymakers, and researchers about effective strategies for internationalization.	
4	Fourth, this study explores green marketing collaboration as a strategy to advance sustainable business practices and foster innovation for future research. It uses artificial intelligence, especially ChatGPT, to enrich the analysis and interpretation of research data, demonstrate the potential of artificial intelligence to enhance academic research, and provide a new approach to better understanding such investigations.	Article 4 (Under review)
5	In conclusion, this doctoral dissertation synthesizes the myriad findings and insights garnered throughout the study, culminating in presenting a conceptual model. This model encapsulates the research's core themes, learnings, and contributions, providing a structured representation of the knowledge acquired for future investigations.	Publication 5 Received the Best Paper Award at the International Conference on Advanced Marketing Practice (ICoAMP, APRIL 2024) and accepted for publication as a book chapter by Springer.

In general, this thesis aims to modify and expand existing models of cluster internationalization, providing valuable insights to strengthen strategies and policies that support the growth and international competitiveness of clusters and industries.

1.3. Thesis Structure

This thesis is structured into two main parts, each comprising several sections. The first part begins with a detailed summary divided into sections for clarity and depth. The first section introduces the thesis's research background, objectives, and structure. The second section presents a literature review, detailing the current state of research on the thesis topics and establishing the hypotheses that guide the study. The third section explains the research methodology employed across four studies, which underpin the published papers supporting the thesis. The fourth section discusses the results and outlines the theoretical contributions of the thesis to the advancement of knowledge.

The fifth section concludes the thesis, summarizing critical findings with significant practical implications for management improvement and acknowledging the study's limitations. It also outlines future research opportunities and includes a final reference list.

Additionally, the second part of the thesis contains appendices, which include the research questionnaires, and a report on a three-month research stay at the University of Tehran, as per the international doctoral regulations of the University of Valencia.

2. DEFINITIONS, CONCEPTUAL FRAMEWORK, and HYPOTHESES

2.1. Main Items' Definition

Given the complexity and breadth of this doctoral thesis, it is crucial to establish a clear and comprehensive understanding of the key terms used throughout. Therefore, before delving into the conceptual framework and hypotheses, this thesis presents concise definitions of all relevant terms, as listed in Table 2

Table 2. List of the relevant terms

Sage	Explanation	Key Items
	• The focus of the thesis	Clusters and Cluster Organizations
Pre-Investigation	• Creating a general understanding of the internationalization of clusters	Clusters Internationalization
Primary model (Part I)	• This thesis collected data from cluster organizations to examine the main models. • The first model theoretically tested the relationship between non-spatial proximities.	Social Proximity
		Cognitive Proximity
		Institutional Proximity
		Organizational Proximity
Primary model (Part II)	• The second model builds on the first by testing the mediating role	Marketing Cooperation

	of marketing cooperation between non-spatial proximities and Export Marketing Intelligence, focusing on its generation and dissemination.	Export Marketing Intelligence (Generation and dissemination)
Pre-Investigation for Future Research	• This thesis Creates a general understanding of Green Marketing Cooperation for future expansion of the leading models and presents a conceptual model for future investigation line	Green Marketing Cooperation

2.1.1. Clusters and cluster organizations

In modern economic discourse, clusters are recognized as critical engines of growth. Defined by Michael Porter as geographical concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions (Porter, 1998), clusters represent a complex amalgam of competition and cooperation. This paper examines the multifaceted roles of clusters in enhancing economic development, embedding sustainable strategies, and responding to global economic dynamics. Key points related to clusters and cluster organization are presented below.

Clusters and Competitive Advantage: Clusters are foundational to fostering competitive environments conducive to innovation. According to the resource-based view of the firm, strategic resources that are valuable, rare, inimitable, and non-substitutable can provide a competitive edge (Hart, 1995). Clusters facilitate access to such resources by fostering dense information and collaboration networks, enhancing firms' capabilities within these clusters. Furthermore, Porter (2000) emphasized that the proximity of companies and institutions within clusters spurs a dynamic environment that enhances competitiveness through shared learning and pooled resources. The synergy within clusters drives technological advancements, setting industry standards and fostering business practices that collectively push economic boundaries (den Hertog, Bergman, & Charles, 2001).

Environmental Sustainability in Clusters: Environmental sustainability is becoming increasingly significant within clusters, particularly those dependent on natural resources such as agriculture and tourism. Integrating environmental strategies is essential for long-term sustainability (Grimstad & Burgess, 2014). Sustainable practices help conserve resources, minimize environmental impact, and enhance the appeal to environmentally conscious consumers. The document reviewed provides examples of firms incorporating environmental actions into their business strategies within clusters, using these strategies for improved market positioning and value creation (de Oliveira

Wilk & Fensterseifer, 2003). This strategic emphasis is a response to environmental concerns and a competitive maneuver in today's eco-aware market.

Globalization and Technological Advancements: While globalization and technological advancements have made resources and information globally accessible, they challenge the traditional notion of clusters. The ease of digital communication and the rapid movement of goods have questioned the relevance of geographic proximity in business success. However, clusters adapt by leveraging their unique local knowledge and networks, which still need to be explored by external competitors (Bergman & Feser, 1999). The interplay of localized expertise and global accessibility creates a unique competitive stance for clusters, maintaining their importance as innovation and economic activity centers.

Clusters represent a paradigm of economic development that contrasts sharply with isolated corporate environments. By fostering a networked ecosystem where competition and cooperation are equally valued, clusters drive the prosperity of companies and regions. They contribute to local and global economic growth, challenging traditional business and governmental approaches to economic development. The comprehensive

examination of clusters, informed by extensive research, highlights their pivotal role in shaping competitive advantages and adapting to global economic shifts.

Cluster Management Organizations: Cluster Management Organizations (CMOs) are pivotal in clusters' strategic and operational management. These organizations are essential in harnessing the collective strengths of clusters, which are geographic concentrations of interconnected businesses and institutions that collectively enhance competitiveness and innovation. The European Cluster Collaboration Platform (ECCP) is a cornerstone in facilitating the networking and collaborative efforts among these clusters across Europe. This paper explores the role of CMOs, focusing on the ECCP and its definition and support of cluster organizations.

Defining Cluster Management Organizations: Cluster Management Organizations are specialized entities that manage complex cluster dynamics. They coordinate the activities of various cluster members, including businesses, research institutions, and other stakeholders. CMOs aim to enhance clusters' competitiveness and innovative capacities by fostering a collaborative environment where members can share resources, knowledge, and expertise. The ECCP defines cluster organizations as "the legal entities that support the strengthening of collaboration, networking, and learning in innovation

clusters. They act as innovation support providers by providing or channeling specialized and customized business support services to stimulate innovation activities, especially in SMEs. In addition, they are usually the actors that facilitate strategic partnering across clusters" (ECCP, 2021). This definition underscores the role of CMOs in managing and strategically enhancing clusters' innovation output.

The Role of the European Cluster Collaboration Platform (ECCP): The ECCP is instrumental in the European cluster landscape. It facilitates extensive networking and collaboration opportunities among European clusters, enhancing their operational capabilities and innovation potential. The ECCP allows clusters to learn from each other, adopt best practices, and develop partnerships that transcend national boundaries by providing a platform for exchange and interaction. This network is crucial for maintaining clusters' competitiveness and fostering a collaborative and competitive European cluster landscape.

The platform supports clusters in several key areas:

- Networking: The ECCP organizes events, workshops, and seminars that unite cluster managers, policymakers, and other stakeholders across Europe. These events are vital for sharing knowledge, discussing challenges, and identifying opportunities for collaboration.

- Innovation Support: The ECCP enhances clusters' innovation capacity by channeling specialized and customized business support services. This support is particularly vital for small and medium-sized enterprises (SMEs) that need more resources to innovate independently.

- Strategic Partnering: The ECCP facilitates strategic partnerships across clusters, helping to coordinate efforts in research and development, technology transfer, and commercialization activities. These partnerships can lead to new business opportunities and expanded markets for cluster members.

Impact and Outcomes of CMOs and ECCP Efforts: The efforts of CMOs and the ECCP have tangible impacts on European clusters' competitiveness and innovative capacities. By facilitating better management practices and encouraging collaboration, these organizations contribute to the economic growth and technological advancement of the regions they serve. Clusters engaging with CMOs and participating in ECCP activities often report higher levels of innovation, improved business outcomes, and greater international reach.

Moreover, the ECCP's role in enhancing cluster management quality is recognized through initiatives such as the European Cluster Excellence Initiative (ECEI). This

initiative evaluates and awards labels to clusters, benchmarking their management quality and fostering a culture of continuous improvement.

Accordingly, cluster Management Organizations, supported by platforms like the ECCP, are fundamental to the vitality and success of clusters throughout Europe. They manage and strategically enhance the innovation and competitive capabilities of clusters. The ECCP, through its comprehensive support for networking, innovation, and strategic partnering, ensures that European clusters remain at the forefront of global competitiveness and innovation. As clusters continue to be crucial drivers of economic development, the role of CMOs and the ECCP will undoubtedly become even more significant in shaping a collaborative and competitive future for European industries.

2.1.2. Cluster and internationalization

The terms "internationalization" and "clustering" differ significantly in meaning, which perhaps explains why they are considered complementary concepts within the literature on geographic economics. Conversely, the semantic disparity between these two terms has rendered their joint definition challenging.

Despite their advantages, clusters face inherent limitations, such as dependence on local market conditions (Porter, 2000) and a limited pool of knowledge, which can hinder

innovation (Albert-Cromarias & Dos Santos, 2020). Nevertheless, one of their primary benefits is geographical proximity, which supports non-spatial forms of proximity—such as social, cognitive, institutional, and organizational proximity—fostering cooperation in later stages (Boschma, 2005). Furthermore, well-established clusters balance healthy competition and collaboration, reducing risks and preventing isolation and stagnation (Albert-Cromarias & Dos Santos, 2020). Consequently, businesses within clusters are more likely to sustain or accelerate their internationalization pace than their non-clustered counterparts (Mendes et al., 2023). Expanding into foreign markets through internationalization can circumvent these local limitations, diversifying risks, and broadening opportunities. In addition, as market conditions and technologies evolve, the strategies for internationalization and cooperation within clusters must also adapt. This continuous evolution justifies ongoing research to address how clusters can leverage these changes for international expansion and competitiveness.

However, cluster internationalization is rising as a trend, and further investigations are needed to understand and develop the theoretical understanding in this field (Chen & Li, 2021). Indeed, the role of cluster organizers should be considered in further investigations. Cluster organizations play a crucial role in assisting members by offering the necessary tools and support to help them navigate the complexities of international markets and enhance their global competitiveness (Amdam et al., 2020).

Given the complexities inherent in the nexus between clustering and internationalization, dissecting clusters' internationalization presents a formidable challenge. A thorough comprehension of this subject can best be attained through an exhaustive examination of extant literature, employing bibliometric mapping analysis as a methodological framework (Cobo et al., 2011). This approach entails the analysis of keyword frequency, literature review, and integration of analyses (Fahimnia et al., 2015), in addition to mapping the interrelations among selected documents and their content. Such a process aims to elucidate the nature and scope of these relationships and their evolutionary trajectory (Cobo et al., 2012). However, it is noteworthy that advancements in technology and the advent of new software solutions have significantly mitigated the challenges previously associated with this endeavor.

2.1.3. Spatial and non-spatial proximity

The first part of this doctoral thesis, a bibliometric review of the literature related to the internationalization of clusters, supports the importance of proximity in both spatial and non-spatial dimensions. This review emphasizes that geographical proximity leads to increased capacities of the expert workforce improved scientific knowledge base, and enhanced organizational effectiveness. Clusters' specialized suppliers and service

providers also promote competitive advantages by facilitating access to necessary resources. For instance, geographic proximity is essential in fostering collaboration and maintaining competitive advantages (Nowaczyk, 2019), mainly through experiential learning, skill acquisition, and the replication of success through tacit knowledge (Boschma, 2005). Moreover, it enhances other dimensions of proximity and competitive interactions (Albert-Cromarias & Dos Santos, 2020).

Technological advancements have, however, reshaped the role of geographic proximity in business, contrasting with earlier views emphasizing its supportive role (Geldes et al., 2015, 2017; Boschma, 2005; Albert-Cromarias & Dos Santos, 2020). Current studies indicate that physical distance minimizes a firm's competitive or cooperative behaviors (Geldes et al., 2015, 2017), leading to calls for a reevaluation of its significance. Boschma (2005) describes 'absolute distance' as physical presence in the same area and 'relative distance' as the actual distance between firms, arguing that geographical proximity is crucial for measuring non-spatial proximities (Boschma, 2005; Albert-Cromarias & Dos Santos, 2020). The bibliometric analysis of this thesis also highlights the significant role of non-spatial proximity, such as social capital and network relationships, which are essential for clusters looking to expand internationally. The evolution of keyword usage in related research underscores a growing emphasis on social capital and

network relationships, indicating their critical role in supporting the internationalization of clusters. These advantages include overcoming limitations such as small local markets and isolation, which is often challenging for localized clusters not engaged in broader, more diverse networks, thereby intriguing researchers about the evolving role of clusters in the era of technology.

Porter (1998, 2000) highlighted the importance of clusters for knowledge exchange, cooperation, innovation, and regional development. These organizations benefit from geographical proximity and cognitive, organizational, social, and institutional proximity. Lis and Lis (2023) emphasize that clusters are dynamic entities whose development is significantly influenced by these multiple dimensions of proximity. This multidimensional proximity facilitates inter-organizational cooperation and competitive advantages, driving the development and effectiveness of cluster organizations. Boschma (2005) defines geographical proximity as 'the spatial distance between actors, both in an absolute and relative sense,' which is essential for the emergence of other forms of non-spatial proximity. Despite the diminishing need for physical collocation due to technological advancements, clusters remain relevant to local economies, raising questions about their evolving role.

Boschma (2005) introduced four dimensions—cognitive, organizational, institutional, and social—to the concept of geographical proximity, advocating for a balanced approach to these dimensions to highlight its multifaceted nature. For example, the most recent research that has targeted the importance of non-spatial dimensions of proximity presents various opinions about it, some of which are mentioned below:

Blasi et al. (2024) utilize a social network analysis to investigate sustainable tourism networks, mainly focusing on cognitive and geographical proximity between tourism businesses in northeastern Italy. They find that geographical clusters of tourist accommodations are not only physically close but also share vital cognitive proximity, demonstrated through shared sustainability values on their websites. This cognitive proximity, defined as similarities in how organizations perceive and understand sustainability, plays a crucial role in fostering collaborations and strengthening the sustainability practices among these businesses. The study suggests that such proximity can significantly influence the development and dissemination of sustainable practices within tourism networks, underlining the importance of both spatial and non-spatial dimensions in enhancing sustainable tourism.

Lis and Lis advocate for a broader, multidimensional understanding of proximity in cluster organizations, extending beyond mere geographical closeness. They introduce

cognitive, social, organizational, and institutional dimensions of proximity, emphasizing their critical role in fostering effective inter-organizational collaborations. By integrating these dimensions, entities within clusters can effectively leverage shared knowledge, trust, and institutional frameworks, enhancing cooperation and competitive advantage. This approach enriches theoretical frameworks about cluster dynamics and offers practical insights for shaping effective cluster policies and management strategies (Lis & Lis, 2023).

Zhao et al. (2024) examine the interplay between various proximity types—such as organizational and cognitive—and enterprise innovation performance, focusing on how different knowledge types (analytical and synthetic) modify these relationships. It posits that non-spatial dimensions of proximity, such as organizational and cognitive proximity, are crucial for enhancing enterprise innovation by facilitating the transfer and absorption of knowledge essential for innovation activities. The findings indicate significant effects of cognitive and organizational proximities on innovation performance, mediated by the types of knowledge transferred. Understanding these non-spatial dimensions enables firms to leverage their innovation networks, strategically enhancing innovation outcomes. This perspective underscores the importance of non-geographical proximity factors in the dynamics of enterprise innovation, suggesting that

firms should consider these dimensions in their strategic planning to optimize innovation performance.

The study, conducted by Hwang, Lee, and Hwang (2023), examines the impact of cognitive proximity on collaborative innovation within the US biotechnology sector, revealing a complex interplay moderated by knowledge complexity. Using USPTO patent data, the researchers identify an inverse U-shaped relationship between cognitive proximity and innovation, indicating that an optimal level of cognitive proximity enhances collaborative outcomes, particularly in contexts of high knowledge complexity. While necessitating closer cognitive proximity for effective collaboration, this complexity also challenges knowledge diffusion, decreasing overall performance in more complex fields. The study underscores the dual role of cognitive proximity in fostering and limiting innovation, suggesting that organizations should strategically manage cognitive distances to maximize learning and innovation outcomes (Hwang et al., 2023).

Garcia Martinez et al. (2024) explore how geographical and cognitive proximity impact innovation performance, emphasizing that while physical closeness can facilitate collaboration, cognitive similarity—how knowledge and expertise are shared among partners—is crucial for effective collaboration across distances. Their findings suggest that these proximities interact in complex ways, leading to a "proximity paradox" where

too much closeness can stifle innovation by limiting exposure to new ideas. They propose an optimal balance of proximity dimensions to maximize innovation. They highlight organizational innovation as a key moderating factor influencing these dynamics, suggesting that strategic proximity management can enhance a firm's innovative capabilities (Garcia et al., 2024).

The study by Ferretti et al. (2022) delves into how micro-geographical proximity within the Greater Boston Area biopharma cluster impacts the formation of inter-organizational relationships. The authors demonstrate that such proximity significantly fosters the establishment of venture capital deals and intellectual property transfer agreements, underlining a 'neighborhood effect' that macro-geographical perspectives fail to capture. This research underscores the importance of considering the micro-geographical context to fully understand the dynamics of knowledge transfer and collaboration within clusters, arguing that the impact of physical closeness varies greatly depending on the nature of the interaction and the specificities of the knowledge exchanged.

Accordingly, spatial and non-spatial proximities are crucial in facilitating clusters' initial formation and effectiveness and their successful internationalization and adaptation in global markets.

However, despite substantial research on clusters and their dimensions, the interrelationships among these dimensions still need urgent and detailed exploration. Geldes et al. (2015) observed no significant distinction between cognitive and organizational proximity within a Chilean agricultural cluster but noted strong connections among cognitive-organizational, institutional, and social proximities. These findings underscore the importance of conducting detailed studies to understand the complex dynamics within clusters. This thesis aims to define and explore these non-spatial dimensions of proximity further, emphasizing the urgency and importance of this research.

2.1.4. Social proximity (CP)

Social proximity refers to the relational distance between actors in a network, often influenced by social ties and shared norms, and includes trust-based relationships at the micro-level that favor establishing collaborative ties (Shekhar & Shah, 2023; Fernandes et al., 2023). These relationships are essential in forming socially embedded relations between agents, contributing to informal relations and mutual understanding (Boschma, 2005). Social proximity is sometimes expressed as relational similarities or personal

proximities and is recognized as a subset of organizational closeness (Coenen et al., 2004; Schamp et al., 2004; Knoben & Oerlemans, 2006).

Social proximity is dynamic and interacts significantly with other dimensions of proximity. Social proximity is essential in horizontal interactive learning contexts, as shown in studies such as those in the Murano glassmaking district (Leszczyńska & Khachlouf, 2018). Strong personal relationships are fundamental to the success of inter-organizational collaboration projects, where practices such as face-to-face meetings and informal gatherings play a critical role in developing these ties (Roth & Mattes, 2023).

2.1.5. Cognitive proximity (CP)

The concept of cognitive proximity (CP) and its influence on interactive learning and innovation has received substantial scholarly attention. Nooteboom (1999) was among the pioneers who examined CP, finding that a firm's accurate comprehension and mutual assessment foster collaborative endeavors and the attainment of shared objectives. This concept has been widely used, particularly in the economics of innovation, since the seminal paper by Boschma (2005). Cognitive proximity refers to the degree to which entities possess and utilize a shared knowledge base, facilitating effective communication and cooperation (Hwang et al., 2023). This concept is intricately linked to the cognitive

dimension of social capital, which encompasses the shared understanding of language, norms, codes, values, and objectives within a social network (Sánchez-García et al., 2023). Essentially, cognitive proximity encapsulates the similarities in how actors perceive, interpret, comprehend, and evaluate their surroundings (Blasi et al., 2024). It denotes the extent to which different entities access and contribute to similar knowledge bases and expertise, significantly impacting collaborative innovation efforts' success(Lis & Lis, 2023). Moreover, cognitive proximity reflects the degree of congruence in knowledge, beliefs, and perceptions among actors, measured by the overlap in their knowledge bases; a more significant overlap suggests closer cognitive proximity (Hwang et al., 2023). In interfirm knowledge exchange, cognitive proximity is recognized as a relational attribute that signifies the extent of shared knowledge bases and expertise between firms (Wu et al., 2023). This shared cognitive ground is pivotal in enabling firms to access and effectively utilize external knowledge, enhancing their innovative capabilities (Sánchez-García et al., 2023).

The optimal level of cognitive proximity is variable and contingent upon the complexity of the knowledge in question. In domains characterized by high levels of knowledge complexity, a greater degree of cognitive proximity is imperative for successful collaboration. This is because complex knowledge is inherently more difficult to disseminate and necessitates a more substantial shared understanding for effective

communication and assimilation (Hwang et al., 2023). In other words, such proximity facilitates consensus, understanding, and communication among partnering entities (Zhao et al., 2024). The concept underscores the significance of similarities in knowledge systems for developing and enhancing cooperative relationships among business entities within clustered organizations (C.O.s) (Lis & Lis, 2023).

2.1.6. Institutional proximity (IP)

Institutional proximity involves the shared formal regulations, norms, and practices within a cluster that guide and facilitate collective actions and interactions. This concept, rooted in the broader institutional framework at the macro-level, encompasses not only formal rules and regulations but also cultural habits and values that influence organizational behavior across various classes, such as corporate bodies, SMEs, research/non-profit entities, government institutions, and risk capital providers (Boschma, 2005). Entities within the same category exhibit institutional proximity by adhering to similar institutional standards, which are pivotal in managing interactions and collaborations.

This alignment under an everyday institutional context helps prevent profiteering and facilitates interactive learning by ensuring that organizations follow standard rules and

regulations (Boschma, 2005; Noonan et al., 2021). Furthermore, institutional proximity is critical in large-scale cooperative endeavors, enhancing efficiency by reducing transaction costs and streamlining processes. Such similarities in institutional frameworks are essential for fostering efficient collaboration and ensuring smooth cooperative engagements (Barakat et al., 2023; Shekhar & Shah, 2023). This proximity dimension significantly influences how effectively firms work together within the same institutional context.

2.1.7. Organizational proximity (CP)

Organizational proximity refers to the structural and relational links between organizations that facilitate effective interactions, such as joint ventures or alliances. This proximity involves formal and informal connections within and across firms, enabling collaboration and resource sharing (Barakat et al., 2023). These connections are crucial in supporting a firm's success in international markets, where the owner/manager's experience and expertise, the organizational evolution of the company, and the ability to adapt to changing market conditions and business practices play significant roles (Chen et al., 2021).

The concept of organizational proximity is multifaceted and intersects with various non-spatial proximity, which has sometimes led to conceptual ambiguity. According to Torre and Rallet (2005), organizational proximity emerges when actors facilitate interactions through behavioral rules and routines, leading to shared beliefs. However, the challenge arises when researchers view organizational proximity as a blend of geographical and non-spatial dimensions, causing overlaps that complicate its definition.

Knoben and Oerlemans (2006) further expand on this by linking organizational proximity to cultural, cognitive, social, and knowledge proximity, suggesting that it plays a dual role. On one level, it determines the structural equivalence of actors—how similar organizations are in structure and function. On another level, it forms the basis for membership in specific networks, defining how organizations relate and connect with a broader ecosystem. Definitions acknowledging these aspects offer a more comprehensive understanding of organizational proximity, emphasizing its importance in facilitating intra- and inter-organizational cooperation and learning.

2.1.8. Marketing cooperation

The topic of intra-organizational cooperation in marketing is entirely different from that of inter-organizational marketing cooperation. Inter-firm marketing cooperation

refers to collaborative arrangements between independent firms that share resources on an ongoing basis to enhance their marketing capabilities and reach. This form of cooperation is pivotal in leveraging collective strengths to achieve competitive advantages that may not be possible for individual firms acting alone (Felzensztein & Gimmon, 2009). This cooperation involves voluntary collaborative efforts between companies to enhance their marketing functions, such as market research, trade missions, branding, and sales (Porter, 2000; Geldes et al., 2017). This form of cooperation is a non-technological innovation that significantly impacts firm competitiveness and regional economic development (OECD, 2005). By engaging in joint actions, firms can leverage external economies of scale and access new markets, leading to increased business opportunities and enhanced competitiveness (Felzensztein et al., 2010). Inter-firm marketing cooperation primarily aims to leverage complementary strengths, resources, and customer bases to achieve outcomes unattainable by each firm acting independently (Lu & Yang, 2004). This form of cooperation can occur at any point in the supply chain, involving manufacturers, suppliers, and retailers, and often extends to include firms in different industries or sectors. The benefits of such collaboration are manifold, including enhanced market reach, increased customer base, and improved competitiveness. It also allows firms to share risks and costs, leading to more efficient operations and better financial performance.

Inter-firm marketing cooperation, as described by Lu & Yang (2004), is a strategic tool firms employ to bolster their competitive position through collaboration. Its success hinges on integrating critical functional areas such as R&D and marketing, which must align with the firm's overall strategy and adapt to environmental uncertainties. This underscores the need for firms to foster a culture of collaboration and open communication, not just within the organization but also with external partners, to exploit the benefits of inter-firm cooperation fully. For instance, Bandeiras et al. (2020) found that such cooperation facilitates a more reliable and economically efficient energy distribution among participating microgrids and promotes sustainable energy practices by optimizing the use of distributed energy resources. The cooperative models, including peer-to-peer and centralized market structures, demonstrate potential for improving microgrid operations' resilience and financial viability.

A critical aspect of inter-firm marketing cooperation is the reliance on various dimensions of proximity. According to Felzensztein et al. (2012), clustering influences the propensity for inter-firm cooperation. It enhances the effectiveness of these collaborative marketing efforts, suggesting that geographic and relational proximity plays a critical role in shaping cooperative marketing strategies. Furthermore, proximity can be understood as cognitive, geographical, institutional, organizational, and social factors. Each of these dimensions plays a unique role in facilitating cooperation between firms.

Cognitive proximity, for instance, ensures that firms share similar knowledge bases and technical understanding, which is crucial for effective communication and joint decision-making (Boschma, 2005). Although less significant in the digital age, geographical proximity still impacts cooperation by reducing logistic costs and enhancing communication efficiency (Geldes et al., 2015). The presence of clusters, however, facilitates frequent face-to-face interactions critical for effective communication and trust-building, thus fostering cooperative marketing efforts among firms (Porter, 1998; Felzensztein & Gimmon, 2009).

Social proximity is perhaps the most critical factor influencing inter-firm marketing cooperation. It involves trust and the strength of informal relationships between the employees of different firms. High levels of social proximity allow for more robust communication, mutual understanding, and a greater likelihood of sustained cooperative engagement (Geldes et al., 2015). Studies have shown that social proximity is a significant determinant of practical inter-firm cooperation, even more so than geographical proximity (Felzensztein et al., 2010). Social networks also play a crucial role in developing inter-firm marketing cooperation. These networks, composed of formal and informal relationships, provide a platform for information exchange, trust building, and learning among firms. In the context of clusters, the density and quality of these networks can significantly impact the extent and effectiveness of marketing cooperation. Social

networks enable firms to access valuable market information, learn about new opportunities, and efficiently coordinate joint marketing efforts (Felzensztein & Gimmon, 2009).

Furthermore, institutional proximity, a commonality in regulatory and cultural frameworks, can significantly ease collaboration by providing a common ground for expectations and norms. On the other hand, organizational proximity concerns the similarities in internal structures and processes, which can streamline collaboration efforts across firms (Felzensztein et al., 2010). Felzensztein et al. (2012) highlight that managers in clustered industries tend to have a more robust perception of the advantages of geographic co-location in enhancing access to market and marketing knowledge, fostering innovation, and facilitating cooperative activities such as joint trade fair participation and market information research.

However, the impact of these proximities is not uniform and can vary based on the regional and economic context and the industry in question. For example, in emerging economies or specific industries like agribusiness, different proximity dimensions might play significant roles in shaping the outcomes of marketing cooperation (Felzensztein et al., 2010; Geldes et al., 2015). The shared resources can range from joint marketing activities and shared distribution channels to co-branding efforts (Felzensztein &

Gimmon, 2009). In addition, differences in national and regional cultures can affect cooperative behaviors among firms. For instance, cultures emphasizing collectivism may facilitate more collaborative and trustful inter-firm relationships than individualistic cultures, which may prioritize competitive over cooperative strategies (Hofstede, 1991; Felzensztein & Gimmon, 2009).

In summary, inter-firm marketing cooperation is a strategic alliance where firms jointly leverage marketing resources to achieve shared goals and gain substantial competitive advantages. Geographical co-location, social network strength, cultural factors, and various proximity dimensions significantly influence this cooperation. These factors are critical in forming, maintaining, and succeeding in cooperative marketing efforts, helping firms enhance their market position and expand capabilities. Understanding these nuances is essential for firms and policymakers to design effective strategies that capitalize on the benefits of collaborative marketing within industrial clusters. Furthermore, this cooperation process is crucial for clusters aiming to internationalize and gain a competitive edge in global markets (Felzensztein et al., 2010; Chen et al., 2021). These proximities help form a cohesive unit that efficiently generates and disseminates Export Market Intelligence (EMI), which encompasses market trends, customer preferences, and competitive dynamics essential for international market success (Cadogan et al., 2002; Chung, 2012).

2.1.9. Export marketing intelligence

Export Marketing Intelligence (EMI) is a vital function within international business, focusing on systematically collecting, analyzing, and applying market information to support decision-making in export-related activities (Williams & Chaston, 2004). This function is essential and empowering for exploring export opportunities, understanding market demands, and managing the complexities of international market environments (Revindo et al., 2024). Importantly, EMI is a game-changer in enhancing the global competitiveness of small and medium-sized enterprises (SMEs), proving that even with limited resources, SMEs can thrive in the global market (Williams & Chaston, 2004).

EMI is a strategic process that analyzes consumer behavior, competitive environments, market trends, regulatory frameworks, and cultural differences influencing export activities. Companies engage in competitor analysis, customer feedback collection, and reviewing market reports and trade fairs to gather necessary data (Williams, 2003). This strategic intelligence guides firms in making decisions about market entry, product adaptation, pricing, and promotional tactics in foreign markets (Williams & Chaston, 2004).

Overall, EMI equips businesses, particularly SMEs, with critical insights into consumer preferences, potential barriers, and market dynamics across different

countries. This enables them to navigate institutional and infrastructural challenges to internationalization, such as limited resources and expertise (Bell & Demick, 1996), thus optimizing their marketing strategies and achieving success in global markets (Morgan et al., 2012; Katsikea et al., 2019).

EMI comprises two main processes: generation and dissemination of export market intelligence. Generating export market intelligence involves collecting detailed and specific information about the external environment of foreign markets, such as customer needs, competitor activities, and market dynamics. This information is crucial for firms to adapt their strategies effectively to suit different market conditions and customer preferences (Katsikea et al., 2019). On the other hand, the dissemination process involves the internal distribution of the gathered intelligence within the firm. This ensures that the valuable insights obtained are accessible across various departments, supporting cohesive and informed decision-making and strategy formulation. Proper dissemination enables a firm to respond dynamically to market changes and align its internal strategies with external market realities, thus maintaining competitiveness and relevance in foreign markets (Morgan et al., 2012; Katsikea et al., 2019).

EMI does not operate in isolation but is interlinked with various business functions. It can inform product development by identifying specific needs in foreign markets,

influencing strategic decisions, and guiding marketing communications tailored to different cultural contexts. It also supports better supply chain management by understanding new markets' logistical challenges and regulatory environments (Bell & Demick, 1996).

According to the above discussion, export Marketing Intelligence (EMI) is crucial in framing the international strategies of businesses, particularly small and medium-sized enterprises (SMEs) (See: Williams & Chaston, 2004; Murray et al., 2011; Morgan et al., 2012; Katsikea et al., 2019). EMI is an essential tool that enables firms to understand and successfully navigate the complexities of global markets. As international competition intensifies, the role of EMI in securing sustainable success in exports becomes increasingly significant

However, marketing intelligence often needs more attention in discussions about cluster internationalization. The generation and dissemination of Export Marketing Intelligence through Marketing Cooperation involves strategic company partnerships. These collaborations enhance their understanding of foreign markets and bolster their marketing strategies for exporting goods and services. This approach draws on the idea that cooperation—encompassing social relationships, cognitive similarities, shared

values, norms, and habits—facilitates knowledge creation and sharing. This concept supports organizational collaboration (Knoben & Oerlemans, 2006).

Moreover, firms working together to make significant product design, packaging, placement, promotion, and pricing adjustments to align with international markets can further improve their Export Marketing Intelligence related to these areas.

2.1.10. Green marketing cooperation

As consumer awareness about environmental responsibilities grows, manufacturers increasingly design eco-friendly products, and retailers promote these through green marketing strategies. This shift in consumer demand underscores the need for greater cooperation among various stakeholders to enhance the effectiveness of green marketing initiatives (Hong & Guo, 2019; Kar & Harichandan, 2022). Although there is some debate among researchers about whether cooperation helps or hinders the adoption of green marketing strategies—with some viewing it as a barrier (Banerjee, 2003; Dangelico & Pujari, 2010) and others identifying a strong positive correlation (Nielsen et al., 2020; Li et al., 2022; Peng et al., 2022; Yang et al., 2022)—the prevailing view is that cooperation is beneficial.

Over the past two decades, the academic focus has been on elucidating how cooperation impacts green marketing. For instance, collaboration on sustainability programs, supply chain partnerships, and collective actions can significantly enhance environmental impacts (Calik et al., 2020; Youn et al., 2012; Rane et al., 2021). These collaborative efforts facilitate sharing knowledge and resources, thereby fostering industry standards that enhance business credibility and consumer trust (Salim et al., 2020; Rauter et al., 2019; Casidy & Yan, 2022). Polonsky (2011) a noted author on green marketing, emphasizes that such collaborations are crucial for exchanging ideas, best practices, and innovations.

Challenges, however, persist in the form of high costs associated with acquiring knowledge, innovation in production, and cultural adaptation (Melander, 2017; Ilg, 2019; Ullah & Arslan, 2022; Yu et al., 2021; de Medeiros et al., 2018; Wang et al., 2020). Addressing these challenges requires a comprehensive framework that supports cost management, knowledge exchange, innovation, and culture building within green marketing cooperation.

Further examination reveals that while there is a strong focus on technological innovation in business cooperation, there is comparatively less emphasis on non-technological aspects such as marketing cooperation (Geldes et al., 2015). Marketing

cooperation involves innovative strategies and approaches that enhance marketing efforts without necessarily involving technological advancements. Such collaboration can extend to green marketing, thus promoting eco-friendly products and practices (Dangelico & Vocalelli, 2017; Belso et al., 2024).

Considering evolving market demands and technological advancements, businesses must reevaluate their activities to align more closely with environmental sustainability. This reevaluation includes integrating green marketing into the core of business strategies to satisfy consumer needs, achieve organizational goals, and maintain ecosystem compatibility (Fuller, 1999; Dangelico & Vocalelli, 2017).

Ultimately, collaborative efforts within green marketing are critical. They can drive research cooperation, knowledge dissemination, and joint marketing endeavors, which are crucial for tackling the complex challenges of environmental sustainability. Such inter-organizational alliances can lead to shared resources and knowledge, advocacy for policy measures, and the development of environmentally conscious products and solutions. This collaborative approach fosters a culture of environmental sustainability and demonstrates the transformative power of cooperation in addressing complex global issues.

2.2. Conceptual Framework and Hypotheses

2.2.1. Non-spatial proximities' relationships

Social proximity is dynamic and significantly interacts with other dimensions of proximity. For example, geographic proximity often facilitates frequent face-to-face interactions that foster social connections, thereby enhancing trust and mutual commitment, which are vital for collaborative innovation and interactive learning (Roth & Mattes, 2023; Knoben & Oerlemans, 2006). Furthermore, social proximity both affects and is affected by cognitive proximity, where trust and shared norms support knowledge acquisition and dissemination, creating a shared cognitive base among firms that improve communication and collaboration (Barakat et al., 2023; Chumnangoon et al., 2023).

In regional clusters, social proximity is influenced by cognitive, organizational, and institutional proximity. Trust and mutual understanding promote social ties, which boost interactive learning and collaborative innovation. Cognitive proximity establishes a shared framework for knowledge dissemination and strengthens social connections. Organizational proximity aligns structures and routines, facilitating coordination and enhancing trust, strengthening social relationships. Similarly, institutional proximity, through standard norms and regulations, fosters a cohesive environment that both

supports and benefits from strong social networks (Roth & Mattes, 2023; Knoben & Oerlemans, 2006; Barakat et al., 2023; Chumnangoon et al., 2023).

Cognitive proximity draws similar organizations closer within densely populated areas, enhancing information exchange and innovation communication, especially when firms share similar knowledge bases (Sánchez-García et al., 2023; Zhao et al., 2024). The extent of cognitive proximity between firms significantly influences their ability to access and apply external knowledge for innovation, underlining its critical role in enhancing a firm's innovation performance (Zhao et al., 2024; Wu et al., 2023). However, excessive cognitive proximity can lead to innovation lock-in, reducing diversity and mutual learning, thereby highlighting the need to balance cognitive proximity and distance to foster innovation and learning (Boschma, 2005; Wu et al., 2023; Zhao et al., 2024).

As a result, organizational, social, and institutional proximities shape cognitive proximity within a regional cluster. Organizational structures facilitate the sharing and assimilation of knowledge, directly impacting cognitive alignment. Social proximity nurtures trust and shared values, which are crucial for effective communication and joint problem-solving, thus influencing cognitive understanding. Institutional settings also play a critical role by aligning educational and professional standards among cluster

members, thereby fostering cognitive proximity (Sánchez-García et al., 2023; Zhao et al., 2024).

Institutional proximity, characterized by shared formal rules, norms, and routines, establishes a common foundation for aligning cognitive efforts toward innovation, particularly in regulated environments where activities must adhere to specific standards (Fernandes et al., 2023). Such environments enhance cognitive proximity, enabling entities with similar training and professional guidelines to achieve cognitive alignment, thus influencing organizational structures and practices. This alignment facilitates cooperation by minimizing misunderstandings and improving coordination (Fernandes et al., 2023; Geldes et al., 2015).

In regional clusters, "institutional proximity" is supported by cognitive, organizational, and social proximity. Cognitive alignments, such as shared goals and knowledge bases, promote adherence to common institutional frameworks, which are crucial in regulated innovation contexts. Organizational proximity ensures entities operate within similar regulatory frameworks, fostering institutional cohesion. Through trust and mutual commitments, social proximity bolsters compliance with institutional norms and enhances cooperative behavior (Fernandes et al., 2023; Boschma, 2005).

Organizational proximity involves aligning internal structures and processes within similar institutional contexts, supporting inter-organizational interactions, and conformity with broader regulatory and normative frameworks (Barakat et al., 2023). This proximity dimension is instrumental in enhancing other dimensions like cognitive, social, and institutional, especially when geographical proximity is present (Boschma, 2005). It facilitates knowledge exchange, cooperative actions, and innovation within clusters, remaining crucial for regional development and corporate sustainability despite technological advances that reduce the need for geographic closeness (Porter, 1998; 2000; Ruiz-Ortega et al., 2021).

Cognitive, social, and institutional proximities influence organizational proximity in regional clusters. Cognitive proximity allows organizations to share and integrate knowledge effectively, leading to aligned organizational practices. Social proximity fosters trust and mutual understanding, facilitating smoother organizational coordination and cooperation. Institutional proximity ensures that organizations adhere to a standard set of norms and regulations, standardizing procedures and behaviors across the cluster and establishing a foundation for organizational proximity (Barakat et al., 2023).

Consequently, the second phase of this thesis explores four distinct models (M1, M2, M3, and M4) to examine all potential relationships among these variables (refer to Figures 4 to 7). These models suggest that different types of proximity influence one another. In Model 1 (M1), cognitive proximity (CP), institutional proximity (IP), and organizational proximity (OP) serve as independent variables, with social proximity (SP) as the dependent variable.

Proposed hypothesis **H1s-** *In a regional cluster, social proximity is affected by (a) cognitive proximity, (b) organizational proximity, and (c) institutional proximity*. (Figure 7)

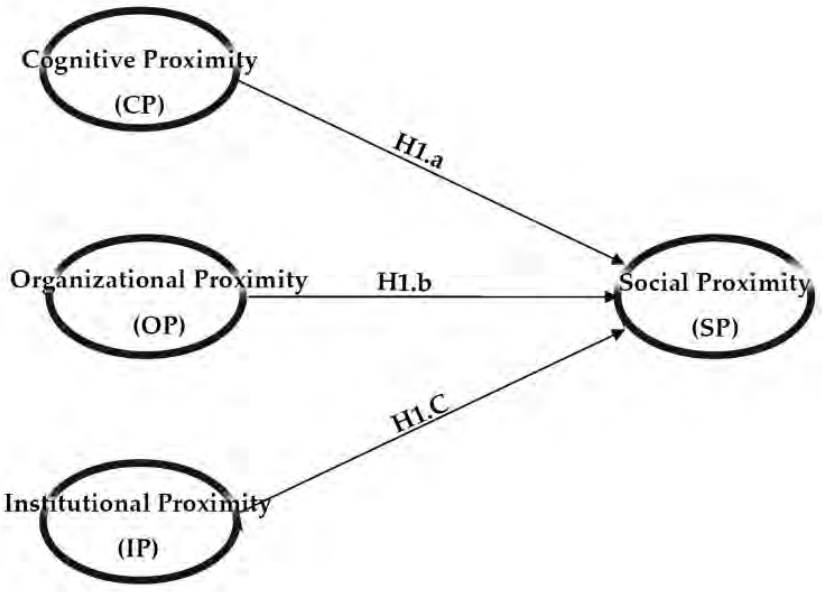

Figure 7- Social proximity (M1)

Model 2 (M2) positions CP as the dependent variable, while SP, IP, and OP act as independent variables.

Proposed hypothesis **H2s-** *In a regional cluster, cognitive proximity is affected by (a) organizational proximity, (b) social proximity, and (c) institutional proximity*. (Figure 8)

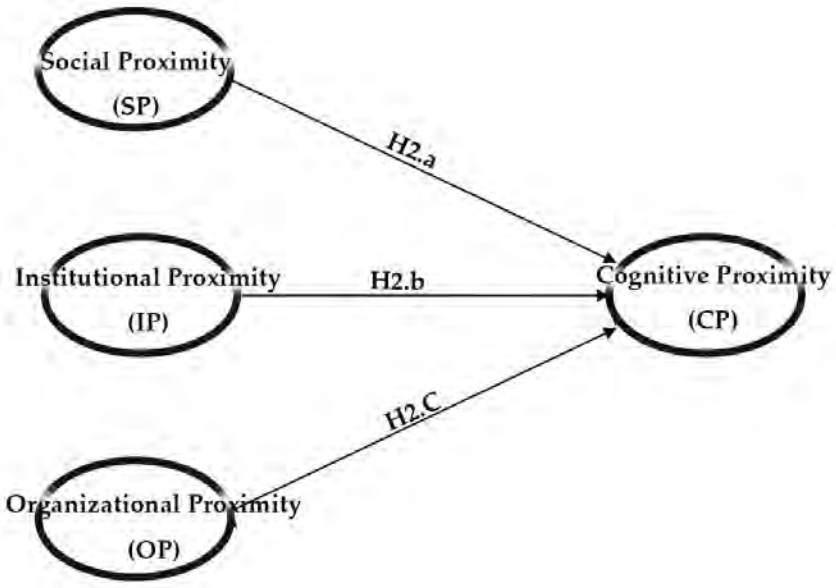

Figure 8- Cognitive Proximity (M2)

In Model 3 (M3), OP is the dependent variable, influenced by CP, SP, and IP as independents.

Proposed hypothesis **H3s-** *In a regional cluster, institutional proximity is affected by (a) cognitive proximity, (b) organizational proximity, and (c) social proximity*. (Figure 9)

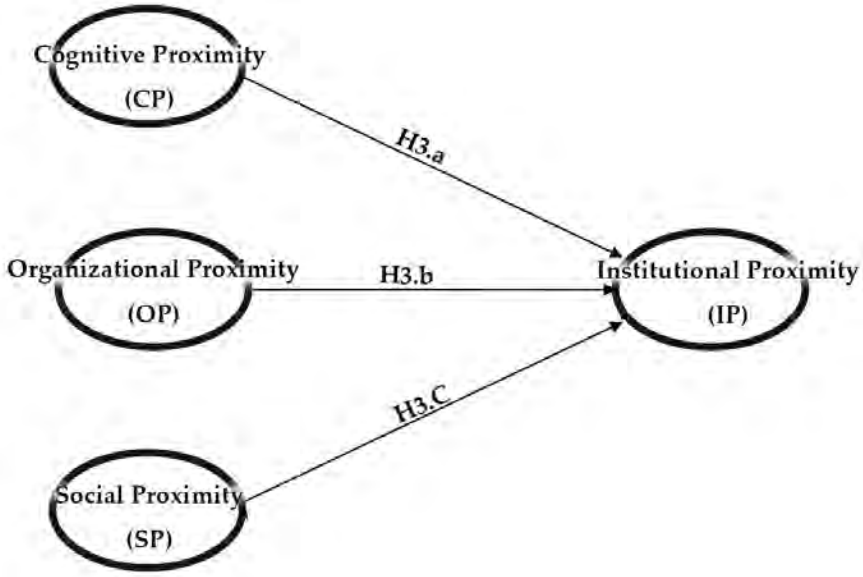

Figure 9- Institutional Proximity (M3).

Finally, Model 4 (M4) identifies SP, CP, and OP as independent variables with IP as dependent.

H4s *In a regional cluster, organizational proximity is affected by (a) cognitive proximity, (b) social proximity, and (c) institutional proximity*. (Figure 10)

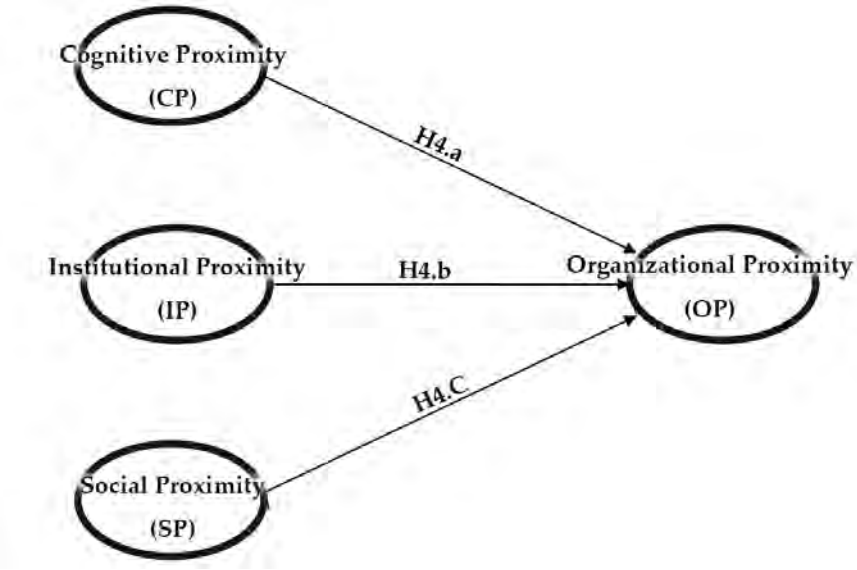

Figure 10- Organizational Proximity (M3)

2.2.2. Exploring the role of non-spatial proximity in enhancing export marketing intelligence through cooperative marketing

Non-spatial Proximity and Marketing Cooperation- Understanding the dynamics between various proximity dimensions is essential for enhancing collaborative efforts and strategic initiatives in marketing and innovation. This thesis underscores the vital role of clusters, consisting of diverse actors—from competitors and government entities to educational institutions—that collaborate closely to facilitate knowledge transfer and foster innovative networks (Porter, 2000; Geldes et al., 2017). Clusters leverage geographic proximity and foster rich political, economic, institutional, and social

interactions, which are integral for generating and disseminating knowledge through these networks (Malmberg & Power, 2005).

Expanding on this framework, as mentioned before, Boschma (2005) identified four additional non-spatial proximity dimensions—social, cognitive, institutional, and organizational—that, alongside geographic proximity, are crucial for spurring innovation in today's technologically driven communication landscape. These dimensions collectively shape the unique characteristics of clusters.

Furthermore, innovations within collaborations are categorized into technological and non-technological types. Non-technological innovations, such as cooperative marketing, often necessitate changes in organizational structures, processes, or cultures to enhance collaboration (OECD, 2005). It aims to clarify how non-spatial proximity dimensions influence marketing collaboration within clusters, as perceived by cluster coordinators. In this context, social proximity encourages more personal interactions, which are critical for professional exchanges (Roth & Mattes, 2023).

Relationship between Social Proximity and Marketing Cooperation- Social proximity, defined by Boschma (2005) as "socially embedded relations between agents at the micro-level," plays a critical role in fostering initial interactions and establishing mutual goals within clusters. This type of proximity, based on mutual trust and friendship, is essential for overcoming the main

obstacles to cooperation and significantly impacts collective innovation (Wang & Krakover, 2008; Capone & Lazzeretti, 2018). Trust, a fundamental achievement of social proximity, facilitates business interactions and localized learning processes in an innovation-driven economy (Wasiluk & Saadatyar, 2020; Boschma, 2005).

Research shows that social proximity enables access to diverse knowledge sources, enhances innovative orientation, and simplifies partner selection, thus increasing the likelihood of collaboration. This type of proximity is especially crucial in times of crisis when firms prioritize familiar and trustworthy partners (Tsouri, 2019; Errico et al., 2022). Geldes et al. (2015) found a strong correlation between social proximity and inter-firm marketing cooperation, emphasizing that reduced social distance leads to more cohesive and effective marketing efforts.

Further, social proximity promotes an environment conducive to informal exchanges and tacit knowledge sharing, essential for innovative solutions and problem-solving in collaborative projects (Roth & Mattes, 2023; Fernandes et al., 2023). It also fosters trust and reduces transaction costs, thereby supporting structured organizational relationships and enhancing the overall success of collaborative efforts (Martens et al., 2023).

Moreover, the interconnectedness of relational and cognitive dimensions extends beyond physical or spatial aspects, influencing knowledge sharing and firm

competitiveness (Chumnangoon et al., 2023). Personal solid ties developed through social proximity contribute to positive working relationships, facilitating the initiation and sustainability of long-term cooperative agreements (Roth & Mattes, 2023).

In summary, understanding and leveraging the dynamics of social proximity can provide a strategic advantage in managing inter-organizational collaborations, particularly in marketing, where proximity can align strategies, share market intelligence, and initiate joint marketing initiatives, especially in tightly knit clusters such as those in high-tech industries (Lis & Lis, 2023).

Relationship between Cognitive Proximity and Marketing Cooperation- Cognitive proximity (CP), which involves sharing a similar knowledge base and expertise, significantly enhances collaboration and innovation performance by facilitating mutual learning among individuals and organizations (Shu et al., 2021; Boschma, 2005). It allows companies with similar references and knowledge bases to better process new information and adapt to environmental changes. There is a consensus that CP underpins effective collaboration, particularly as cognitively close firms can more easily understand each other, share goals, and jointly navigate complex marketing efforts (Geldes et al., 2017; Garcia et al., 2018; Albert-Cromarias & Dos Santos, 2020).

Furthermore, CP supports effective communication and efficient knowledge transmission, which is essential for collaborative innovation processes. It enables firms to align goals better and facilitates more effortless knowledge transfer, crucial in marketing efforts requiring coordination and mutual understanding (Martens et al., 2023; Barakat et al., 2023). The discourse also highlights that close social and cognitive proximities improve firms' understanding of consumer needs and enhance collaboration on marketing initiatives.

The interdependence between cognitive and other proximity dimensions is critical in fostering inter-organizational collaboration, thereby increasing the likelihood of successful interactions and knowledge sharing. This nuanced understanding contributes to a more comprehensive grasp of the mechanisms underpinning inter-organizational learning and collaboration.

For instance, clear expectations and shared norms established through cognitive proximity facilitate university-industry collaborations, especially in regions with strong institutional support for innovation (Fernandes et al., 2023). In the agri-food sector, better cognitive and social proximities lead to more effective branding and marketing strategies that align with local values and sustainability goals (Martens et al., 2023).

In international marketing contexts, cognitive and social proximities are crucial for understanding market nuances and customer behavior, enabling firms to effectively tailor their strategies to local preferences and behaviors (Rivero-Gutiérrez et al., 2024). This interconnectedness of proximity dimensions significantly influences marketing strategies, demonstrating the strategic importance of fostering cognitive and social proximities in a globalized economy.

However, the impact of CP on cooperation is not without contention. Although prior investigations recognized CP as a fundamental factor in fostering innovation and enhancing interactions related to knowledge transfer and collective intelligence generation, studies like those by Geldes et al. (2015) suggest that the relationship between CP and inter-firm marketing cooperation might not be significant. This indicates a need for further research to clarify CP's role in marketing cooperation (Garcia et al., 2018).

Relationship between Institutional Proximity and Marketing Cooperation- Institutional proximity (IP) is critical in marketing cooperation by providing a common regulatory and normative framework that influences companies' operations. This proximity includes formal aspects, such as laws and regulations, and informal aspects, such as culture, norms, and habits. North (1991) defines *institutions* as "the humanly devised constraints that structure political, economic, and social interaction,"

encompassing everything from taboos and traditions to constitutions and property rights. Boschma (2005) further highlights IP as a pivotal dimension for innovation, emphasizing its role at the macro-level institutional framework.

The shared understanding fostered by IP can simplify the planning and execution of marketing strategies, ensuring compliance and reducing the risks of legal conflicts. This commonality is especially valuable in international marketing, where understanding local regulatory boundaries and consumer rights is crucial (Fernandes et al., 2023; Lis & Lis, 2023). Companies that share institutional proximity can streamline their marketing efforts as they operate within similar expectations and regulations, thereby enhancing market penetration and reducing misunderstandings related to regulatory compliance (Martens et al., 2023).

It is sometimes disagreed upon whether Institutional Proximity positively affects marketing cooperation. While it is expected to facilitate knowledge transfer and cooperation by creating a shared environment of similar behavioral models and procedures, studies such as those by Geldes et al. (2015) found no significant positive relationship between IP and marketing cooperation. This discrepancy may stem from the overlap and ambiguities in definitions of IP, mainly when interacting with other types of proximity like cognitive, social, and organizational (Knoben & Oerlemans, 2006).

Moreover, institutional proximity, particularly at the organizational level, can impact how thriving entities can leverage other forms of proximity. For example, a high degree of institutional and organizational proximity can enhance the effects of social proximity by providing a structured context for interactions. In contrast, cognitive proximity can be more effectively leveraged within entities that share similar organizational norms and routines (Shekhar & Shah, 2023).

Overall, institutional proximity significantly influences marketing strategies by ensuring that firms are aligned with local customs, legal standards, and business practices, which is crucial for successful marketing across different regional and national contexts.

Relationship between Organizational Proximity and Marketing Cooperation- Organizational proximity (OP) significantly influences the success of marketing cooperation by aligning firms along similar organizational structures and norms, facilitating strategic partnerships, and reducing operational risks. Wang and Krakover (2008) assert that firms with comparable organizational systems are more likely to engage in successful strategic networks as they adhere to the same rules and regulations. This alignment simplifies communication, regulation, and sanctioning processes, enhancing cooperation (Cadogan et al., 2001).

Moreover, OP supports the synchronization of marketing efforts across firms and ensures compliance with local laws and regulations, enhancing legitimacy and reducing risks (Rivero-Gutiérrez et al., 2024). Firms' ability to align their marketing strategies resulted in better market penetration and cost efficiencies, leveraging collective resources such as joint marketing campaigns and shared market research (Barakat et al., 2023).

The proximity framework is crucial in rural agri-food systems, where high levels of organizational and cognitive proximities lead to more effective communication and shared market insights, thus fostering competitive advantage and innovation (Lis & Lis, 2023). Additionally, Gyamfi and Stejskal (2021) highlight OP's role in facilitating open innovation among SMEs by reducing opportunism and controlling uncertainty.

Despite these benefits, the concept of OP faces conceptual ambiguity due to its overlap with non-spatial proximities like cultural, cognitive, and social dimensions, which complicates its definition and application in research (Knoben & Oerlemans, 2006; Torre & Rallet, 2005). Nonetheless, understanding and leveraging OP is essential for firms seeking to navigate international markets and adapt to changing conditions (Chen et al., 2021), as it directly impacts their ability to enter and perform in strategic networks and regional innovation systems (Gao et al., 2021).

Marketing Cooperation (MC) and Expert Market Intelligence (EMI)- Cooperation can mediate non-spatial proximity and facilitate knowledge creation (Geldes et al., 2017). Every item that causes harmony in an organization, such as social relationships, cognitive similarities, similar organizational culture, values, norms, and habits, can be the reason for organizational cooperation (Knoben & Oerlemans, 2006). On the other hand, this collaboration is essential for market intelligence generation and dissemination, especially in export (Cadogan et al., 2002).

Firms in clusters, however, have the advantage of working together and competing simultaneously to achieve common goals, in which marketing plays a vital role as a complement to cooperation (Porter, 2000). Geldes *et al.* (2017) used inter-firm cooperation to mediate between proximity and innovation. Also, Geldes *et al.* (2015) had already proposed marketing cooperation to create and sustain competitive advantages in the cluster. According to Wang and Krakover (2008), innovative cooperation arises from shared goals and foster through collaboration and joining strategic networks. Marketing cooperation was defined as obtaining new business methods in internal and external relations to implement "significant changes in product design or packaging, product placement, product promotion or pricing" (OCED, 2005, p. 48). Geldes *et al.* (2015, p. 264) proposed that cluster inter-firm marketing cooperation "includes participation in trade

fairs, delegations to clients, trade missions, firm referrals, and information gathering/sharing."

SMEs require cooperation to access strategic resources and improve marketing strategies (Martin *et al.,* 2019). Other investigations also reveal that the parties must cooperate formally to achieve effective international strategies (Jankowska, 2015), in which the cluster organization is the controller and catalyzer (Jankowska, 2015). Accordingly, intra-cluster marketing cooperation can be crucial in generating and disseminating export market intelligence by cluster organizations. Moreover, cluster organizations can help firms better understand their customers and markets and develop effective marketing strategies to succeed in global markets by promoting collaboration and information sharing among firms within the cluster. Based on these considerations and the discussion about Marketing Cooperation (hereafter MC) and Export Marketing Intelligence (hereafter EMI), this thesis expanded the Geldes *et al.* (2015; 2017) model by proposing new hypotheses.

According to the above discussion, the assumptions presented in this section are divided into three categories. The first group of hypotheses in this section is an upgrade of the relationship between different dimensions of non-spatial proximity. Many studies have emphasized the interrelationship between these dimensions in the past, but more is needed. However, researchers must highlight the significance of non-spatial dimensions

in enhancing cluster performance (Geldes et al., 2015). Wang & Krakover (2008) believes that the degrees of proximity between firms can directly impact the level and type of inter-firm cooperation, specifically in marketing. Therefore, this paper examines the significance of non-spatial proximities in marketing cooperation by analyzing their linear relationships, building on previous findings (Mazandarani & Royo, 2022; Royo-Vela & Mazandarani, 2022). In the first hypothesis, non-spatial dimensions of proximity are linearly related to each other:

H1.1 Social Proximity positively impacts Cognitive Proximity.

H1.2 Cognitive Proximity Positively Impacts Institutional Proximity.

H1.3 Institutional Proximity positively impacts Organizational Proximity.

The study incorporates the classification of proximities by Geldes et al. (2015), which is well-regarded in scholarly literature, alongside Boschma's (2005) typology. Numerous investigations have explored how different dimensions of proximity—such as social, cognitive, institutional, and organizational—interact in various industrial sectors (e.g., Felzensztein et al., 2010). These analyses reveal that these proximity dimensions collectively enhance collaborative innovation and cooperation, particularly in cluster marketing. Effective management and understanding of these dimensions can help firms

maximize their collaborative efforts' benefits, leading to a sustained competitive advantage and enhanced innovation performance (Knoben & Oerlemans, 2006; Boschma, 2005).

However, there remains a need for further research on how proximity influences inter-firm marketing cooperation in clusters, particularly regarding non-technological innovation (Geldes et al., 2015). To this aim, the second set of hypotheses posits a positive relationship between inter-firm marketing cooperation and the non-spatial aspects of proximity, as illustrated in Figure 11. Specifically, Hypothesis 2 suggests that non-spatial proximity positively impacts inter-firm marketing cooperation in several significant ways.

H2.1- Social Proximity directly and positively impacts Marketing Cooperation.

H2.2 Cognitive Proximity directly and positively impacts Marketing Cooperation.

H2.3 Institutional Proximity directly and positively impacts Marketing Cooperation.

H2.4 Organizational Proximity directly and positively impacts Marketing Cooperation.

The subject of this paper is export market intelligence within cluster organizations. The focus is on how inter-firm marketing cooperation mediates between firms' non-spatial proximities and EMI generation and dissemination at cluster organizations. Following this discussion, a third set of hypotheses can be formulated:

H3.1 Marketing Cooperation directly and positively impacts Export Market Intelligence generation in cluster organizations.

H3.2 Marketing Cooperation directly and positively impacts Export Market Intelligence dissemination in cluster organizations.

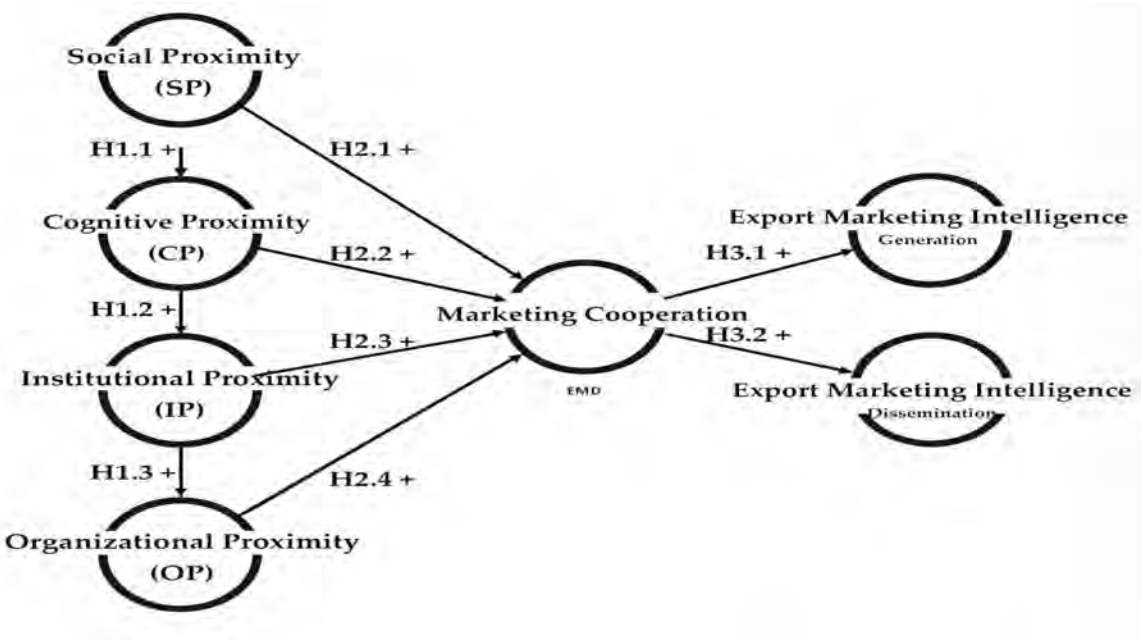

Figure 11- Relationships among non-spatial dimensions of proximities, interfirm marketing cooperation, and export market intelligence components.

3. METHODOLOGY

This PhD thesis utilizes a range of methodologies across its various sections to meet its objectives, research questions, and hypotheses. Four studies were conducted—two qualitative and two quantitative. The first and fourth studies used distinct qualitative methods via bibliometric reviews. A uniform quantitative methodology was applied to analyze the principal models of this doctoral thesis, corresponding to the second and third studies. The data collected in these studies are reliable and pertinent. Consequently, this section delineates the three methodologies employed in this thesis, discussing each in the sequence of their implementation.

3.1 Bibliometric Analysis of Internationalization of Clusters (1st Research)

A keyword-driven bibliometric review developed a thorough understanding of the subject before designing the primary models in this PhD thesis. Researchers use various methods to review articles based on their research goals (Weismayer & Pezenka, 2017). Üsdiken and Pasadeos (1995) categorize these methods into six distinct approaches: analysis of publication volume, co-citation analysis, comprehensive reviews, method-specific investigations, journal-specific analysis, and meta-analysis. Specifically, bibliometrics serves as a qualitative technique to "describe research patterns and identify relationships between documents" (Weismayer & Pezenka, 2017, p. 1759). Among

qualitative methods, keyword analysis is highly recommended for bibliometric studies (Muñoz-Leiva et al., 2012).

The concept of clustering and internationalization presents a paradox, making the internationalization of clusters complex. A thorough bibliometric mapping analysis is considered one of the most effective methods to understand this issue (Cobo et al., 2011). This technique involves analyzing the frequency of keyword usage, reviewing the literature, integrating analyses (Fahimnia et al., 2015), and mapping the relationships among selected documents to assess the nature and scope of these relationships, as well as their development over time (Cobo et al., 2012). However, this task has become less challenging with the advent of new technologies and software.

This study utilized SciMAT, one of the most advanced science mapping software tools. Cobo et al. (2012) evaluated the strengths and weaknesses of nine bibliometric mapping software tools to develop this multifunctional software capable of performing analyses within a longitudinal framework. SciMAT facilitates all mapping steps within the broader scientific context, including measurement, algorithm design, and result visualization, enabling researchers to leverage these findings for their studies. Moreover, it integrates various features and tools from similar software to organize input data and conduct

necessary measurements and analyses, thus clearly understanding the results (Cobo et al., 2012, p. 1609).

Following the software instructions, this chapter conducted an eight-step methodology to collect and analyze the keywords from selected articles (Figure 12). This comprehensive method has been established to identify the top studies, determine the most essential items in this topic, and facilitate future investigation.

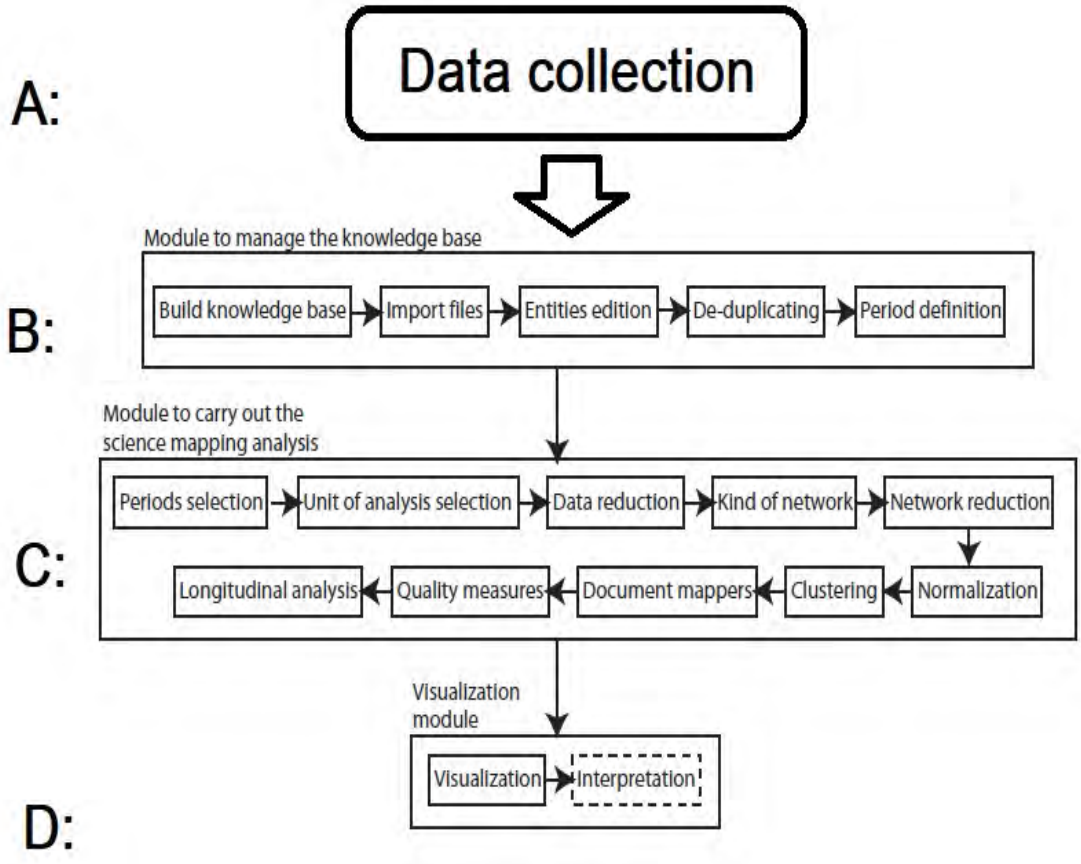

Figure 12."Workflow of science mapping" Source: Cobo et al. (2012, p. 1610).

3.1.1. Data collection and software used (Step 1)

In this study, data collection occurred in several phases. The initial phase involved identifying leading marketing and international business management journals using the SCImago Journal Rank (SJR). As a premier bibliometric database, SJR has become increasingly prominent recently (Cobo et al., 2011; Coimbra et al., 2019; Niñero-la et al., 2019). Notably, SJR, a freely accessible database, assesses citations by considering both the prestige of the citing journal and its relevance to the cited journal, as Juliani and Oliveira (2016, p. 1036) emphasize. This method evaluates citations based on their source (Mojgani et al., 2020). Based on this approach, the top 30 journals were selected, and the integrity of the data was verified by reviewing each journal's Citation Reports™ (JCR).

For the research topic, the keyword selection process was thorough and comprehensive. The keywords "internationalization" and "cluster" served as primary filters for articles. Additional synonyms such as Cluster, Firms' Agglomeration, Firms' Cooperation, Firms' Proximity, Internationalization, Export, and their combinations were used to refine the search quality. According to Martínez-Fernández et al. (2012), a 10-year review period is suitable for a thematic literature review. Initially, 260 articles published from January 2009 to December 2018 were selected using Google's advanced search.

These articles were later re-evaluated using N-VIVO, qualitative analytical software, to eliminate irrelevant papers.

In the final stage of data selection, 152 articles published in the top 30 journals related to the internationalization of clusters were analyzed. A comprehensive list detailing the keywords, titles, journal names, and publication years was compiled in CSV format. This data was then imported into SciMAT for management (editing, de-duplicating, and setting analysis periods). SciMAT is renowned for its comprehensive science mapping capabilities, which distinguish it from competitors (Cobo et al., 2012). (Table 3)

Table 3. Selected Journals' Information (Sort by H index JSR ranking)

ID	JOURNAL NAME	H index JSR Ranking	Published of DOC	
1	Academy of Management Journal	8.548 Q1	2	USA
2	Strategic Management Journal	8.006 Q1	**4**	USA
3	Journal of Marketing Research	7.819 Q1	2	USA
4	Journal of Business Venturing	5.212 Q1	2	NED
5	Journal of International Business Studies	5.198 Q1	**23**	ENG
6	Journal of Supply Chain Management	5.015 Q1	1	USA
7	Journal of the Academy of Marketing Science	4.614 Q1	1	USA

8	Journal of Management Studies	3.804 Q1	**4**	ENG
9	Entrepreneurship: Theory and Practice	3.648 Q1	2	USA
10	Leadership Quarterly	3.130 Q1	1	ENG
11	Public Administration Review	3.023 Q1	1	ENG
12	Academy of Management Perspectives	2.946 Q1	2	USA
13	Strategic Entrepreneurship Journal	2.712 Q1	2	USA
14	International Public Management Journal	2.548 Q1	2	ENG
15	International Journal of Research in Marketing	2.528 Q1	1	NED
16	Strategic Organization	2.274 Q1	1	USA
17	Journal of Purchasing and Supply Management	2.003 Q1	1	ENG
18	International Small Business Journal	1.974 Q1	**6**	USA
19	Business Strategy and the Environment	1.881 Q1	**5**	USA
20	Journal of World Business	1.722 Q1	**9**	ENG
21	Industrial Marketing Management	1.663 Q1	**29**	NED
22	Journal of International Marketing	1.568 Q1	2	USA
23	Entrepreneurship and Regional Development	1.461 Q1	**3**	ENG
24	Journal of International Management	1.432 Q1	**5**	NED
25	Global Strategy Journal	1.420 Q1	**3**	USA

26	International Journal of Advertising	1.282 Q1	1	ENG
27	Journal of Business Ethics	1.276 Q1	**10**	NED
28	Journal of Business Research	1.260 Q1	**24**	NED
29	Business Horizons	1.240 Q1	1	NED
30	Sport Management Review	1.159 Q1	2	NED

3.1.2. Intended keyword classification (Step 2)

After selecting the articles and collecting the necessary information, such as the author's name, year of publication, abstract, and keywords, the next part is to complete the keyword classification. As mentioned, the prepared file was imported into SciMAT for further corrections, categorizations, and analysis. The results were revised, and necessary corrections were made. Therefore, the duplicate keywords used in the papers were omitted in a de-duplicating process to improve the accuracy and quality of the results (Cobo et al., 2012). The keywords were then categorized into separate classes called items. This research identified a total of 585 keywords that were categorized into 113 items. Table 4 shows an example of de-duplicating and keyword classification processes.

Table 4. De-duplicating process example

Before de-duplicating	After de-duplicating		
Social Networks	Social Network	{	Social Networks
Social Network Analysis			Social Network Analysis
Facebook			Facebook
Social Network			Social Network

On the left is a set of keywords relating to social networks. On the right, the keywords are categorized into one class and identified as Social Networks, the process by which the 48 keyword groups are categorized as main classes. These keyword groups (items) are cited in at least two papers. Table 5 sorts these 48 keyword groups by the number of articles related to each keyword.

Table 5. list of main keyword groups (Items)

· Item 1 Cluster Type: The cluster type is the first item regarding the number of relevant words and papers. The main subject of this study was cluster internationalization literature; therefore, this group of keywords was expected to be the study's most used set of words. It consists of 54 words, used as keywords in 50 papers. The keywords included in this item suggest that researchers have also generally measured this phenomenon besides paying particular attention to industrial and technology-related clusters. Other clusters, such as agriculture and relevant industries, service, tourists, and sports clusters, were ranked next in order of priority.

· Item 2 Network: The network is the second most used group. This item comprises 26 words and illustrates different forms of cluster networks in 33 papers. These keywords suggest that, in some cases, researchers have focused on more specialized aspects of different networks. The keywords of intra-organizational, commercial, and entrepreneurial networks have been used more frequently than other relevant keywords. This number of publications indicates that researchers have paid particular attention to commercial networks. In addition, the networks connecting different industries, suppliers, and educational networks were other vital keywords in this item.
· Item 2 Cooperation: Cooperation is another critical item in cluster internationalization. This group consists of 25 words used in 30 papers. Researchers have identified various factors for reinforcing and correctly understanding cooperation. These keywords also specify the levels of cooperation in clusters and are often related to cooperation between the whole units (cluster), not between individuals (firms).
· Item 4 Social Capital: The term "social capital" contains 22 members and is used as a keyword in 28 papers. Various factors have been presented to influence the formation and reinforcement of social capital. In addition to "social capital," the terms "social proximity" and "social participation" are other main keywords included in this group.
· Item 5 Innovation: Many scholars have presented different interpretations of innovation; therefore, reaching this term in one cluster indicates successful performance. Innovation is the fifth group of keywords in the cluster internationalization literature. This item contains 14 words used in 29 papers. An old definition of innovation states that innovation results from R&D activities in a unit due to the accumulation of knowledge and capabilities in a region. Recent studies indicate that innovation is not only limited to industries and technologies but also encompasses various services, new methods of business cooperation,

marketing, export, education, natural resource and environmental protection, cultural development, and policymaking.
· Item 6 Agglomeration: Agglomeration is one of the main keywords used in this study. It is a sub-item of geographical proximity consisting of 11 keywords used in 26 papers.
· Item 7: Location and Distance - These keywords are prevalent terms in cluster literature and are considered the most crucial initial factor for forming local clusters (Porter, 1998). The author identified 23 keywords in this category used across 25 papers. The majority of these keywords pertain to "location." Additionally, some words related to proximity are also used. Other terms, such as "localization" and "distance," feature prominently in relevant studies.
· Item 8 Marketing: Marketing is recognized as an essential tool for the growth and development of clusters (Porter M., 1998). In addition to the everyday aspects of marketing, the cluster literature also emphasizes the importance of innovation in marketing. For instance, some of these keywords are related to cooperation in marketing, and others illustrate business-to-business (B2B) marketing.
· However, this item is the third most important item regarding the number of keywords (34) used in more than 24 papers. This issue highlights the importance of different aspects of marketing in the process of cluster internationalization.
· Item 9 Institution Characteristics: These keywords indicate that the characteristics of several institutions in a specific cluster can be divided into three categories. The first category refers to specific characteristics that emphasize the advantages of various capabilities, dynamism, effectiveness, competition status, organizational diversity, and sustainability. The second category is related to the organizational structure and depicts environmental characteristics and conditions. The third category describes organizational behaviors. Examples include the extent of dependence, power of attraction, inter-organizational, and even

international behavior. The more similar the cluster members are, the closer they are in terms of institutional characteristics. This item contains 24 keywords used in 23 papers.
· Item 10 Knowledge: Researchers unanimously recognize knowledge acquisition as essential for innovation and internationalization. The keywords in this item indicate that words like exchange, sharing, and knowledge spillover are essential in the cluster internationalization literature. Following the words related to knowledge transfer, other words associated with knowledge acquisition and production, knowledge resources, and knowledge management are included in this item. This item contains 23 keywords used in 22 papers.
· Item 11 Development: The cluster internationalization literature has discussed different aspects of development. The available keywords indicate that researchers have given the highest priority to the words related to economic development. The keywords related to product development and production are following in order of priority. In addition, the development of commercial activities, sustainable development, and cluster development are other keywords related to this item. This item contains 18 members used in 20 papers.
· Item 12 Countries of Origin: This item includes keywords related to the country of origin. More than 16 countries were mentioned as keywords in 22 papers. The names of some countries, such as China, Latin America, Chile, Australia, India, and Italy, were mentioned more frequently than others. This indicates that researchers have emphasized developing clusters in these areas more.
· Item 13 Internationalization- The term internationalization can be interpreted in different ways. This category includes accessing foreign markets, attracting foreign capital, importing and exporting goods, and any other activity that involves interaction with a country other than the one in which the cluster is located. However, this item only includes words that specifically mention internationalization. Therefore, it contains 11 words used in 21 papers.

· Item 14 Relationships: Establishing solid collaborative relationships is a prerequisite for cooperation (Geldes et al., 2015). The keywords associated with this item indicate that studies have mainly focused on establishing collaborative organizational relationships rather than individual ones. This item contains 17 words used in more than 17 papers.
· Item 15: Small and Medium Enterprises (SMEs)—Although small and Medium Enterprises could have been classified under the Characteristics group, the specific focus on this item in the literature on cluster internationalization has been treated as a distinct category. This group includes 12 words used as keywords across 17 papers.
· Item 16 Global: This item is exactly the opposite of all others, highlighting the importance of location and geographical boundaries. It was used in 15 papers and has 11 members. The keywords associated with "universal" and "multinational" are included in this category.
· Item 17 Management: This item contains 15 keywords used in 12 papers related to the concepts of leadership organization and structural adjustments introduced by researchers as instruments for increasing productivity.
· Item 18 Culture: Culture is part of a cluster's characteristics (Boschma, 2005). However, because it is frequently used in literature, it was categorized into a different group for separate analyses. This group includes 12 combined and independent words related to cultural differences, cultural values, and organizational culture used in 12 papers.
· Item 19 Alliances: This group is associated with the cooperation group and has been used with items such as marketing, bridging, and joint actions in the cluster internationalization literature. It consists of the keyword's formation of alliances, relationships with governments, functions, international alliances, and management of alliances. This item contains 11 keywords used in 10 papers.

· Item 20 Strategy and policy: Strategy and policy generally refer to the decisions made, and policies pursued. This item contains keywords related to environmental strategies, the status and type of adopted strategies, and the formation of different strategies. It contains ten keywords that have been used in 10 papers.
· Item 21 Performance: The boundaries of "performance" cannot be quickly drawn; therefore, this item contains keywords that combine the word performance into other words. Most of these words refer to corporation efficiency and performance, financial performance, technology, cluster performance, and external performance. This item contains eight keywords used in 10 papers.
· Item 22 Entrepreneurship: This item comprises 5 keywords used in 10 papers. Some of these keywords are related to different types of general and specialized entrepreneurship activities; another group is associated with entrepreneurial capacities and mechanisms, and the last group focuses on international entrepreneurship.
· Item 23 Difficulties: "Difficulties" consists of 10 keywords that present limitations and problems in 9 papers.
· Item 24 Exports: According to the collected data, eight papers used eight keywords related to "exports" and "getting into international markets."
· Item 25 Differentiation: This item includes all keywords referring to differences. These include differences associated with customer perspectives, differences in institutions, and differences in countries of origin (domestic or foreign institutions). This item contains five keywords that have been used in seven papers.
· Item 26 Geographical Characteristics: In this study, seven keywords were used to describe geographical characteristics in 6 papers.

· Item 27 Supply Chain: This item contains six words used in 6 papers. Examples include keywords related to relevant selection mechanisms, supply chains' relationships, and supplier satisfaction.
· Item 28: Joint Action: Joint action refers to severe, legal, and executive cooperation of some companies; therefore, this item has not been included in the cooperation category. This group contains six words used as main keywords in six papers.
· Item 29 Resources: This item contains five keywords used in 6 papers.
· Item 30 Outsourcing: This item consists of 4 keywords used in 5 papers.
· Item 31 Social Networks: Based on the results, despite the unique role of social networks in people's lives, this term is still new in the discussion of cluster literature. This group of keywords was used in 5 papers and consists of 4. Among all social networks, only Facebook was mentioned once in a paper, and considering the particular place and diversity of available social networks, it seems to require further contemplation.
· Item 32 Learning: This item was used in four papers with five keywords to discuss different topics, such as organizational learning, learning through experience, and learning benefits.
· Item 33 Risk: Any factor that challenges commercial, industrial, or service activities is recognized as a risk factor. This item involves various keywords such as cost risks, proper understanding of problems, political issues, or environmental and geographical factors.
· Item 34 Trust: This single word is essential and has been used in 4 papers.
· Items 35 to 37 are Adaptation, Experience, and Transaction Costs. They contain three keywords and have been used in three papers.

· Items 38 to 48 are Emerging Markets, Age and Gender, Born Global Firms, Climate Change, Bridging, Cognitive Proximity, Competition, Economy, Imitation, Language-Religion, and Governance. These terms are used only in two papers.

As a complementary explanation, the cluster map of de-duplicated keywords is shown in Figure 13.

Figure 13. The cluster map of de-duplicated keywords

The methodology section will further elucidate the data collection and analysis procedures. Subsequently, this research will present some pivotal results that have informed the development of the principal models underpinning this thesis.

3.1.3. SciMAT analysis (Steps 3 to 8)

As mentioned above, to use SciMAT, the configuration must be applied in five main steps (Figure 12). These steps contain the "Time-Slicing Process," "Building the data set," "Creating and - moralizing the Networks," "Determining the Desired Algorithm," and "Performing Necessary Analyses" (Cobo et al., 2012, p. 1616). A complementary explanation is available in Table 6.

Table 6. SciMAT analysis method complementary explanation

Title	**Explanation**
A. Time-Slicing Process	Before starting the intended analyses, the time-slicing process should be performed to facilitate the longitudinal mapping process and help researchers trace the evolutionary use of keywords over time.
B. Building the data set	The data is filtered in three phases. First, the defined periods must be selected. Then, regarding the nature of the study, one item is selected from among the five available items (i.e., authors, words, reference, authors-reference, and source-reference).

	Finally, in this stage, the user must select a number for each period's minimum frequency or threshold of the data.
C. Creating the Networks	In this section, users must first select the matrix type for the selected unit. Then, the network's threshold edge value for each period should be configured.
D. Normalizing the Networks	Here, one method is required to be set to normalize the networks.
E. Determining the Desired Algorithm	At this stage, the type of algorithm and the maximum and minimum numbers of items per cluster must be specified.
F. Performing Necessary Analyses	In the final step, the researcher selects the type of analysis to receive the results.

Given the relatively modest annual publication volume, conducting annual reviews could be more pragmatic. Consequently, for this study, the shortest feasible review periods were selected. The research was structured into two five-year intervals to facilitate a longitudinal and thematic analysis and to mitigate issues of ambiguity, inaccuracies, or duplications, thus augmenting the scientific validity of the study. The first interval encompassed papers published from the beginning of 2009 to the end of 2013, and the second period started from the beginning of 2014 to the end of 2018.

In the methodology, the analysis first addressed temporal returns before concentrating on the conceptual dimensions of the research, selecting "Words" as the primary analytical unit. A minimum frequency threshold was established for each interval to include even single keywords that appeared in multiple studies in the final analysis. Keywords were utilized as the unit of analysis for constructing and normalizing networks, with co-occurrence as the preferred relational metric. The threshold for network connections was set at a minimum edge value of two, and the equivalence index method was employed as the normalization measure for these networks.

As detailed in Table 6, the simple centers algorithm was chosen to produce the desired maps and identify pertinent clusters. The sizes of these clusters were regulated, with the maximum and minimum numbers of members set at eight and three, respectively, to ensure more accurate results and enhanced manageability. The final analysis step measured the "density and centrality" of the networks separately for each period using the software's default settings. "Centrality" reflects how integrated a network is with other networks, demonstrating the external cohesion of a cluster. Mathematically, it is defined as $c=10\times\sum euv$, where "u" is an element within the cluster, and "v" is an element from other clusters. "Density" measures the internal strength of a network, calculated as

d=100×$\sum eijn$, where "i" and "j" are elements within the cluster, and "n" is the total number of elements in the theme.

Subsequently, the author assessed the performance of each item using various metrics, with adjustments made to the document mapper function to align with the core mapper and the h-index selected as the measure of their impact. This section provided a comprehensive description of each item's subsequent performance. Moreover, the overlap between items in each period was calculated, and the evolutionary use of keywords over time was tracked. This temporal analysis aids scholars in understanding and comparing the conceptual, social, and intellectual evolution of a subject across different periods. Finally, Jacquard's and inclusion indexes were employed to determine the probability distributions within the study.

3.2 Testing the Relationship between Non-spatial Proximities (Research 2)

The core of this doctoral thesis comprises two empirical studies that employ quantitative and qualitative research methods. The author collected the data in a single instance.

A portion of this data was utilized to examine the relationship between non-spatial dimensions of proximity in the second study. Therefore, since the data for both studies were collected at once, parts of the methodology used for the two main models are identical.

3.2.1 Research Context

The primary focus of this thesis is to investigate various dimensions of non-spatial proximity, a topic of significant importance in the current industrial landscape (Albert-Cromarias & Dos Santos, 2020). Despite technological advancements reducing the influence of geographical proximity on cooperation, it remains a crucial foundation for developing other proximity dimensions (Buchma, 2005). Therefore, this research targets industrial and commercial clusters to test its hypotheses. The author has developed four models to examine the relationships among social, cognitive, institutional, and organizational proximity, concentrating on a diverse range of European cluster organizations, particularly those affiliated with the European Cluster Collaboration Platform (ECCP). This research targets a wide range of clusters from diverse industrial sectors with varying regional characteristics, ensuring a comprehensive and representative study yielding essential insights for the field.

The ECCP, a key partner in this research, is an online platform where industry clusters can seek partners by country, region, sector, or industrial ecosystem. As of July 2021, the ECCP boasted participation from approximately 1,087 cluster organizations spanning more than 11 industries across 37 European countries (ECCP, 2021).

3.2.2 Data collection

Data for this study was gathered from members of the European Cluster Collaboration Platform (ECCP). Initially, an online survey was distributed to all 1087 cluster organizations registered on the ECCP, accompanied by an invitation published on the platform's official webpage to encourage participation (ECCP_News, 2021). A follow-up was conducted a few days later through a second mailing, LinkedIn messages, or direct calls to reinforce the request for participation. The survey process emphasized the importance of being a local cluster, and the cover letter addressed explicitly to cluster managers underlined this criterion (Figure 14).

VNIVERSITAT DE VALÈNCIA
Facultat d' Economia

EUROPEAN CLUSTER COLLABORATION PLATFORM

Firms' Proximity
Marketing Cooperation
Export Market Intelligence

(Generation and Dissemination)

Dear **ECCP** Members

According to past investigations, we realized that members' marketing cooperation and internationalization are certainly the main challenge for management in a cluster organization. To bring light on this issue, we are planning to investigate the impact of cluster members' different dimensions of proximity (cognitive, organizational, social, and institutional) on organization's export market intelligence generation and dissemination through marketing cooperation in European cluster organizations.

With this regard, we would like to invite all European Cluster Organizations to participate in this research by responding to our questionnaire. In this research, all responses are anonymous and will not be linked to any particular organization or company. The estimated time to participate in this study is 5 to 8 minutes according to the language of the questionnaire. You can choose one of the following two links:

English link: https://forms.gle/CA4msemsCzCLPePK8
Spanish link: https://forms.gle/zwEJm2QmAK3AJmQm6
Thank you in advance for your time.
Mohammad Reza Mazandarani
LinkedIn: https://www.linkedin.com/in/mohammadrezamazandarani/

Firms' Proximity → Marketing Cooperation → Export Market Intelligence

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Figure 14. ECCP invitation link and letter

Of the organizations contacted, 115 initially completed the questionnaire, resulting in a 10.5% response rate. However, only 99 of these responses were deemed valid and included in the final analysis, reflecting a 9.1% effective response rate. The other responses were excluded due to their failure to meet the regional cluster criterion determined by their answers to a specific exit question.

3.2.3 Measurement

The construct involved in this study was measured using preexisting scales. Prior investigations empirically assessed these constructs and confirmed their validity; therefore, minor wording changes were necessary to make them compatible with the clustering context. This research empirically tests the relationship between non-spatial proximity using Geldes et al.'s a (2015) and b (2017) scales. The author utilized 18 items for this study to evaluate non-spatial proximity using a 7-point Likert-type scale. Additionally, the survey included one initial question to select regional clusters exclusively and four questions at the end to collect demographic information, such as country, emerging industry, cluster level, and size, which will be discussed in further detail later (See Table 7).

Table 7. Measurement scales for non-spatial proximities (Geldes *et al.,* 2015).

Social Proximity	
SP1	Friendship
SP2	trust
SP3	Previously knowing
SP4	Common experiences
SP5	Reputation
Cognitive Proximity	
CP1	Same knowledge base
CP2	The same level of experience
CP3	Same language
CP4	Same educational level
CP5	Same cultural level
Institutional Proximity	
IP1	Complying with laws and regulations
IP2	Same cultural norms
IP3	Common values

IP4	Similar habits and routines
Organizational Proximity	
OP1	Similar organizational culture
OP2	Similar organizational structure
OP3	Similar inter-organizational relationships
OP4	The same technology.

3.3 Testing Main Empirical Mode (Research 3)

3.3.1 Research context

This thesis develops the second empirical model (research 3) based on existing research to assess the impact of non-spatial proximities on export marketing intelligence through cooperative marketing. Specifically, it involves cluster managers from various regions, emphasizing their clusters' unique characteristics.

One significant challenge for cluster organizations is establishing a foundation for their members' success in international markets, which influences knowledge exchange dynamics within the cluster (Chen et al., 2021). As the literature review highlights, clusters usually represent a geographic concentration of businesses, industries, associations, alliances, and educational and governmental institutions. These entities are

engaged in both cooperation and competition (Porter, 2000). Knowledge plays a critical role in managing interactions among members, facilitating the collection, processing, and dissemination of shared knowledge, and promoting knowledge exchange within the district (Calignano et al., 2018). Furthermore, these organizations are pivotal in enhancing collaboration, networking, and learning within innovation clusters. They often serve as innovation support providers, offering access to specialized business support services encouraging innovation, particularly among small and medium-sized enterprises (SMEs) (ECCP, 2021).

The European Cluster Collaboration Platform (ECCP) describes these entities as legal bodies facilitating strategic partnerships across different clusters. It supports over 1075 clusters, collaborative institutions, and alliances across over 33 European countries (ECCP, 2021).

This thesis focuses on European cluster organizations, particularly those affiliated with the ECCP, targeting clusters from various industrial sectors with distinct regional dimensions. These organizations are crucial in fostering cooperation within and between clusters and driving innovative collaborations in corporate sustainability across economic, social, and environmental dimensions (Bartolacci et al., 2020). This research aims to enhance the understanding of local clusters and develop cooperation, a vital issue

for platforms like the ECCP. Unlike previous studies, this research covers a wide range of clusters, allowing cluster managers to assess members' proximity levels at their discretion (Geldes et al., 2015; Geldes et al., 2017). Given the regulatory role of cluster organizations, this approach is expected to yield more accurate findings (Jankowska, 2015).

Data for this research was collected in July 2021, with approximately 1087 cluster organizations from over 11 industries in 37 European countries participating in the ECCP (ECCP, 2021).

3.3.2 Measurement

The second empirical model (research 3) in this research builds upon and expands the models proposed by Geldes et al. in 2015 and 2017. The principal scale for this model consists of 28 items, 18 of which have been previously described. Additionally, the survey incorporated an initial filter question to select regional clusters exclusively, followed by four questions at the end to collect demographic information such as the country, emerging industry, cluster level, and size. Data from the European Cluster Collaboration Platform (ECCP), including member count and cluster labels, were utilized to assess the

size and tier of each cluster. Furthermore, based on ECCP reports, this study categorized the participating clusters by industry and country of origin (ECCP, 2021).

As established in previous research, this study employed a seven-item scale to gauge the four dimensions of non-spatial proximity, demonstrating its adaptability using the same scale to assess marketing cooperation. To evaluate the generation and dissemination of Export Marketing Intelligence (EMI), this research applied scales developed by Katsikea et al. (2019), adapted specifically for the cluster context (See Table 8).

Table 8. Measurement scales used in the research.

Social Proximity (5 items) (see table 7)		(Geldes *et al.*, 2015)
Cognitive Proximity (5 items) (see table 7)		
Institutional Proximity (4 items) (see table 7)		
Organizational Proximity (4 items) (see table 7)		
Marketing Cooperation		
MC1	Participating in trade fairs and promotions	
MC2	Participating in commercial missions	
MC3	Cooperating with research delegations	
MC4	Achieve/share market information	

MC5	Recommendations for nearby businesses	
MC6	Joining in market research	
MC7	Cooperate in new product development.	
Export Market Intelligence generation		(Katsikea *et al.,* 2019)
EMG1	Generating much information concerning trends in our members' export ventures' markets	
EMG2	Monitoring the members' level of commitment and orientation to serving foreign customer needs	
EMG3	Reviewing the likely effect of changes in the members' export environment	
EMG4	Generating information to understand the forces influencing our members' foreign customers' needs and preferences	
Export Market Intelligence dissemination		
EMD1	Discussing export competitors' strategies	
EMD2	Discussing export market developments	
EMD3	Discussing the future needs of international customers	

EMD4	Fast informing changes in tactics and strategies of significant export competitors.	
EMD5	Intense communication	
EMD6	Providing important international information	

3.3.3 Questionnaire validation

Respondents were allowed to complete the survey anonymously; however, they were asked to voluntarily provide cluster-related information to confirm the validity of their responses. Personal details such as the names of the clusters, email addresses, and respondents' personal information were kept confidential and were not used for any other purposes. This approach guaranteed both the anonymity and integrity of the data collection process. Approximately 11% of the total registered clusters participated, and among those who responded, 85% confirmed their status as local clusters (Figure 15).

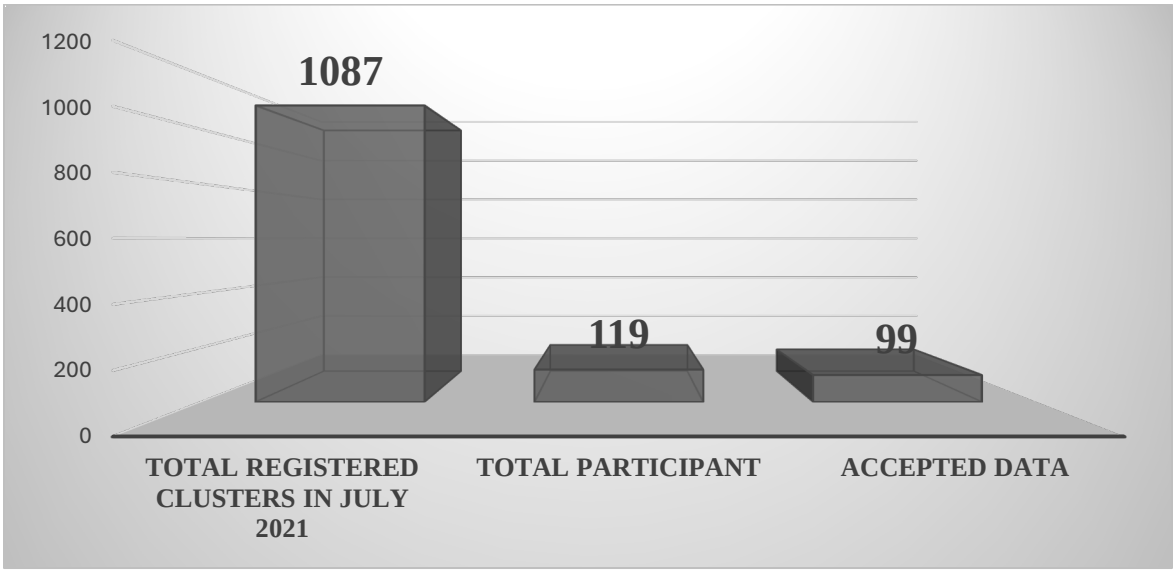

Figure 15- Participation of ECCP Members in the Research

Regarding the goal of this research, the cluster managers are fully qualified to judge and comment on this matter, and only one questionnaire is enough for each cluster. With this regard, the topic was discussed with the ECCP executive people and experts in clustering to ensure the appropriateness of the research structure for the cluster organizations before inviting the study target to respond to the questionnaire and testing the relevance of measurements. Marketing and relationship managers in two clusters also helped edit the items to make them understandable for cluster organizations. Then, the questionnaire was sent to five academic experts in internationalization and marketing, who confirmed its content and readability. As the last step before delivering the questionnaire, the final version was pre-testing with ten cluster organizations. These

experts also confirmed the survey's clarity and length. Notably, 92% of the respondents (91 cluster organizations) participated in this assessment. (See Figure 16)

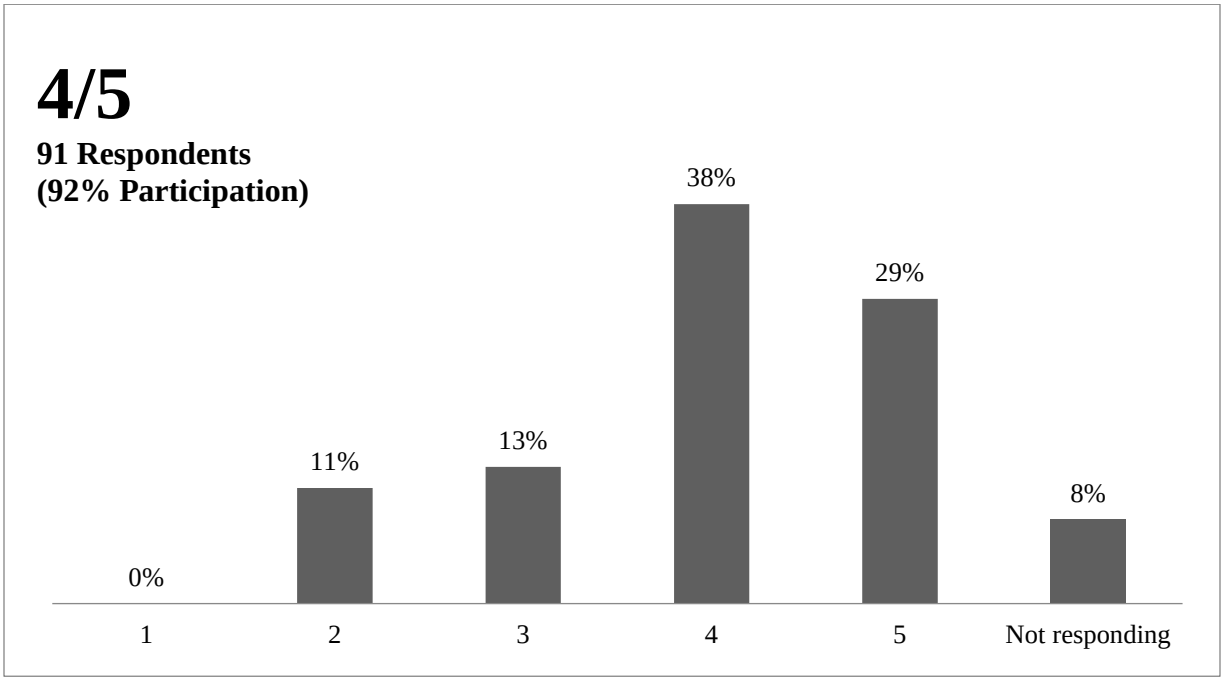

Figure 16- Questionnaire quality assessments

3.4 Bibliometric Analysis of Green Marketing Cooperation (4th research)

To effectively enhance and extend the scope of future research, this doctoral thesis has adopted a novel approach to investigating the relationship between cooperation and green marketing. This approach distinguishes itself from initial bibliometric inquiries, and the subsequent bibliometric study notably reflects the distinction in data collection and analysis methods.

Unlike the first study, the second bibliometric research adopts different data-gathering methodologies. This approach aligns with current trends in the field and aims to develop and refine models that more accurately reflect the dynamics of cooperation in the context of green marketing. The revised methods have been revamped to encompass a broader range of data points and employ advanced analytical techniques, delivering more profound insights into the complex interactions within this research domain.

Accordingly, the third section of the methodology employs bibliographical coupling to group authors, documents, and journals based on their similarities in explaining the relationship between cooperation and green marketing. A bibliometric analysis visualizes a subject's research landscape, identifies current and emerging research topics, and highlights influential academics and publications (Kar & Harichandan, 2022; Trang et al., 2023). Additionally, the bibliometric analytical approach facilitates an impartial, systematic, and unbiased assessment. This method also aids in the evaluation of publication success and the explanation of the structural dynamics of the research topic (Kar & Harichandan, 2022).

Moreover, this study differentiates itself from prior bibliometric analyses by testing artificial intelligence explanations as an assistant for bibliometric analysis. According to Lee et al. (2020), AI-powered content analysis offers more reliability, validity, and

efficiency than manual and computer-aided methods. This study planned to test the efficacy of ChatGPT as a crucial supportive function across various stages of bibliometric analysis. The plan is to examine ChatGPT in several stages of bibliometric analysis, such as brainstorming efforts to enrich comprehension of relevant literature, contributing to data analysis, unraveling intricate patterns within results, offering rapid content reviews, and aiding in rewriting and refining language. Consequently, this research investigates the innovative potential of leveraging artificial intelligence to elevate the bibliometric methodology.

This research utilized a five-step literature review process commonly employed by previous researchers (Agarwal & Kumar, 2021) to represent the current literature on green marketing and cooperation accurately. In addition, once the data had been gathered and analyzed in the fourth step, the author verified the Chat GPT results by comparing them with existing literature.

3.4.1 Selection of research period

The scope of this study encompasses a review of literature spanning three decades, from 1990 to 2023. The focus on publications beginning in 1990 is due to the seminal works that first articulated the interplay between cooperation and green marketing (Roy

& Whelan, 1992). The data compilation concluded on July 7, 2023, marking the end of the period under review.

3.4.2 Database selection

For bibliometric analysis, the Web of Science database was selected based on its extensive utilization and credibility within the academic community, as noted in multiple studies (Fetscherin & Usunier, 2012; Araújo et al., 2018; Radler, 2018; Agarwal & Kumar, 2021). This platform is a premier source offering access to various academic journals, conference proceedings, and scholarly publications across diverse disciplines. The selection criteria employed by the Web of Science ensure the inclusion of high-quality journals, which are determined based on journal impact, citation patterns, and other scholarly metrics. This rigorous selection process has significantly contributed to the database's authority and reliability in bibliometric research.

3.4.3 Keyword selection

Identifying appropriate keywords for the study proved challenging due to the multifaceted nature of green marketing, characterized by various synonymous and overlapping concepts. The selection was informed by a thorough examination of extant

literature about green marketing, where terms such as "eco marketing," "sustainable marketing," "Enviro Marketing," and "Ethical marketing" are interchangeably used to describe the domain (Bhardwaj et al., 2023, p. 3). Additionally, the research incorporated five more terms from the green marketing mix: "green price," "green place," "green product," "green promotion," and "green purchasing." To improve the keyword selection, the author added synonyms related to collaboration from the Word Reference Dictionary (wordreference.com, 2023). As a result, the final search query was meticulously constructed to incorporate these keywords in the targeted publications' titles, keywords, and abstract sections:

[(“green marketing” or “environment marketing,” “sustainable marketing,” “green price,” “green product,” or “green promotion,” or “green place,” or “green purchasing” (Topic) AND “cooperation” or “working together” or “joint action” or “combined effort” or “teamwork” or “mutual support” or “partnership” or “coordination” (Topic)]

3.4.4 Data and bibliometric analysis

Part 1: Citation Analysis and Mapping- This study conducted an extensive citation analysis involving 575 articles and reviews accessed through the Web of Science's online portal. The data were meticulously cataloged using a Microsoft Excel spreadsheet,

capturing variables such as the number of publications per year, publication type, leading journals, contributing countries, prominent authors, affiliated universities, industries covered, and the research tools utilized. Subsequently, the data was transferred to VOSviewer Software (Version 1.6.19) for advanced bibliometric mapping. VOSviewer facilitates the construction of distance-based maps, where the spatial proximity between two nodes visually represents the bibliometric relationship, indicating the degree of relatedness between the nodes (Van Eck & Waltman, 2010).

Part 2: AI Comparison—Repeated words are first categorized to determine the main lead words (de-duplication) (Mazandarani & Royo-Vela, 2022). Then, the author compares these main keywords with the ChatGPT classification of the relationship between cooperation and green marketing. This comparison aimed to evaluate AI's potential to support traditional bibliometric methodologies.

Following an exhaustive review and analysis of the literature, the study identified several research gaps in green marketing and cooperation. These gaps suggest areas that require further exploration and could potentially open new avenues for future research. Identifying these gaps is crucial for advancing the understanding of green marketing strategies and their implications for sustainable business practices.

4. RESULTS ANALYSIS

4.1. Bibliometric Analysis of Cluster Internationalization

4.1.1 Publication trends by year

Figure 17 illustrates the trajectory of the volume of selected articles over time. The dataset encompasses the most recent decade, revealing a discernible uptick in publication frequency during the latter half of the period under review (2014-2019). Initial statistical analyses indicate that 68 papers, constituting approximately 45% of the total dataset, were disseminated in the final three years of the timeframe considered. Moreover, 78% of these articles were distributed across ten journals. Table 9 catalogs the distribution of these scholarly contributions, both temporally and by publication venue. These findings underscore the escalating significance attributed to the theme of internationalization within geographic economy literature.

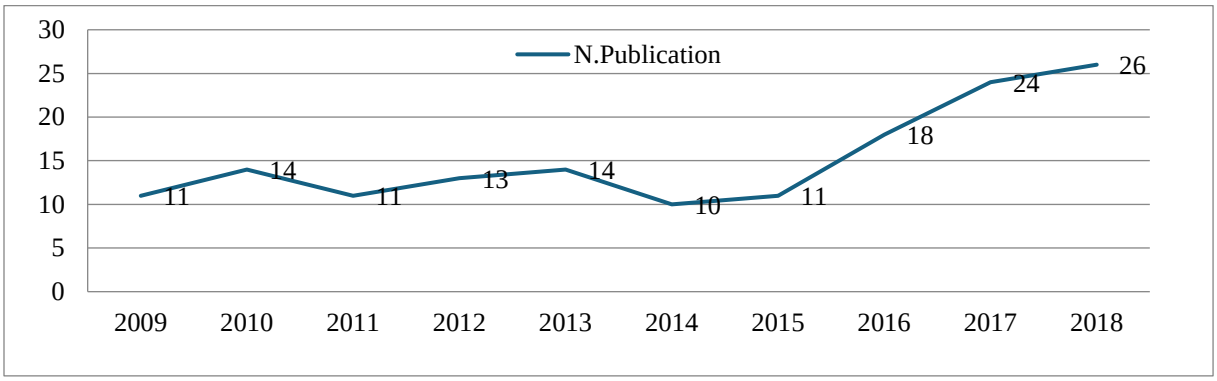

Figure 17- The evaluation of published papers from 2013-2019.

4.1.2 Prominent Journals

Table 9 in the document indicates that "Industrial Marketing Management" is the top publishing journal based on the number of publications covered between 2009 and 2018, with a total of 31 articles. The journal's consistent publishing over these years, with a peak in 2017 and 2018, highlights its central role in disseminating research in this area. Other leading journals include the "Journal of International Business Studies" and the "Journal of Business Research," with 23 publications. This result suggests a robust interest and continued research in the fields associated with these journals over the decade.

Table 9. Top 10 publishing journals based on the number of publications.

JOURNAL NAME	JSR Ranking	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	TOTAL
1 Industrial Marketing Management	1.663 Q1	2	3	1	4	3	2	1	2	7	6	31
2 Journal of International Business Studies	5.198 Q1	2	2	1	3	4		3	2	2	4	23
3 Journal of Business Research	1.260 Q1	1				5	4	2	4	3	4	23
4 Journal of Business Ethics	1.276 Q1		1		3				3	1	2	10
5 Journal of World Business	1.722 Q1			1	2				4	1	1	9
6 International Small Business Journal	1.974 Q1			1			1	1		2	1	6
7 Business Strategy and the Environment	1.881 Q1		1	1			1	2				5
8 Strategic Management Journal	8.006 Q1		1					1	1	1		4
9 Journal of Management Studies	3.804 Q1	2		2								4

10 Journal of International Management	1.432 Q1	1	1	1		1		4

4.1.3 Keyword analysis

Following the methodology employed for keyword analysis, structured according to the predefined settings for software use, resulting in five distinct types of analysis:

Performance Measurement: This process began by assessing each keyword's impact using its h-index, a quantitative measure of its significance in the literature. This provides practical insights into keywords' influence on the field.

This research quantitatively assessed the impact of each keyword (after removing duplicates) utilizing its h-index, a recognized metric for evaluating scholarly impact (Liu & Rousseau, 2008). The h-index is defined herein as the highest number *h*, such that a given keyword appears in *h* publications, each of which has been cited at least *h* times. This metric identified 29 keywords as having the highest impact, with these keywords grouped, as demonstrated in Appendix A2. These impactful keywords, delineated by their respective h-index scores, formed distinct clusters within each examined time frame.

In the initial five-year period, the cluster centered around the theme of "Network" exhibited the highest h-index of 22, underscoring its significance in the studies of that period. Other notable clusters included those focused on "Location and Distance" (h-

index = 14) and "Global" (h-index = 8), each representing key areas of research interest, as depicted in Figure 18.

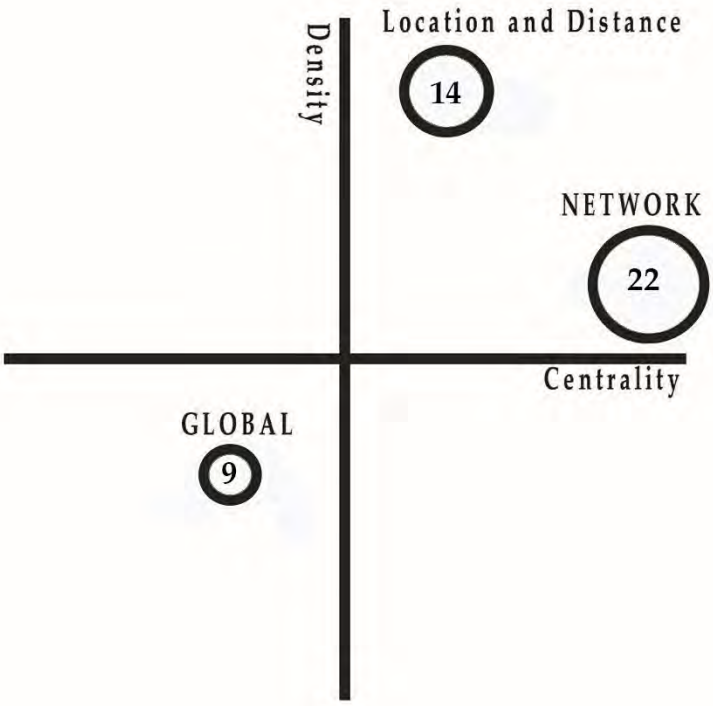

Figure 18- Strategic diagram (h-Index) period (2009-2013)

Variations in h-index values highlighted different focal areas during the subsequent period. Clusters centered on "Cluster-type" (h-index = 16), "Social Capital" (h-index = 14), and "Development" (h-index = 11) emerged as critically important, as illustrated in Figure 19.

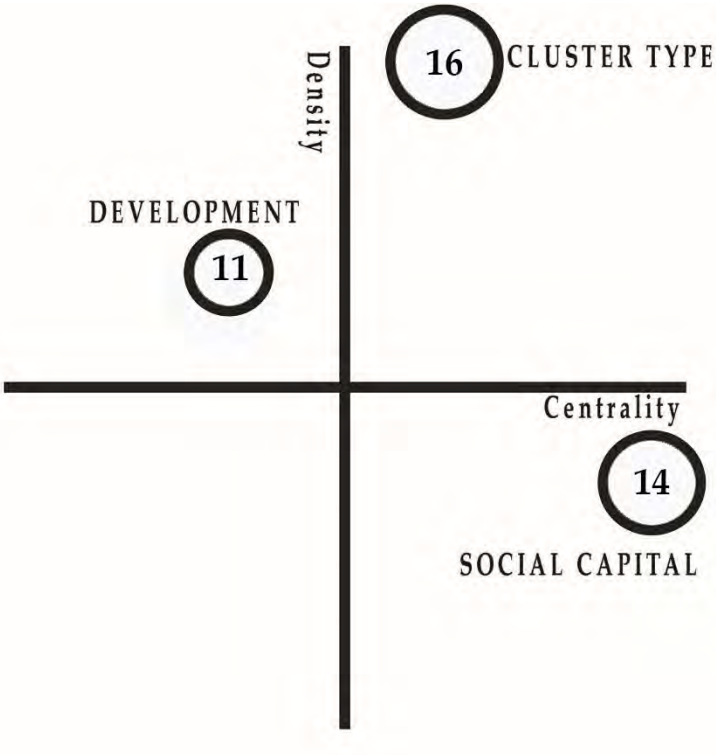

Figure 19- Strategic diagram (h-Index) period (2014-2018)

Identifying more significant items in this second period signals an expanding breadth of research within this domain, suggesting an evolving and diversifying field of study.

Temporal Analysis: For each defined period, the analysis identified the most significant keywords based on their density, centrality, and overall performance. These key metrics were then visually represented through separate diagrams, enhancing the clarity of the comparison.

Regarding centrality, In the initial five-year phase of the study, clusters themed around "Network," "Location and Distance," and "Global" demonstrated the highest levels of centrality, in descending order, as detailed in Table 10. This result indicates that the keywords associated with the "Network" cluster were the most frequently occurring, both within its cluster and relative to those in other clusters, suggesting a pivotal role in the research landscape of this period.

Table 10. Analytical information (2009-2013)

Cluster content, h-index, centrality, and density in the first-time scoop (2009-2013)						
Cluster name	Items content	h-index	Centrality	C- Range	Density	D-range
NETWORKS	Cluster type; Network; Institution characteristics; Social capital; Knowledge; Marketing; Entrepreneurship; Social networks	22	22.95	1	13.05	0.67
LOCATION AND DISTANCE	Location-and-distance; Innovation; Agglomeration; Cooperation; location and distance; Management;	14	13.69	0.67	13.41	1

	SMEs; Relationships; Resources					
GLOBAL	Internationalization; Global; Development; Strategy and policy; Countries of origin; Outsourcing	9	9.97	0.33	10.03	0.33

During the subsequent period, the "Social capital" cluster emerged with the highest centrality value, signifying that its constituent keywords were the most prevalent, internally and in comparison, with keywords from other clusters. This shift underscores the evolving focus of research interest. Following "Social capital," the clusters "Cluster type" and "Development" were identified as having the highest centrality values, respectively, as presented in Table 11. This progression reflects a dynamic shift in the thematic research concentration within the field.

Table 11. Analytical information (2014-2018)

Cluster content, h-index, centrality, and density in the second time scoop (2014-2018)						
Cluster name	Items content	h-index	Centrality	C- Range	Density	D-range
CLUSTER TYPE	Cluster type; Cooperation; Innovation; Relationships; SMEs; Institution	16	30.1	0.67	13.28	1

	characteristics; Performance; Climate change					
DEVELOPMENT	Development; Internationalization; Global; Differences; Experience; Supply chain; Risk	14	19.14	0.33	11.13	0.67
SOCIAL-CAPITAL	Social capital; Network; Marketing; Location and distance; Agglomeration; Knowledge; Difficulties; Management	11	32.34	1	10.53	0.33

Regarding the density, the analysis offers insight into the focal points of academic inquiry within this domain across different time intervals. During the initial analysis, the cluster identified by its centrality around “Location and Distance” demonstrated the most robust internal cohesion, indicating that it was the primary subject of academic interest. Following in density were the “Network” and “Global” clusters, respectively, suggesting significant but lesser degrees of internal thematic consistency.

In contrast, the second-period findings enhanced all clusters' internal strength and thematic diversity. Notably, the "Cluster-type" cluster emerged as the most cohesively concentrated, reflecting its ascent as a central study theme. In that order, the "Innovation" and "Social capital" clusters were identified as the next most dense, suggesting their growing importance in the field's discourse. This shift towards greater internal strength and diversity within clusters is detailed in Tables 10 and 11, indicating evolving research dynamics and interests over time.

Further, within the first temporal segment under review, the "Location and Distance" item was situated at the epicenter of the densest cluster, indicating its pivotal role in the thematic structure of the cluster—this item connected with all seven other items within the cluster, highlighting its central importance. Following in significance were items such as "Innovation," "Agglomeration," and "Cooperation," each contributing to the thematic fabric of the cluster.

Notably, the most pronounced connections were observed between "Management" and "Relationship," as well as between "Resource" and "Location," suggesting these pairs of items share particularly strong thematic interrelations. Figure 20 visually represents these relationships, delineating the intricate network of connections defining the structural and thematic composition of this cluster during the initial period of analysis.

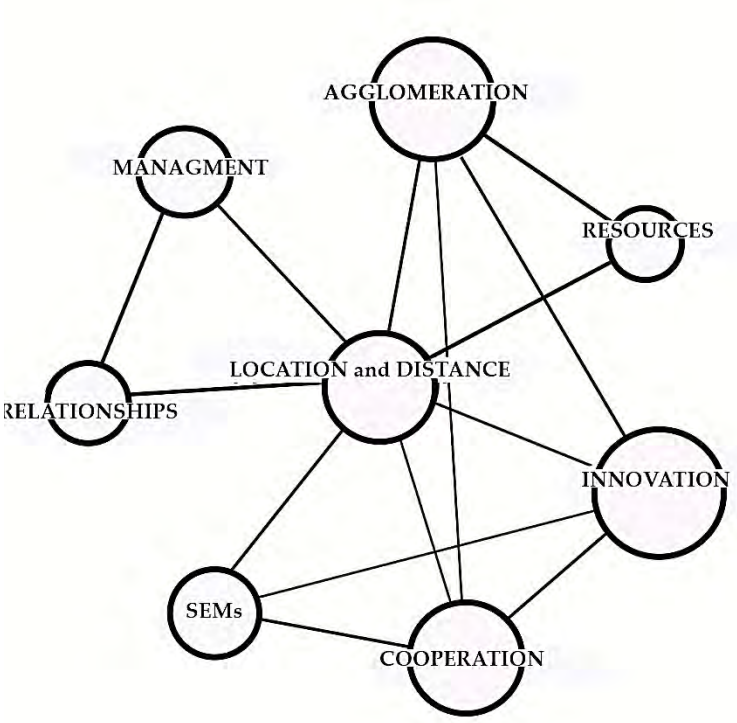

Figure 20-Cluster 1/Period 1 (2009-2013)

During the initial analysis period, the "Network" item emerged as the central node within the second-ranked cluster in terms of density. This centrality signifies that the keywords associated with "Network" maintained more substantial and compelling connections with other keywords within the cluster, underscoring its thematic significance.

Furthermore, a pronounced relationship was observed between the "Networks" and "Social networks" items, indicating a solid thematic linkage. Additionally, "Institution-

characteristics" was found to have robust connections with "Marketing" and "Knowledge," suggesting these items share significant thematic overlap and contribute to the cluster's cohesive structure.

Figure 21 visually represents these and other relationships within the cluster, illustrating the network of thematic connections that define its composition during the first analysis period.

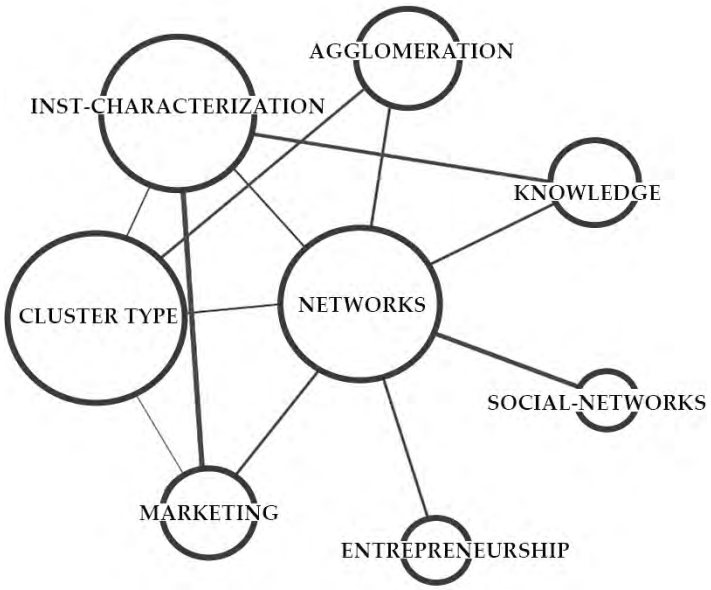

Figure 21- Cluster 2 /Period 1 (2009-2013)

During the initial analysis period, the cluster centered around the keyword "Global" was finally identified as the third most dense. The keyword "Global" occupies a central

position within this cluster, highlighting its thematic prominence. However, the most significant connection within this cluster is observed between "Internationalization" and "Strategy and Policy," indicating a solid thematic linkage that suggests these topics are closely interrelated within the context of global studies.

Figure 22 details the visualization of the remaining connections within this cluster, including the relationship between "Global" and other thematic items. This figure elucidates the network of thematic relationships that characterize the cluster, providing insight into the complex interplay of topics within the domain of global studies during the first period of analysis.

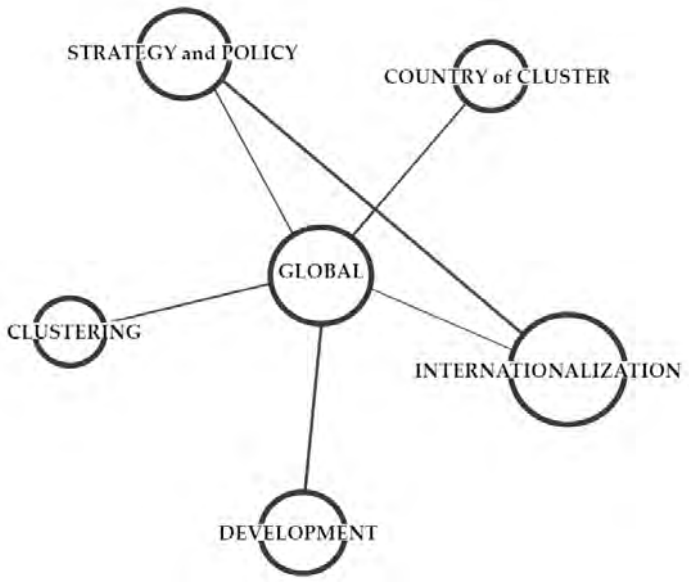

Figure 22- Cluster 3/Period 1 (2009-2013)

During the second period under review, the "Cluster type" item emerged as the focal point within the densest clusters, underscoring its central role in the thematic structure. As depicted in Figure 23, this item is intricately connected to a variety of other significant items, including "Cooperation," "Innovation," "Relationships," "SMEs," "Institution characteristics," "Performance," and "Climate change." Among these, "Innovation" and "Cooperation" are distinguished by having the highest number of connections with other items, indicating their critical importance in the network of thematic relationships.

Notably, the most robust relationships within this cluster are observed between "Cluster types" and "Cooperation" as well as "Performance" and between "Innovation" and "Institution Characteristics." Furthermore, this period marks the introduction of emergent items such as "Climate change" and highlights its significant association with "Cluster type." These findings reflect the evolving focus of research within this domain, signaling the increasing relevance of these topics in contemporary studies.

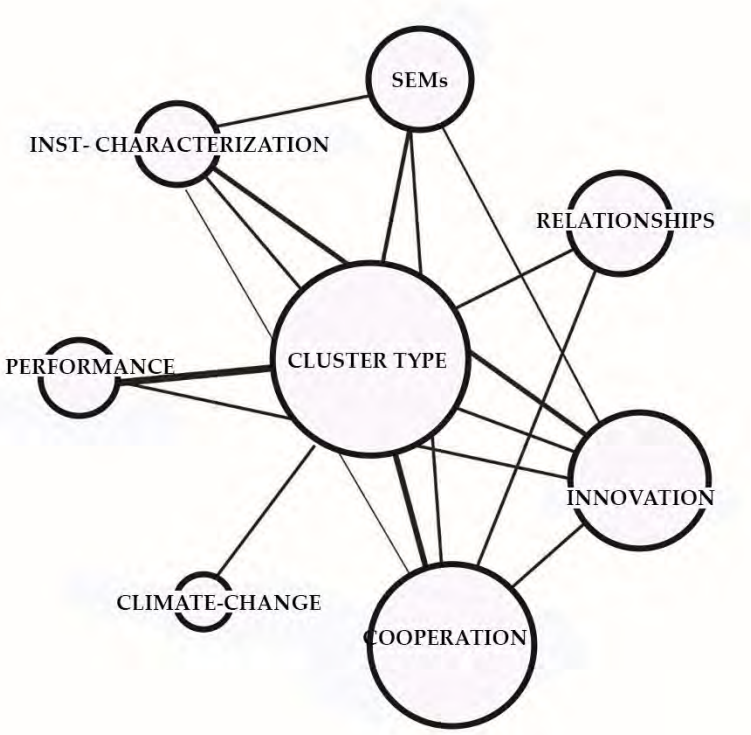

Figure 23- Cluster 1/Period 2 (2014-2018)

Within the subsequent analysis period, the keyword "Development" is positioned at the nucleus of the second cluster by density value, indicating its paramount significance within this thematic constellation. This cluster encompasses seven additional items: "Countries of Origin," "Internationalization," "Global," "Differences," "Experience," "Supply Chain," and "Risk," all of which orbit around "Development," illustrating a complex network of thematic associations.

As delineated in Figure 24, "Internationalization" ranks second regarding the volume of connections with other keywords, underscoring its pivotal role within the cluster.

Notably, the diagram highlights the solid thematic ties between "Risk" and "Development," "Experience" and "Internationalization," as well as "Global" and "Development." These relationships underscore the intricate interplay of themes within this cluster, reflecting the depth and diversity of research interests in this time frame, particularly the nuanced interactions between development, risk, and globalization processes.

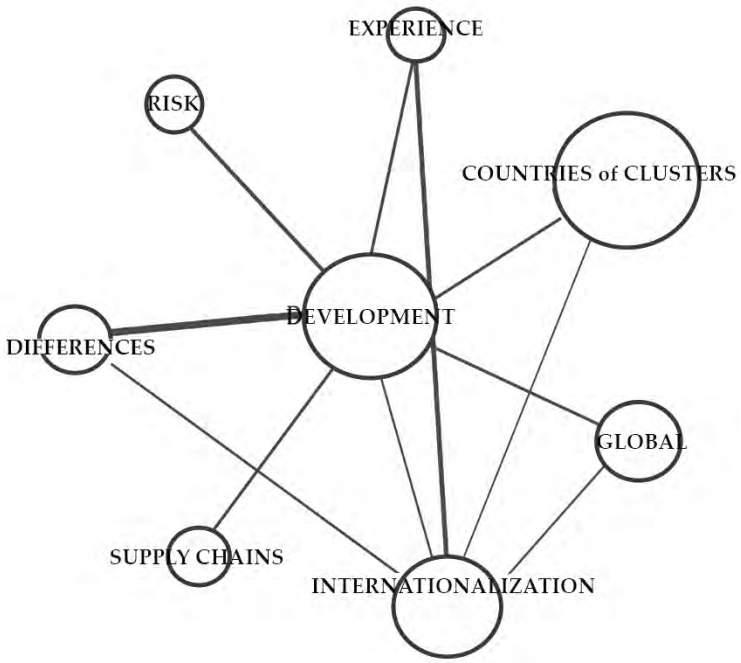

Figure 24- Cluster 2/Period 2 (2014-2018

Between 2014 and 2018, the cluster characterized by a centrality of "Social Capital" emerged as the third in density value, marking it as the final cluster of notable

concentration in this timeframe. Figure 25 provides a visual representation of all thematic connections within this cluster. Central to this cluster, "Social Capital" establishes links with every other item, signifying its foundational role in the network of thematic exploration.

Additional observations from this diagram highlight the research community's interest in exploring the impact of "Marketing" on various locations and the intricate relationship between "Management" and "Difficulties." Moreover, the item "Networks" is notably connected with "Location," "Agglomeration," and "Knowledge," reflecting a multifaceted investigation into the interactions between social capital, geographical considerations, and knowledge dissemination. This analysis underscores the nuanced and complex nature of research themes within this cluster, particularly regarding the intersection of social capital with other critical factors in the contemporary research landscape.

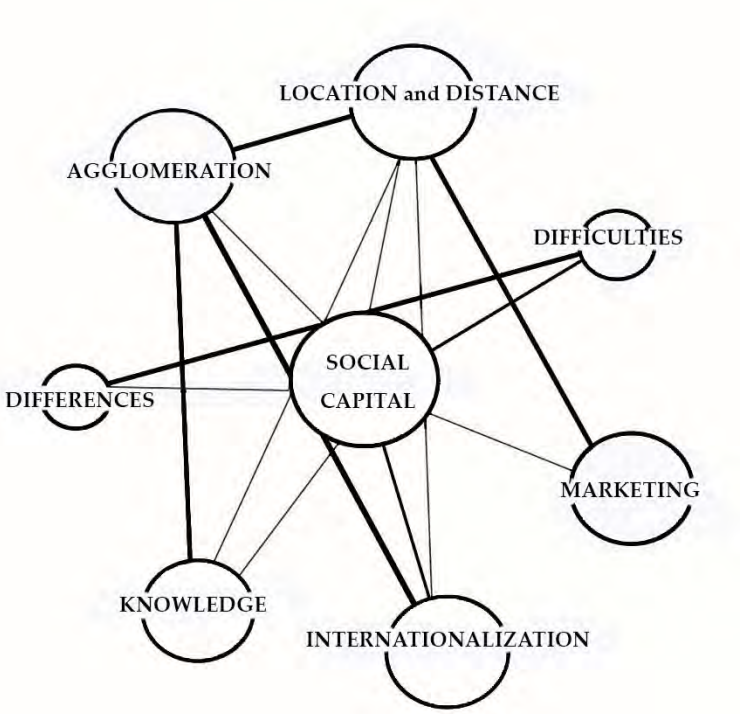

Figure 25. Cluster 3/Period 2 (2014-2018)

Evolutionary Tracking: The study traced the usage patterns of keywords over two distinct periods, offering insights into their evolution and changing significance over time.

The evolutionary map provides a dynamic visualization of the shifts in research focus and keyword utilization across two distinct periods, as demonstrated in Figure 26. According to Cobo et al. (2012), in temporal or longitudinal analysis, the diameter of a circle representing a cluster correlates with the volume of published documents linked to that cluster. Notably, circles symbolizing factors considered during the initial period are

smaller than those from the subsequent period, reflecting a quantitative increase in publications within the latter timeframe.

Moreover, the map elucidates the changes in cluster composition, detailing how the thematic focus of clusters evolves. Initially, the "Network" cluster from the first period underwent fragmentation, with its elements subsequently assimilating into the "Cluster-type" and "Social Capital" clusters in the following period. Solid lines on the map trace these transitions, with the line connecting "Network" to "Social Capital" being notably thicker. This visual distinction indicates a more substantial migration of keywords from the "Network" cluster to the "Social Capital" cluster in the latter period.

A further significant shift involved the migration of items from the "Location and Distance" cluster in the first period to the "Social Capital" and "Cluster-type" clusters in the second period. Additionally, the third major transition observed was the absorption of items from the "Global" cluster in the initial period into the "Development" cluster in the subsequent period. These transformations highlight the fluid nature of research themes, revealing how focus areas adapt and coalesce around new central themes over time.

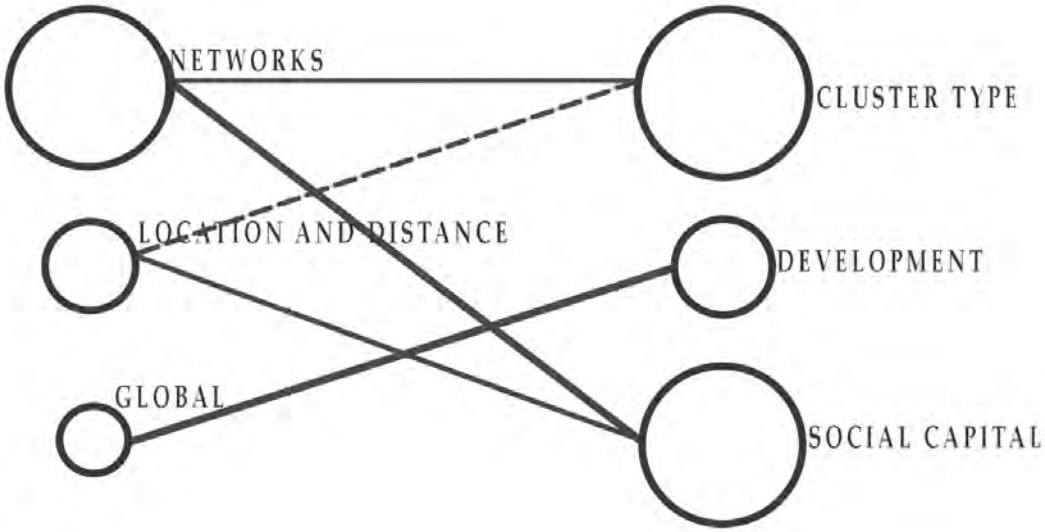

Figure 26. The evolution Area map

Overlap Assessment: Finally, the analysis calculated the keyword overlap rate between the two periods, identifying the extent to which specific keywords remained central across time frames.

Figure 27 provides a diagram that visually encapsulates the overlap of items between two consecutive periods, delineating the continuity and emergence of research themes through keywords. In this investigation, 585 keywords were identified and subsequently categorized into 113 distinct items. Of these, 62 items were utilized by selected publications in the first period and an increased count of 94 items in the second period, illustrating a diversification in research focus.

The diagram's horizontal axis shows 43 common items. This number shared set underscores the thematic linkages and continuities between the two periods. The stability index, calculated to assess the consistency of item usage across periods, stood at 0.69, indicating a moderate degree of stability in the research themes.

Moreover, the vertical axes on the diagram highlight the dynamic nature of the research landscape. The downward axis indicates the introduction of 51 new items in the second period, reflecting the evolving scope and direction of research inquiries. Conversely, the upward axis accounts for 19 items unique to the first period, suggesting a shift away from specific themes as the field progresses. This diagrammatic representation facilitates a comprehensive understanding of thematic evolution and shifts in focus within the research domain across the studied periods.

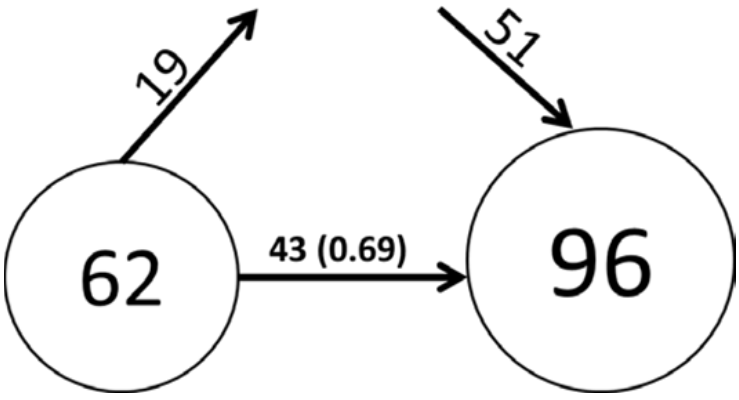

Figure 27. The overlapping-items diagram

This subsection employs a thorough methodology and sheds light on keywords' changing dynamics and significance in the pertinent literature, offering detailed insight into their function and development. The outcome of this analysis forms the basis for the principal frameworks of this thesis.

The evolutionary tracking and nuanced assessment of keyword overlap underscore the necessity for exploring emergent connections and elaborating on the intricacies of existing terminologies. For instance, the dotted line bridging "Location and Distance" with "Cluster-type" suggests that the broader theme of proximity warrants further exploration. Conversely, the solid line linking the "Location and Distance" and "Social Capital" clusters underscores the imperative for this thesis to delve into the nuances and benefits of proximity with greater specificity.

In response to this imperative, this thesis meticulously examines the theme of proximity, considering a diverse array of keywords such as "Institution characteristics," "Relationships," "Differences," "Experience," "Knowledge," "Networks," "Social capital," and "Management." This analysis categorizes proximity into two main dimensions: geographical and non-spatial; the latter includes social, cognitive, institutional, and organizational facets.

Furthermore, with a specific focus on innovation, the integration of marketing and cooperation emerges as a pivotal intermediary to evaluate the "generation and distribution of market export intelligence" by cluster organizations. Additionally, "Climate change" as a keyword signals an ongoing commitment to addressing sustainability, paving the way for future inquiries within this critical domain.

4.2. Empirical Models' Demographic Results (Research 2 and 3)

Country of origin- The research has examined the country of origin of the participant clusters from two perspectives. First, participating organizations have been measured proportionately to each country's ECCP members (see Figure 28). This statistic can provide an overview of the participation of clusters in different countries. Nevertheless, due to the limited number of cluster organizations in some countries, these numbers could be more suitable for comparing the participation rate. For example, the participation rate in Cyprus is 33% with one cluster, and the involvement rate in Spain is 17% with 28 participants.

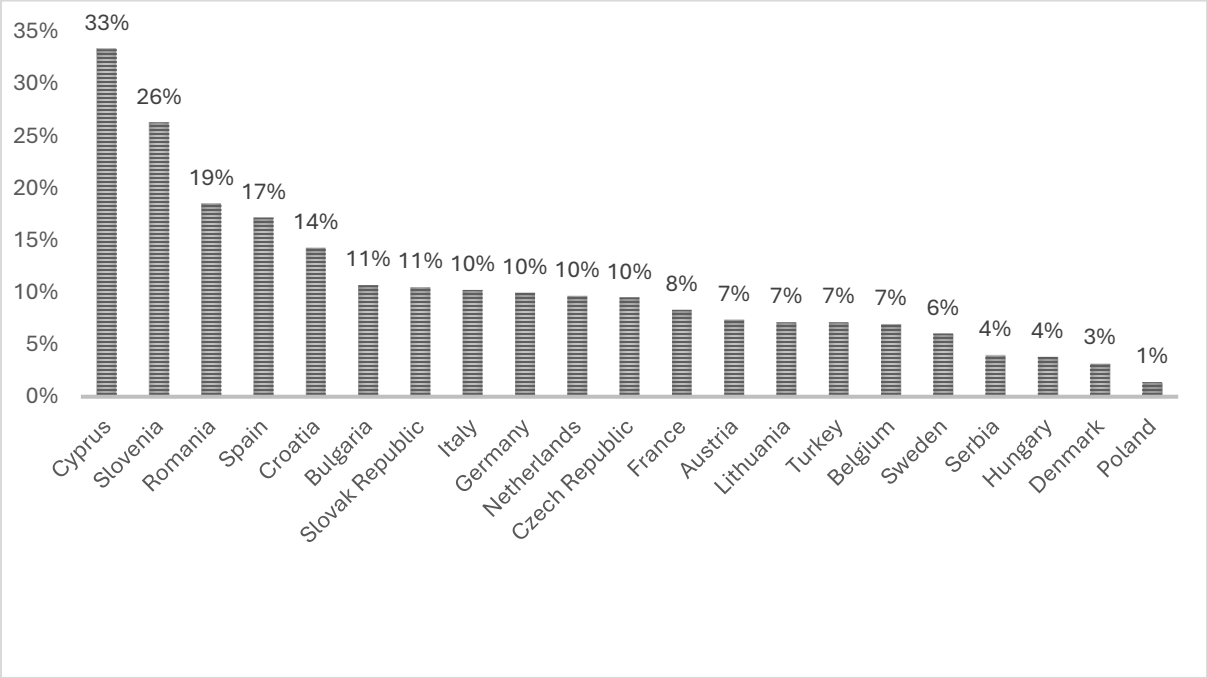

Figure 28. Participating clusters / the number of organizations in the country

These 99 organizations hailed from 21 European countries, with the highest representation from Spain, Germany, Romania, France, and Italy. Figure 29 depicts the percentage of participating clusters in each country regarding the total number of respondents (99 Cluster organizations). According to these numbers, the highest participation belongs to the countries of Spain (28%; 28 Clusters), Germany (11%; 11 Clusters), Romania (10%; 10 Clusters), France (9%; 9 Clusters), and Italy (8%; 8 Clusters).

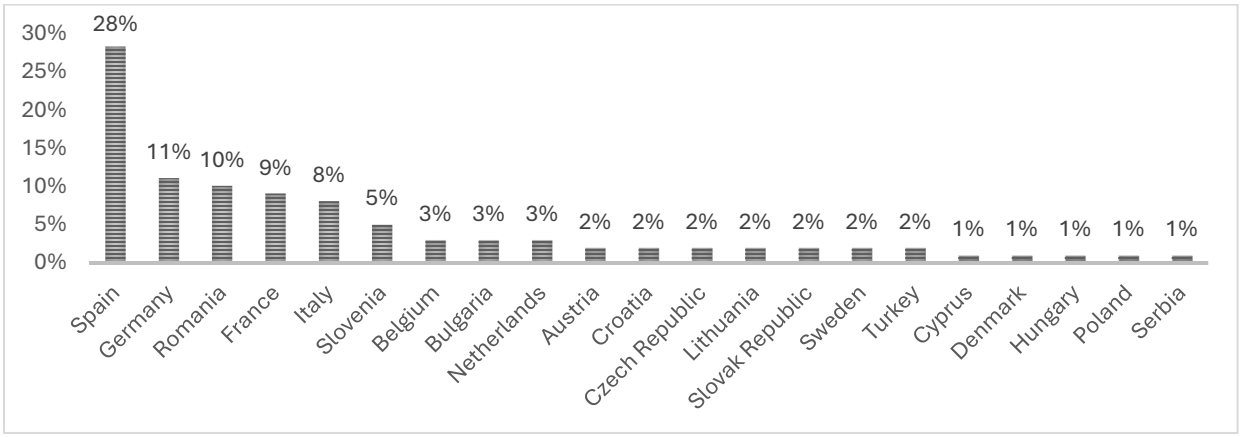

Figure 29- Participating clusters in each country concerning / total number of respondents.

Emerging industry—These 99 clusters emerged from 12 sectors. As shown in Figure 30, Digital, Environmental, and Creative Industries are the most critical origins of the clusters.

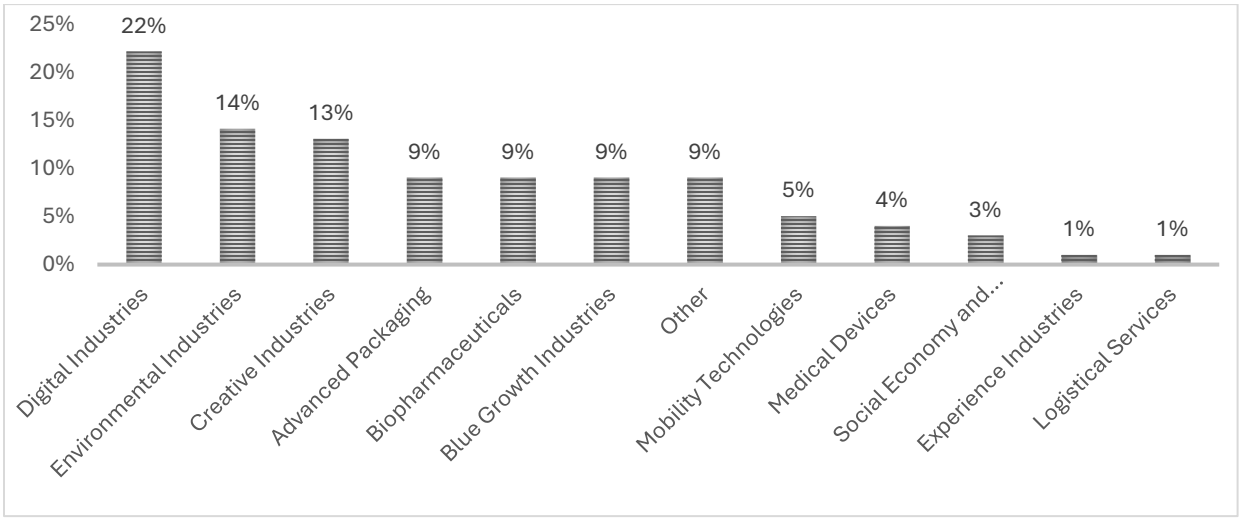

Figure 30- Emerging industries.

Cluster Excellence Label- Almost half of the participating cluster organizations have an Excellence Label. The European Commission DG Enterprise and Industry designed the European Cluster Excellence Initiative (ECEI) to evaluate cluster organizations' capacities and capabilities. This Commission "invented a uniform set of cluster management quality indicators and developed a quality labeling system featuring the three quality labels *Bronze*, *Silver*, and *Gold* for professional cluster management." (Anon., 2022). According to the classification, 10% of the cluster organizations that participated in this research have a gold level, 9% have a silver level, and 29% have a bronze. (See Figure 31)

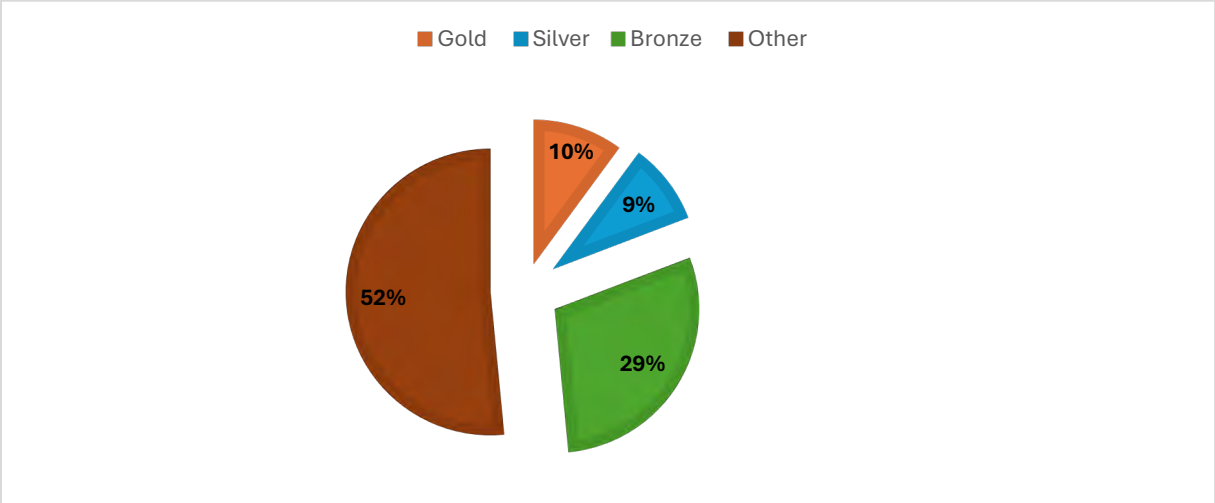

Figure 31. Participating clusters' excellence label

4.3. Relationship Between Non-Spatial Proximities

Quality checks were performed using SPSS software to detail the steps taken to ensure the validity of the research findings, following the data collection outlined in the second part of the methodology. This was a crucial step in identifying and correcting missing values through exploratory analysis. A concurrent validity test was then conducted to remove items not meeting the acceptable threshold. Specifically, items with a factor loading greater than 0.5 were deemed satisfactory, adhering to the guidelines established by Hair et al. (1998). Further analyses were focused on assessing the reliability and validity of the proposed structures through confirmatory factor analysis (CFA) in strict adherence to the guidelines established by Hair et al. (2010).

The author used structural equation modeling (SEM) to evaluate the research hypotheses. Given the limited number of respondents and the absence of a transparent conceptual reference model, partial least squares SEM (PLS-SEM) was employed to analyze the data. Hair et al. (2011) recommended that the minimum sample size for this method should be at least ten times the highest number of items in the most complex latent variable. This study's most complex latent variable contained five indicators, satisfying the sample size requirements for adequate analysis.

4.3.1. Exploratory factor analysis

Exploratory Factor Analysis (EFA) utilizing VARIMAX rotation was employed to assess the alignment of items measuring non-specific dimensions of proximity with the framework established by Geldes et al. (2015). The analysis yielded a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy at 0.828 and a Bartlett's Test of Sphericity with an approximate chi-square value of 1039.224 (p-value < 0.0001), both endorsing the presence of an underlying factor structure. Despite all items initially meeting validity criteria, the rotated component matrix excluded two items, mirroring the approach of Geldes et al. (2015). The items removed were Q3-CP3 (use of common language for communication within clusters) and Q15-IP1 (compliance with laws and regulations within groups), which recorded factor loadings of 0.845 and 0.677, respectively. This decision was influenced by the participation of cluster organizations from diverse countries, which likely contributed to the ambiguous relationship of these items with the primary four factors. Additionally, the analysis prompted the reclassification of item Q5-CP5 from measuring cognitive proximity to institutional proximity, thus renaming it IP5.

Subsequently, a reconfiguration of items for the four dimensions of non-specific proximity was established: social proximity (five items), organizational proximity (four items), institutional proximity (three items), and cognitive proximity (three items), as

detailed in Table 12. This restructured matrix highlights the distinctiveness and independence of cognitive and organizational proximity as separate factors. Moreover, reliability and validity assessments confirmed that the four dimensions—cognitive, organizational, social, and institutional proximity—satisfactorily met the requisite c

Table 12. Key questions, items and their evaluation, loadings and cross-loadings, and commonalities.

Rotated Component Matrix						
Loadings and cross-loadings						Communalities
Question No	Item Name	3/SP	1/OP	2/IP	4/CP	
Q1	CP1	0.099	0.180	0.105	**0.889**	0.843
Q2	CP2	0.201	0.249	0.141	**0.852**	0.848
Q4	CP4	0.210	0.145	0.562	**0.568**	0.703
Q16	IP2	0.046	0.276	**0.803**	0.042	0.725
Q17	IP3	0.200	0.418	**0.748**	0.028	0.775
Q18	IP4	0.239	0.579	**0.449**	0.258	0.660
Q5	(CP5) > IP5	0.171	0.141	**0.781**	0.314	0.758
Q6	OP1	0.128	**0.846**	0.320	0.211	0.878
Q7	OP2	0.181	**0.864**	0.260	0.167	0.874

Q8	OP3	0.202	**0.799**	0.210	0.161	0.750
Q9	OP4	0.179	**0.792**	0.036	0.100	0.670
Q10	SP1	**0.781**	0.163	0.037	0.148	0.659
Q11	SP2	**0.758**	0.004	0.387	0.068	0.730
Q12	SP3	**0.574**	0.131	0.299	0.376	0.577
Q13	SP4	**0.656**	0.364	0.126	0.183	0.613
Q14	SP5	**0.607**	0.251	0.278	0.007	0.509

KMO= 0.828 Chi-Square= 1039.224 Sig. 0.000

4.3.2. Confirmatory factor analysis

Confirmatory factor analysis (CFA) was performed on four distinct models to evaluate the reliability of the first-order constructs within the study. This statistical procedure is crucial as it tests whether the data fits a hypothesized measurement model based on the relationships between observed variables and their underlying latent constructs. The internal consistency of the measures was assessed by calculating Cronbach's alpha coefficient and the composite reliability, both indicators of reliability. These calculations produced values that demonstrate strong reliability, as detailed in Table 13. Specifically, each model's latent variable exhibited Average Variance Extracted

(AVE) values above 0.5, the minimum acceptable threshold, ensuring sufficient convergent validity. Additionally, Cronbach's alpha (CA) and composite reliability (CR) scores consistently exceeded 0.7, signifying strong internal consistency across cognitive, social, organizational, and institutional dimensions of proximity in all evaluated models (Hair et al., 1998).

Furthermore, the significance of the factor loadings and path coefficients within the models was assessed using a non-parametric bootstrapping procedure. This method, employed in the Partial Least Squares Structural Equation Modeling (PLS-SEM), facilitates robust statistical analysis by resampling the data to estimate the accuracy and stability of the proposed model parameters (Ringle et al., 2015).

Table 13. Reflective factors, their reliability, convergent validity assessment, and formative construct (variables loading and weights).

		M 1 -CP		M 2 -IP		M 3 -OP		M 4 -SP		CA	CR	AVE
	Items	Loading	Mean	Loading	Mean	Loading	Mean	Loading	Mean			
CP- Cognitive Proximity	CP1	0.863	0.317	0.839	0.290	0.877	0.339	0.875	0.325	0.831	0.899	0.748
	CP2	0.897	0.393	0.875	0.357	0.909	0.409	0.912	0.427			
	CP4	0.827	0.453	0.859	0.517	0.806	0.411	0.804	0.406			
IP- Institutional Proximity	IP2	0.818	0.230	0.822	0.242	0.823	0.254	0.814	0.215	0.851	0.898	0.688
	IP3	0.850	0.245	0.875	0.300	0.884	0.319	0.879	0.320			
	IP4	0.807	0.353	0.823	0.369	0.833	0.387	0.823	0.366			
	IP5	0.838	0.381	0.799	0.294	0.773	0.241	0.800	0.302			
OP- Organizational Proximity	OP1	0.941	0.324	0.944	0.330	0.941	0.319	0.931	0.276	0.916	0.941	0.800
	OP2	0.943	0.297	0.946	0.311	0.944	0.307	0.939	0.295			
	OP3	0.887	0.277	0.887	0.272	0.887	0.276	0.887	0.290			
	OP4	0.797	0.212	0.789	0.193	0.795	0.207	0.816	0.256			
SP- Social Proximity	SP1	0.776	0.267	0.747	0.230	0.761	0.273	0.763	0.258	0.776	0.847	0.529
	SP2	0.762	0.297	0.804	0.324	0.753	0.239	0.774	0.285			
	SP3	0.626	0.266	0.470	0.057	0.563	0.157	0.555	0.160			
	SP4	0.789	0.297	0.798	0.372	0.815	0.371	0.806	0.352			
	SP5	0.677	0.244	0.735	0.333	0.717	0.309	0.712	0.296			
CA=Cronbach's Alpha; CR= Composite Reliability; AVE=Average Variance Extracted												

4.3.3. Valuation of discriminant validity in confirmatory factor analysis

This section evaluated the discriminant validity of the measurement models using Fornell and Larcker's criterion (1981). According to this criterion, for discriminant validity to be established, the square roots of the Average Variance Extracted (AVE) for each construct should exceed the correlations between the construct and any other construct within the model. As depicted in Table 13, this condition was met in all four models, with each construct demonstrating greater square root values of AVE than its highest correlation with any other construct. This ensures that the constructs are empirically distinct and do not measure the same phenomenon.

Additionally, the upper section of Table 14 presents the heterotrait-monotrait ratio of correlations (HTMT) as another method to assess discriminant validity. The HTMT, a more recent and stringent criterion, compares the meaning of the heterotrait correlations (correlations between different constructs) to the mean of the monotrait correlations (correlations within the same construct). In this study, all HTMT values were below the threshold of 0.9, reinforcing the conclusion that the measurement models possess adequate discriminant validity (Hair et al., 2011).

Table14. Discriminant Validity/ Fornell-Larcker Criterion; Heterotrait-Monotrait Ratio (HTMT)

	CP	IP	OP	SP
CP	0.86	**0.625**	**0.553**	**0.584**
IP	0.55	0.83	**0.711**	**0.570**
OP	0.49	0.65	0.89	**0.567**
SP	0.47	0.51	0.50	0.73

4.3.4. Path coefficient estimation in confirmatory factor analysis

Following the confirmation of validity and measurement accuracy of the content within the proposed models, this study implemented a bootstrapping procedure with 5,000 subsamples to robustly estimate the path coefficient standards. This analysis utilized a one-tailed test with a significance level set at 0.05. The results of each model are shown in Figures 32 through 35 and Tables 15 through 18.

Analysis of Path Coefficients in Model M1- Model M1 focuses on the relationships between different proximity dimensions and social proximity (SP). In this model, three hypotheses were tested to ascertain the influence of cognitive proximity (CP),

organizational proximity (OP), and institutional proximity (IP) on social proximity. These relationships' statistical significance and strength were determined using path coefficients (β), t-values, and associated p-values. The results are summarized and detailed in Figure 32.

Hypothesis H1a (CP -> SP): The path coefficient for cognitive proximity influencing social proximity was β=0.227β=0.227 with a t-value of 1.679. The p-value associated with this path coefficient is 0.047, indicating statistical significance at the 0.05 level. Therefore, Hypothesis H1a is supported, suggesting a positive influence of cognitive proximity on social proximity.

Hypothesis H1b (OP -> SP): Organizational proximity's effect on social proximity yielded a path coefficient of β =0.237 and a t-value of 1.841. The p-value of 0.033 falls below the 0.05 threshold for significance, leading to the acceptance of Hypothesis H1b. This result supports the assertion that organizational proximity positively impacts social proximity.

Hypothesis H1c (IP -> SP): The influence of institutional proximity on social proximity resulted in a path coefficient of β=0.231 and a t-value of 1.148. With a p-value of 0.127, this relationship does not meet the conventional criteria for statistical significance ($p < 0.05$), and thus Hypothesis H1c is Not supported. This outcome indicates that the effect

of institutional proximity on social proximity is not statistically substantiated within this model.

Table15. Model M1 results.

M1-SP		**β**	**T**	**P Values**	**Contrast**
H1a	**CP -> SP**	**0.227**	**1.679**	**0.047***	Supported
H1b	**OP -> SP**	**0.237**	**1.841**	**0.033***	Supported
H1c	**IP -> SP**	**0.231**	**1.148**	**0.127**	Not supported

***p<0.05; **p<0.01**

In summary, the analysis of Model M1 demonstrates significant positive effects of cognitive and organizational proximity on social proximity, while the impact of institutional proximity did not achieve statistical significance. These findings contribute to understanding the nuanced interactions within proximity dimensions and their collective influence on social dynamics within the specified framework.

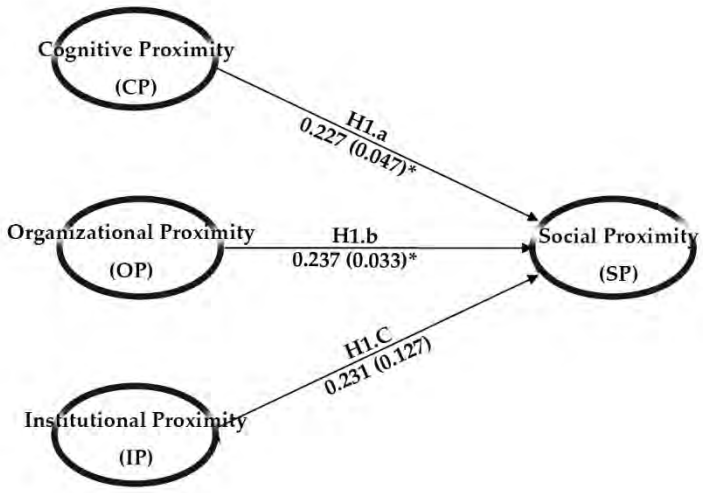

Figure 32- Model M1

Analysis of Path Coefficients in Model M2- Model M2 investigates the influence of various dimensions of proximity on cognitive proximity (CP). The findings from this model are detailed in Table 16 and involve three hypotheses that assess the effects of social proximity (SP), organizational proximity (OP), and institutional proximity (IP) on cognitive proximity. The outcomes are based on the analysis of path coefficients ($\beta\beta$), t-values, and p-values, which are summarized as follows:

Hypothesis H2a (SP -> CP): This hypothesis proposed that social proximity positively influences cognitive proximity. The results indicated a path coefficient of β=0.233 with a t-value of 2.305. The associated p-value is 0.021, below the significance threshold of 0.05. Therefore, Hypothesis H2a is Supported, confirming a significant positive relationship between social and cognitive proximity.

Hypothesis H2b (OP -> CP): The analysis tested whether organizational proximity affects cognitive proximity. The path coefficient for this relationship was β=0.145, with a t-value of 0.851. However, the p-value was 0.403, exceeding the 0.05 threshold for statistical significance. Consequently, Hypothesis H2b is not Supported, indicating that the influence of organizational proximity on cognitive proximity is not statistically significant within this model.

Hypothesis H2c (IP -> CP): This hypothesis examined the impact of institutional proximity on cognitive proximity. The path coefficient was notably higher at β=0.371β=0.371, with a t-value of 2.401. The p-value of 0.018 falls well below the 0.05 significance level. Thus, Hypothesis H2c is Supported, suggesting a strong positive effect of institutional proximity on cognitive proximity.

Table 16. Model M2 results.

M2-CP		**β**	**T**	**P Values**	**Contrast**
H2a	**SP -> CP**	**0.233**	**2.305**	**0.021***	Supported
H2b	**OP -> CP**	**0.145**	**0.851**	**0.403**	Not Supported
H2c	**IP -> CP**	**0.371**	**2.401**	**0.018***	Supported

***p<0.05; **p<0.01**

In conclusion, the results from Model M2 indicate that social and institutional proximities are significant predictors of cognitive proximity, while organizational proximity does not show a statistically significant effect. These findings enhance understanding of the factors contributing to developing and maintaining cognitive proximity within the studied framework.

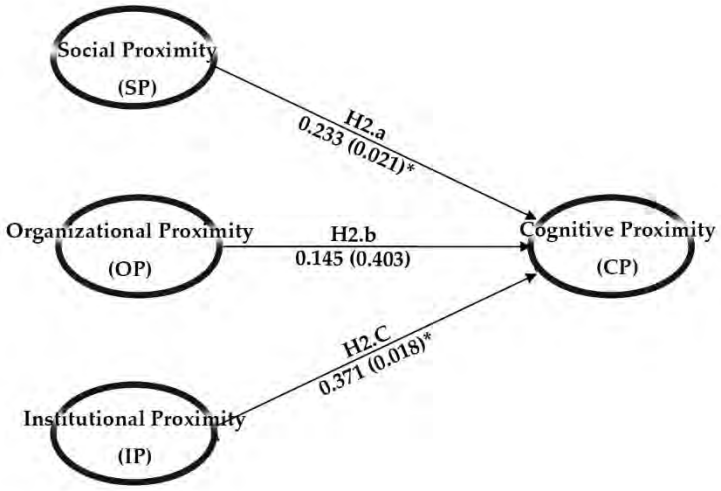

Figure 33-Model M2

Analysis of Path Coefficients in Model M3- Model M3 explores the relationships between cognitive proximity (CP), organizational proximity (OP), and social proximity (SP) as predictors of institutional proximity (IP). This model's findings are compiled in Table 17, and feature analyses using path coefficients (β), t-values, and p-values to

evaluate the impact of these proximities on institutional proximity. The following details summarize the outcomes for each hypothesis:

Hypothesis H3a (CP -> IP): This hypothesis asserts that cognitive proximity positively influences institutional proximity. The data shows a path coefficient of β=0.27 with a t-value of 2.011. The corresponding p-value is 0.020, below the 0.05 significance threshold, leading to the acceptance of Hypothesis H3a. This result indicates a significant positive effect of cognitive proximity on institutional proximity.

Hypothesis H3b (OP -> IP): This hypothesis examines the effect of organizational proximity on institutional proximity. The analysis resulted in a path coefficient of β=0.43 and a t-value of 4.569, with a very low p-value of 0.001. This result comfortably exceeds the significance criteria, so Hypothesis H3b is supported. It underscores a solid positive relationship between organizational proximity and institutional proximity.

Hypothesis H3c (SP -> IP): The hypothesis that social proximity affects institutional proximity was also tested. The path coefficient for this relationship was β=0.192 with a t-value of 1.242. However, the p-value of 0.103 does not meet the standard threshold for significance ($p < 0.05$), resulting in the non-supported of Hypothesis H3c. These numbers suggest that the influence of social proximity on institutional proximity is not statistically significant in this model.

Table 17- Model M3 results.

M3-IP		β	T	P Values	Contrast
H3a	**CP -> IP**	**0.27**	**2.011**	**0.020***	Supported
H3b	**OP -> IP**	**0.43**	**4.569**	**0.001****	Supported
H3c	**SP -> IP**	**0.192**	**1.242**	**0.103**	Not Supported

***p<0.05; **p<0.001**

In summary, Model M3 demonstrates that cognitive and organizational proximity significantly positively influence institutional proximity, while social proximity does not show a statistically significant effect. These findings contribute to a nuanced understanding of how different dimensions of proximity can influence institutional structures within the specified context.

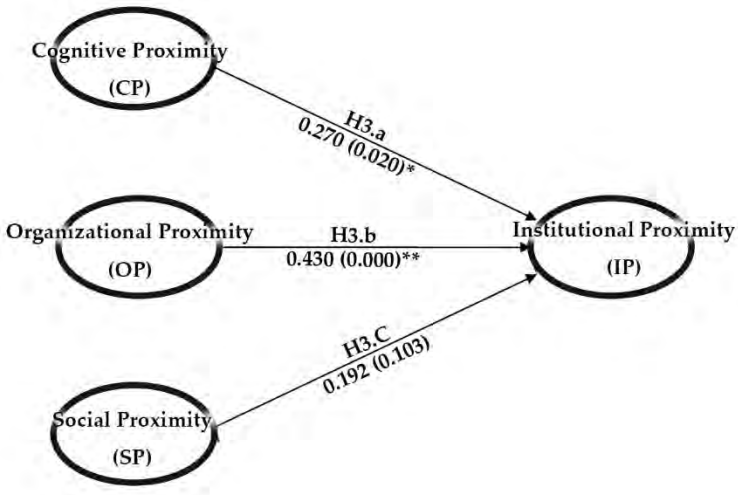

Figure 34- Model M3

Analysis of Path Coefficients in Model M4- Model M4 assesses the impact of cognitive proximity (CP), institutional proximity (IP), and social proximity (SP) on organizational proximity (OP). The results from this model are documented in Table 18, utilizing path coefficients (β), t-values, and p-values to evaluate the influence of these proximity dimensions on organizational proximity. Here are the detailed findings for each hypothesis:

Hypothesis H4a (CP -> OP): This hypothesis proposed that cognitive proximity positively influences organizational proximity. The results indicate a path coefficient of β=0.141 with a t-value of 0.99. The p-value associated with this hypothesis is 0.163, which exceeds the 0.05 significance threshold. Consequently, Hypothesis H4a is not supported, suggesting that the influence of cognitive proximity on organizational proximity is not statistically significant within this model.

Hypothesis H4b (IP -> OP): This hypothesis examines whether institutional proximity significantly affects organizational proximity. The analysis yielded a robust path coefficient of β=0.495 and a t-value of 4.834, with an extremely low p-value of 0.001. This finding significantly surpasses the criteria for statistical significance, leading to the support of Hypothesis H4b. This result confirms a robust positive relationship between institutional proximity and organizational proximity.

Hypothesis H4c (SP -> OP): The influence of social proximity on organizational proximity was also tested. The path coefficient for this relationship was β=0.185 with a t-value of 1.841. The p-value of 0.032 is below the threshold of 0.05. Thus, Hypothesis H4c is supported. This finding indicates a significant positive effect of social proximity on organizational proximity.

Table 18- Model M4 results.

M4-OP		β	T	P Values	Contrast
H4a	**CP -> OP**	**0.141**	**0.99**	**0.163**	Not- Supported
H4b	**IP -> OP**	**0.495**	**4.834**	**0.001****	Supported
H4c	**SP -> OP**	**0.185**	**1.841**	**0.032***	Supported

***p<0.05; **p<0.001**

In conclusion, the analysis of Model M4 reveals that institutional and social proximities significantly enhance organizational proximity, while cognitive proximity does not demonstrate a significant statistical impact. These insights are crucial for understanding the interactions and influences among different proximity dimensions on organizational dynamics within the explored framework.

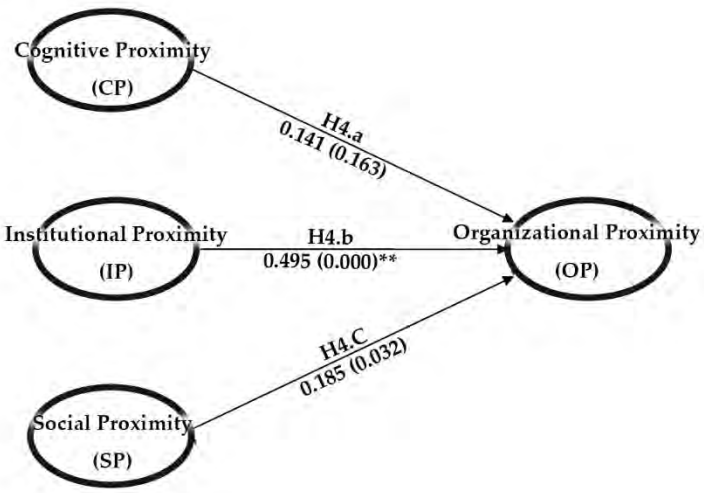

Figure 35- Model M4

Table 19 presents a detailed overview of the significant relationships among four key proximity dimensions: social proximity (SP), cognitive proximity (CP), institutional proximity (IP), and organizational proximity (OP). Each dimension's influence on the others has been analyzed using four models (M1, M2, M3, and M4). The p-values in the table indicate the statistical significance of these relationships, with thresholds denoted by symbols (*$p<0.05$; **$p<0.001$). Here is a closer look at the interactions among these dimensions:

Social Proximity (SP) positively and significantly influences Cognitive Proximity (CP) with a p-value of 0.047. SP also significantly influences Organizational Proximity (OP)

with a p-value of 0.032, demonstrating a positive impact. However, the effect of SP on IP, indicated by a p-value of 0.127, is positive but not statistically significant.

Cognitive Proximity (CP) positively and significantly impacts Social Proximity (SP) with a p-value of 0.012. CP also significantly and positively affects IP, with a p-value of 0.019, indicating a positive relationship. However, the positive influence of CP on Organizational Proximity (OP) is not significant, with a p-value of 0.204.

Institutional Proximity (IP) positively influences Social Proximity (SP), but it is insignificant with a p-value of 0.101. The influence of IP on Cognitive Proximity (CP) is highly significant, with a p-value of 0.009, indicating an intense positive impact. The influence of IP on Organizational Proximity (OP) is also highly significant, with a p-value of 0.001, reflecting a substantial positive impact.

Finally, *Organizational Proximity (OP)* positively and significantly influences Social Proximity (SP) with a p-value of 0.034. Its influence on Institutional Proximity (IP) is highly significant, with a p-value of 0.001. However, the influence of OP on Cognitive Proximity (CP) is positive but not significant, with a p-value of 0.161.

The relationships detailed in Table 19 reveal the complex and varied interactions between the different dimensions of proximity. The path coefficients across all four models were significant for two of the hypotheses tested, reinforcing the reliability and

robust nature of the theoretical foundations and empirical validations within these frameworks. The data highlights the importance of considering these interdependencies when analyzing the dynamics of organizational, social, cognitive, and institutional structures in various contexts.

Table 19. Summary of the interrelationship between non-specific dimensions of proximity.

	SP	CP	IP	OP
Social Proximity	N/A	**0.012***	0.101	**0.034***
Cognitive Proximity	**0.047***	N/A	**0.019***	0.161
Institutional Proximity	0.127	**0.009****	N/A	**0.001****
Organisational Proximity	**0.032***	0.204	**0.001****	N/A

N/A= Not applicable; *p<0.05; **p<0.001

These findings emphasize the complex and significant interactions between the four dimensions of proximity: social, cognitive, institutional, and organizational. It highlights that while some relationships between these dimensions are enormously significant, others are not, illustrating the nuanced interdependencies within and across these proximity dimensions. Additionally, the consistent significance of the path coefficients across different models underlines the reliability and robust nature of the models used to

analyze these relationships. This part of the thesis underlines the importance of considering such interdependencies when examining the dynamics of various structures within organizational, social, cognitive, and institutional frameworks.

4.4. Non-Spatial Proximity, Marketing Cooperation, and Export Marketing Intelligence

The second research analyzed only a subset of the collected data. The third segment of this doctoral thesis utilized the entire dataset. To verify the quality of the data and identify any missing values, the author conducted an exploratory analysis using SPSS. This process of content validity testing enabled us to pinpoint any weak variables or items in the dataset. According to Hair *et al.* (1998), only factor loading higher than 0.5 is satisfactory. Next, a confirmatory factorial analysis CFA was performed to test the reliability and validity of the proposed structures following the Hair *et al.* (2010) criteria. Finally, structural equation modeling using partial least squares (SEM-PLS) was employed to test the hypotheses. Smart PLS can handle models with non-normal data, small sample sizes, and missing data, making it a versatile tool for analyzing structural models in various research contexts (Wong, 2013). Additionally, efforts were made to minimize the variance of the model's residuals, effectively maximizing the predictive

power of the model's causal relationships. PLS-SEM allows us to focus on predicting or testing hypotheses about the relationship between constructs and the model's predictive capacity. This research follows Chin's (1998) rule of thumb regarding sample size. It states that the overall sample size should be ten times the largest of two cases: the component with the greatest quantity of observable variables or the dependent component impacted by the most significant number of independent components. In this model, the first possibility equals eight (export MK intelligence), while the second equals four (the number of arrows arriving at MK cooperation). Accordingly, the minimum sample size required in the research was 80, and the sample used is composed of 99 sample units.

4.4.1. Model's measurements and SEM

Upon Exploratory Factor Analysis (EFA) with varimax rotation, the field data analysis differs from items derived from the original questionnaire. The heuristic nature of the research explains this difference, the uncertainty of boundaries between different dimensions of proximity (Geldes *et al.,* 2015; Knoben & Oerlemans, 2006), the overlap of two items of Export Market Intelligence production and dissemination (Cadogan *et al.,* 2002), the confusion regarding marketing cooperation (Geldes *et al.,* 2015), and the effects of sample size (Hair *et al.,* 2010). Accordingly, this research identified six latent variables: social proximity (four items), cognitive proximity (three items), Institutional-

organizational proximity (seven items), Marketing Cooperation-promotion (two variables), Marketing Cooperation-market study (four items), and Export Market Intelligence- generation and dissemination (eight items), with 28 items in total.

From the initial scales, two of the deleted items relate to cognitive proximity (CP3 and CP5), one to institutional proximity (IP1), one to social proximity (SP3), one to marketing cooperation (MC7), and two to export market intelligence (MI-G1 and MI-D5). Appendix I presents more information about deleted items. Furthermore, all six factors meet the minimum requirements regarding latent variables' reliability and validity measurements (see Table 20).

Table 20. The critical question, items, their evaluation, loadings, cross-loadings, and commonalities.

Rotated Component Matrix							
	4 (SP)	6 (CP)	2 (IP-OP)	5 (MC-P)	3 (MC-M)	1 EMI	Extraction
SP1	**0.759**	0.211	0.186	0.027	0.085	0.220	**0.712**
SP2	**0.754**	0.112	0.173	-0.121	0.388	0.173	**0.806**
SP4	**0.529**	0.151	0.358	0.276	0.174	0.171	**0.567**
SP5	**0.579**	0.136	0.211	0.331	0.161	0.065	**0.538**
CP1	0.132	**0.835**	0.188	0.134	0.107	0.180	**0.812**
CP2	0.256	**0.836**	0.286	0.124	0.062	0.052	**0.868**
CP4	0.163	**0.544**	0.355	-0.001	0.397	-0.008	**0.607**
IP2	0.037	0.057	**0.703**	-0.222	0.289	-0.045	**0.633**
IP3	0.184	-0.019	**0.777**	-0.078	0.301	0.036	**0.735**
IP4	0.207	0.143	**0.742**	0.258	0.180	0.082	**0.720**
OP1	0.142	0.234	**0.821**	0.240	0.121	0.108	**0.834**
OP2	0.141	0.220	**0.824**	0.226	0.017	0.205	**0.841**
OP3	0.138	0.181	**0.743**	0.268	0.077	0.252	**0.745**
OP4	0.086	0.147	**0.649**	0.234	-0.041	0.206	**0.549**
MC1	0.146	0.122	0.271	**0.819**	0.181	-0.021	**0.814**

MC2	0.007	0.123	0.213	**0.759**	0.343	0.092	**0.763**
MC3	0.103	0.243	0.069	0.268	**0.722**	0.150	**0.690**
MC4	0.190	0.077	0.267	0.220	**0.736**	0.227	**0.755**
MC5	0.226	-0.089	0.240	0.360	**0.574**	0.292	**0.660**
MC6	0.310	0.115	0.226	0.028	**0.687**	0.314	**0.732**
MI-G2	0.340	0.104	-0.072	-0.015	0.152	**0.680**	**0.617**
MI-G3	0.036	0.024	0.077	-0.101	0.173	**0.806**	**0.697**
MI-G4	0.084	0.087	0.096	0.001	0.013	**0.877**	**0.794**
MI-D1	0.061	0.123	0.054	-0.113	0.266	**0.844**	**0.818**
MI-D2	0.087	-0.094	0.176	0.070	0.146	**0.805**	**0.721**
MI-D3	0.025	-0.029	0.214	0.153	0.117	**0.785**	**0.701**
MI-D4	0.047	0.145	0.150	0.139	0.061	**0.799**	**0.708**
MI-D6	0.253	0.081	0.037	0.356	-0.050	**0.634**	**0.603**
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.							
Kaiser-Meyer-Olkin (KMO) = 0.851			Approx. Chi-Square = 2002.684			Sig. 0.001	

The updates of hypotheses- This research has added extra explanations in this section to help clarify the obtained results for better understanding. After performing an Exploratory Factor Analysis (EFA), it is possible for a research hypothesis to change (Tabachnick et al., 2013). According to Costello and Osborne (2005), EFA is a statistical method that identifies observed variables' underlying factors or dimensions. This analysis step aims to identify patterns and relationships within the data to understand the underlying structure better.

While conducting EFA, researchers may find that the observed variables do not load onto the expected factors as they initially hypothesized. This situation could indicate the presence of a different underlying structure or a requirement to reevaluate the initial

hypothesis. Furthermore, EFA may uncover unforeseen patterns or dimensions that were not initially expected. Accordingly, hypotheses H1.2 and H1.3 are combined from the first group.

H.1.2- Cognitive Proximity positively affects Institutional-Organizational Proximity.

Further, this integration is also the cause for deleting hypothesis H2.4 from the second group. On the other hand, due to the division of "Marketing Cooperation," the remaining assumptions in the second group are divided into two parts as follows:

H2.1a- Social Proximity directly and positively impacts Marketing Cooperation in promotion.

H2.1b- Social Proximity directly and positively impacts Marketing Cooperation in market research.

H2.2a- Cognitive Proximity directly and positively impacts Marketing Cooperation in promotion.

H2.2b- Cognitive Proximity directly and positively impacts marketing cooperation in market research.

H2.3a- Institutional-organizational proximity directly and positively impacts Marketing Cooperation at promotion.

H2.3b- Institutional-organizational proximity directly and positively impacts Marketing Cooperation in market research.

Since cooperation in marketing is divided into two separate factors (promotion and market research), and EMI generation and dissemination have been considered as a single factor, the following hypotheses have been modified:

H3.1- Marketing cooperation in promotion directly and positively impacts Export Market Intelligence in cluster organizations.

H3.2- Marketing cooperation in market research directly and positively impacts Export Market Intelligence in cluster organizations.

Regarding reliability (see Table 21), this research applied a Confirmatory Factorial Analysis (CFA). To test the reliability of the first-order constructs, Cronbach's alpha coefficient and the composite reliability were calculated to measure the internal consistency. All latent variable values are more than 0.5, confirming AVE's validity in all factors. Cronbach's alpha (CA) and composite reliabilities (CR) 0.7 (Hair *et al.,* 1998) in all six factors *(i.e., Social Proximity, Cognitive Proximity, Institutional-Organizational proximity,*

Marketing cooperation in promotion, Marketing cooperation in market study, and Export market intelligence). To complete this test, the author applied a non-parametric bootstrapping procedure with the PLS-SEM and tested the significance of item loadings and paths (Ringle *et al.,* 2015).

Table 21- Confirmatory factorial analysis for the measurement model.

	Latent Variable	loadings	Mean	CA	CR	(AVE)
Social Proximity	SP1	0.790	0.291	0.782	0.784	0.605
	SP2	0.815	0.315			
	SP4	0.781	0.360			
		0.722	0.321			
Cognitive Proximity	CP1	0.857	0.361	0.814	0.815	0.731
	CP2	0.912	0.403			
	CP4	0.791	0.409			
Institutional-Organizational Proximity	IP2	0.627	0.113	0.913	0.933	0.664
	IP3	0.766	0.151			
	IP4	0.844	0.205			
	OP1	0.929	0.206			
	OP2	0.918	0.192			
	OP3	0.857	0.194			
	OP4	0.715	0.148			
	MC1	0.938	0.536	0.862	0.862	0.879

Marketing Cooperation (Promotion)	MC2	0.937	0.531			
	MC3	0.756	0.244			
Marketing Cooperation (Market study)	MC4	0.889	0.309	0.857	0.870	0.702
	MC5	0.823	0.301			
	MC6	0.875	0.336			
Export Market Intelligence	EMG2	0.737	0.155	0.924	0.928	0.655
	EMG3	0.812	0.145			
	EMG4	0.872	0.128			
	EMD1	0.870	0.186			
	EMD2	0.834	0.164			
	EMD3	0.816	0.161			
	EMD4	0.829	0.159			
	EMD6	0.687	0.139			

CA= Cronbach's alpha; CR= Composite reliability (rho_a); AVE= Average variance extracted (AVE)

Fornell and Larcker's (1981) criterion was applied to test discriminant validity. All AVE's square roots must be higher than the other presented correlations (see Table 22). The top side of Table 22 also shows the heterotrait–monotrait ratio of correlations (HTMT)

(Hair *et al.,* 2011). All numbers in this part are less than 0.9, which confirms the model's discriminant validity.

Table 22. Discriminant validity/Fornell–Larcker criterion; heterotrait–monotrait ratio (HTMT).

	CP	EMI	IP-CP	MC-M	MC-P	SP
CP	0.855	0.251	0.546	0.438	0.370	0.545
EMI	0.291	0.809	0.327	0.480	0.199	0.410
IP-CP	0.624	0.349	0.815	0.514	0.477	0.553
MC-M	0.524	0.529	0.573	0.838	0.477	0.607
MC-P	0.441	0.225	0.520	0.566	0.937	0.405
SP	0.679	0.483	0.641	0.732	0.486	0.778

4.4.2. Results and discussion

As explained above, after ensuring the validity of the proposed model, a PLS-SEM bootstrapping procedure was used to test the updated factors and their relationships. The factors and their measurements changed after Exploratory Factor Analysis (EFA), which affected some hypotheses. Therefore, the author retained the first relationship (H1.1) and modified the other beliefs. For instance, all assumptions related to marketing cooperation

were divided into MC-promotion and MC-market research. Further, the author mixed the Institutional and Organizational proximities (***Henceforth*** IP-OP) and proposed a new hypothesis to test the relationship between CP and IP-OP. As noted in the section discussing the literature review of these two factors, this incident resonates closely and corroborates the conclusions drawn by Knoben and Oerlemans (2016). This research also found that export market intelligence generation and dissemination are going in the same direction. Figure 36 summarizes the constructs' structural relationship.

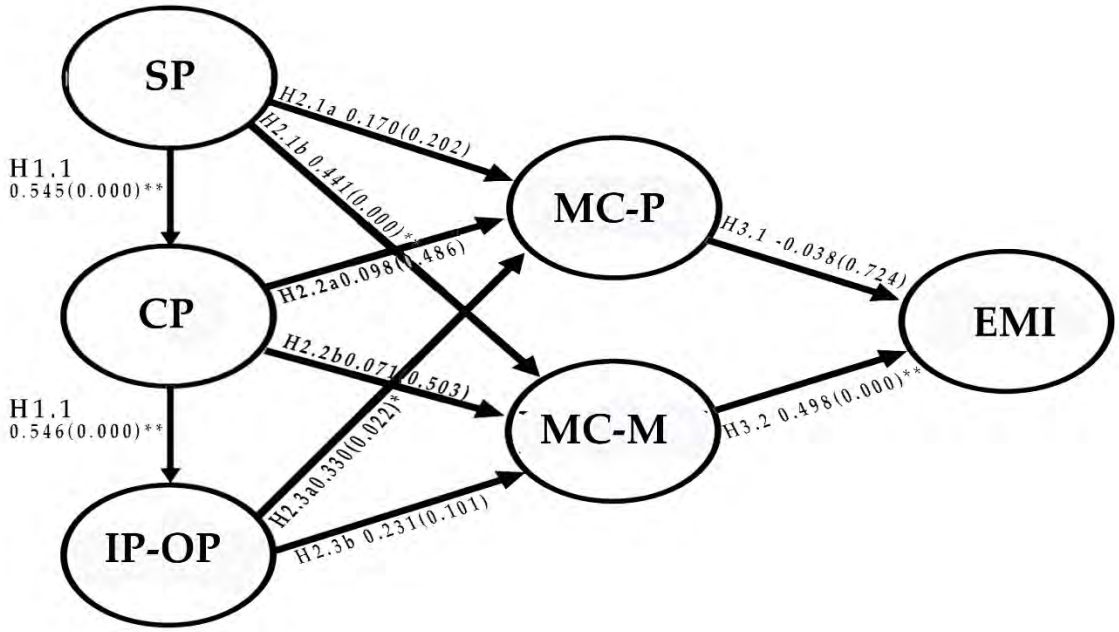

Figure 36- SEM: Non-spatial proximity dimensions, marketing cooperations, and export market intelligence.

The variance of the dependent latent variables explained by the predictive constructs was observed to assess the model's predictive capacity. According to Falk and Miller (1992), the R-squared criterion was applied, which should exceed 0.1. Additionally, Chin (1998) suggests that scores around 0.33 should be considered moderate. Table 23 indicates that all R2 values range from 0.231 to 0.418. Beyond R-squared, Hair et al. (2012) recommended using the effect size (f2), path coefficients, and their respective t-values. In terms of effect size, all independent variables substantially impact endogenous variables. All scores exceed 0.35, notably the moderated MC-M on EMI at 0.301. Consequently, the model demonstrates a moderate predictive capacity based on these results.

In new suppositions, H3.1 measures the direct and positive impact of marketing cooperation (in-promotion) on Export Market Intelligence, which cannot be verified. Marketing cooperation (market research) is supported and assessed for its positive and immediate effect on Export Market Intelligence in H3.2. This finding confirms that social proximity facilitates the exchange of ideas and feedback, which helps individuals refine and improve their innovative ideas. (Salvini & Galina, 2022)

After the changes applied to the second group of hypotheses, H2.1a reveals that while social proximity is critical to interfirm interactions, particularly in marketing (Geldes *et al.,* 2015), its relationship with marketing cooperation (in-promotion) is no significance.

On the other hand, H2.1b confirms that social proximity firmly and directly impacts marketing cooperation (market research). It is possible to explain this observation because social proximity involves direct or indirect interactions between firms, enabling managers to observe and monitor each other's behavior and develop mutual trust (Boschma, 2005; Molina-Morales & Martínez-Fernández, 2010). Then, regarding cognitive proximity, neither hypotheses (H2.2a) nor (H2.2b) are supported, as there is no significant correlation between CP-MC/P and CP-MC/M.

Nevertheless, Geldes *et al.* (2015) have already pointed out that cognitive proximity has no direct effect on cooperation in the market. Next, two hypotheses were proposed to target marketing cooperation in the promotion and market research after combining organizational and institutional proximity. First, H2.3a reveals that institutional-organizational proximity directly and strongly affects marketing cooperation (in-promotion). This finding confirms that developing strategic networks in clusters requires institutional and organizational proximity (Wang & Krakover, 2008). However, this does not apply to the relationship between IP-OP and marketing cooperation (market research), and this research does not support H2.3b. Finally, hypotheses proposed that the relationship between non-spatial dimensions of proximity (H1a and H1b) are supported. Social proximity has a direct and substantial impact on cognitive proximity (H1.1), and the mix of institutional-organizational proximity is affected significantly by

cognitive proximity (H1.2). This finding confirmed that IP characteristics are associated with organizational norms and routines (Knoben & Oerlemans, 2006). In a better word, institutional proximity is a part of the organizational dimension.

As shown in Table 23, five of the ten hypotheses are supported. H1.1, the relationships between SP and CP (0.545); H1.2, CP and the mix of IP-OP (0.546); H2.1b, SP, and MC-M (0.441), H2.3a, IP-OP, and MC-P (0.33); and H3.2, MC-M with EMI (0.498) (see Table 23).

Table 23. Model predictive capacity and Hypotheses testing

	β	t-value		Endogenous Construct	R^2	f^2
SP -> CP	0.545	7.061**	**Supported**	**CMC-M**	0.297	0.422
SP -> MC-M	0.441	4.058**	**Supported**		0.418	0.718
SP -> MC-P	0.17	1.275	Not supported	**IP-OP**		
CP -> IP-OP	0.546	6.468**	**Supported**		0.299	0.426
CP -> MC-M	0.071	0.67	Not supported			
CP -> MC-P	0.098	0.696	Not supported			
IP-OP -> MC-M	0.231	1.643	Not supported	**MC-P**		
IP-OP -> MC-P	0.33	2.286*	**Supported**		0.263	0.356
MC-M -> EMI	0.498	5.188**	**Supported**	**EMI**	0.231	0.301
MC-P -> EMI	-0.038	0.353	Not supported			

4.5. A Systematic Bibliometric Analysis of Green Marketing Cooperation

This study gathered 575 prominent cooperation and green marketing publications from the Web of Science to explore green marketing cooperation. This information was utilized as a component of its bibliometric analysis. To conduct a more in-depth analysis, the data collected from WOS were exported to VOSviewer Software (Version 1.6.19). Various keyword maps, co-citation maps, and coupling maps were created to obtain insights. By using the software, this research improved the visualization of the data. Much attention has been paid to visualizing bibliometric networks, also known as science mapping, since the early days of bibliometric study (Van Eck & Waltman, 2014).

4.5.1. Publication trends by year

Regarding RQ1, green marketing has recently garnered increased attention despite having limited coverage before 2005. The 575 publications collected for this research affirm the growing focus on this issue. The publication trend is shown in Figure 37. These findings show that 89% of the publications (509 research) fall within the past decade, between 2013 and 2023. The maximum number of publications is found in 2022 (108 publications, around 19%). The number of articles published in 2023 is expected to increase significantly by the end of the year. The oldest article in the selection talked about

the achievement of recycling through collaboration in the value chain (Roy & Whelan, 1992). After analyzing the data presented in Figure 37, it can be observed that only forty-four documents were published between 1990 and 2010, comprising less than 8% of the total 575 documents. Publications on "green marketing" and "cooperation" significantly increased after 2012.

However, there is also a noticeable trend of increasing citation rates for these documents. This trend steadily rose from 2017 onwards and peaked in 2022, which means new investigations are essential to future research (Figure 37). This upward trend will continue, as the research was conducted in the middle of 2023.

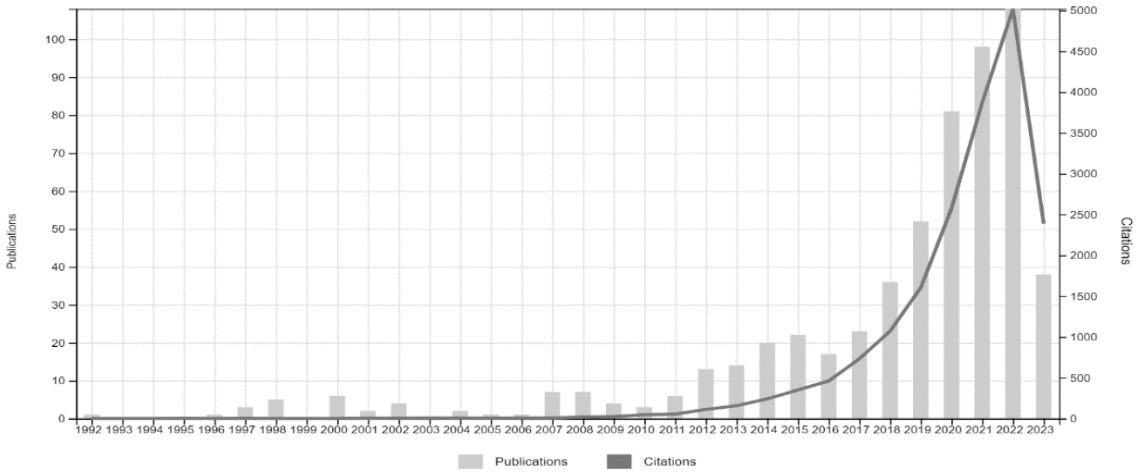

Figure 37. Number of articles and citations received on green marketing and cooperation- source Web of Science.

Furthermore, the author employed artificial intelligence to scrutinize the contents of Figure 37, aiming to discern emerging trends or patterns within the literature concerning cooperation and green marketing. This examination yielded substantial outcomes. The image illustrates that post-2008, there was a notable increase in the volume of scholarly articles and their citations, reaching a zenith in 2015, with this upward trajectory persisting to the present day. Such findings underscore a growing academic and practical interest in the nexus between collaboration and green marketing. The pronounced escalation in research activity in recent years highlights these studies' expanding scope, influence, and integration into future works. This evolution indicates a continuous effort by researchers to build upon previous investigations, suggesting an ongoing identification of novel challenges linked to earlier discoveries.

4.5.2. Research categories

As observed in this research, examining publications by subject area uncovers the trends and frequency of their occurrence in the literature. The analysis of the articles based on the subject area (i.e., green marketing cooperation) reveals the trend and pattern of appearances (Table 24). For example, the dominant fields of publications are related to engineering, which accounts for 37.39 percent of selected papers. It strongly focuses on

the technical aspects of implementing green marketing strategies in cooperation with stakeholders. Then environmental science and ecology represent a significant part of the literature, with 32.52%. The ecological focus of the articles shows a strong interest in the environmental impact of these collaborative marketing efforts. Then, business and economics hold a significant share of 28.35%, reflecting the economic analysis and dynamics of the green marketing market in cooperative frameworks. Also, the coverage of green marketing and collaboration in the broader topics of science and technology (24.35%) and operations research and management science (13.91%) shows that this field is not only limited to environmental and engineering perspectives but also includes operations and Aspects of strategic management. The role of computer science (13.57%) also shows that digital and computing tools are used in the analysis, tracking, and perhaps in implementing green marketing strategies. According to 6.26% mathematics, there is a trend towards using quantitative methods to model and understand the dynamics of cooperation in green marketing. In addition, telecommunications (5.04%) indicates that technology and communication networks may play a role in facilitating collaborative strategies and expanding green marketing initiatives.

However, although less attention has been paid to social impacts, social sciences (2.78%) and energy and fuel (2.26%) have been represented, indicating a growing awareness of the social implications and energy considerations of green marketing

practices in cooperative investments. As mentioned in the previous section, the increasing trend of studies considering the previous findings can be a reason for these two issues to receive more attention in the future.

Table 24- Subject area-wise publications on cooperation in green marketing

	Research Areas	Record Count	% of 575
1	Engineering	215	37.39%
2	Environmental Sciences Ecology	187	32.52%
3	Business Economics	163	28.35%
4	Science Technology Other Topics	140	24.35%
5	Operations Research Management Science	80	13.91%
6	Computer Science	78	13.57%
7	Mathematics	36	6.26%
8	Telecommunications	29	5.04%
9	Social Sciences Other Topics	16	2.78%
10	Energy Fuels	13	2.26%

4.5.3. Prominent journals

Figure 38 and Table 25 provide detailed information on the top 10 journals that strongly emphasize green marketing collaboration. The obtained statistics show that the Journal of Cleaner Production has published the most articles on cooperation in green marketing compared to other journals. This finding indicates that this journal has paid particular attention to research on the impact of marketing on sustainability and environmental issues.

Indeed, the evidence must convincingly demonstrate that the "Journal of Cleaner Production" contains the foremost articles in this field. Although most publications and citations in Greek marketing cooperation are related to this journal, other journals have fewer publications and a higher average number of citations. For instance, "Supply Chain Management: An International Journal," with two publications, has the highest average of citations (783). This journal was followed by "The International Journal of Operations and Production Management," with three papers and 858 citations.

However, the diverse range of journal titles and their varied focus on aspects such as sustainability, technology, and business underscore the breadth and depth of the issue of cooperation in green marketing. This comprehensive coverage of commercial and industrial activities and the interdisciplinary approach in this scientific research field, as

evidenced by the journals in this list, further enriches our understanding of the environmental impact of green marketing, making our audience feel the full scope of this field. Furthermore, the number of publications in journals such as "IEEE Access" and "Computers and Industrial Engineering" and their citations point to a significant trend in which technological innovations and industrial applications are integrated with green marketing strategies.

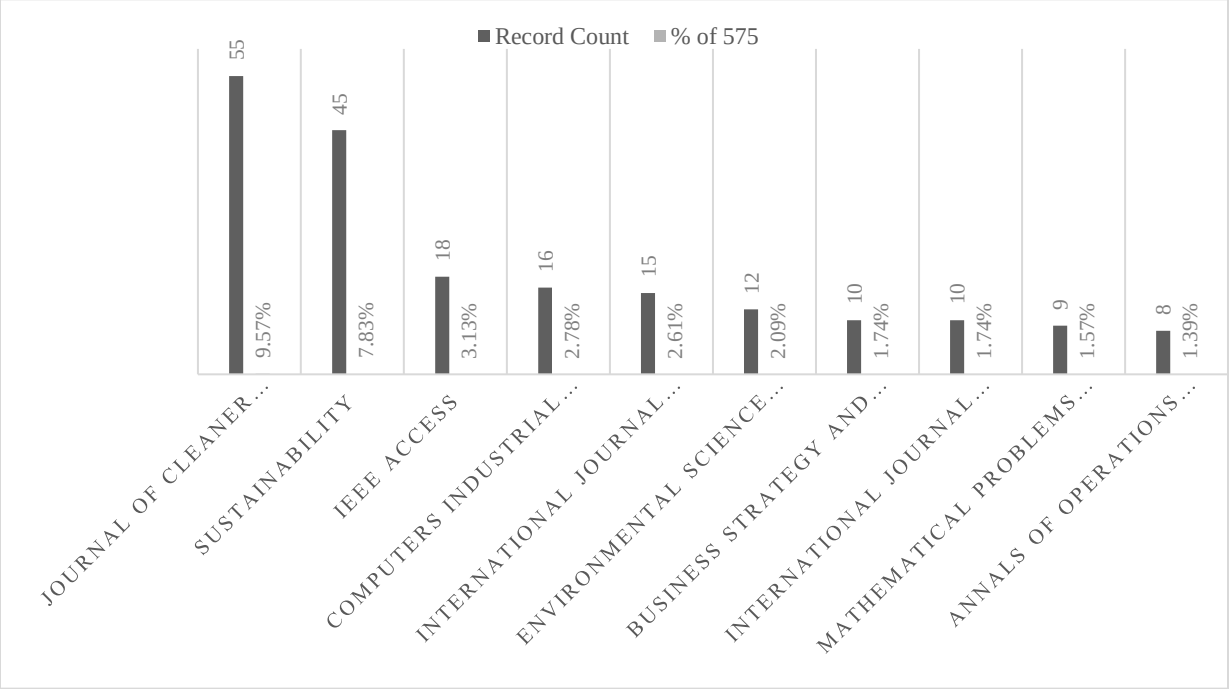

Figure 38. Top journals based on the number of publications for green marketing cooperation

Table 25- Top journals based on number of citations for green marketing cooperation

	Publication Titles	Number of research	Citations	Average Citation per item	% of Total citations
1	JOURNAL OF CLEANER PRODUCTION	55	3363	61.15	18%
2	INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS	15	1528	101.87	8%
3	INTERNATIONAL JOURNAL OF OPERATIONS PRODUCTION MANAGEMENT	3	858	286.00	5%
4	BUSINESS STRATEGY AND THE ENVIRONMENT	10	800	80.00	4%
5	SUPPLY CHAIN MANAGEMENT AN INTERNATIONAL JOURNAL	2	783	391.50	4%
6	COMPUTERS INDUSTRIAL ENGINEERING	16	754	47.13	4%
7	INTERNATIONAL JOURNAL OF PRODUCTION RESEARCH	10	668	66.80	4%
8	EUROPEAN JOURNAL OF OPERATIONAL RESEARCH	5	552	110.40	3%
9	SUSTAINABILITY	45	445	9.89	2%
10	TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE	3	436	145.33	2%

4.5.4. Top authors

Figures 39 and 40 contribute to answering the third research question. Figure 39 ranks the top ten authors in green marketing collaboration based on their publication count. This data indicates that research in this area involves many authors. Among the 575 articles analyzed, lead authors were responsible for about 1% of the publications. These numbers indicate that no single author dominates the research landscape, as the field features contributions from various authors.

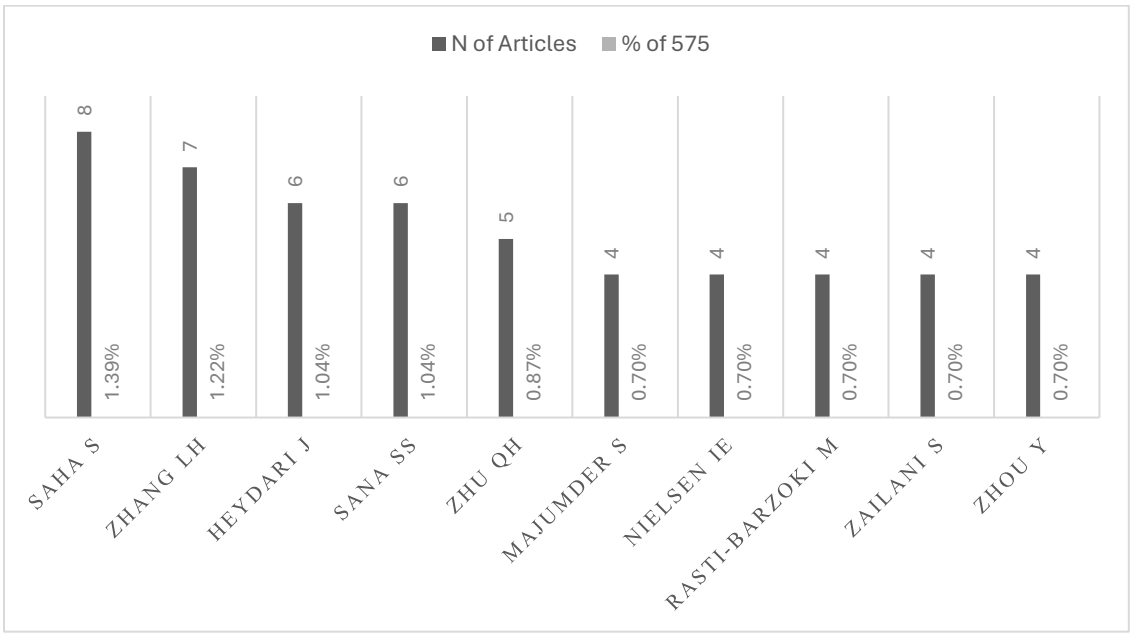

Figure 39. List of the top ten authors, ranked by the number of publications for green marketing cooperation.

Figure 40 shows the author's networks in two colors. Each color likely represents the author's correlation and topic of interest. Authors within the same cluster are more frequently co-cited, suggesting they may work on similar issues. The size of each rectangle indicates the number of co-citations each author has had. However, comparing Figures 40 and 41 revealed that some researchers with fewer publications gained significant attention from other authors, for instance, "Zhu, gh." These authors are often vital influencers or have produced seminal works.

Figure 40 shows the thickness of the lines between the authors, representing co-citation links. A thicker or more numerous line between authors suggests a more robust relationship or greater relevance of their combined work to the field. For instance, Green, Zelbst, Meacham, and Bhadauria's (2012) publication has received over 724 citations (see Table 25), which makes a strong connection between them.

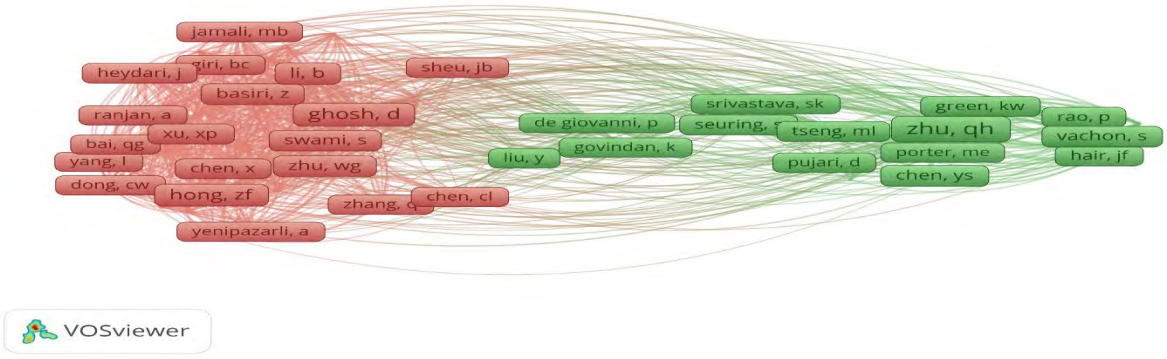

Figure 40. Map of co-citation analysis based on authors.

4.5.5. Prominent countries

Table 26 and Figure 41 listed the top ten countries based on the number of publications and citations. These findings reflect where the research community's emphasis lies geographically. These results signal that green marketing and cooperation in Asia and North America are particularly pertinent or well-funded. The numbers in Table 26 show a significant concentration of research activity in China, as indicated by the highest record count and a substantial number of citations. Chinese researchers are followed by research contributions from the USA, India, and other countries, suggesting active research engagement across diverse global regions.

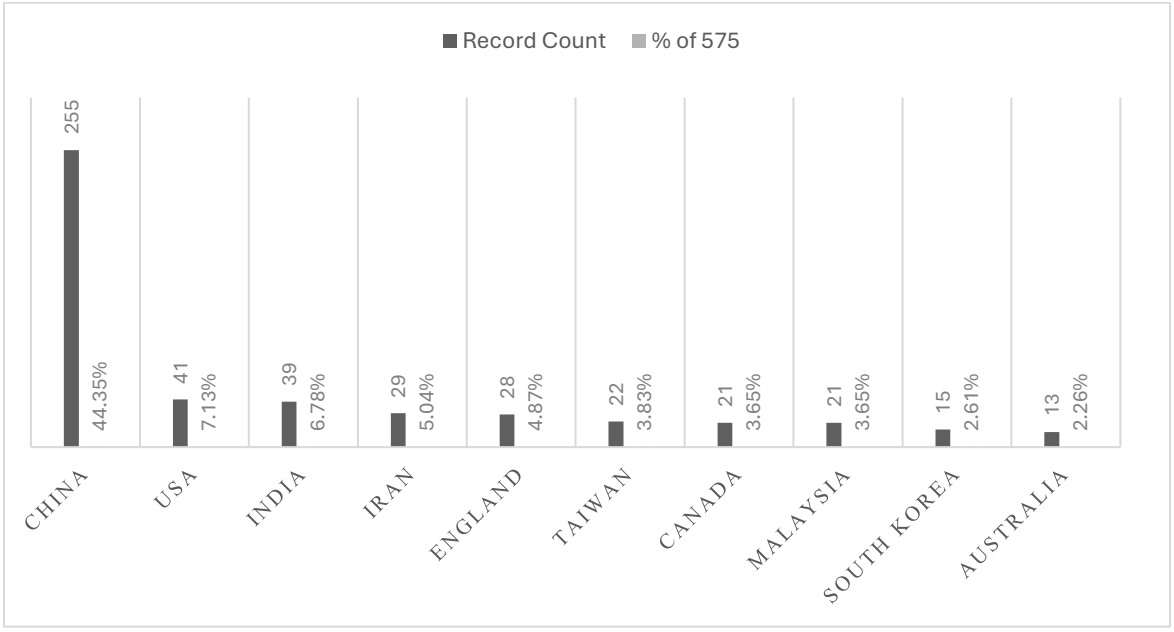

Figure 41. List of the top ten countries, ranked by the number of publications for green marketing cooperation.

However, despite China having the highest record count, the average citation per item is higher for the USA, England, and other countries like Spain, which could imply that while Chinese research output is voluminous, the impact as measured by citations per publication is more significant in different regions. (Table 26)

Table 26- Citations for green marketing collaboration at the top countries

	Countries/Regions	Record Count	Number of Citations	Average citation per item
1	CHINA	255	6336	24.8
2	USA	41	2410	58.8
3	ENGLAND	28	1683	60.1
4	INDIA	39	1662	42.6
5	IRAN	29	1569	54.1
6	TAIWAN	22	1383	62.9
7	CANADA	21	1068	50.9
8	SPAIN	9	717	79.7
9	AUSTRALIA	13	679	52.2
10	SOUTH KOREA	15	654	43.6

In addition, Figure 42 illustrates the network between countries that simultaneously targeted cooperation and green marketing, as depicted in the VOSviewer software output. This cluster map displays the global landscape of scholarly partnerships, distinguishing four principal clusters. Figure 42 divides the four clusters into four different colors. Each rectangle contains a country name. The size of each rectangle indicates the magnitude of scholarly contributions or citations received, and the connecting lines represent the intensity and frequency of cross-citation among nations. For example, the depiction highlights China's prominent research collaborations with Iran, the United States, and India. The assortment of colors and groupings on the map further enables the identification of closely allied nations and those exerting significant scholarly influence.

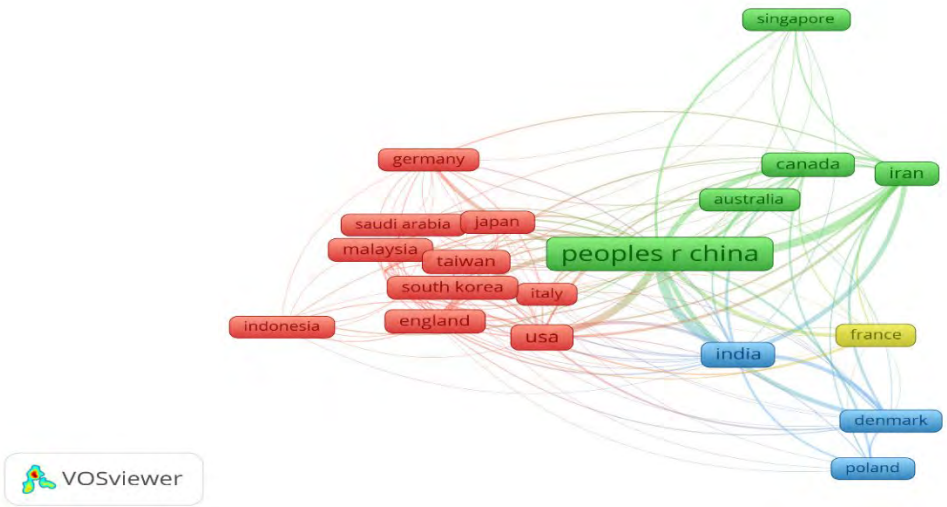

Figure 42. Map of bibliometric citation analysis based on countries.

4.5.6. Most cited publications

This research shows that 575 collected articles have been cited 18,765 times until January 21, 2023. Table 27 lists the top 10 cited papers. Accordingly, this list shows the field's most foundational or particularly influential research. To find the most frequently cited publications and scholars in cooperation and green marketing and their insights, the article focuses on sustainable supply chain management practices, the role of management and human resources in green practices, and consumer behavior related to environmentally friendly products.

Table 27- Top 10 articles cited for green marketing collaboration.

Title	Authors/ Year	No Citations	Average per year
"Green supply chain management practices: impact on performance."	(Green et al., 2012)	724	60.33
"Achieving sustainability through attention to human resource factors in environmental management."	(Daily, B. F., & Huang, S. C. 2001)	532	23.13
"Supply chain analysis under green sensitive consumer demand and cost-sharing contract"	(Ghosh, D., & Shah, J. 2015)	488	54.22
"Drivers of different types of eco-innovation in European SMEs"	(Triguero et al., 2013)	429	39
"Green innovation and organizational performance: The influence of big data and the	(El-Kassar, A. N., & Singh, S. K. 2019)	404	80.8

moderating role of management commitment and HR practices."			
"Using fuzzy DEMATEL to evaluate the green supply chain management practices."	(Lin, R. J. 2013)	395	35.91
"Green product design in supply chains under competition"	(Zhu, W., & He, Y. 2017)	363	51.86
"Green product supply chain contracts considering environmental responsibilities"	(Hong & Guo, 2019)	351	70.2
"Pricing policies of a competitive dual-channel green supply chain"	(Li et al., 2016)	342	42.75
"Re-examining green purchase behavior and the green consumer profile: new evidence."	(Akehurst et al., 2012)	291	24.25

These leading publications offer new insights into the efficiency and effectiveness of green supply chain practices (Hong & Guo, 2019; Li et al., 2016; Zhu et al., 2017), the strategic importance of management commitment to environmental issues (Daily & Huang, 2001), and innovative approaches to evaluating green practices (Ghosh & Shah, 2015; Triguero et al., 2013; El-Kassar & Singh, 2019), such as the use of fuzzy DEMATEL (Lin, 2013) and the examination of green consumer profiles (Akehurst et al., 2012).

Figure 43 illustrates the distribution of clusters and the interconnectedness of articles. Due to the large volume of articles on this topic, a threshold of fifty citations was set for a document to be included (Maier et al., 2020). Out of 575 papers reviewed, only eighty-

eight were cited over 50 times. Consequently, the density visualization map in Figure 43 highlights the areas of intensive research into cooperation and green marketing. It marks the significant contributors and critical timeframes with specific names and years, indicating key authors and considerable contribution periods. Each cluster signifies either thematic concentrations or methodological perspectives within the scholarly literature.

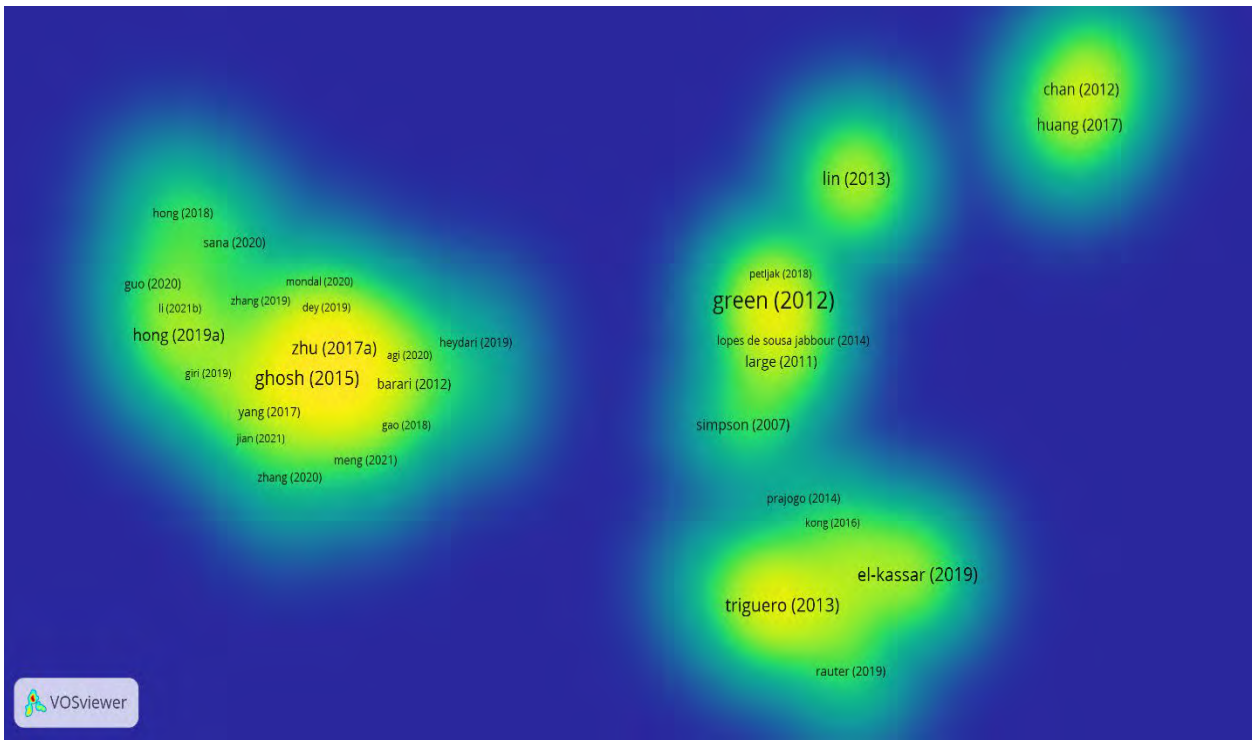

Figure 43. Density visualization map of articles on cooperation and green marketing

4.5.7. Keyword analysis

Building on the methodology outlined by Agarwal and Kumar (2021), this study employed the counting method for keyword analysis within VOSviewer, setting a

threshold of at least eight occurrences to be considered significant. Consequently, the software identified thirty-six words as the most pertinent. Regarding RQ2, the analysis revealed six clusters of words that frequently co-occurred. The following words were the most recurrent within each respective cluster:

Cluster 1 (10 keywords)- environmental performance, game theory, green innovation, green product development, green purchasing, green supply chain management, innovation, supply chain management, sustainability, sustainable development

Cluster 2 (9 keywords)- channel coordination, consumer environmental awareness, dual-channel, fairness concern, government subsidy, green marketing, green product design, supply chain coordination, sustainable supply chain

Cluster 3 (6 keywords)- coordination, dual-channel supply chain, fairness concerns, green degree, green supply chain, Stackelberg game

Cluster 4 (6 keywords)- competition, corporate social responsibility, pricing, supply chain

Cluster 5 (4 keywords)- carbon dioxide, green products, optimization, supply chains

Cluster 6 (3 keywords)- government intervention, green product, green technology innovation

To complete the above discussion, Figure 44 presents a visualization of keyword co-occurrence from bibliometric data generated by VOSviewer. This figure shows the interaction between keywords in six clusters in different colors. Each rectangle presents one keyword, and its size represents the prevalence of the keyword in the literature. Lines connecting rectangles indicate how often other researchers cited similar keywords, with thicker lines indicating stronger associations between terms.

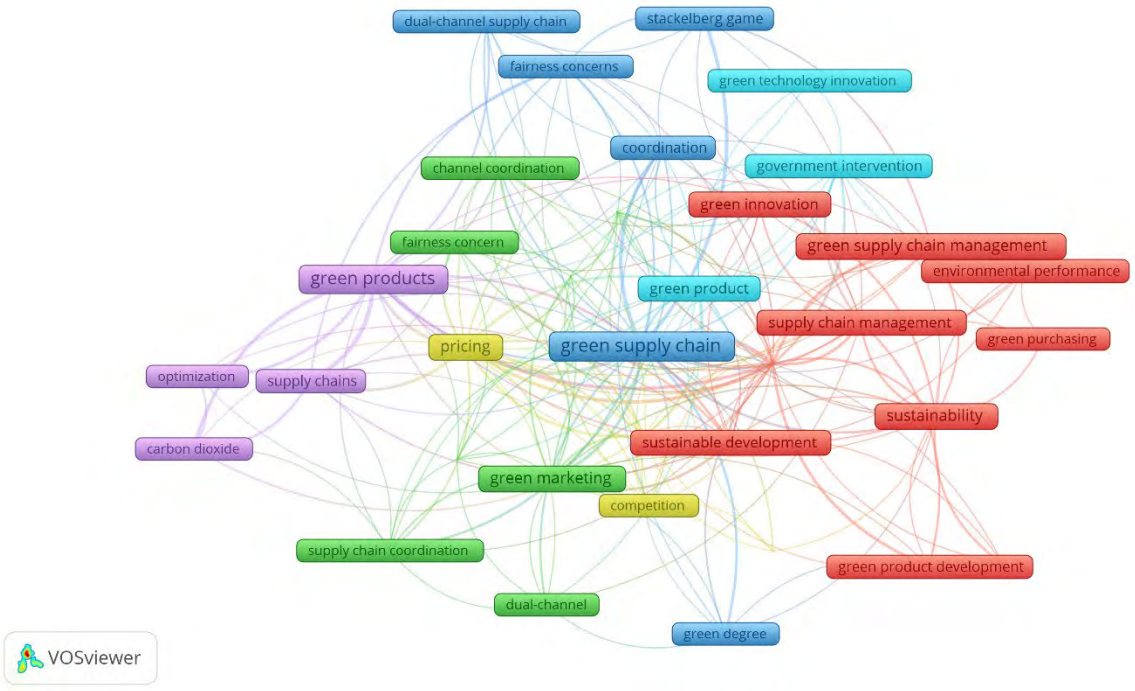

Figure 44. An analysis of co-occurrences based on keywords.

In this map, clusters of keywords have been formed around central topics in cooperation and green marketing. Figure 44 reveals that terms such as "green supply

chain management," "sustainability," and "green product" indicate critical focus areas in green marketing cooperation literature. Furthermore, the diversity and relevance of these terms suggest a multidisciplinary approach that intersects environmental considerations with business practices, technological innovations, and consumer behavior. This cluster map is a valuable tool for quickly understanding the scope and focus of research in this field in a given period.

After comparing the six keyword clusters with the results of Figure 44, the authors refined the main keywords using de-duplication detection techniques. This method groups similar keywords together. Consequently, the research categorized the keywords into seven primary groups, as summarized in Table 28.

Table 28- De-duplicated keywords

1. Green Innovation and Development	• green innovation • green product development • green technology innovation • green product • green products • optimization • green product design • innovation
2. Green Supply Chain Management	• green supply chain management • supply chain management • supply chain coordination • green supply chain • supply chains • supply chain • sustainable supply chain

3. Sustainability and Environmental Performances	• sustainability • sustainable development • environmental performance • green degree • carbon dioxide
4. Government and Corporate Roles	• government subsidy • government intervention • corporate social responsibility • fairness concern • fairness concerns • competition
5. Game Theory and Strategic Interactions	• Stackelberg game • pricing • game theory
6. Marketing and Consumer Awareness	• green marketing • green purchasing, • consumer environmental awareness
7. Coordination and Channel Strategies	• channel coordination • dual channel • coordination • dual-channel supply chain

The conclusion obtained from the detailed examination of keywords can answer this research's first and second questions. To this end, the study primarily focused on subjects within the most repeated keywords, notably Green Innovation and Development, Green Supply Chain Management, and Sustainability and Environmental Performances. Other keyword groups such as Government and Corporate Roles, Fairness and Competition, Game Theory and Strategic Interactions, Marketing and Consumer Awareness, and Coordination and Channel Strategies emerged as promising areas for future investigation.

The first step, in alignment with the discussions in the literature review, aimed to deepen our understanding of the relationship between cooperation and green marketing. This research meticulously reviewed the literature to explain each keyword group independently. Table 29 and related references show a more detailed view of the available literature about each topic.

Table 29. Literature validation of identified keywords

Green Supply Chain Management:
Successfully implementing sustainable practices in the supply chain necessitates a collaborative approach (Liu et al., 2023). Companies must collaborate closely with their suppliers and distributors to ensure eco-friendly sourcing, manufacturing, and distribution of products (Yang et al., 2023). By fostering cooperation within the supply chain, businesses can reduce their environmental impact and contribute to a more sustainable future (Sun & Zhong, 2023).
However, out of 575 papers, around 15% (85) discussed supply chain collective activities, while only twenty-eight specifically mentioned supply chain cooperation and collaboration.

Marketing and Consumer Awareness:

Educating consumers about the benefits of green products and services can be accomplished through collaboration between manufacturers, retailers, and consumers (Tao et al., 2023). Raising awareness among consumers about environmental issues through joint campaigns, workshops, and informative materials can encourage them to embrace eco-friendly products, even if they come with a slightly higher price tag (Chang, 2023). 15% of publications (88 Papers) mentioned education or awareness. Out of 88 papers, 79 mentioned awareness, and four specifically mentioned customer awareness. The remaining nine were about education.

Government, Corporate Roles:

Government and regulatory agencies often significantly shape green marketing practices (Fakheri et al., 2022). Businesses must cooperate with regulatory authorities to ensure compliance with environmental regulations and work towards more stringent standards promoting sustainability (Miao et al., 2022). Out of all the collected papers, 75 publications mentioned rules and standards, but only three specifically discussed regulatory compliance.

In addition, developing essential criteria (He & Chen, 2022) and certifications (Hyytia, 2022) for green products can be achieved through cooperation between businesses and relevant industry associations. These standards and certifications help consumers identify environmentally friendly options, and the messaging across the industry is consistent. As a result of the increasing number of companies obtaining eco-labels or third-party certifications for their environmentally friendly products, the introduction of green products is growing (Dangelico et al., 2013).

Green Innovation and Development:

Collaboration among research, development, marketing, and sustainability teams can foster the creation of eco-friendly products (Batwara et al., 2022). Companies must share their knowledge and resources to develop environmentally friendly solutions (Calik et al., 2020).

It was found that 29 of the collected papers discussed product development, while 19 mentioned green product development.

Game Theory and Strategic Interactions:

Constantinos and Herrmann (2011) mentioned that if a company decides to introduce an environmentally friendly product, it may initially experience a decrease

in profit due to higher costs. Accordingly, cooperation between multiple stakeholders can distribute costs and benefits equitably to achieve green initiatives (Kuiti et al., 2020), such as recycling programs (Mandal & Pal, 2023) and renewable energy projects (Liu et al., 2022).

Sustainability and Environmental Performances:

Regarding Ma et al. (2018), In a centralized scenario, participants of the green supply chain collectively make decisions to maximize overall profit. For this reason, social capital can perform several beneficial functions, such as sharing information, coordinating activities, and making collective decisions. Collective recycling, for example, enhances producer responsibility while remaining affordable for coalition members by adopting the proposed two-part allocation scheme (Chen & Chen, 2019). Further, the convergence of various entities can significantly affect consumer behavior and industry practices, leading to positive outcomes (de Caluwe, 2004).

Coordination and Channel Strategies

Collaboration among businesses, organizations, and governments is often necessary in green marketing efforts to tackle environmental issues. Companies can collaborate with environmental non-profits, government agencies, or other businesses

to combine resources and expertise to amplify the effects of their sustainability efforts (Calik et al., 2020). Out of 575 documents collected for this research, approximately 10% (56 papers) discussed Partnerships and Alliances.

Collaboration helps with the transfer of information and the dissemination of innovative methods (Wang, 2016). Sharing intelligence with suppliers and users is crucial for businesses to fulfill unmet needs and succeed in the market (McCarthy et al., 2015). As a result, for entrepreneurs' success in green entrepreneurship, planners and managers should consider shared value and knowledge flows in addition to all fundamental factors (Fallah & Soori, 2023).

CSR strategies promote collaboration with environmental research and development, which can result in more substantial investments but does not necessarily translate to higher social welfare (Ullah & Arslan, 2022). A company can develop sustainable product attributes by leveraging corporate social responsibility research and development knowledge and human capital (Ullah & Arslan, 2022). The Corporate Social Responsibility (CSR) philosophy can enhance competitiveness, trade, marketing, and sustainable development in the economic market (Hyytia, 2022).

4.5.8. Use of AI-based (ChatGPT) in bibliometric analysis

The relentless progression of technology is steering us toward a future where the integration of tools such as artificial intelligence (AI), including Large Language Models (LLMs), into all facets of human endeavor, including scientific research, is inevitable. Consequently, adopting a forward-thinking approach that focuses on devising strategies for the judicious application of technology is far more productive than yielding to resistance or pessimism (Rahman et al., 2023). A straightforward search combining the topics of artificial intelligence and academic research supports Dönmez et al.'s (2023) theory about the challenges researchers face when deciding whether or not to use AI in their scholarly work. As a general expectation, artificial intelligence can assist researchers in various aspects, such as topic modeling, data extraction, conducting literature reviews, summarization, identifying emerging trends, generating report summaries, quality assurance, and customized analysis and visualization.

However, it is a significant error for researchers to conduct an entire study from scratch by designing appropriate parameters through artificial intelligence (Rahman et al., 2023). Recent research has proven that this approach is not feasible, and AI provides some tips and support for academic writing (Dönmez et al., 2023). This section of the doctoral thesis tackles the question of whether researchers can or should use artificial intelligence in their academic work. To explore this, the author tests the capabilities of

OpenAI's ChatGPT in the second bibliometric analysis of the thesis. This analysis complements a previous bibliometric review on the relationship between cooperation and green marketing, focusing specifically on using artificial intelligence as a scientific assistant. Combining the strengths of AI and human intelligence, this balanced approach is the key to successful and impactful academic research.

As Garg et al. (2023) indicated, it is essential to consider AI tools like ChatGPT as supplements to human expertise. Rahman et al. (2023) further emphasize that ChatGPT can serve as an effective instrument for sparking initial ideas in academic scientific research. In alignment with the discussions in the literature review, the first step aimed to deepen understanding of the relationship between cooperation and green marketing. This section engaged ChatGPT in delineating and clarifying this relationship to achieve this.

Through this prompt (list the relationship between cooperation and green marketing), the AI described ten scenarios illustrating the synergy effects between cooperation and green marketing, providing explanations for each (ChatGPT, 2023). However, it could not offer any reliable references to back these explanations.

This section compares OpenAI answers with the bibliometric findings to find more limitations. The keyword analysis section, especially de-duplicating keywords, does the

same job. Accordingly, this section compares both findings and summarizes them in Table 30.

Table 30- AI classification vs Main keywords

OpenAI ChatGPT thematic classification (ChatGPT, 2023)	keyword classification using de-duplication
Collective Impact	Coordination and Channel Strategies
Partnerships and Alliances	
Shared Resources and Infrastructure	
Knowledge Sharing	
Regulatory Compliance	Government and Corporate Roles
Industry Standards and Certifications	
Green Product Development	Green Innovation and Development
Supply Chain Collaboration	Green Supply Chain Management
Corporate Social Responsibility (CSR) Initiatives	Sustainability and Environmental Performances

Consumer Education and Awareness	Marketing and Consumer Awareness
Green Product Development	Green Innovation and Development
	Game Theory and Strategic Interactions

This table shows that artificial intelligence provides more details to older and more repeated items, while the newer and less discussed trends received less attention. For instance, ChatGPT detailed the keyword "Coordination and Channel Strategies" and explained it in four topics (Collective Impact, Partnerships and Alliances, Shared Resources and Infrastructure, and Knowledge Sharing). On the other hand, ChatGPT does not mention "Game Theory and Strategic Interactions."

However, to get an assistant from OpenAI for more specific actions such as data extraction, conducting literature reviews, summarization, identifying emerging trends, generating report summaries, quality assurance, and customized analysis and visualization, researchers need more advanced AI, such as ChatGPT 4 or newer versions. Using advanced AI, such as ChatGPT 4, has been instrumental in assisting authors in dissecting complex data, including tables and clusters generated through bibliometric analysis tools like VosViewer. Importantly, AI serves as an empowering tool, enhancing comprehension of the topic and thereby increasing the precision of the results, even if it

may not be suitable for content creation. Additionally, AI and large language models (LLMs) can help refine the quality of academic writing, streamline content summarization, and facilitate data cleansing processes, such as eliminating redundant data.

Accordingly, AI, especially Large Language Models (LLMs), may provide some opportunities for researchers to present different perspectives on issues with more creativity. Therefore, as Dönmez et al. (2023, P1) mentioned, "Artificial intelligence does not write articles for you but provides some tips and support in article writing."

5. CONCLUSIONS AND PRACTICAL IMPLICATIONS

This PhD thesis embarks on a novel journey, comprehensively exploring several pivotal themes related to cluster internationalization and non-spatial proximity via marketing cooperation. The research, unique in its approach, begins by investigating cluster internationalization's academic trends and keyword usage over the past decade. It delves into the concept of cluster internationalization, thoroughly exploring the roles of proximity, marketing, and cooperation within clusters. This study harnesses the power of bibliometric analysis to identify and analyze trends and keywords from literature from 2009 to 2018. The research strongly emphasizes the critical roles of social capital, global strategies, and different cluster types, elucidating their significant impact on the dynamics of clusters.

Further, the research focuses on non-spatial proximity and its impact on cluster performance, highlighting the significant interactions among cognitive, organizational, and institutional proximity. It uses bootstrapping methods for statistical analysis. The study identifies significant relationships among social, cognitive, institutional, and organizational proximities. It not only highlights how these different proximity dimensions interact with one another but also discusses their implications for cluster sustainability, emphasizing the complex interplay and its influence on cluster dynamics.

These findings have direct implications for cluster managers and policymakers, providing actionable insights for enhancing cluster performance.

Additionally, this thesis examines the effects of non-spatial proximity on marketing cooperation within clusters, focusing on its impact on export market intelligence (EMI). It highlights the critical roles of social and institutional-organizational proximities in enhancing marketing cooperation and details how cluster organizations practically apply EMI. Additionally, the study explores the pivotal role of cluster leaders in facilitating and optimizing cooperative marketing strategies. It also investigates the correlation between intra-cluster cooperation and global market competitiveness, offering insights into how internal dynamics influence broader market engagement.

Lastly, to clarify the direction of future research, this thesis shifts the focus to green marketing and its cooperation strategies, employing advanced AI tools like VOSviewer for sophisticated data visualization. The research conducts a thorough bibliometric analysis to uncover emerging trends within the green marketing literature.

Consequently, clusters emphasizing marketing also focus on cooperation, suggesting that effective internationalization strategies often combine these elements to optimize external visibility and internal synergies. Furthermore, joint marketing campaigns, shared market intelligence, and collaborative strategies are essential for overcoming the

limitations of individual SMEs within clusters and enhancing their ability to enter new markets.

In conclusion, this research lays a foundation for further exploration into cluster internationalization, emphasizing the need for continuous adaptation of academic models to mirror global economic realities and the pivotal role of innovation in sustaining cluster competitiveness. Future research should delve deeper into the interactions between different clusters, explore the implications of these dynamics for global business practices, and examine emerging themes like digital transformation, which are poised to redefine strategic orientations of clusters worldwide.

Building on this, the study also highlights how marketing and cooperation within clusters are prevalent and crucial for successful internationalization, enhancing competitive advantage globally. This underscores the importance of fostering solid internal cooperation networks alongside robust marketing strategies to compete effectively in the international market. These elements complement and are integral to the broader strategic framework supporting cluster internationalization. Therefore, the proposed conceptual model for this thesis aims to put Proximity, Marketing, Cooperation, and Internationalization in one frame (Figure 45).

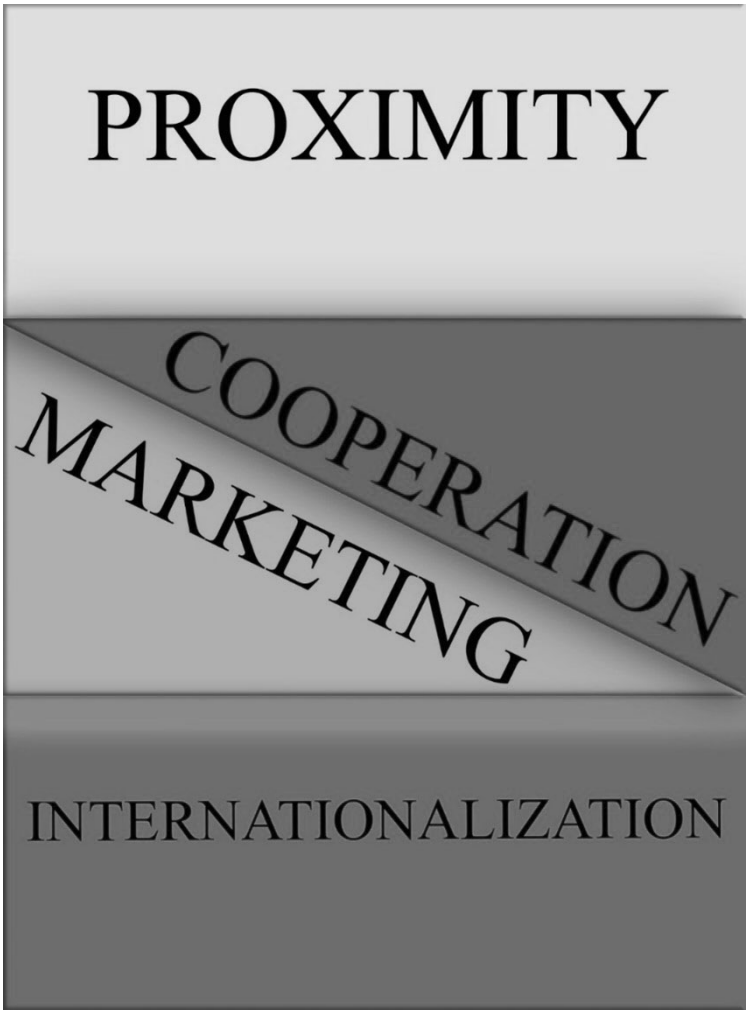

Figure 45. Conceptual model for the thesis

Based on the findings from the initial part of the study, clusters enhance the dimensions of non-spatial proximity among their members. Additionally, these clusters leverage geographic proximity to optimize their locational advantages. Consequently, the core models of this thesis inherently assume geographic proximity and systematically

explore and evaluate their hypotheses within the framework of local clusters. Nevertheless, a thorough understanding of the interplay between these proximity dimensions is essential before delving into the effects of non-spatial proximity on cluster performance.

Figure 46 encapsulates these findings by summarizing all dimensions' significant and non-significant relationships. The most robust and consistent relationship between organizational and institutional proximities indicates that how organizations are structured is deeply interlinked with the formal institutional frameworks within which they operate. Moreover, institutional and cognitive proximities also show a solid dual influence, reflecting that the institutional environment influences how individuals and entities think and process information. Interestingly, social proximity emerges as a pivotal factor, as it maintains significant bilateral relationships with cognitive and organizational proximities, underscoring social interactions' importance in shaping thought processes and organizational dynamics.

Based on these results, some types of proximity do not significantly influence each other. For instance, institutional proximity does not relate to social proximity, and there is no significant relationship between cognitive and organizational proximity. The social dimension has the lowest considerable impact on the different dimensions of proximity.

Overall, the research suggests a complex web of interactions where institutional structures significantly shape organizational behaviors and cognitive processes, and social dynamics play a crucial role in influencing both cognitive and organizational structures. These findings underscore the multifaceted nature of proximity dimensions and their interdependent effects within organizational and institutional clusters.

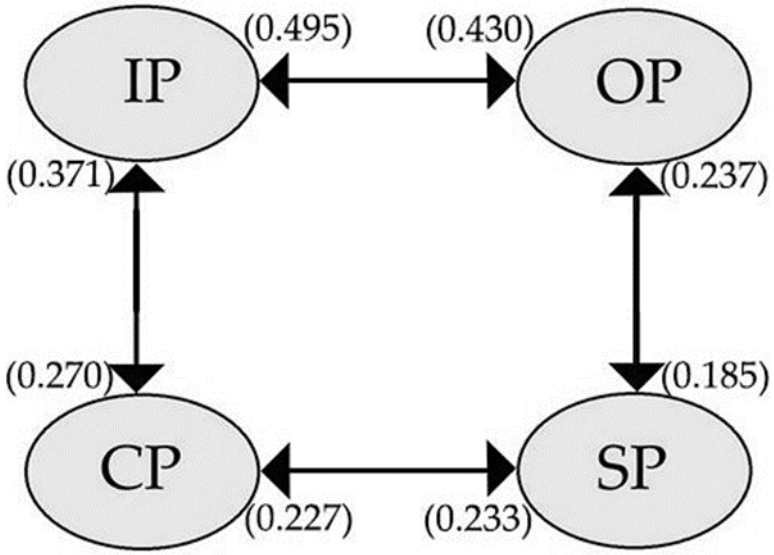

Figure 46- The interrelationship between non-specific dimensions of proximity.

Indeed, this study's contributions extend beyond its initial findings. In the context of an abundant theoretical discourse on local clusters, their performance, and environmental practices, there remains a scarcity of theoretical models and empirical inquiries examining the nexus between various dimensions of proximity and corporate sustainability. This section enriches the academic discourse by introducing a novel perspective and expanding the scope of data derived from previous research.

Regarding the research on cluster organization, the considerable variation among European clusters concerning economic conditions, regional idiosyncrasies, membership size, excellence certification, and legal frameworks has yielded a highly conducive empirical investigation. This study's findings indicate that sharing a cultural level—a measure utilized by Geldes et al. (2015) to gauge cognitive proximity—aligns more closely with institutional proximity. Moreover, the validity and reliability assessments substantiate the distinction between cognitive and organizational proximities as separate constructs. This distinction corroborates Boschma's (2005) theoretical framework of non-spatial proximity dimensions, specifically social, institutional, organizational, and cognitive proximities.

Regarding the effects of non-spatial proximity on marketing cooperation and export market intelligence within clusters, non-spatial proximity has been recognized as a critical driver of innovation (Hung et al., 2021). Considering the role of geographical proximity in forming other non-spatial dimensions, cluster organizations can be a suitable platform for different types of innovation (Boschma, 2005). In this field, most assumptions propose creation as an interactive process realized through cooperation and knowledge exchange (Gyamfi & Stejskal, 2021). The findings ~~in response to the first research question~~ illustrate that non-spatial proximity significantly influences intra-cluster marketing cooperation through various channels. Social proximity, which

encompasses the relationships and social interactions within the cluster, enhances cooperation by building trust and facilitating communication among members. This type of proximity is particularly crucial in generating and disseminating Export Market Intelligence (EMI) through market research activities within the cluster. While cognitive proximity—representing the shared knowledge and expertise among cluster members—has a less direct impact on marketing cooperation than social proximity, it still plays a crucial role in aligning understanding and facilitating coordinated marketing strategies.

In addition, institutional-organizational proximity, which includes shared norms, rules, and organizational practices among cluster members, markedly affects marketing cooperation. This is especially true for promotional activities, helping to align efforts in market approach and strategy execution.

These forms of non-spatial proximity empower cluster leaders to effectively manage and leverage collective marketing efforts, thereby enhancing the generation and dissemination of EMI. Such cooperative frameworks are vital for maintaining the cluster's competitiveness in global markets.

Furthermore, the efforts of cluster leaders to generate and disseminate EMI are closely related to firms' non-spatial proximity. The study reveals that non-spatial proximity fosters marketing cooperation and significantly influences the cluster organizations'

capacity to generate and disseminate market intelligence. Social proximity strongly supports market research cooperation within clusters—an essential activity for effectively generating and disseminating EMI. Institutional-organizational proximity enhances promotional collaboration, crucial for effectively disseminating market intelligence within the cluster. Overall, non-spatial proximity, mainly social and institutional-organizational proximity, facilitates intra-cluster research cooperation, which is pivotal in generating and disseminating EMI by cluster-leading organizations.

A key conclusion from this research, which holds significant implications for future theoretical and conceptual frameworks, is that not all non-spatial dimensions of proximity have an equal impact on marketing cooperation. The study identifies social proximity as the most critical non-spatial dimension, particularly in market research. It also establishes a link between social and cognitive proximity, affecting the institutional and organizational dimensions. Notably, institutional-organizational proximity selectively influences specific types of marketing cooperation, such as inter-firm collaboration in promotional activities. Therefore, it is strongly recommended that future research focus on developing models that can precisely delineate how different dimensions of proximity influence various types of marketing cooperation (Figure 47).

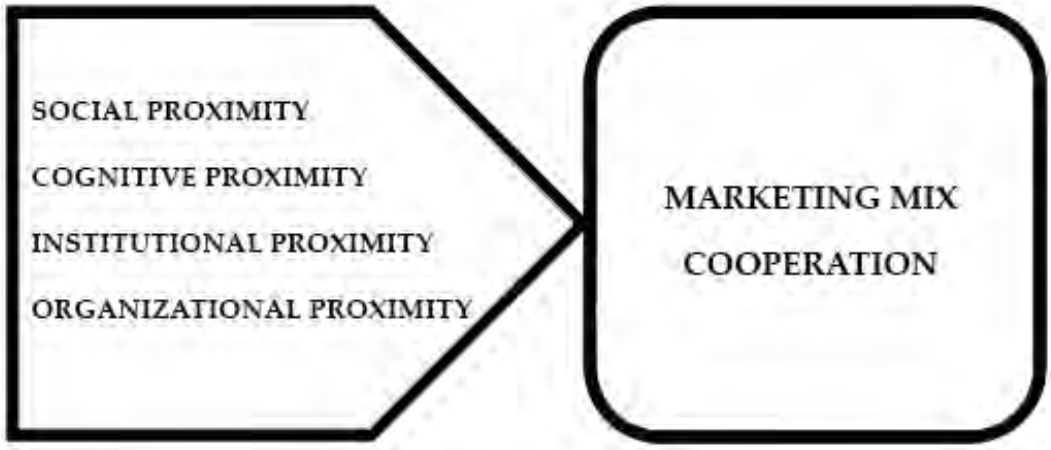

Figure 47. Future research direction

The primary model of this PhD thesis yields results that can empower cluster managers and regional decision-makers in shaping management concepts in various aspects. By understanding that they have the potential to significantly influence cognitive proximity and, more importantly, cooperation in marketing research through the creation of social proximity, they can take a more active role in fostering these effects. This can be achieved by encouraging social interactions and establishing communication networks among cluster members.

Moreover, while cognitive proximity may not directly impact marketing cooperation, cluster organizations can play a crucial role in bolstering other dimensions of non-spatial proximity and facilitating various types of marketing cooperation. Enhancing cognitive proximity has led to strengthening institutional and organizational proximity, which are

the driving forces behind joint promotional decisions. This underscores the importance of cluster organizations in this process.

Cluster organizations can leverage intra-cluster social proximity and cooperative market research to generate and disseminate export market intelligence (EMI) effectively without relying on promotional cooperation. Activities such as holding regular workshops, meetings, and social events can strengthen intra-cluster links and expand collaboration in marketing-related studies.

Thus, cluster members can keep or control the sharing of their promotional secrets and collaborate safely on market research activities. Furthermore, cluster managers must consider that intra-cluster marketing cooperation in promotional activities is only affected by institutional-organizational proximity. These findings are novel since previous research (Geldes et al., 2015) regarded inter-firm marketing cooperation as a single factor influenced only by social proximity.

Finally, cluster managers, members, and policymakers should note that the effectiveness of all these dimensions of closeness and the resulting results require continuous monitoring. Constant evaluation and monitoring can fine-tune approaches and achieve desired results. However, this research also faces limitations, which are discussed in the next section.

Finally, this PhD thesis offers various avenues for future research by thoroughly reviewing the literature on cooperation in green marketing. The trend observed in publications and citations underscores a burgeoning interest and impact in the domain over the past thirty years, with a notable uptick in the last five years. This rise in citations could signal that the research findings are increasingly relevant, capturing the academic community's attention. Publications often take time to achieve their full citation potential, which could explain the surge in recent years. The focus of the publications on green marketing cooperation within realms like Engineering, Environmental Sciences, and Business Economics highlights the strategic development and implementation of green marketing efforts. The inherent complexity of green marketing cooperation demands a comprehensive approach, as evidenced by the contributions across diverse fields.

The landscape of green marketing cooperation is marked by a diversity of active authors, with publication counts hinting at a competitive field. The structured network of researchers revealed by the co-citation map indicates a thematic linkage and collaboration across interdisciplinary domains, such as green marketing cooperation. The spread of publications among authors and their co-citation patterns highlights the collaborative and interconnected essence of the research, showcasing multiple vital figures driving the field forward.

Regarding publication venues, the "Journal of Cleaner Production" emerges as a pivotal platform for disseminating research on green marketing cooperation, both in the published research volume and the total citations garnered. This section emphasizes its influence and stature within the field. However, despite their limited article count, journals with fewer publications, such as the *International Journal of Operations* and *Production Management* and *Technological Forecasting* and *Social Change*, exhibit high citation rates, suggesting significant influence. This underlines the importance of assessing journals by the research volume and the impact and quality of their contributions to the field.

Internationally, China, the USA, and India have contributed to green marketing cooperation literature, with China at the forefront of a robust global collaboration network. The bibliometric map's connections showcase the breadth of Chinese researchers' academic output and the depth of international cooperation, emphasizing the global nature of green marketing cooperation research and spotlighting the primary countries contributing to this arena.

The analysis of publication citations sheds light on key focus areas and influential works within green marketing collaboration. Clustering research activities and identifying the most impactful works based on citation metrics reveal diverse research

themes despite the prominence of specific topics and articles. The significant citation counts of leading works affirm the critical role of green marketing collaboration research in advancing discussions on sustainability and environmental management in business practices.

Keyword analysis points to "green supply chain management," "sustainability," "green products," and "environmental performance" as central themes in green marketing cooperation. The tight interlinkages between these and other terms like "pricing," "supply chain coordination," and "green marketing" indicate a keen focus on integrating economic strategies with environmental considerations. This melding of ecological concerns into business and economic models has birthed a vital research domain to optimize supply chains for economic efficiency and ecological impact, showcasing the complexity and breadth of green marketing beyond just promoting eco-friendly products.

6. Theoretical Implications and Future Directions

This section of the conclusion underscores the thesis's forward-looking perspective, directly linking it to opportunities for future research. Based on the findings, implications, and limitations, this thesis develops a conceptual model that expands traditional marketing collaboration into green marketing cooperation. Utilizing a novel approach, this model creatively examines the relationships between various aspects of proximity and green marketing.

6.1. Non-spatial Proximity and Green Marketing Cooperation (GMC)

Over the past twenty years, research has consistently shown that firms' proximity contributes significantly to their innovative capabilities. Boschma (2005) extended the concept of geographical proximity by introducing non-spatial dimensions, which include social, cognitive, institutional, and organizational aspects. These dimensions are crucial as they facilitate cooperation within innovation networks (Lazzeretti & Capone, 2016).

Geldes et al. (2015) applied the non-spatial proximity framework to marketing cooperation within an agricultural cluster in Chile. They found that social proximity, defined by Boschma (2005) as the presence of socially embedded relationships at the micro-level, such as friendships built on trust and shared experiences, is particularly

significant. This proximity often initiates and significantly influences cooperative behaviors in green marketing.

Cognitive proximity refers to the similarity in the cognitive or learning capacities between organizations, enabling them to share and utilize collective knowledge efficiently (Boschma, 2005). This is essential for firms to adapt and process new information, which is particularly important in green marketing, where understanding environmental changes is crucial.

However, distinguishing cognitive proximity from organizational proximity can be complex, as both involve shared cultures and knowledge frameworks (Molina-Morales et al., 2014). Nonetheless, studies have shown that while these proximities are related, they are distinct and influence innovation in their ways.

Institutional proximity, which involves shared norms and regulations, facilitates cooperative marketing by reducing transaction costs and preventing conflicts (Boschma, 2005). This form of proximity ensures that firms adhere to standard guidelines, which is vital in maintaining sustainable and green marketing practices.

Finally, organizational proximity involves the shared organizational and knowledge spaces that can lead to cooperative or competitive behaviors (Boschma, 2005). While

initially beneficial, excessive closeness can result in a lack of innovation, known as "lock-in."

In summary, non-spatial proximity dimensions independently and collectively impact green marketing cooperation (GMC). Each type of proximity—social, cognitive, institutional, and organizational—plays a specific role in fostering cooperative behaviors among firms, particularly in environmental sustainability and innovation.

6.2. The Function, Classification, and Intensity of Inter-firm Relationships

While various dimensions of proximity may, to some extent, serve as catalysts for cooperation, they may not always suffice to attain shared objectives. The significance attributed to proximity by specific authors lacks universal support, as evidenced by the findings of researchers exploring the correlation between proximity and cooperation. For instance, Geldes et al. (2015) examined various proximity types in marketing cooperation, identifying only social proximity as a significant influencing factor. Their results raise two possible perspectives: either solely social proximity shapes firms' cooperation, or the impact of other dimensions of closeness may vary under specific conditions.

To successfully engage in collaborative green marketing, it is imperative to comprehend and delineate the relationships among the involved actors (Terpstra &

Simonin, 1993; Wang & Krakover, 2008). Hence, this research aims to bridge this gap by incorporating the concept of relationship type into characterizing the actor's level of proximity.

As it interacts with other members, the communication within an organization spans a spectrum from informal to more integrated relationships (Bailey & Koney, 2000). Notably, Wang and Krakover (2008) have categorized relationships into four types and levels:

Affiliation: The most informal links among members are formed based on initial trust and commitment.

Coordination: The second level of inter-firm relationship.

Collaboration: Involving a set of practices.

Strategic Networks: When members are fully prepared to participate in strategic networks in every possible way.

Consequently, this research explores four scenarios to elucidate how the level of inter-firm relationship may moderate the association between non-spatial dimensions of proximity and Joint Green Marketing Cooperation.

Affiliation: The cluster development process among firms unfolds through several stages, with the initial phase being Affiliation (Calignano et al., 2018). The relationship between firms starts with building trust, commitment, and a shared goal and moves forward through affiliation (Boschma, 2005). At this initial stage, actors explore common objectives, laying the groundwork for knowledge sharing and collaboration in innovation (Tiessen & Linton, 2000; Lin et al., 2010). Informal Affiliation at this level is characterized by the emergence of common interests and mutual support, serving as a precursor to cooperation (Bailey & Koney, 2000).

In a qualitative investigation conducted by Wang and Krakover (2008) within tourism organizations, the link between marketing cooperation and the level of inter-firm relationships was examined. The findings indicated that Affiliation represents the most informal connection between organizations. Affiliation is portrayed as a product of trust and commitment, emphasizing a "person-to-person rather than organization-to-organization" nature (Wang & Krakover, 2008, p. 132).

Behavioral researchers have delineated multiple factors underscoring the significance of trust and perseverance in collaborative endeavors (Tiessen & Linton, 2000). Initially, social relations grounded in trust can catalyze the establishment of affiliations among firms in industrial settings (Casper & Murray, 2005). Furthermore, associations built on

trust and commitment enhance cooperation, facilitating knowledge exchange (Lin et al., 2010). Higher levels of trust among participants correlate with a reduced risk of opportunistic behavior, underscoring that cultivating stable, committed relationships can mitigate differences and challenges for firms (Boschma, 2005; Albert-Cromarias & Dos Santos, 2020).

Under this perspective, Affiliation may serve as the underlying factor for social proximity. Subsequently, this level of proximity serves as the foundation for collaborative engagement in research endeavors and the exchange of knowledge, particularly within the marketing domain.

Coordination: Coordination is the second level of the working relationships among and between firms (Wang & Krakover, 2008). This relationship refers to the established decisions and basic rules that help firms cooperate with their partners (Fyall & Garrod, 2005). To align minimal activities to support each other in specific tasks, cluster organizations at least need a coordination level of relationship. In addition, Coordination allows cluster organizations to align self-interest with different interests and better participate in activities such as fairs and events and joint learning. However, the policies and strategies remain relatively informal (Wang & Krakover, 2008).

Amidst the challenges posed by global warming, the imperative for corporate sustainability becomes evident through adopting environmentally conscious strategies. Consequently, enterprises must adopt a green-oriented paradigm in resource procurement and utilization (Dangelico & Vocalelli, 2017). Furthermore, at this juncture, achieving parity among companies is crucial regarding their capacity to assimilate knowledge for collaborative planning toward shared objectives through collective learning (Boschma, 2005). Consequently, establishing cognitive proximity necessitates closer relationships, emphasizing Coordination over mere affiliation.

Hence, this degree of relational closeness can catalyze cognitive proximity, creating a conducive environment for exchanging resources and information and pursuing green marketing initiatives.

Collaboration: Collaboration is born from coordination (Wood & Gray, 1991), a sign of development in cluster organizations (Calignano et al., 2018). Collaboration begins when the clusters form initiative groups and enter into joint meetings and collective decisions (Ungur, 2017). At this point, many researchers recognize the interaction of cluster members with institutions as the main factor of cooperation. For example, Calignano et al. (2018) mentioned that cluster organizations foster collaborative innovations through Coordination in research activities.

However, higher levels of cooperation usually require regulation and control (Ungur, 2017). Researchers use collaboration to explain more formal inter-firm working relationships as a higher grade for Coordination (Wang & Krakover, 2008). Collaboration is "when a group of autonomous stakeholders of a problem domain engage in an interactive process, using shared rules, norms, and structure, to act or decide on issues related to that domain" (Wood & Gray, 1991, p. 146). In addition, actors must develop a collaborative formal agreement plan for working as a cluster. At this level, organizations face each other to interact directly, facilitating mutual support and achieving common goals (Wang & Krakover, 2008). Consequently, collaborative endeavors among members are anticipated to result in institutional proximity, with the resultant output manifesting as policy advocacy.

Strategic networks: However, strategic networks can be divided into vertical and horizontal structures (Wang & Krakover, 2008). If the design of relations is vertical, it can hinder progress and innovation, but formal horizontal systems are precisely what centralized economies need for development (Boschma, 2005). On the other hand, competing companies that cooperate outside the framework can also prompt the misuse of cooperation "as partner's opportunism" (Tiessen & Linton, 2000, p. 205). As mentioned above, organizational proximity refers to a cognitive likeness and the similarity of interactions (Boschma, 2005). According to this definition, if the cluster members are

ready to join strategic networks, this level of relationship may moderate the impact of all dimensions of non-spatial proximities on GMC.

Hence, this conceptual model incorporates horizontal strategic networks within cluster organizations, utilizing it as a regulator for the uppermost tier of the relationship between non-spatial dimensions of proximity and cooperation in green marketing. Consequently, achieving Joint Marketing Initiatives and Economies of Scale requires the establishment of Organizational Proximity among firms. This particular proximity facet can be cultivated through the influence exerted by strategic networks.

6.3. Conceptual Model for Future Investigation

Geographical or other dimensions of Proximity, such as social, cognitive, institutional, and organizational, are not automatically reasons to achieve common goals. Moreover, the linear relationship between non-spatial Proximity reinforces the hypothesis that these dimensions do not create simultaneously. Thus, even if all these dimensions are a reason for innovation, depending on the type and level of relationships, non-spatial dimensions of Proximity become essential one after the other. Hence, various dimensions of Proximity exert disparate influences on diverse forms of Collaboration, which is particularly evident in multidisciplinary domains such as marketing.

This challenge prompts researchers to gauge the correlation between distinct proximity and marketing cooperation divisions to confront two ambiguous issues. Firstly, determining the primary factor contributing to the emergence of various dimensions of closeness is imperative. Secondly, discerning the specific type of marketing cooperation influenced by each proximity dimension becomes a pivotal consideration. Furthermore, while countless investigations have studied the different dimensions of Proximity, conceptual and theoretical models have yet to draw down the relationship between Proximity and green marketing cooperation. For example, Geldes et al. (2015) only tested the relationship between Proximity and cooperation marketing. Therefore, considering the critical role of cooperation and green marketing for global sustainability, this research referenced Boschma's (2005) theory of proximity to conceptualize the connection between firms' Proximity and GMC.

In response to the first question, this research highlights several key points about the impact of interfirm relationships on various dimensions of non-spatial Proximity. First, interfirm relationships, such as Affiliation, Coordination, Collaboration, and strategic networks, significantly influence non-spatial proximity dimensions such as social, cognitive, institutional, and organizational Proximity. Social Proximity, which arises from informal relationships between companies, encourages research collaboration and knowledge sharing. Cognitive Proximity facilitates sharing resources and expertise,

institutional Proximity supports policy advocacy, and organizational Proximity drives innovation and co-marketing. Furthermore, the quality of these relationships is essential to manage the inherent competitive and cooperative dynamics within clusters. Effective relationships help balance these dynamics, improving the cluster's overall cooperative effectiveness and innovative outcomes.

Consequently, this research shows that the interaction between the quality of interfirm relationships and non-spatial proximities could determine the success of cooperative firms in green marketing. This hypothesis indicates that fostering high-quality relationships can significantly improve the effectiveness of these non-spatial proximity dimensions, leading to better outcomes in sustainability-oriented marketing practices. Solid and well-managed relationships can also lead to more successful cooperation and innovation in green marketing efforts. The themes and theories mentioned above should be tested in future research.

In response to the second research question, the content of this research reveals that the influence of non-spatial dimensions of Proximity on cooperation in green marketing may vary, each contributing differently based on the context and specific requirements of the initiatives:

Informal, trust-based relationships within firms primarily drive Social Proximity. This Proximity can foster cooperation by enabling research collaboration and knowledge sharing, which is essential for initiating cooperative interactions within green marketing.

Cognitive Proximity involves the similarity in knowledge and understanding between firms. Sharing the technical expertise and resources necessary for successful collaborative efforts in green marketing is essential. It helps understand new information and adapt to environmental changes, especially regarding sustainable practices.

Shared formal rules and norms define Institutional Proximity. It facilitates cooperation by providing a framework for policy advocacy and ensuring compliance with standards and regulations, which is crucial for large-scale environmental initiatives.

Organizational Proximity relates to the structural connections between firms, such as shared goals and strategic alignment. It is essential for successful joint marketing initiatives and for integrating sustainable practices into the core strategies of collaborating companies.

Thus, this research clarifies that while all these dimensions are essential, their specific impact on cooperation may vary significantly, indicating that they do not influence cooperation similarly. Instead, each dimension plays a unique role in facilitating different aspects of cooperation within green marketing. The assumptions articulated in this

research delineate the sequential relationship among diverse dimensions of non-spatial Proximity, influenced by the nature of inter-firm relationships. In the subsequent section, the assumptions posit that each non-spatial dimension can influence a specific type of cooperation in green marketing (Figure 48).

Hypotheses:

- The development of inter-firm relationships progresses sequentially, beginning with Affiliation, advancing to Coordination, followed by Collaboration, and culminating in the formation of Strategic Networks.
- Inter-firm relationships govern the dimensions of non-spatial Proximity.
- In cases where inter-firm relationships involve Affiliation, social Proximity positively affects research cooperation and knowledge exchange.
- In cases where inter-firm relationships involve Coordination, Cognitive Proximity positively affects Shared Resources and Knowledge.
- When firms collaborate, their Institutional Proximity positively impacts policy advocacy.
- In cases where inter-firm relationships involve Strategic Networks, organizational Proximity positively affects Joint Marketing Initiatives.

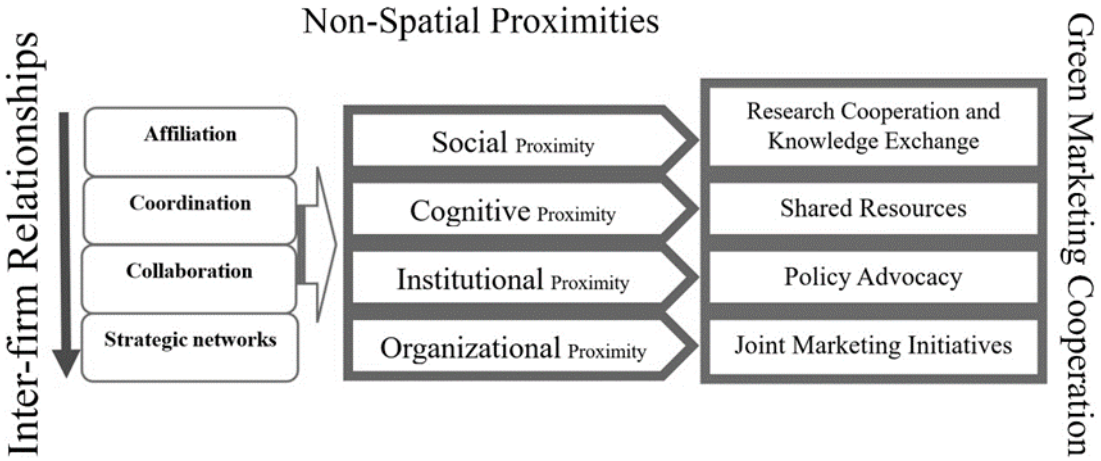

Figure 48. Graphic descriptions of the conceptual model and hypotheses.

7. LIMITATIONS AND FUTURE RESEARCH

This study represents an initial systematic exploration into the relationship between non-spatial dimensions of proximity and Export Market Intelligence (EMI) via Marketing Cooperation in cluster organizations. Despite offering novel insights, the study acknowledges limitations that pave the way for future research opportunities.

Researchers are encouraged to delve deeper into how cluster members react to the generation and dissemination of EMI within their organizations. Investigating EMI's direct and indirect implications in these settings would be beneficial. A nuanced examination of these relationships could reveal the moderating effects of the level of interfirm relationships on the dynamics between non-spatial proximities, Marketing Cooperation, and EMI.

Furthermore, individual firms' responsiveness to these factors varies, necessitating empirical testing of the proposed models from the perspective of cluster members. Methodologically, future studies could extend beyond the perceptions of cluster organizations to individual firm analyses, which offer more granular insights.

The applicability of findings across different industries also requires examination. The study suggests a sector-specific analysis to account for industry-specific dynamics in

proximity and cooperation. Adopting an intercultural or inter-industry approach could enrich the understanding of the proposed relationships across different global contexts and economic sectors.

Expanding on green marketing cooperation, future research should focus on the effectiveness of regulatory frameworks in overseeing green marketing claims and their ability to protect various stakeholders. The role of collective impact activities and the advancement of green products within the supply chain are other critical areas that merit deeper investigation.

Further studies could also explore the impact of cooperative educational strategies to enhance consumer awareness of green products and encourage sustainable consumer behaviors. Additionally, examining the role of Corporate Social Responsibility (CSR) within marketing collaboration frameworks could provide new insights, particularly in green marketing contexts.

Given the intertwined benefits of competition and cooperation in cluster structures, testing these models within clustered and non-clustered environments is advisable to uncover distinct dynamics influenced by geographical proximity.

Lastly, future research methodologies might benefit from diverse data sources and advanced analytical tools, like Structural Equation Modeling (SEM), to enhance the robustness and applicability of the findings. This approach aligns with recommendations from previous studies, which emphasize the need for comprehensive sampling and a detailed questionnaire design to effectively measure various dimensions of proximity and Green Marketing Cooperation (GMC).

This future research will not only extend the theoretical framework established by this thesis but also provide practical strategies for managers to implement effective green marketing initiatives that capitalize on cluster-based cooperation and regulatory compliance.

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9. APPENDICES

Appendix I. International Stay Report

DOCTORADO EN MARKETING
Departamento de Comercialización e Investigación de Mercados

VNIVERSITAT DE VALÈNCIA

VALORACIÓN DE LA ESTANCIA
MENCIÓN INTERNACIONAL

La Comisión Académica del Programa de Doctorado en Marketing (3137), celebrada el 17 de enero de 2022, a la vista del certificado de realización de la estancia emitido por el responsable del Centro de la misma y de la memoria de la actividad e informe del tutor/directores presentados por **D. Mohammad Reza Mazandarani**, emite informe FAVORABLE sobre la estancia realizada para la obtención de la mención Internacional en el título de Doctor, en la Universidad de Teherán del 1 de marzo al 1 de julio de 2017.

Dicha estancia se ha realizado **sin** financiamiento a través de convocatorias para estancias cortas.

Valencia, a 17 de enero de 2022

Vº Bº Coordinador del Doctorado

Fdo.: Marcelo Royo Vela

DOCTORADO EN MARKETING
Departamento de Comercialización e Investigación de Mercados

VNIVERSITAT DE VALÈNCIA

SOLICITUD DE VALORACIÓN DE LA MEMORIA DE LA ACTIVIDAD DESARROLLADA EN LA ESTANCIA PARA LA OBTENCIÓN DE LA MENCIÓN INTERNACIONAL

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Estudiante del Programa de Doctorado en Marketing (3137) de la Universitat de València
Tutor/a de la tesis: Profesor. Marcelo Royo Vella
Directores/as de la tesis: Profesor. Marcelo Royo Vella

INFORMA
Que ha realizado una estancia de investigación en **Universidad de Teherán,** durante el periodo del 1 de marzo al 1 de Julio de 2017, bajo la supervisión de Profesor TALEBI, *(responsable de la estancia)*.

Dicha estancia se ha realizado **SIN/~~CON~~** financiamiento a través de convocatorias para estancias cortas.

Valencia, a 17 de diciembre de 2021

Fdo. El/La doctorando/a

El/la tutor/a y los/las directores/as de la tesis emiten informe **FAVORABLE**
Sobre el cumplimiento de los objetivos de la estancia del/ de la doctorando/a, la idoneidad del Centro de destino y la actividad desarrollada.

Vº Bº Tutor/a Director/a Tesis

Firmado: Prof. Dr. Marcelo Royo Vela

Vº Bº Director/a

Firmado: Prof. Dr. Marcelo Royo Vela

Anexos:
- MEMORIA DE LA ACTIVIDAD DESARROLLADA EN LA ESTANCIA DE INVESTIGACIÓN (Deberá ir firmada por el estudiante y su tutor/a-director/a.)
- Certificado de la Universidad receptora de la realización de la estancia, con indicación del periodo realizado.

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MEMORIA ESTANCIA

1. Relation of the stay with the content and degree of development of the thesis

1.1 State of development of the thesis

We are currently immersed in a stage in which the theories of marketing and inter-firms' relationships are in the process of fundamental changes that share similarities in terms of origin and procedure. Value creation, and innovation based on collaboration are considered as competitive advantages of local clusters. At the same time, in recent decades, the rapid pace of technological advancement has made geographical proximity lose its importance in business interactions. Since the late nineties, a series of initiatives have been developed trying to specify the basic principles of interactive knowledge creation and innovation in geographical agglomerated firms. All of them start from searching for comprehensive compatibility between proximity and performances. Geographical economists represent the first steps in the formulation of future strategies in coopetition (simultaneously cooperation and competition), which is one of the main organizational demands.

Our Doctoral Thesis under the title "DIMENSIONS OF PROXIMITY AND ITS EFFECTS ON EXPORT MARKET INTELIGENCE AND COOPERATION IN MARKETING WITHIN CLUSTERS" is a combination of different paper works. I will discuss the fundamental factors in cluster literature in the first article. The second work examines the inter-relationship among non-special dimensions of proximity in local clusters. The relationship between cooperation marketing and proximity in different dimensions will be discussed in the third paper. Finally, I planned to examine the impact of these inter-firms' proximities on export market intelligence (creation and distributions) by cluster organizations. This thesis aims to achieve the following objectives:

- Revealing the impressive factors in cluster performances
- Proposing dimensions of proximity (i.e. Cognitive, organizational, Social, and institutional), and finding their relationship in clusters
- Understanding the role of firms' proximity within cooperation marketing and export marketing intelligence
- Highlighting the importance of inter-firm's multidimensional proximity aspects in the minds of the members of cluster organizations, in terms of the need to obtain a competitive advantage

- Examining the suitability of using proximity as criteria for export marketing intelligence and cooperation marketing in cluster organizations. These empirical researches are based on the variables under study in this doctoral thesis.

1.2 Relationship of the project to be carried out during the stay with the content and with the objectives of the doctoral thesis

Because of the inherent limitations of clusters and the need for fresh knowledge for innovation, studying the internationalization of clusters has always been interesting for under-development economies. Accordingly, as the first step, we planned to conduct a meta-analysis to highlight the **popular research topics in Cluster internationalization**. The aims proposed for the work project to be carried out during the stay in Iran, specifically at the Entrepreneurship Faculty of Tehran University are the following:

- Reviewing of some authoritative articles published in the field of internationalization of clusters until 2017.
- Identifying the main factors implemented in the cluster internationalization literature.
- Revealing the evaluation of the timeframe for a number of published articles.

➢ It should be noted that, this study is only the first step in the identification of factors affecting the cluster internationalization process, and just pave the way for our future investigations.

In order to achieve these objectives, the necessary information will be collected, reviewed, and discussed through a meta-analysis.

2. Work plan

2.1 Methodology and results of the descriptive meta-analysis

The main objective is to verify the fundamental items related to cluster internationalization and recognize fresh topics for future investigations. The temporary planning is as follows:

- March 1 to April 1: Checking the selection of papers used in the study; specifying the sample characteristic and determining the sampling method.
- April 1-June 1: carrying out the content analysis. To do this, first, a computerized bibliographic search method was utilised to access our database. Next, content analysis was applied to provide the correct data for a meta-analytical purpose. The following keywords were used: internationalization (as the main words that must necessarily be used in the topic of the article), and cluster, Industrial district, agglomerations
- June 1-July 1: carrying out the evaluation of selected articles along two dimensions: general characteristics of each research (i.e., year of research, country, sector, and cluster size) and focusing on the information about variables that influence the internationalization of clusters

2.2 Continue with the work on the doctoral thesis

Throughout the months of my stay at Tehran University, I will progress in the study of collaboration practices and innovation in the context of the developing clusters in order to understand both the main driving factors and the barriers that influence their implementation.

2.3 Exchange information through contact with researchers

The research stay will allow us to exchange information with relevant researchers such as Profesor Talebi (the research director and the supervisor of our research stay), Dr. Zali, Dr. Bagheri, Dr.Davari, and Neda Shahmiry, experts on marketing, management, entrepreneurship, inter-firms collaboration, and clustering, fundamental themes of our doctoral thesis. Such specialists will allow us to increase our knowledge about the developing cluster.

2.4 Participate in scientific activities organized by the receiving center.

We intend to present the results of our research in the form of a conference paper at the 4th International Conference on Entrepreneurship 1018-ICE2018

3. Suitability and quality of the destination center

As a new initiative in higher education, the graduate Faculty of Entrepreneurship was founded for the first time in Iran and in the region in 2007 by the University of Tehran. This faculty, located in the North Amirabad Campus and staffed with the most recognized entrepreneurship experts from various sectors, offers one of the most comprehensive entrepreneurship curricula at the Master and Doctoral levels.

The faculty of Entrepreneurship is creating an innovation ecosystem inspired by an entrepreneurial spirit. As a proactive faculty, their vision is to be the preeminent faculty for training and education of dynamic Entrepreneurs and for entrepreneurial thought and action-and known for it. This university wants to put the power of entrepreneurship as a force for economic and social value creation in as many hands as they can.

Research is one of the added values of the Faculty of Entrepreneurship and this is illustrated through the primary objectives of this body which are:

- To produce scientific knowledge about the Iranian business reality and its national and international environment.

- To encourage and strengthen the investigative skills of its professionals through the development of theoretical and methodological tools of their respective disciplines.

- To promote and disseminate research works that has scientific and practical application in academic journals, books, and national and international congresses.

Faculty of Entrepreneurship's Mission is to equip students and entrepreneurs with new knowledge and skills in the field of entrepreneurship. Faculty of entrepreneurship shall seek and develop new knowledge, transfer existing knowledge and educate, as well as train young individuals with potential and talent for entrepreneurship.

Thus, there is a strong relationship between the Faculty of Entrepreneurship research work and our doctoral thesis, which will allow us to exchange information and strengthen ties as well as make progress in achieving our objectives in relation to the project to be carried out and in our research work.

During this stay, Profesor Dr. Talebi is my supervisor, who has a long tradition of publications of great national and international recognition in his different specialties. Among his most recent projects, the following stand out:

Internationalization of SMEs and organizational factors in emerging economies: High-tech industry of Iran
K Talebi, M Tajeddin, AA Rastgar, A Emami
International Journal of Academic Research in Business and Social Sciences 7 ...

How relational embeddedness affects business performance through trust: empirical research on emerging SMEs

FS Shahmehr, SMS Khaksar, R Zaefarian, K Talebi
International Journal of Entrepreneurship and Small Business 26 (1), 61-77

Internationalization of SMEs and Organizational Factors in a Developing Country: A Case Study of ICT Industry of Iran
AE kambiz talebi,Mahdi Tajeddin,Abas Ali Rastgar
International Journal of Academic Research in Business and Social Sciences 2 …

The Moderating Role of Bridging Ties between Risk-Taking, Proactivness and Performance: The Evidence from Iranian SMEs
A Jalali, M Jaafar, K Talebi, S Ab Halim
International Journal of Business and Management 9 (5), 74

Internationalization of SMEs and Organizational Factors in a Developing Country: A Case Study of ICT Industry of Iran
AE kambiz Talebi,Mahdi Tajeddin,Abas Ali Rastgar
international journal of academic research in business and social sciences 2 …

More information and updates are available in:
https://scholar.google.com/citations?user=iQvzX7QAAAAJ&hl=en

4. Length of stay requested

The research stay will run from March 1 to July 1, 2017, for which a total of four months is requested to carry out the work plan at the receiving centre. Finally, we can conclude that this stay will be very valuable for the development of the doctoral thesis because it will enable us to achieve our essential objectives in the research and a substantial improvement of it.

4th International Conference On Entrepreneurship

Certificate

This Certificate is Proudly Present to:

Mr. Mohammad Reza Mazandarani, Dr. Marcelo Royo Vela

Has Presented an article entitled:

Popular research topics in Cluster internationalization: Meta-analysis

at 4th. International Conference on Entrepreneurship (ICE-2018)
Emphasizing Improvement of Business Environment
Organized by the Faculty of Entrepreneurship, University of Tehran, Iran

Date: 04-05 September 2018
Tehran- Iran

Dr. Mohammad Reza Zali
Conference Chair and Dean of The Faculty of Entrepreneurship University of Tehran

Dr. Hamid Padash
Conference Scientific Secretary

4th International Conference On Entrepreneurship

Certificate

This Certificate is Proudly Present to:

Mohammad Reza Mazandarani

has attended the 4th. International Conference on Entrepreneurship (ICE-2018)
Emphasizing Improvement of Business Environment
Organized by the Faculty of Entrepreneurship, University of Tehran, Iran

Date: 04-05 September 2018
Tehran- Iran

Dr. Mohammad Reza Zali
Conference Chair and Dean of The Faculty of Entrepreneurship University of Tehran

Dr. Ali Davari

Faculty of Entrepreneurship
University of Tehran

Date: 24 Nov 2021
No.: 18032/0347

PROFESSOR Dr. KAMBIZ TALEBI, CATHEDRATIC OF UNIVERSITY OF THE ENTREPRENEURSHIP FACULTY OF THE UNIVERSITY OF TEHRAN

NOTES:

As supervisor of the International mention stays of Mr. Mohammad Reza Mazandarani, Doctorate student in Marketing at the University of Valencia (RD 99/2011), I approved his Research work entitled "**Popular research topics in Cluster internationalization: Meta-analysis**". Said student has worked during the 1 of March 2017 -1 of July 2017 on his research, he has done his research work very excellent. For which this certificate of achievement of studies is issued.

And for the record, I issue, sign and seal this certification in Tehran on November 24, two thousand twenty one.

Dr. Kambiz Talebi
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Education

1) Ph.D , 1993, ,

2) B.S, 1985, ,

3) M.S, 1989, ,

Authored Books

1) Kambiz Talebi. "development." : entrepreneurship, 1993.

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A Chapter of a Book

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Papers in International Journals

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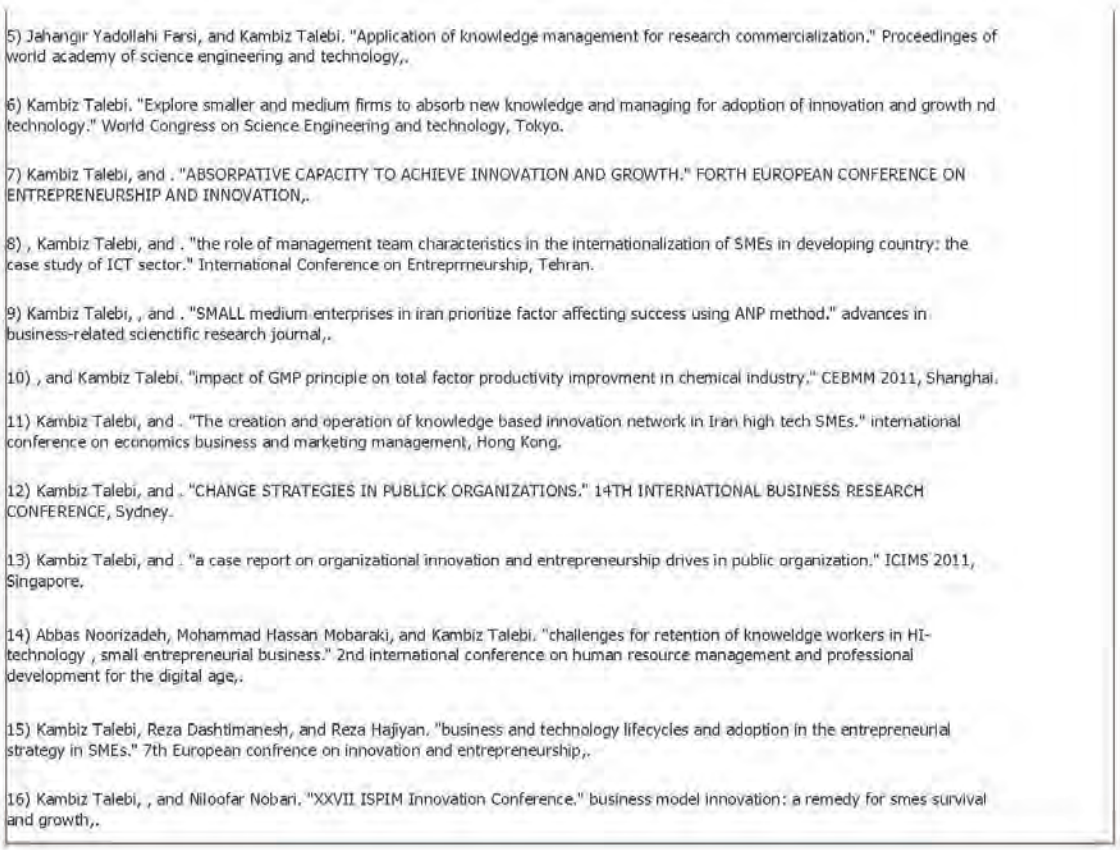

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Appendix II. Measurement scales (QUESTIONNAIRE) were used for research 1 and 2.

Social Proximity		
SP1	Friendship	
SP2	trust	
SP3	Previously knowing	
SP4	Common experiences	(Geldes *et al.*, 2015)
SP5	Reputation	
Cognitive Proximity		
CP1	Same knowledge base	
CP2	The same level of experience	

CP3	Same language	
CP4	Same educational level	
CP5	Same cultural level	
Institutional Proximity		
IP1	Complying with laws and regulations	
IP2	Same cultural norms	
IP3	Common values	
IP4	Similar habits and routines	
Organizational Proximity		
OP1	Similar organizational culture	
OP2	Similar organizational structure	
OP3	Similar inter-organizational relationships	
OP4	The same technology.	
Marketing Cooperation		
MC1	Participating in trade fairs and promotions	
MC2	Participating in commercial missions	
MC3	Cooperating with research delegations	
MC4	Achieve/share market information	
MC5	Recommendations for nearby businesses	
MC6	Joining in market research	
MC7	Cooperate in new product development.	
Export Market Intelligence generation		(Katsikea *et al.*, 2019)
EMG1	Generating much information concerning trends in our members' export ventures' markets	
EMG2	Monitoring the members' level of commitment and orientation to serving foreign customer needs	

EMG3	Reviewing the likely effect of changes in the members' export environment	
EMG4	Generating information to understand the forces influencing our members' foreign customers' needs and preferences	
Export Market Intelligence dissemination		
EMD1	Discussing export competitors' strategies	
EMD2	Discussing export market developments	
EMD3	Discussing the future needs of international customers	
EMD4	Fast informing changes in tactics and strategies of significant export competitors	
EMD5	Intense communication	
EMD6	Providing important international information	