UNIVERSITAT POLITÈCNICA DE VALÈNCIA

Doctorado en Diseño, Fabricación y Gestión de Proyectos Industriales

El *crowd* o multitud como método de financiación de proyectos empresariales: Referencia al *crowdlending* o préstamo de multitud

Crowd as a method of financing entrepreneurial projects: Reference to crowdlending

TESIS DOCTORAL

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RESUMEN/ABSTRACT/RESUM

RESUMEN

La financiación es uno de los aspectos más importantes, y muchas veces problemáticos, a la hora de crear una empresa. Hay distintas formas de financiarse, con fondos propios o ajenos. El *crowdfunding* es una forma, relativamente reciente de financiación, con fondos ajenos al capital del promotor del negocio y basada en el uso de plataformas tecnológicas.

Existen distintas formas de *crowdfunding*. Algunas se pueden basar en donaciones, como por ejemplo para financiar proyectos comunitarios, músicos y artísticos. Otras pueden basarse en la recaudación y contribuciones de individuos que buscan recompensas no monetarias. Otras pueden formar parte del sistema de financiación alternativa para los empresarios y emprendedores. Dentro de estas podemos diferenciar, por un lado las aportaciones de los inversores a cambio de acciones de las empresas financiadas, más conocido como *crowdfunding* basado en acciones (*crowdequity*), Y por otro lado, las que se basan en la solicitud de crédito, donde los inversores esperan recibir el principal aportado más intereses siguiendo un modelo de préstamo tradicional (*crowdlending*).

El objetivo de esta tesis es focalizarlo en este último: el *crowdlending*. Para ello hemos realizado cuatro trabajos de investigación que se han publicado en cuatro diferentes *journals* indexados en *Web of Science* de Clarivate (con JCR). En primer lugar, se estudia el estado del arte del *crowdlending* dentro del *crowdfunding*. En segundo lugar, se analizan dos casos importantes de *crowdlending* en dos sectores distintos (relojes como complemento de moda y el sector del vino). En tercer lugar, se analizan 17 plataformas activas de *crowdlending* para ver la actividad de las mismas en relación a los inversores. En cuarto y último lugar, se estudian los factores en la gestión de la información que se asocian a una plataforma de proyectos de *crowdlending*.

El *crowdlending* es una herramienta de financiación que surge de la economía colaborativa. Se emplea una plataforma *online* para poner en común inversores que ofrecen recursos económicos, con empresas/individuos emprendedores que necesitan y demandan recursos monetarios. Para ello, lo primero que hemos realizado ha sido una revisión de la literatura previa en el *topic* (plasmado en el primer artículo). Luego hemos realizado un estudio cualitativo, centrado en dos casos de *crowdlending* a nivel nacional (plasmado en el segundo artículo). Con posterioridad realizamos un estudio cuantitativo de plataformas con el propósito

de crear un indicador sintético definido por una serie de variables influyentes: importe total de los préstamos intermediados en la plataforma, variación anual de este importe, número de inversores y su variación anual, rentabilidad media, préstamos por inversor y su variación anual, y por último la oferta y la demanda de este modelo de financiación (plasmado en el tercer artículo). Finalmente acabamos la investigación de la tesis con un análisis cualitativo comparativo (QCA) utilizando tanto componentes numéricos como cualitativos (plasmado en el cuarto artículo).

ABSTRACT

Financing is one of the most important, and often problematic, aspects of starting a business. There are different ways of financing, with own or third party funds. Crowdfunding is a relatively recent form of financing, with funds outside the capital of the business promoter and based on the use of technological platforms.

There are different forms of crowdfunding. Some may be based on donations, for example to finance community, music and art projects. Others may be based on fundraising and contributions from individuals seeking non-monetary rewards. Others may be part of the alternative financing system for entrepreneurs and business people. Within these we can differentiate, on the one hand the contributions of investors in exchange for shares of the funded companies, better known as crowdfunding based on shares (crowdequity), and on the other hand, those based on the application for credit, where investors expect to receive the principal contributed plus interest following a traditional lending model (crowdlending).

The objective of this thesis is to focus on the latter: crowdlending. To this end, we have carried out four research papers that have been published in four different journals indexed in Clarivate's Web of Science (with JCR). First, the state of the art of crowdlending within crowdfunding will be studied. Secondly, two important cases of crowdlending in two different sectors will be analyzed (watches as a fashion accessory and the wine sector). Thirdly, 17 active crowdlending platforms will be analyzed to see their activity in relation to investors. Fourthly and finally, the factors in information management associated with a crowdlending project platform are studied.

Crowdlending is a financing tool that arises from the collaborative economy. An online platform is used to match investors who offer economic resources with entrepreneurial companies/individuals who need and demand monetary resources. To do this, the first thing we have done has been a review of previous literature on the topic (reflected in the first article). Then we conducted a qualitative study, focused on two cases of crowdlending at national level (shown in the second article). Subsequently, we conducted a quantitative study of platforms in order to create a synthetic indicator defined by a series of influential variables: total amount of loans intermediated on the platform, annual variation of this amount, number

of investors and their annual variation, average profitability, loans per investor and their annual variation, and finally the supply and demand of this financing model (reflected in the third article). Finally, we finish the thesis research with a qualitative comparative analysis (QCA) using both numerical and qualitative components (presented in the fourth article).

RESUM

La finançació és un dels aspectes més importants, i moltes voltes problemàtics, a l'hora de crear una empresa. Hi ha distintes formes de finançar-se, en fondos propis o aliens. El crowdfunding és una forma, relativament recent de finançació, en fondos aliens al capital del promotor del negoci i basada en l'us de plataformes tecnològiques.

Existixen distintes formes de crowdfunding. Algunes es poden basar en donacions, com per eixemple per a finançar proyectes comunitaris, músics i artístics. Unes atres poden basar-se en la recaptació i contribucions d'individus que busquen recompenses no monetàries. Unes atres poden formar part del sistema de finançació alternativa per als empresaris i mamprenedors. Dins d'estes podem diferenciar, per un costat les aportacions dels inversors a canvi d'accions de les empreses finançades, més conegut com crowdfunding basat en accions (crowdequity), I per un atre costat, les que es basen en la solicitut de crèdit, a on els inversors esperen rebre el principal aportat més interessos seguint un model de préstam tradicional (crowdlending).

L'objectiu d'esta tesis és focalizarlo en este últim: el crowdlending. Per a això hem realisat quatre treballs d'investigació que s'han publicat en quatre diferents journals indexats en Web of Science de Clarivate (en JCR). En primer lloc, s'estudiarà l'estat de l'art del crowdlending dins del crowdfunding. En segon lloc, s'analisaran dos casos importants de crowdlending en dos sectors distints (rellonges com a complement de moda i el sector del vi). En tercer lloc, s'analisaran 17 plataformes actives de crowdlending per a vore l'activitat de les mateixes en relació als inversors. En quarto i últim lloc, s'estudien els factors en la gestió de l'informació que s'associen a una plataforma de proyectes de crowdlending.

El crowdlending és una ferramenta de finançació que sorgix de l'economia colaborativa. S'ampra una plataforma online per a posar en comú inversors que oferixen recursos econòmics, en empreses/individus mamprenedors que necessiten i demanden recursos monetaris. Per a això, lo primer que hem realisat ha segut una revisió de la lliteratura prèvia en el topic (plasmat en el primer artícul). Després hem realisat un estudi qualitatiu, centrat en dos casos de crowdlending a nivell nacional (plasmat en el segon artícul). En posterioritat realisem un estudi quantitatiu de plataformes en el propòsit de crear un indicador sintètic definit per una série de variables influents: import total dels préstams intermediats en la

plataforma, variació anual d'este import, número d'inversors i la seua variació anual, rendabilitat mitjana, préstams per inversor i la seua variació anual, i per últim l'oferta i la demanda d'este model de finançació (plasmat en el tercer artícul). Finalment acabem l'investigació de la tesis en un anàlisis qualitatiu comparatiu (QCA) utilisant tant components numèrics com a qualitatius (plasmat en el quart artícul).

CAPÍTULO I

INTRODUCCIÓN

El *crowdfunding* es una herramienta que permite obtener financiación a través de una plataforma *online*. Se aglutinan intereses de demandantes de recursos económicos y oferentes de los mismos (Martínez-Climent, Zorio-Grima y Ribeiro-Soriano, 2018). Mediante la utilización de este modelo se crea una comunidad o "*crowd*" de inversores. El *crowdfunding* es un concepto relativamente reciente en la economía, que se fundamenta en modelos anteriores de micro financiación o cooperativas (Harrison, 2013; Kedmenec y Strašek, 2017).

Existen diferentes tipos de *crowdfunding*, el primer tipo de *crowdfunding* se denomina *crowdlending* (lo hemos querido poner en primer lugar ya que nos vamos a centrar en él para el estudio de esta tesis) y consiste en financiar préstamos para lanzar productos/servicios o crear empresas con un tipo de interés asociado a la transacción, y que deberá devolverse con una tasa de retorno al dinero prestado. La plataforma, al actuar como mediadora, obtendrá una prima o comisión por poner en común a ambas partes. Se estima que el *crowdlending* tiene una orientación económica porque el emprendedor recibe financiación y el inversor una retribución económica por la operación.

El segundo tipo de *crowdfunding* es el *equity crowdfunding,* y en este caso se realiza una *open call* o convocatoria abierta, en la que el inversor obtiene acciones de la empresa en la que invierte a cambio de su aportación financiera (De Crescenzo, Ribeiro-Soriano y Covin, 2020). Su orientación también se considera económica. El tercer tipo de *crowdfunding* es el *reward-based crowdfunding* o basado en una recompensa, retribuye la inversión con un producto, servicio o regalo en permuta de su financiación. La orientación de esta tipología no es ni puramente económica ni puramente social, resultando un híbrido modelo de interés. El último tipo de *crowdfunding* es el de donación, cuyo objetivo es obtener fondos para contribuir a causas sociales. No se espera ninguna retribución económica sino un desarrollo sostenible o una mejora de las condiciones sociales o medioambientales del proyecto.

Objetivos

El objetivo de esta tesis es investigar el *crowdlending* como un instrumento que contribuye a la financiación de proyectos industriales. Para ello se estudia primero la literatura, realizándose una revisión bibliográfica del concepto de *crowdlending*, modelo de financiación participativa hacia empresas, proyectos o personas por parte de inversores a través de internet. Dentro de

este modelo de financiación se pueden diferenciar dos categorías según las partes implicadas, si son particulares se estará considerando el modelo *peer to pèer* (P2P) o si se trata de empresas el *peer to business* (P2B). No obstante, debemos decir que basándonos en la literatura, no existe una unificación de criterios en la consideración semántica del término P2P, puesto que puede asemejarse a "individuo a individuo", traduciéndose la palabra "individuo" como un "particular" o como una "empresa".

Los términos de *crowdfunding* y *crowdlending* han ganado relevancia en los últimos años posicionándose como nuevos modelos de financiación alternativa apoyados por el desarrollo tecnológico. Vamos a estudiar dos casos de *crowdfunding* empresarial. En concreto, se analizará el proyecto de *crowdlending* desarrollado por una empresa del sector de relojería, y un *crowdfunding* tanto de recompensa como *crowdlending* desarrollado por una empresa del sector vinícola, comparando de este modo los tipos de préstamos, proyectos desarrollados, los niveles de riesgo y las plataformas utilizadas.

Seguidamente se identificarán las plataformas líderes del sector de *crowdlending*. Para ello se analizará y tendrá en cuenta el importe total de los préstamos intermediados en la plataforma, la variación anual de este importe, el número de inversores y su variación anual, la rentabilidad media, los préstamos por inversor y su variación anual, y por último el ratio de oferta y demanda en la plataforma.

Finalmente, se han concretado factores vinculados a la satisfacción de los inversores que utilizan las plataformas de *crowdlending*. Para ello, se analiza la satisfacción de los inversores de las plataformas de *crowdlending* teniendo en cuenta algunas variables: experiencia de navegación por la plataforma, publicación y actualización frecuente de los detalles de las campañas, comunicación digital efectiva y la existencia de nuevos elementos digitales de redes como una aplicación móvil o un blog corporativo.

Estructura

Esta tesis se estructura en cuatro artículos. Cada uno aborda un subtema distinto, teniendo en común el carácter financiador del modelo del *crowdlending*. A continuación se presenta un resumen de los cuatro artículos.

El primer artículo titulado **"*Crowdlending*: Mapping the core literature and research frontiers"** se ha publicado en la revista *Review of Managerial Science*, indexada en el *Social Sciences Citation Index*. Se plantea una investigación que permita describir las aportaciones bibliográficas de los autores más representativos dentro de la financiación participativa o *crowdlending*. Igualmente se consideran los trabajos vinculados dentro de este modelo de financiación al préstamo P2P, en un horizonte temporal desde 2003 hasta febrero del 2021. Además, se estudia el posicionamiento del P2P, puesto que se trata de un área de investigación en desarrollo. De esta forma se realiza una identificación de las principales *keywords* relacionadas con el área de investigación, consiguiendo así mostrar la consolidación y relevancia del concepto P2P en la actualidad y las posibilidades que genera en el futuro siendo conscientes de que se trata de un área de investigación incipiente.

El segundo artículo **"From *crowdfunding* to *crowdlending*: The cases of Acero Watch and Perinet Winery"** se ha publicado en *European Journal of International Management*, revista indexada en el *Social Sciences Citation Index*. A través de la investigación realizada en este artículo se han demostrado las diferencias notables entre los dos casos de empresas analizadas, que utilizan *crowdfunding* para financiarse. Así pues, la Bodega Perinet buscaba financiación para la instalación de energía solar para su propio consumo. Mientras Acero Watch solicitaba financiación para su actividad de negocio habitual. Bodega Perinet ofreció recompensas adicionales al *crowdlending*. Sin embargo, Acero Watch no ofreció recompensas adicionales con el préstamo garantizado.

El tercer artículo **"A synthetic indicator of market leaders in the *crowdlending* sector"** se ha publicado en *International Journal of Entrepreneurial Behaviour & Research*, revista indexada en el *Social Sciences Citation Index*. Para ello se realiza una selección previa de 59 plataformas de *crowdlending* del panorama internacional, de las que solo se utilizan finalmente para el estudio 17, ya que son las únicas de las que existe información completa y relevante. De esta forma, se pone de manifiesto, la falta de transparencia en la comunicación de la mayoría de las plataformas de *crowdlending*. Asimismo, la selección de indicadores queda condicionada a la disponibilidad de datos, puesto que es considerablemente limitada. Se incluyeron en el estudio todos los datos disponibles sobre el nivel de actividad y rendimiento de las plataformas, siendo los ocho indicadores claves los siguientes: el importe total de los préstamos intermediados en la plataforma en 2020, la variación anual de este importe de 2019

a 2020, el número de inversores en 2020, la variación anual del número de inversores de 2019 a 2020, la rentabilidad media en 2020, los préstamos por inversor en 2020, la variación anual de los préstamos por inversor de 2019 a 2020, y el ratio de la oferta y la demanda en la plataforma de este modelo de financiación en 2020.

Finalmente, el cuarto artículo se titula **"Key factors of information management for *crowdfunding* investor satisfaction",** que está publicado en la revista *International Journal of Information Management*, revista indexada también en *Social Sciences Citation Index*. Con el propósito de analizar la satisfacción del inversor con la plataforma se han investigado 97 proyectos de *crowdlending*. El primer paso consistió en examinar las condiciones necesarias para la presencia y la ausencia de la motivación del inversor. Considerando la investigación se generaron diferentes configuraciones de análisis teniendo en cuenta las condiciones causales (o variables independientes). Ninguna condición analizada individualmente tuvo puntuaciones de consistencia que superara el corte mínimo para la presencia del resultado (es decir, para la satisfacción de los inversores de proyectos de *crowdlending* con la plataforma de *crowdfunding*), ni para la ausencia del resultado (es decir, para la insatisfacción de los inversores de proyectos de *crowdlending* con la plataforma). Posteriormente se analizaron las condiciones suficientes, destacando que existen diferentes configuraciones que repercuten en la satisfacción del inversor.

Metodología

Para el primer artículo se ha realizado un bibliométrico que analiza el estado del arte del *crowdlending* dentro del *crowdfunding*. Para el mismo se han descargado los artículos de la base de datos de la *Web of Science* (WoS).

Para el segundo artículo se ha realizado una investigación cualitativa que estudia dos casos de *crowdlending* (sector de relojes y sector del vino). Es decir, entrevistas en las dos empresas respectivas.

Para el tercer artículo se ha realizado un estudio cuantitativo para ver aspectos de 17 plataformas activas de *crowdlending*. Para dicho estudio se ha recogido información de bases de datos no publicadas (pero accesibles a través de contactos personales).

Para el cuarto artículo se ha realizado un estudio cualitativo y cuantitativo. Utilizando la técnica fuzzy (fs) QCA. Para dicho estudio nos hemos basado en datos no publicados por una plataforma de *Crowdlending*.

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CAPÍTULO II

CROWDLENDING: LOCALIZANDO LA LITERATURA MAS IMPORTANTE Y LAS FRONTERAS DE LA INVESTIGACION

CROWDLENDING: MAPPING THE CORE LITERATURE AND RESEARCH FRONTIERS

Crowdlending: Mapping the core literature and research frontiers.

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Q1

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El objetivo general de este artículo es realizar una revisión bibliográfica del concepto de *crowdlending*, modelo de financiación participativa hacia empresas, proyectos o personas por parte de inversores a través de internet. Dentro de este modelo de financiación se pueden diferenciar dos categorías según las partes implicadas, si son particulares se estará considerando el modelo *peer to pèer* (P2P) o si se trata de empresas el *peer to business* (P2B). Como hemos apuntado con anterioridad, según la literatura no existe una unificación de criterios en la consideración semántica del término P2P, puesto que puede asemejarse a "individuo a individuo", traduciéndose la palabra "individuo" como un "particular" o como una "empresa". Por lo que para nuestra investigación vamos a tener en cuenta el comportamiento de los inversores, su proceso de toma de decisiones y las expectativas que generan en relación con los procesos de financiación.

Es necesario considerar que existe una asimetría de información en relación con las plataformas de *crowdfunding*, en concreto con el concepto de *crowdlending*. Por lo que planteamos una investigación que permita describir las aportaciones bibliográficas de los autores más representativos dentro de la financiación participativa o *crowdlending*. Igualmente se consideran los términos semánticos vinculados dentro de este modelo de financiación al préstamo. Nuestro estudio incluye un horizonte temporal desde 2003 hasta febrero del 2021. De esta forma se realiza una identificación de las principales *keywords* relacionadas con el área de investigación, consiguiendo así mostrar la consolidación y

relevancia del concepto en la actualidad y las posibilidades que genera en el futuro siendo conscientes de que se trata de un área de investigación incipiente.

Para la búsqueda de referencias se han utilizado los operadores booleanos (OR AND). Siendo los siguientes conceptos los que han quedado vinculados al análisis: *(peer to peer lending), (crowdlending), (p2p lending), (peer to business lending), (P2B lending), (business to business lending), (B2B lending), (crowd lending), (crowd-lending), (peer-to-peer lending), (peer-to-business lending), (business-to-business lending) y (peer-to-peer (P2P) lending).*

Además, para obtener resultados precisos, sólo se consideraron las investigaciones agrupadas dentro de las siguientes categorías: *Economics, Business Finance, Business, Computer Science Information Systems, Management, Computer Science Interdisciplinary Applications, Operations Research Management Science y Social Sciences Interdisciplinary*.

Teniendo en cuenta el objetivo propuesto, se han utilizado métodos recientes de análisis como son el análisis mediante la co-citación, el acoplamiento bibliográfico, y la co-ocurrencia de palabras clave. De esta forma se pone de manifiesto los autores, publicaciones y revistas más relevantes desde 2003 hasta 2021 en el ámbito de la financiación vinculada al *crowdlending*.

Con el objetivo de desarrollar este estudio bibliográfico, se ha utilizado el Software VOSviewer (el cual considera los nodos y los enlaces como método de relación entre conceptos). A través de este método, se ha calculado la matriz de similaridad y la matriz de co-ocurrencia entre conceptos, así como también se ha representado un mapa visual de los resultados.

Teniendo en cuenta los resultados obtenidos de la co-citación, es necesario destacar las referencias más representativas en relación al concepto de *crowdlending*. El número mínimo de citas para considerar una referencia se fijó en 50, por lo que, del total de 10884 referencias consideradas en el estudio, solo 11 trabajos fueron destacados por superar este umbral. Para el estudio bibliométrico se ha utilizado el análisis estadístico propuesto en las publicaciones científicas de (Pritchard, 1969) a través del cual se proporciona información objetiva e imparcial sobre un campo de investigación específico (Zupic y Čater, 2015).

Considerando esta premisa, se consiguen identificar dos grupos concretos. El primero, contiene siete papers relacionados con la confianza o comportamiento de rebaño que adoptan los inversores ante este modelo de financiación, siendo los autores más representativos: Herzenstein, Dholakia y Andrews, (2011); Duarte, Siegel y Young, (2012); Zhang y Liu, (2012); Dentro de este grupo, es necesario considerar el trabajo de investigación de los autores Lin, Prabhala y Siva, (2013), siendo el más relevante según el número de citaciones. El segundo grupo está compuesto por cuatro investigaciones, las cuales quedan vinculadas al concepto desde una perspectiva financiera. Dentro de este clúster se identifican como autores principales Lee y Lee (2012). Teniendo en cuenta la revisión bibliográfica, se ha podido observar cómo dicho paper se encuentra cercano al centro del gráfico, lo que muestra la relación existente entre ambos grupos identificados, es decir, entre la perspectiva financiera y el comportamiento que adoptan los inversores en este tipo de plataformas.

Considerando el acoplamiento bibliográfico, se analizan las revistas que tienen 5 ó más trabajos publicados relacionados con el tópico. Así pues, dentro de las 283 fuentes existentes, solo 11 superaron este umbral. Teniendo en cuenta lo mencionado con anterioridad, la revista con un mayor número de trabajos publicados, 15, fue *Electronic Commerce Research and Application*, la cual tenía 390 citas entre sus publicaciones. Continuando con el análisis de este aspecto, es decir, el número de trabajos citados, la revista que adquiere especial relevancia es *Management Science* con 785, con únicamente 5 trabajos publicados.

Si se hace referencia a la temporalización, y se consideran los artículos más actuales (desde 2019), son las revistas *Finance Research Letters, Emerging Markets Finance Trade, European Journal of Finance* e *IEEE Access* las que incluyen más artículos destacados vinculados al tópico.

En relación con la co-ocurrencia, las *keywords* relacionadas que destacan con el concepto de *crowdlending* son: "*Peer-to-peer lending", "P2P lending", "Crowdfunding", "Fintech", "Information asymmetry", "P2P" y "Online P2P lending*". Además, se debe considerar que el interés en este *topic* ha crecido considerablemente en los últimos años, viéndose impulsado por conceptos vinculados a la digitalización y las tecnologías tales como "*Fintech", "machine*

learning" y "*deep learning and soft information*". De esta forma, se aportan nuevas líneas de investigación futuras.

El *crowdfunding*, entendido como forma de financiación digital, está ganando relevancia en la sociedad actual apoyado en las nuevas tecnologías, por lo que se vuelve necesario analizar los factores que influyen en el rendimiento de los proyectos generados a través de estas plataformas de financiación (Chen *et al*., 2020). De este modo es preciso considerar que el éxito del *crowdfunding* queda vinculado a la digitalización de la sociedad y a la creciente presencia de Internet (Bouncken *et al*., 2015). A su vez, requiere del conocimiento y de la colaboración a todos los niveles (Bouncken *et al*., 2021). Así pues, el *crowdfunding* ha ganado popularidad desde la crisis financiera de 2008 y se vuelve especialmente relevante para las pequeñas y medianas empresas (PYME), puesto que, a través de una plataforma, se reúnen pequeñas contribuciones de un gran número de inversores para financiar proyectos (Cholakova y Clarysse, 2015).

Las transacciones de *crowdlending* tienen lugar ~~principalmente~~ en entornos *online*, donde prestamistas y prestatarios realizan intercambios de confianza. Los préstamos entre ambas partes implican plataformas que unen a prestamistas y prestatarios que buscan financiación para llevar a cabo sus proyectos. Así pues, las plataformas de préstamos facilitan los intercambios mediante servicios de selección de créditos, tipos de interés (Wei y Lin, 2017; Franks *et al*., 2020), predicción de impagos o procedimientos de préstamo formales e informales (Allen *et al*., 2019).

Teniendo en cuenta los problemas de asimetría de información que pueden surgir en las transacciones se deberán considerar las señales informativas que permiten guiar al usuario en el uso de estos modelos de financiación. De esta forma, se evitarán los desequilibrios de información, permitiendo así atraer financiación tras proporcionar una información consistente y precisa (Connelly *et al*., 2011). Estas señales tendrán también la capacidad de comunicar las habilidades (Connelly, *et al*., 2011), ayudar a construir la reputación (Walsh *et*

al., 2015), generar credibilidad (Leischnig y Enke, 2011), destacar la calidad de las ofertas (Helm y Özergin, 2015) o desarrollar ofertas co-creativas (Patterson, 2016).

El capital social ha quedado examinado como elemento facilitador o dificultador de los intercambios económicos (Guiso *et al*., 2004; Granovetter, 2005). De esta forma, las conexiones sociales pueden ser beneficiosas, puesto que además de transmitir flujos de información entre las partes, los lazos que generan ofrecen una valiosa señal para que las personas ajenas infieran la calidad de los agentes implicados. En definitiva, al proporcionar contenido, el capital social puede mitigar las posibles ineficiencias causadas por los desequilibrios de información, aumentando así la eficiencia del mercado (Durlauf y Fafchamps, 2005). De esta forma, esta investigación propone el análisis de la literatura de los préstamos, analizando cómo y por qué ha evolucionado este concepto de préstamo desde el crowdsourcing y el *crowdfunding*, permitiendo a su vez explorar que dirección tomará la investigación en el futuro.

Los académicos han estudiado el *crowdfunding* desde diferentes puntos de vista, incluyendo la motivación del crowdfunder (Ordanini *et al*., 2011), los tipos y definiciones de crowdfunder (Schwienbacher y Larralde, 2012; Mollick, 2014), la señalización informativa (Burtch *et al*., 2013), los factores que permiten el éxito de este método de financiación (Kuppuswamy y Bayus, 2017), la distribución geográfica de las inversiones (Agrawal *et al*., 2011), el capital social (Lin *et al*. 2013; Mollick, 2014), el altruismo local y el capital social (Giudici *et al*., 2018), la comunicación (Courtney *et al*., 2017), los relatos y descripciones (Parhankangas y Renko, 2017), la educación, el género y la experiencia profesional de los solicitantes de fondos (Barbi y Mattioli, 2019), los vínculos sociales de los solicitantes de fondos (Simon *et al*. 2019), la financiación empresarial (Roma *et al*., 2017), las percepciones de los consumidores (Wehnert *et al*., 2019) o la ciencia y la tecnología (Colombo *et al*., 2015; Sauermann *et al*., 2019).

Este concepto de préstamo ha adquirido relevancia en los últimos años ya que no requiere de ningún intermediario financiero (Lee y Lee, 2012), permitiendo así las operaciones a través de plataformas multilaterales y mercados virtuales que facilitan las transacciones entre agentes.

Así pues, el objetivo principal de los mercados de estos préstamos es involucrar a compradores y vendedores en transacciones convenientes y de confianza. Sin embargo, estos intermediarios se consideran depositarios de información no consistente sobre la calidad del crédito (Petersen y Rajan, 2002). Por lo que, en las transacciones de préstamos la información es difícil de verificar, dado que los prestamistas son menos sofisticados, el marco institucional está menos desarrollado dando así lugar a asimetrías de información. En este contexto las señales son cruciales para que los inversores reduzcan el riesgo de la inversión y tomen decisiones (Ahlers *et al*., 2015; Courtney *et al*., 2017). Así pues, las señales proporcionan información coherente a todas las partes permitiendo atraer financiación (Ribeiro-Soriano *et al*., 2020). Según Spence (1973), la teoría de la señalización ayuda a rellenar las lagunas de información existentes entre las diferentes partes, enviando señales para compensar esa información que falta, puesto que la información del proyecto anunciado en la plataforma suele ser limitada.

El capital social también desempeña un papel crucial en la reducción de las asimetrías de información ya que puede evitar las posibles ineficiencias provocadas por los desequilibrios de información, mejorando así la eficiencia del mercado (Durlauf y Fafchamps, 2005; Cassar *et al*., 2007). En consecuencia, además de mejorar el rendimiento de los préstamos (Cassar *et al*., 2007) presenta varios beneficios, puesto que permite complementar la información crediticia para prestatarios específicos (Lin *et al*., 2013), aumentar el comportamiento de intercambio de conocimientos de los participantes en un contexto virtual (Chang y Chuang, 2011), y facilitar el acceso de los participantes a ampliar información válida para sus intereses (Birley, 1985).

Otros autores han llegado a la conclusión de que la falta de conexión y las estructuras cerradas pueden complicar el desarrollo y la conservación del capital social por parte de las redes de grupo (Nahapiet y Ghoshal, 1998; Wasko y Faraj, 2005), de manera que puede obstaculizar la consecución de resultados positivos en los préstamos. En definitiva, será clave proporcionar mecanismos y recomendaciones que permitan atenuar las asimetrías de información en torno a los préstamos ofrecidos en la plataforma, para crear mercados más equilibrados y mejorar la capacidad de los participantes en los procesos al gestionar la información sobre sus transacciones en línea (Caldieraro *et al*., 2018).

Esta investigación contribuye aportando una visión concreta de la influencia y relevancia del *lending* desde el *crowdfunding* hasta la actualidad. Así pues, pone de manifiesto, que no se trata de un concepto aislado, sino que queda vinculado a las tecnologías, siendo estas las herramientas que apoyan la gestión y el desarrollo de este método de financiación. Desde la perspectiva social, se ha demostrado que el comportamiento de los individuos y la divulgación de información influye notablemente en las decisiones relativas a los préstamos en estas plataformas. Por ende, se aportan consideraciones y contribuciones relevantes para el concepto de *lending*, contribuyendo así al desarrollo de la limitada información existente hasta la fecha.

Como se ha mencionado con anterioridad, los trabajos de investigación en este *topic* se encuentran en una fase incipiente. Así pues, se debe seguir estudiando el vínculo del *lending* y el componente conductual (innovación, orientación empresarial de los prestatarios y prestamistas, y valores culturales en esta relación causal), analizando la influencia de la gestión del riesgo y la rentabilidad mediante la sostenibilidad y las previsiones futuras.

A su vez, es necesario entender el entorno digital y su repercusión en el concepto de *crowdfunding* y *crowdlending*, ya que las nuevas tendencias como el *blockchain, big data* y *machine learning* generarán una oportunidad de investigación en el futuro.

Las variables objeto de estudio deben ser entendidas dentro de su contexto, ya que no siempre el número de citaciones va ligado a la importancia del documento. Por último, se debe considerar que para esta investigación se han obtenido los datos de forma exclusiva de la *Web of Science* (WoS). Todo esto se podría comparar a través de otras bases de datos como son las de *Scopus* y *Google Scholar*, impulsando así el desarrollo y análisis de nuevas contribuciones. Como resultado, se conseguirá potenciar el diseño de políticas y toma de decisiones estratégicas que permitan promover los entornos financieros de base tecnológica.

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CAPÍTULO III

DEL *CROWDFUNDING* AL *CROWDLENDING*: LOS CASOS DE ACERO WATCH Y LAS BODEGAS PERINET

FROM CROWDFUNDING TO CROWDLENDING: THE CASES OF ACERO WATCH AND PERINET WINERY

From Crowdfunding to crowdlending: the cases of Acero Watch and Perinet Winery.

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Como hemos dicho con anterioridad, los términos de *crowdfunding* y *crowdlending* han ganado relevancia en los últimos años posicionándose como nuevos modelos de financiación alternativa apoyados por el desarrollo tecnológico. Por eso hemos decidido investigar el uso combinado de distintas formas de *crowdfunding* para financiar empresas. De esta forma se estudian los casos de Acero Watch y Bodegas Perinet, empresas pertenecientes a distintos sectores. En concreto, Acero Watch pertenece al sector de la relojería y se encuentra en fase de introducción. Por su parte, la Bodega Perinet es una empresa vinícola con amplia trayectoria en el sector y cuyo modelo organizacional se encuentra en fase de madurez. Así pues, se analiza el proyecto desarrollado por Acero Watch, y el que lleva a cabo Bodegas Perinet, comparando de este modo los tipos de préstamos, proyectos desarrollados, los niveles de riesgo y las plataformas utilizadas. Además, se completa este análisis con la entrevista del gerente de la plataforma MyTripleA, empresa que concentra su actividad en la búsqueda de financiación a través del método de *crowdlending* (efectuado por Acero Watch).

Para el planteamiento de la investigación se desarrolla un estudio de casos. De esta forma se ha considerado la organización Acero Watch, negocio de reciente creación. Igualmente se investiga el caso de la Bodega Perinet, empresa dedicada a la producción de vino de alta calidad; esta organización cuenta con una larga trayectoria en el sector, considerando así que su modelo de negocio se encuentra en una fase consolidada. Las dos empresas estudiadas en esta investigación presentan características distintas debido al modelo de negocio y al

momento en el que se encuentran. Así pues, se observan los diferentes patrones desarrollados en cuanto a la estrategia, las características estructurales, los estilos de liderazgo y la toma de decisiones.

Los principios de Woodside (2010) se han utilizado para esbozar las pautas de la investigación, puesto que permiten garantizar la congruencia y adaptación del análisis durante las diferentes etapas del ciclo de vida del producto en las organizaciones. Estas adaptaciones dan lugar a las etapas de desarrollo que forman el ciclo de vida organizacional (Miller y Friesen, 1984).

Se utilizaron diferentes técnicas de investigación, como son las entrevistas en profundidad, las técnicas indirectas y las herramientas visuales. En consecuencia, se entrevistó al empresario fundador de Acero Watch y a un miembro de la dirección de la Bodega Perinet. Siguiendo el principio de “varios individuos, no una sola persona" (Woodside, 2010) se entrevistó también a un miembro de la familia del empresario de Acero Watch, el cual además era analista de riesgos financieros. Asimismo, pudo realizarse una entrevista al gerente de la plataforma de *crowdlending* MyTripleA con el objetivo de completar la información relativa al modelo de financiación del proyecto utilizado por Acero Watch. Para el tratamiento de la información se aplicó el “principio de toma de decisiones conjuntivo-disyuntivo no compensatorio” (Woodside, 2010), permitiendo así establecer un nivel mínimo aceptable para considerar la opción de financiación, lo que permitió analizar las diferentes reglas utilizadas por el empresario para la toma de decisiones. Con el objetivo de realizar una investigación en profundidad, se analizó también el pensamiento del empresario basándose en el principio de “pensamiento sistémico, no lineal” (Woodside, 2010), lo que permitió evaluar las acciones vinculadas a las decisiones tomadas.

Considerando otras técnicas indirectas de investigación se ha tenido en cuenta el contenido de los proyectos publicados en las plataformas (Kickstarter, MyTripleA y Ecrowd). Siguiendo el principio de "recopilación de datos visuales y no sólo verbales" (Woodside, 2010), se ha logrado una interpretación de la información en profundidad. De esta forma, se ha realizado un estudio de las fotografías que hemos podido recopilar (websites de las empresas e imágenes de Google) de Acero Watch y las de la Bodega Perinet, permitiendo esto recuperar detalles relevantes relacionados con el enfoque empresarial.

A través de la investigación se han demostrado las diferencias notables entre ambas organizaciones. En términos descriptivos, es necesario considerar que Acero Watch se creó en 2017 y desarrolla su actividad en el sector de la relojería. Sin embargo, la Bodega Perinet es una empresa vinícola consolidada cuyo origen se remonta a 1998.

En esta investigación el modelo financiero de ambas compañías ha sido estudiado. De esta forma, la Bodega Perinet buscaba financiación para la instalación de energía solar para su propio consumo. Este proyecto pretendía la instalación de 200 paneles con una potencia total de 80KW y 60 baterías con una potencia total de 144KW. Por su parte, Acero Watch pretendía iniciar su negocio, creando así un stock de relojes pre-order para el comercio electrónico y para la campaña del centenario de la Catedral de Burgos 2021. En definitiva, la Bodega Perinet buscaba financiación para un proyecto puntual y sostenible, sin embargo, Acero Watch solicitaba financiación para su actividad de negocio habitual.

El proyecto de la Bodega Perinet pretendía conseguir 170.400 euros a través de las plataformas de *crowdfunding* ya que este modelo de financiación era considerado un método de financiación más rápido y efectivo. De esta forma, se pudo observar cómo las declaraciones del empresario mostraban el respaldo de la motivación intrínseca en la elección del método de financiación (Ryu y Kim, 2018; Shneor y Munim, 2019). Finalmente, el proyecto se financió a través de un préstamo colectivo de *crowdlending.* Además, hay que considerar que la Bodega Perinet ofreció recompensas adicionales a los prestamistas en relación con el uso y disfrute de sus productos e instalaciones.

El proyecto de Acero Watch pretendía alcanzar 21.000 euros para generar un stock y satisfacer una posible demanda del producto. Para ello se focalizó en un crowdfunding de recompensa (este tipo de crowdfunding regala producto a los donantes de capital). Sin embargo, y dada la dificultad encontrada para acceder a esta forma de financiación, reconfiguró su estrategia hacia el crowdfunding de préstamo, *crowdlending*, solicitando 15.000 euros. Así pues, aunque en un primer momento optó por la financiación bancaria, considerando las difíciles condiciones que les ofrecían los bancos, se decantó por esta forma de financiación. En esta plataforma de *crowdlending* en concreto se le permitió obtener la financiación mediante un préstamo

garantizado. Esto significaba que los inversores no tenían riesgo de no recuperar el principal más los intereses. Además, Acero Watch transmitió mas confianza a los futuros inversores a través de la plataforma explicando que el 50% de los relojes ya se habían vendido, lo que generaba unos ingresos cercanos al importe de la financiación solicitada.

En relación con el uso de las plataformas por parte de las organizaciones, hay que destacar que la Bodega Perinet utilizó Ecrowd!, una plataforma de financiación participativa (PFP), la cual está autorizada por la Comisión Nacional del Mercado de Valores (CNMV). Esta plataforma presenta diferentes requerimientos para poder publicar el proyecto. En consecuencia, fue necesario una entrevista con la dirección, un estudio técnico, un análisis presupuestario de la inversión, la comprobación de la documentación del impuesto de sociedades o la cuenta de resultados, entre otros. Una vez aportada esta documentación, fue necesario firmar una carta de intenciones entre las partes, siendo este el momento en el que se publicó el proyecto en la plataforma. En cinco días ya se había recaudado el 100% del importe pese a que la estimación de la campaña fuera de 24 días. Además, Ecrowd! proporciono promoción para la Bodega Perinet. En total fueron 264 inversores los que participaron en el préstamo, cuyas inversiones oscilaron entre 50 euros (inversión mínima permitida por Ecrowd!) y 12.000 euros.

De esta forma, el empresario de Acero Watch que había solicitado una propuesta de financiación al banco y cuyas condiciones no eran atractivas, se decantó como hemos dicho anteriormente, por la opción del *crowdlending* a través de la plataforma MyTripleA. El total de la financiación se recaudó en un día, siendo ocho los inversores que aportaron capital desde los 150 a 5000 euros. Sin embargo, esta plataforma, no impuso condiciones asociadas para la publicación ni para el lanzamiento del proyecto en sus redes.

Los métodos de financiación están cambiando. De esta forma, las empresas y los inversores particulares diversifican cada vez más sus fuentes de financiación (Lin *et al*., 2013). Teniendo en cuenta el uso y la repercusión de las nuevas tecnologías, como hemos visto las plataformas de *crowdlending* ganan relevancia dentro de los modelos de financiación puesto que, a través de la tecnología, el *crowdlending* permite a las empresas y a los particulares obtener financiación directamente del público y de los inversores profesionales, los cuales prestan su capital a cambio de una rentabilidad (Schneuwly, 2014). Es necesario considerar que el *crowdlending* se ha visto favorecido por el auge de la economía colaborativa, puesto que a

través de la colaboración sin intermediarios, instituciones o empresas se pueden satisfacer las necesidades financieras de los individuos (Schweizer *et al*., 2017; Aslam *et al*., 2021).

El auge del *crowdlending* a nivel mundial se ve impulsado por el desarrollo de plataformas cada vez más profesionalizadas. Por ejemplo, MyTripleA se especializa en préstamos garantizados, mientras que Ecrowd! lo hace en proyectos tecnológicos o de mejora de la eficiencia capaces de crear un impacto social o medioambiental positivo. Así pues, las empresas que desarrollan estas plataformas de servicios financieros utilizan potentes tecnologías que forman parte de sectores asociados al *Fintech*, el cual surge como respuesta a dos necesidades concretas: la de los inversores de tener una mayor autonomía en la gestión de los recursos, y la de las empresas que pretenden contar con una financiación alternativa (Ziegler *et al*., 2019).

El *crowdlending* tiene un papel fundamental como medio alternativo de financiación permitiendo a las pyme que consigan el capital que necesitan para hacer crecer sus modelos de negocio (Astrauskaitė y Paškevičius, 2018). Aunque, en paralelo, debemos de decir que no todos los otros tipos de *crowdfunding* son igualmente adecuados para satisfacer las diferentes necesidades que surgen en las etapas del ciclo de vida de la empresa (Paschen, 2017). Por lo tanto, en términos generales, este estudio aborda la relación del ciclo de vida empresarial y el grado de utilidad de las plataformas. Para ello, se considera la perspectiva del ciclo de vida empresarial y la teoría de la evaluación cognitiva de Deci y Ryan (1985), la cual aborda específicamente los efectos de contextos sociales sobre la motivación intrínseca ante las decisiones de financiación, lo que permite entender como los diferentes factores (como por ejemplo, las recompensas) impactan en la motivación intrínseca del individuo y tienen la capacidad de influir sobre su decisión financiera. No obstante, después de realizar este estudio consideramos adecuado la utilización de campañas de *crowdfunding* basadas en recompensas, tanto para empresas que se encuentren en la etapa de arranque (nacimiento) como en la de madurez. De esta forma, la empresa podrá requerir financiación tanto para permitir el lanzamiento de la organización en la etapa inicial, como para financiar proyectos específicos que generen diferenciación en los contextos competitivos y heterogéneos durante el periodo de madurez empresarial.

Los límites existentes en los modelos de financiación son uno de los principales problemas al que se enfrentan las empresas para lanzar su negocio (Shneor y Munim, 2019; Cicchiello *et al*., 2020). De esta forma, los modelos financieros que se apoyan en las nuevas tecnologías, asimilados a *Fintech*, surgen como alternativa a las instituciones financieras tradicionales (Dorfleitner y Braun, 2019; Solesvik, 2016).

Las motivaciones de los emprendedores (Metallo *et al*., 2021) y de las empresas para utilizar esta forma de financiación se han puesto de relevancia en algunos estudios y pueden considerarse extrínsecas o intrínsecas (Baber y Fanea-Ivanovici, 2021). De esta forma, la motivación extrínseca quedará impulsada por factores externos a un determinado comportamiento, mientras que la motivación intrínseca estará relacionada con los propios intereses del individuo (Ryan y Deci, 2000). Además, en este ámbito puede surgir la motivación hacia la sociedad, es decir, se puede considerar la responsabilidad social de la empresa (RSE) (Pucheta-Martínez y López-Zamora, 2018).

A través de una plataforma *online* se pueden conseguir fondos más rápidamente sin tener que aportar el tipo de garantías y requerimientos que exigen los bancos (Pignon, 2017). Sin embargo, esto lleva a aportar tipos de interés más altos. La principal debilidad de las plataformas de *crowdlending* es el riesgo de impago de los prestatarios, lo que provoca la pérdida de las inversiones de los prestamistas. Como medida para superar esta debilidad, algunas plataformas garantizan la devolución del principal y los intereses a través de su propia liquidez o de un fondo de garantía (Ahern, 2018).

Así pues, es necesario considerar que la decisión de un prestamista de invertir en un préstamo colectivo a través del modelo de *crowdlending* está condicionada por la confianza en el prestatario (Han *et al*., 2018), el comportamiento gregario del grupo (Zhang y Liu, 2012), y la proximidad geográfica entre las partes vinculadas (Lin y Viswanathan, 2016).

La principal conclusión de este segundo artículo radica en que el éxito en la financiación de los proyectos de Acero Watch y de la Bodega Perinet a través del uso combinado de diferentes formas de *crowdfunding* para financiar proyectos empresariales queda demostrado en esta

investigación, como así lo apunta también Paschen (2017). En consecuencia, se utiliza el *crowdfunding* con dos propósitos: los financieros (para asegurar la financiación) y los no financieros (que buscan la validación del producto o del mercado, y la promoción del producto).

El contenido del proyecto y la fiabilidad de la plataforma influía en la velocidad en la que se consigue las cantidades de fondos requeridas por los proyectos empresariales (Paschen, 2017), por lo que utilizar una plataforma líder en un área concreta y dirigida a un público especializado en ese ámbito puede influir en la rapidez con la que se consigue la financiación.

Finalmente, debemos decir que en el *crowdlending* son los factores referentes a la cantidad del préstamo, la naturaleza del proyecto y la plataforma seleccionada, las variables que influyen también en la consecución de la financiación.

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CAPÍTULO IV

UN INDICADOR SINTÉTICO DE LOS LIDERES DEL MERCADO EN EL SECTOR DEL *CROWDLENDING*

A SYNTHETIC INDICATOR OF MARKET LEADERS IN THE CROWDLENDING SECTOR

A synthetic indicator of market leaders in the crowdlending sector.

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El objetivo de esta investigación es identificar las plataformas líderes del sector de *crowdlending*, modelo de financiación participativa hacia empresas, proyectos o personas por parte de inversores a través de internet. Para ello se tendrá en cuenta: el importe total de los préstamos intermediados en la plataforma en 2020, la variación anual de este importe de 2019 a 2020, el número de inversores en 2020, la variación anual del número de inversores de 2019 a 2020, la rentabilidad media en 2020, los préstamos por inversor en 2020, la variación anual de los préstamos por inversor de 2019 a 2020, y la oferta y la demanda de este modelo de financiación en 2020.

De esta forma, este estudio responde a dos preguntas de investigación. En primer lugar, ¿qué plataformas de *crowdlending* lideran el sector? A partir de su respuesta, se revelará el marco competitivo de este sector y el perfil de sus empresas líderes. En segundo lugar, ¿cuáles son los indicadores simples con mayor poder de discriminación en este sector? Es decir, ¿cuáles son los factores clave que definen a los líderes de este sector, así como los posibles cambios en el liderazgo del mercado en el futuro?

Teniendo en cuenta el objetivo propuesto, se presenta un análisis exploratorio del modelo de financiación del *crowdlending*, el cual ofrece una visión actual, una previsión futura y pone de

manifiesto la relevancia de las plataformas de *crowdlending* líderes en el sector. A su vez, se examinan los stakeholders o público/grupos de interés asociados a los nuevos modelos de financiación que permiten el correcto funcionamiento de las plataformas. Para ello se han tenido en cuenta los prestamistas y prestatarios que intervienen en el desarrollo de este modelo financiero. Asimismo, se considera la ventaja competitiva que proporciona el uso de las plataformas de *crowdlending* a los individuos como medio de financiación.

Pocos estudios sobre la estructura del sector financiero del *crowdlending* han explorado su marco competitivo en profundidad (Coakley y Huang, 2020). Por lo tanto, surge la necesidad de completar la limitada literatura existente referente al modelo de financiación de *crowdlending* a través de datos empíricos.

Para ello se realiza una selección previa de 59 plataformas de *crowdlending* del panorama internacional, de las que solo se utilizan para el estudio 17, las únicas de las que existe información completa. De esta forma, se pone de manifiesto, la falta de transparencia en la comunicación de la mayoría de las plataformas de *crowdlending*. Asimismo, la selección de indicadores queda condicionada a la disponibilidad de datos, puesto que es considerablemente limitada. Se incluyeron en el estudio todos los datos disponibles sobre el nivel de actividad y rendimiento de las plataformas, siendo los ocho indicadores claves los enumerados con anterioridad.

Para poder proceder al análisis se generó un indicador sintético de las principales plataformas de *crowdlending*, siguiendo el método de la Distancia P2 (DP2) descrito por Pena (1977) y basado en la idea de la distancia de Ivanovic (1974). El método DP2 permite agregar la información contenida en un conjunto de indicadores sociales y realizar comparaciones intertemporales permitiendo un análisis en profundidad. Así pues, este método permitió clasificar las plataformas de *crowdlending* a través de un indicador compuesto que sintetizaba la información captada por las ocho variables citadas anteriormente. El sistema de ponderación de los indicadores simples se modificó sustituyendo el coeficiente de correlación por el coeficiente de determinación. Así pues, el coeficiente de determinación se utilizó como factor corrector del modelo de investigación propuesto. Es necesario considerar que el método

DP2 presenta diferentes ventajas en relación con otros indicadores compuestos, como serían el análisis envolvente de datos (AED) o el análisis de componentes principales (ACP). Aun así, se debe tener en cuenta que, dados los objetivos de este estudio, el AED podría ofrecer una alternativa viable para el análisis, puesto que es un método valioso para medir la eficiencia de la toma de decisiones. Sin embargo, se selecciona el método DP2 puesto que elimina la información redundante que aportan los indicadores simples cuando se combinan en un indicador sintético. Por lo tanto, el método DP2 resuelve los problemas que surgen al agregar información de variables que utilizan diferentes unidades de medida (Somarriba y Pena, 2009).

En definitiva, el método DP2 se consideró como una herramienta efectiva para comparar las principales variables de análisis descritas con anterioridad en las plataformas de financiación. De esta forma, cada plataforma se comparó con otra hipotética de referencia que tomó el valor mínimo en todos los indicadores simples, dándole así un valor de cero en el indicador DP2 (Rodríguez *et al*., 2018) y permitiendo de esta forma identificar las plataformas líderes del sector de *crowdlending*.

Se ponen de manifiesto los siguientes resultados respecto a las plataformas líderes en el sector. Si tenemos en cuenta el importe del crédito intermediado por las diferentes plataformas, es Mintos la plataforma que más crédito intermedió, llegando a 5.881 millones de euros en 2020, seguido de Twino con 742 millones de euros, y Fellow Finance con 692 millones de euros. En cuanto al número de inversores que utilizaron la plataforma, Mintos fue la mejor, alcanzando los 358.456 inversores en 2020, seguida de Housers con 125.125, y Estateguru con 67.756. En relación con la rentabilidad ofrecida por los proyectos definidos en estas plataformas, es necesario destacar que las mayores rentabilidades en 2020 las ofrecieron los proyectos cotizados en Bondster (14,95%), seguidos de los de Mintos (12,98%), y Peerberry (12,46%). Por último, en cuanto a la relación entre la oferta y la demanda, las mejores plataformas fueron Trine (2,45) y Debitum Network (2,41).

Basándonos en el indicador sintético que se ha construido en esta investigación, los resultados de los coeficientes de información relativa obtenidos para cada uno de los indicadores simples, nos indican qué variables ejercen un mayor poder de discriminación que explicarán las

diferencias en el ranking final de las plataformas líderes. Destacar que la contribución combinada de tres de estos indicadores simples abarca el 71,3% del total de los ocho indicadores. Estos tres son: importe total de los préstamos intermediados, variación anual del numero de inversores de un año a otro y variación anual del préstamo por inversor de un año a otro.

El resultado final nos indica que las plataformas líderes en el sector han quedado rankeadas de la siguiente forma: Mintos (1), Evoestate (2), Peerberry (3) (ver *Table* 3 del *paper* aceptado).

Se debe considerar que es el sector financiero, debido a la aparición de los nuevos métodos de financiación, el que necesita más transparencia e información, lo más perfecta posible, para alcanzar el éxito de las plataformas que se utilizan para financiar proyectos. Sin embargo, esta investigación destaca que las plataformas de *crowdlending* proporcionan muy poca información al entorno y a las partes implicadas, dando así lugar a asimetrías de información. Por lo que se vuelve relevante considerar este aspecto por parte de prestatarios y prestamistas al utilizar estos nuevos modelos financieros.

Los préstamos a través de las plataformas *online* han crecido masivamente en los últimos 10 años, atrayendo la atención tanto de los inversores como de los reguladores (CGFS, 2017; Buchak *et al*., 2017). La imagen de las plataformas de *crowdlending* juega un papel crucial en su posicionamiento (Manrai y Manrai, 2007). Por lo tanto, las plataformas se esfuerzan en posicionarse como objetivo de atracción de capital (Rogers, 2003; Ghahtarani *et al*., 2020). Asimismo, se debe considerar que la cantidad de financiación disponible contribuirá al potencial de atracción de nuevos proyectos (Havrylchyk y Verdier, 2018).

Ningún marco teórico aplicable a este tipo de actividad puede utilizarse para un análisis estructural del mercado financiero, por lo que se ha identificado un vacío de investigación relacionado con las plataformas de *crowdlending*. Por lo tanto, surge la necesidad de completar los estudios anteriores basados en la competencia existente en el sector de *crowdlending* a nivel internacional (Agrawal *et al*., 2011, 2014; Bholat y Atz, 2016).

Teniendo en cuenta los tipos de interés de estos modelos de financiación, es necesario considerar que las plataformas de *crowdlending* implican, generalmente, tipos de interés más

altos que la financiación tradicional aportada por los bancos, dando así lugar a un riesgo más elevado.

El *crowdlending* se considera una forma de inversión sostenible asociada a beneficios tanto financieros como sociales (Schweizer *et al*., 2017). Este sistema de intermediación financiera aumenta la conciencia social gracias a sus asociaciones con los conceptos básicos de la economía colaborativa (Sanchís-Pedregosa *et al*., 2020). Este tipo de plataformas de intermediación permiten el desarrollo de modelos de negocio que de otra manera no serían viables (Schweizer *et al*., 2017). Además, estos métodos de financiación facilitan el acceso al crédito a personas con bajos ingresos, a la vez que permiten a los inversores con recursos limitados invertir en proyectos (Ashta y Assadi, 2009).

Hay que tener en cuenta que algunas investigaciones se han centrado en los factores que intervienen en atraer y retener a los inversores (Serrano-Cinca *et al*., 2015; Martínez-Climent *et al*., 2021) y en las razones para pasar de los sistemas de financiación tradicionales a los modelos de *crowdlending* (Maier, 2016; Coakley & Huang, 2020). Esta financiación se centra en entender los procesos de adopción de las innovaciones basadas en la tecnología (Davis *et al*., 1989; Agrebi y Jallais, 2015), así como el impacto del diseño y la usabilidad de las plataformas de *crowdlending* para su éxito (Adhami *et al*., 2019).

Las plataformas de *crowdlending* se han desarrollado considerablemente en los últimos años. Sin embargo, debido a la novedad del concepto existe una falta de información y datos relevantes, limitando así la capacidad para la realización de estudios empíricos. Así pues, la falta de información y en consecuencia de disponibilidad de datos, condicionó el número de plataformas incluidas en el análisis.

También debemos puntualizar, que las plataformas de *crowdlending* no resultarán atractivas si no se informa adecuadamente de su éxito o si no se cuida la imagen o valor social, puesto que no se conseguirá de esta forma un posicionamiento sólido (Roger, 2003). En definitiva, una de las claves para generar confianza reside en la forma en la que se maneja la información en la plataforma. Así pues, la imagen percibida de la plataforma y por tanto su posición en el

mercado es fundamental para convertirse en líderes y atraer tanto a los prestamistas como a los prestatarios, por lo que se anima a las plataformas a mejorar la información que proporcionan.

Es interesante apuntar que las investigaciones futuras deben abordar el concepto del *crowdlending* desde diferentes perspectivas. Así pues, se podría analizar este modelo de financiación desde la perspectiva del debate de mercado y la exclusión social (Burton, 2017), considerando los estudios sociales de las finanzas (Kear, 2017), y teniendo en cuenta los diferentes modelos de financiación (Ronald *et al*., 2017), abordando la perspectiva ética desde la cual se entiende el crédito como un derecho (Bayulgen, 2013).

Finalmente, se debe destacar que existen otras perspectivas de análisis, puesto que hay autores que se han centrado en mayor medida en los aspectos sociales de estos modelos de financiación, como son la forma en que estas plataformas pueden proporcionar financiación a las zonas más pobres de la sociedad (Signg *et al*., 2018).

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CAPÍTULO V

FACTORES CLAVE EN LA GESTION DE LA INFORMACIÓN PARA SATISFACER AL INVERSOR DE *CROWDFUNDING*

KEY FACTORS OF INFORMATION MANAGEMENT FOR CROWDFUNDING INVESTOR SATISFACTION

Key factors of information management for crowdfunding investor satisfaction.

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El objetivo de este capítulo ha residido en Identificar los factores vinculados a la satisfacción de los inversores que utilizan las plataformas de *crowdfunding*. Para el desarrollo de esta investigación, se analiza la satisfacción de los inversores de las plataformas de *crowdlending* teniendo en cuenta factores como: la navegación de los usuarios, la actualización frecuente de los detalles de las campañas, la comunicación con los inversores y la existencia de nuevos elementos digitales como una aplicación móvil o un blog corporativo.

A finales de 2019 había 50 plataformas de *crowdlending* operando en el mercado financiero español (Universocrowdfunding, 2020), siendo sólo 30 de ellas las autorizadas por la Comisión Nacional del Mercado de Valores (CNMV, 2020). Con el objetivo de distinguir los factores influyentes en la satisfacción de los inversores de las plataformas, se ha distribuido un cuestionario de 45 preguntas relacionadas con los objetivos mencionados con anterioridad a inversores de la plataforma Colectual. Se selecciona esta plataforma, puesto que cuenta con licencia oficial y trabaja con proyectos de toda España, y nos han facilitado información al respecto. Además, presenta notable influencia en el sector ya que tiene su origen en el año 2015, y a finales del 2019 ya contaba con 2.308 inversores. Su modelo de financiación se centra en las pequeñas y medianas empresas nacionales.

El desarrollo del cuestionario ha contado con el apoyo del consejo de administración de Colectual. Las preguntas han incluido consideraciones sociales y demográficas que permiten

estudiar en profundidad tanto los factores vinculados a la satisfacción de los inversores como a la comunidad de usuarios. Las preguntas han sido evaluadas en una escala Likert de 10 puntos. Este cuestionario se envió a 206 inversores, siendo correctamente cumplimentados 97 cuestionarios (los cuales se han considerado para el análisis).

En relación con el estudio se ha utilizado la metodología cualitativa comparativa (QCA), y dentro de la misma el fuzzy análisis (fsQCA), herramienta que permite analizar de forma cualitativa y comparativa un conjunto de datos que previamente no se podían categorizar. Para ello, se han transformado los datos brutos recogidos del cuestionario en datos difusos, pudiendo así conseguir resultados consistentes considerando la satisfacción de los inversores en función de los grados de cumplimiento de cada proposición del estudio. De esta forma, el cuestionario permitió identificar las configuraciones causales que conducen a la satisfacción (o a la ausencia de satisfacción) de los inversores que utilizan la plataforma de *crowdlending*.

El software utilizado es el FsQCA 3.0, desarrollado por Ragin y Davey (2016) y el paquete R desarrollado por Medzihorsky, Oana, Quaranta y Schneider (2018).

El primer paso consistió en examinar las condiciones necesarias para la presencia y la ausencia de la motivación del inversor. Se generaron diferentes configuraciones de análisis teniendo en cuenta las condiciones causales (o variables independientes) mencionados con anterioridad. Así pues, ninguna condición analizada individualmente tuvo puntuaciones de consistencia que superara el corte de 0,9 ni para la presencia del resultado (es decir, para la satisfacción de los inversores de proyectos de *crowdlending* con la plataforma) ni para la ausencia del resultado (es decir, para la insatisfacción de los inversores de proyectos de *crowdlending* con la plataforma). Los factores analizados no consideran condiciones necesarias, individualmente hablando, en la motivación del inversor teniendo en cuenta el límite de 0,9 propuesto por Schneider y Wagemann, (2012).

Referente al análisis de datos, es necesario destacar que existen diferentes configuraciones que repercuten en la satisfacción del inversor. De las seis configuraciones resultantes del estudio, hemos escogido las cinco que representan un mayor porcentaje de cobertura de la

muestra (entre el 35.2 y el 45%). Así pues, la satisfacción será de un 45% de los casos, cuando sea fácil navegar por la plataforma de la empresa, la empresa actualice con frecuencia los detalles del proyecto en su página web y tenga una aplicación móvil para realizar sus operaciones. Otra configuración analiza que el 39.3% de la muestra considera relevante para satisfacer al inversor que la navegación por la plataforma de la empresa sea fácil, que la empresa actualice con frecuencia los detalles del proyecto en su página web y que la empresa cuente con un blog. Otra de las configuraciones con la misma cobertura del 39.3% de la muestra considera relevante para la satisfacción del inversor, que la navegación por la plataforma de la empresa sea fácil, que la empresa tenga una aplicación móvil y que los inversores reciban correos electrónicos que les proporcionen información para ayudarles a tomar decisiones. Una nueva configuración estudia que el 37.3% de la muestra tiene en cuenta para la satisfacción del inversor que la plataforma actualice con frecuencia los detalles del proyecto en su página web, que tenga una aplicación móvil y que envía un número elevado de correos electrónicos para proporcionar a los inversores información que les ayude en su toma de decisiones. Finalmente, una nueva configuración dirá que en el 35.2% de los casos, la satisfacción del inversor se condiciona a una navegación fácil por la plataforma, que exista un blog de la empresa y que los inversores reciban un número suficiente de correos electrónicos para recabar información que les ayude en su toma de decisiones.

Considerando las configuraciones que conducen a la ausencia del resultado, de las cinco configuraciones resultantes del estudio, hemos escogido las dos que representan un mayor porcentaje de cobertura de la muestra (entre el 33.4 y el 55.7%). Así, el 55.7% de la muestra considera que el inversor está insatisfecho cuando la navegación por la plataforma no es fácil, a pesar de que los inversores reciban un elevado número de correos electrónicos con información. Finalmente, según el 33.4% de los casos, los inversores están insatisfechos cuando no es fácil navegar por la plataforma y ésta no actualiza con frecuencia los detalles del proyecto, aunque sí ofrezca una aplicación móvil.

En definitiva, los resultados de este estudio empírico muestran la importancia de variables relacionadas con la política de información y comunicación, y con la experiencia digital del inversor en estas plataformas de financiación. De esta forma, los resultados confirman las

conclusiones de Isak-Zatega *et al*. (2020), puesto que la facilidad de uso de la plataforma percibida por los inversores aumenta su satisfacción.

Rey-Martí *et al*. (2016) apuntan que los inversores presentan motivaciones adicionales a las financieras a la hora de invertir. Siguiendo los hallazgos de nuestra investigación se puede afirmar que tener una buena experiencia de navegación satisface a los inversores. De este modo, se debe valorar de forma positiva la existencia de un blog corporativo, la actualización de contenido relacionado con los proyectos que contiene la plataforma o el desarrollo de una aplicación móvil que permita una mayor información en tiempo real sobre la oferta de proyectos disponible. Finalmente, la investigación también muestra la importancia que los inversores conceden a una comunicación fluida con los diferentes elementos vinculados a la plataforma puesto que se demuestra que les ayuda a tomar decisiones. Por consiguiente, se vuelve relevante la digitalización en el contexto global de los negocios y por supuesto, en el ámbito financiero, ya que autores como Kirakosyan y Danaiat (2014) consideran la comunicación electrónica como una variable crucial para la satisfacción del cliente.

El *crowdfunding* forma parte de la economía digital, por lo que es importante que los prestamistas y prestatarios desarrollen una buena reputación para inspirar confianza a todos los agentes del sector (Bouncken y Barwinski, 2021; Bouncken y Kraus, 2021; Kraus *et al*., 2019). Al mismo tiempo, el sector bancario europeo ha reducido su financiación a las pequeñas y medianas empresas y a los emprendedores, mientras que las plataformas de *crowdfunding* han impulsado su capacidad de financiación, proporcionando al mercado una fuente de capital muy necesaria (BCE, 2017). Por lo que se debe considerar que el *crowdfunding* basado en préstamos (o *crowdlending*) atrae una buena parte de fondos en todo el mundo (Agrawal *et al*., 2015). Sin embargo, tratar de financiar a las empresas a través de las plataformas de *crowdfunding* es un reto.

La financiación participativa es un método de financiación que se encuentra en constante evolución, atrayendo así un gran interés académico (Kreituss, 2017). Así pues, el *crowdfunding*, y en nuestro caso el *crowdlending*, se convierte en un modelo innovador de financiación el cual

se ha hecho popular en las últimas décadas (Alfiero *et al*., 2014). Este mecanismo colaborativo de financiación ha sido relevante para empresas y particulares en los últimos años (Ryoba *et al*., 2020), puesto que además se ha visto impulsado por el desarrollo y la introducción de las nuevas tecnologías. Dentro de este método de financiación aparecen tres factores clave: los creadores, que inician los proyectos; los financiadores (o *backers*), que financian los proyectos; y las plataformas, que ponen en contacto a creadores y financiadores (Kaur y Gera, 2017; Martínez-Climent *et al*., 2019).

La literatura se centra fundamentalmente en las oportunidades de emprendimiento que ofrecen las plataformas (Mollick, 2014; Dorfleitner *et al*; Fondevila *et al*., 2015; Kraus *et al*., 2016; Olarte-Pascual*et al*., 2016; Block *et al*., 2018; Ryoba *et al*., 2020). Además, tiene en cuenta las habilidades y características que estos modelos de financiación requieren para la toma de buenas decisiones por parte de prestamistas y prestatarios.

Considerando el avance de las tecnologías y el posicionamiento de Internet, las empresas deberán adaptar el modelo de negocio al canal *online* para así poder ofrecer una experiencia diferencial a los clientes, lo que constituirá una ventaja competitiva (Weber, 1999; Soriano, 2010; Soriano y Peris-Ortiz, 2011). Por consiguiente, las plataformas de *crowdfunding*, en general, y particularmente las de *crowdlending*, deben seguir la tendencia de permitir una generación de confort y confianza por parte del usuario (Kshetri, 2015).

Schneider (2005) ha demostrado que la actualización del contenido de las páginas web mejora la fidelidad y el compromiso de los usuarios. Sin embargo, no hay estudios relevantes sobre los factores internos que condicionan la satisfacción de los usuarios en las plataformas de *crowdfunding.*

El éxito de las aplicaciones móviles en entornos empresariales es evidente, ya que repercute en la satisfacción de los usuarios (Lettner *et al*., 2013; Wang *et al*., 2019). Igualmente, esto se ha puesto de manifiesto en diferentes investigaciones sobre aplicaciones móviles en el sector financiero, puesto que se ha demostrado que las aplicaciones de alta calidad afectan positivamente a la satisfacción del usuario (Tam y Oliveira, 2016; Wu y Wan, 2016) y a su fidelidad (Zhou, 2018).

También se debe considerar la existencia de los blogs corporativos en el entorno digital, en esta línea, Hsu y Tsou (2011) mostraron la relevancia de estos sitios web en las experiencias de los clientes y, en concreto, en los procesos de decisión de los inversores.

Finalmente se vuelve evidente la relación entre la comunicación y la satisfacción del cliente (Kirakosyan y Danaiatja, 2014; Pengnate y Riggins, 2020). Laukkanen *et al*. (2009) informaron de la relación existente entre la resistencia al uso de la banca *online* por las restricciones y el uso de la información y la privacidad de datos, lo que demuestra que la comunicación es un elemento clave en la confianza para el uso y desarrollo de aplicaciones financieras digitales como el *crowdfunding*.

Como resultado de esta investigación se ponen de manifiesto las variables influyentes en la satisfacción del inversor en plataformas *crowd*, puesto que aporta pruebas empíricas que revelan la influencia de la calidad de las políticas de comunicación y de la satisfacción de los inversores cuando utilizan estas plataformas. Además, se expresa la oportunidad que supone este modelo de financiación alternativa para las pyme (Bouncken *et al*., 2015).

En definitiva, el apoyo multimedia hacia la usabilidad de las plataformas multicanal tendrá un impacto positivo en el conocimiento explícito y tácito que los inversores necesitan para tomar decisiones.

Debido a la novedad del concepto de *crowdfunding* y *crowdlending* los trabajos académicos disponibles sobre nuestro *topic* son limitados. Además, la investigación se ha desarrollado en un contexto nacional específico por lo que será necesario considerar otros países para contrastar el análisis y poder así generalizar los resultados.

El uso de plataformas de inversión de *crowdfunding*, y centrándonos en plataformas de *crowdlending*, en Europa está en una etapa de introducción, por lo que será clave seguir abordando este tema de investigación desde diferentes perspectivas. Así púes, se podrán realizar estudios cuantitativos desde un enfoque experimental para mostrar cómo impacta el contenido de la información en la satisfacción de los inversores, pudiendo de esta forma considerar también, las percepciones subjetivas en futuras investigaciones.

Para concluir, podemos puntualizar que Täuscher *et al*. (2020) demuestran que la legitimidad depende de la confianza a nivel cognitivo y normativo, por lo que se debe considerar ese factor como elemento capaz de impulsar el crecimiento del sector del *crowd*. De esta forma, se puede seguir explorando este concepto con el objetivo de que el *crowdfunding*, y en especial el *crowdlending*, sea entendido como una alternativa real frente a las instituciones de financiación tradicionales por la mayoría de los individuos y empresas.

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CAPÍTULO VI

CONCLUSIONES / CONCLUSIONS

El objetivo de la tesis doctoral ha sido examinar la relación entre el *crowdfunding*, focalizado en el *crowdlending*, como método de financiación de proyectos industriales.

Primero se ha estudiado teóricamente el *crowdfunding* desde diferentes puntos de vista en el artículo "*Crowdlending: Mapping the core literature and research frontiers*". El concepto de este préstamo ha adquirido relevancia en los últimos años, ya que no requiere ningún intermediario financiero, permitiendo así las operaciones a través de plataformas multilaterales y mercados virtuales que facilitan las transacciones entre agentes. Así pues, el objetivo principal de los mercados de *lending* es involucrar a compradores y vendedores en transacciones convenientes y de confianza, sin embargo, estos intermediarios se consideran depositarios de información no consistente sobre la calidad del crédito. Por lo que, en las transacciones de préstamos la información es difícil de verificar, dado que los prestamistas son menos sofisticados, y el marco institucional está menos desarrollado dando así lugar a asimetrías de información. En este contexto las señales son cruciales para que los inversores reduzcan el riesgo de la inversión y tomen decisiones. Así pues, las señales proporcionan información coherente a todas las partes permitiendo atraer financiación. Según Spence (1973), la teoría de la señalización ayuda a rellenar las lagunas de información existentes entre las diferentes partes, enviando señales para compensar esa información que falta, puesto que la información del proyecto anunciado en la plataforma suele ser limitada. En resumen, debemos destacar de este artículo y capítulo de la tesis que la mayoría de los estudios y trabajos publicados de *lending* se basan en investigaciones cualitativas que buscan identificar las deficiencias de este tipo de préstamos por lo que existe un gran potencial para incrementar las investigaciones cuantitativas derivadas de nuestro tópico. Junto con esto, existe una necesidad urgente de educar a los pequeños inversores, teniendo en cuenta variables como la edad, el género y la educación previa, y diseñar una ética financiera promoviendo valores que beneficien a todos los ámbitos de la Sociedad.

En los dos casos analizados en el artículo "*From crowdfunding to crowdlending: The cases of Acero Watch and Perinet Winery*" se concluye que la combinación del *crowdfunding* y el *crowdlending* son eficaces en algunos casos. Se ha demostrado el éxito en la financiación de los proyectos de Acero Watch y de la Bodega Perinet a través del uso combinado de diferentes formas de *crowdfunding* para financiar proyectos empresariales. Los emprendedores y

empresarios utilizan el *crowdfunding* con dos propósitos, los financieros (para asegurar la financiación) y los no financieros (que buscan la validación del producto o del mercado y la promoción del producto). La diferencia que separa el *crowdfunding* del *crowdlending* depende de la fase del ciclo de vida empresarial en la que se encuentre la empresa que busca financiación. Se debe destacar que la motivación del empresario en el caso de Acero Watch para utilizar el modelo de *crowdlending* era intrínseca, puesto que el principal interés era validar la idea y conseguir financiación para los prototipos. Además, la motivación del emprendedor estaba directamente relacionada con el objetivo principal, es decir, crear una empresa. Es relevante que las organizaciones deban conocer las opciones de los tipos de financiación ofrecidas por las plataformas para poder decidir cuál se adapta mejor a sus necesidades. Finalmente, con esta investigación hemos puesto de manifiesto que las plataformas de *crowdfunding* y *crowdlending* serán útiles tanto para impulsar el desarrollo inicial como para el crecimiento y posicionamiento de la organización en el mercado.

En el artículo "*A synthetic indicator of market leaders in the crowdlending sector*" se concluye que teniendo en cuenta el importe del crédito intermediado por las diferentes plataformas, es Mintos la plataforma que más crédito intermedió, seguido de Twino, y en tercer lugar se encontraba Fellow Finance. En cuanto al número de inversores que utilizaron la plataforma, Mintos fue la mejor, seguida de Housers, y EstateGuru en tercer lugar. En relación con la rentabilidad ofrecida por los proyectos definidos en estas plataformas, destaca en primer lugar los proyectos cotizados en Bondster, seguidos de los de Mintos, y en tercer lugar Peerberry. Y en cuanto a la relación entre la oferta y la demanda, las mejores plataformas fueron Trine y Debitum Network. Por su parte, basándonos en el indicador sintético los resultados nos indican que las tres plataformas líderes son: Mintos, Evoestate, y Peerberry (respectivamente). Por otra parte, se debe considerar que es en el sector financiero, sobre todo a través de los nuevos métodos de financiación, donde la transparencia se vuelve un elemento crucial para la supervivencia y el éxito de las plataformas de financiación. Sin embargo, esta investigación destaca que las plataformas de *crowdlending* proporcionan muy poca información al entorno y a las partes implicadas, dando así lugar a más asimetrías de información. Por lo que se vuelve relevante considerar este aspecto por parte de prestatarios y prestamistas al utilizar estos nuevos modelos financieros. Finalmente, destacamos que cambios futuros son esperados en

las plataformas líderes del *crowdlending*. Las pequeñas y medianas empresas del sector vienen pisando fuerte para convertirse en las mejores plataformas, por lo que las actuales plataformas líderes en el mercado que hemos visto en esta investigación no deberían dar por sentado su liderazgo futuro.

En el artículo "*Key factors of information management for crowdfunding investor satisfaction*" se concluye la importancia de las variables relacionadas con la política de información y comunicación para analizar la satisfacción del inversor en el uso de las plataformas de *crowdfunding*. Considerando que los inversores presentan una motivación financiera y/o social que será relevante en las decisiones financieras y siguiendo los hallazgos de nuestra muestra, se puede afirmar que tener una buena experiencia de navegación satisface a los inversores. De este modo, se valorará de forma positiva la existencia de un blog corporativo, la actualización de contenido relacionado con los proyectos que contiene la plataforma o el desarrollo de una aplicación móvil que permita una mayor información en tiempo real sobre la oferta de proyectos disponible. La investigación también muestra la importancia que los inversores conceden a una comunicación fluida con los diferentes interlocutores de la plataforma, puesto que se demuestra que les ayuda a tomar decisiones. Por consiguiente, se vuelve relevante la digitalización en el contexto global de los negocios internacionales y por supuesto, en el ámbito financiero, ya que podemos generalizar que se considera la comunicación electrónica como una variable crucial para la satisfacción del cliente.

Limitaciones y futuras líneas de investigación

El presente trabajo no está exento de limitaciones, siendo dichas limitaciones, oportunidades para trabajos futuros.

En primer lugar, la restricción de tiempo característica de cualquier doctorado ha fomentado la elección de un tipo de *crowdfunding* para analizar aspectos que facilitan la financiación y creación de proyectos industriales: el *crowdlending*. No hemos analizado las otras modalidades de *crowdfunding*: crowd*equity* (de inversión), *crowdfunding* de donación y *crowdfunding* de recompensa.

En segundo lugar, en el análisis de casos es necesario considerar que los resultados tienen una cierta falta de generalización, al centrarse en dos casos, de dos sectores distintos. Teniendo en cuenta que se trata de un estudio de casos, se plantea para el futuro el desarrollo de más análisis cuantitativos. Por ejemplo, se puede considerar el análisis de la tasa de éxito y tipo de proyectos financiados por los modelos de *crowdlending* en función de la plataforma, es decir, se puede considerar si se trata de una plataforma especializada o generalista, y si esta afecta a comunidades de inversores grandes o pequeñas.

En tercer lugar, se han estudiado plataformas que operan en determinados territorios, por lo que se debe cuestionar la aplicabilidad de los resultados obtenidos en otras regiones.

En cuarto lugar, la muestra es relativamente pequeña. Habría resultado interesante realizar un análisis de todas las plataformas que operan en otras zonas y regiones para comparar los resultados con los nuestros. Para paliar esta limitación se ha empleado una metodología difusa que permite hallar combinaciones de condiciones que aportan resultados relevantes para estudiar el fenómeno del *crowdlending*.

Como líneas de investigación futuras, se destaca que las plataformas de *crowdlending* siguen evolucionando, incluso como hemos observado se genera una interacción de experiencias y conocimiento, analizándose el fomento de la formación y profesionalización en el *topic*.

Otra futura línea de investigación es analizar los diferentes tipos de *crowdfunding* y compararlos para arrojar luz sobre las diferentes opciones que ofrecen los modelos, y las motivaciones de los inversores y los emprendedores, creando una imagen de conjunto.

También resulta de interés estudiar los efectos de la crisis de la pandemia producida por la COVID-19, en la que una bajada de la inversión en los proyectos debido a la disminución del consumo y la inversión ha producido incertidumbre y miedo. Ver qué pasará antes y después de la crisis pandémica.

Haciendo un balance final de esta tesis, algo que ha marcado un precedente en mi persona ha sido tomar la decisión de embarcarme en la realización de un doctorado. He sentido admiración por ciertas personas al conocer que me estaba dedicando a la investigación. Pero

si algo he proyectado en este trabajo ha sido la importancia de la motivación intrínseca en el transcurso de mi vida, ya que me puedo considerar como un emprendedor.

The aim of this doctoral thesis was to examine the relationship between crowdfunding, focused on crowdlending, as a method of financing industrial projects.

First, crowdfunding has been studied theoretically from different points of view in the article "Crowdlending: Mapping the core literature and research frontiers". The concept of lending has gained relevance in recent years, as it does not require any financial intermediary, thus allowing operations through multilateral platforms and virtual marketplaces that facilitate transactions between agents. Thus, the main objective of lending markets is to involve buyers and sellers in convenient and trustworthy transactions; however, these intermediaries are considered to be depositories of inconsistent information on credit quality. Thus, in lending transactions information is difficult to verify, since lenders are less sophisticated, and the institutional framework is less developed, thus giving rise to information asymmetries. In this context, signals are crucial for investors to reduce investment risk and make decisions. Thus, signals provide consistent information to all parties allowing them to attract financing. According to Spence (1973), signaling theory helps to fill the information gaps between the different parties by sending signals to compensate for this missing information, since the project information announced on the platform is often limited. In summary, we should highlight from this article and thesis chapter that most of the published lending studies and papers are based on qualitative research that seeks to identify the shortcomings of this type of lending so there is a great potential for increasing quantitative research derived from our topic. Along with this, there is an urgent need to educate small investors, taking into account variables such as age, gender and previous education, and to design a financial ethic promoting values that benefit all areas of society.

In the two cases analyzed in the article "From crowdfunding to crowdlending: The cases of Acero Watch and Perinet Winery" it is concluded that the combination of crowdfunding in business creation and crowdlending in business operations are effective. The success in financing the projects of Acero Watch and Perinet Winery through the combined use of different forms of crowdfunding to finance business projects has been demonstrated. Entrepreneurs and business people use crowdfunding for two purposes, financial (to secure funding) and non-financial (seeking product or market validation and product promotion). The difference that separates crowdfunding from crowdlending depends on the stage of the

business life cycle that the company seeking funding is in. It should be noted that the motivation of the entrepreneur in the case of Acero Watch to use the crowdfunding model was intrinsic, as the main interest was to validate the idea and get funding for prototypes. In addition, the entrepreneur's motivation was directly related to the main objective, i.e., to create a company. It will be relevant that organizations should be aware of the options of the types of financing offered by the platforms in order to decide which one best suits their needs. Finally, with this research we have shown that crowdfunding and crowdlending platforms will be useful both for boosting the initial development and for the growth and positioning of the organization in the market.

The article "A synthetic indicator of market leaders in the crowdlending sector" concludes that taking into account the amount of credit intermediated by the different platforms, Mintos is the platform that intermediated the most credit, followed by Twino, and in third place was Fellow Finance. In terms of the number of investors who used the platform, Mintos was the best, followed by Housers, and EstateGuru in third place. In relation to the profitability offered by the projects defined on these platforms, the projects listed on Bondster stood out in first place, followed by Mintos, and in third place Peerberry. And in terms of the relationship between supply and demand, the best platforms were Trine and Debitum Network. On the other hand, based on the synthetic indicator, the results show that the three leading platforms are: Mintos, Evoestate, and Peerberry (respectively). On the other hand, it should be considered that it is in the financial sector, especially through new financing methods, where transparency becomes a crucial element for the survival and success of financing platforms. However, this research highlights that crowdlending platforms provide very little information to the environment and the parties involved, thus giving rise to more information asymmetries. Therefore, it becomes relevant to consider this aspect on the part of borrowers and lenders when using these new financial models. Finally, we highlight what future changes are expected in the leading crowdlending platforms. The small and medium-sized companies in the sector are stepping up to become the best platforms, so the current market-leading platforms we have seen in this research should not take their future leadership for granted.

The article "Key factors of information management for crowdfunding investor satisfaction" concludes the importance of variables related to information and communication policy in analyzing investor satisfaction in the use of crowdfunding platforms. Considering that investors present a financial and/or social motivation that will be relevant in financial decisions and following the findings of our sample, it can be stated that having a good browsing experience satisfies investors. Thus, the existence of a corporate blog, the updating of content related to the projects contained in the platform or the development of a mobile application that allows more information in real time about the available project offer will be positively valued. The research also shows the importance that investors attach to a fluid communication with the different elements linked to the platform, since it is shown that it helps them to make decisions. Therefore, it becomes relevant digitalization in the global context of international business and of course, in the financial field, since we can generalize that electronic communication is considered as a crucial variable for customer satisfaction.

Limitations and future lines of research

The present work is not without limitations, and these limitations are opportunities for future work.

Firstly, the time constraint characteristic of any PhD has encouraged the choice of one type of crowdfunding to analyze aspects that facilitate the investment and creation of industrial projects: crowdlending. We have not analyzed the other types of crowdfunding: equity, donation or reward crowdfunding.

Secondly, in the analysis of cases it is necessary to consider that the results have a certain lack of generalization, as they focus on two cases, from two different sectors. Considering that this is a case study, further quantitative analysis should be considered for the future. For example, the analysis of the success rate and type of projects financed by crowdlending models can be considered depending on the platform, i.e., whether it is a specialized or generalist platform, and whether it affects large or small communities of investors.

Thirdly, we have studied platforms operating in certain territories, so the applicability of the results obtained in other regions must be questioned.

Fourth, the sample is relatively small. It would have been interesting to perform an analysis of all the platforms operating in other areas and regions to compare the results with ours. To alleviate this limitation, a fuzzy methodology has been used to find combinations of conditions that provide relevant results to study the crowdlending phenomenon.

As future lines of research, it is highlighted that crowdlending platforms continue to evolve, even as we have observed an interaction of experiences and knowledge is generated. The promotion of training and professionalization in the topic is being analyzed.

Another future line of research is to analyze the different types of crowdfunding and compare them to shed light on the different options offered by the models, and the motivations of investors and entrepreneurs, creating an overall picture.

It is also of interest to study the effects of the pandemic crisis produced by COVID-19, in which a drop in investment in projects due to the decrease in consumption and investment has produced uncertainty and fear. See what will happen before and after the pandemic crisis.

Making a final balance of this thesis, something that has set a precedent in my person has been to make the decision to embark on the realization of a doctorate. I have felt admiration for certain people when I learned that I was doing research. But if anything I have projected in this work has been the importance of intrinsic motivation in the course of my life, since I can consider myself as an entrepreneur.

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ANEXOS: ARTICULOS PUBLICADOS

Review of Managerial Science
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ORIGINAL PAPER

Crowdlending: mapping the core literature and research frontiers

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Abstract

Peer-to-peer (P2P) lending uses two-sided platforms to link borrowers with a crowd of lenders. Despite considerable diversity in crowdlending research, studies in this area typically focus on several common research topics, including information asymmetries, social capital, communication channels, and rating-based models. This young research field is still expanding. However, its importance has increased considerably since 2018. This rise in importance suggests that P2P lending may offer a promising new scientific research field. This paper presents a bibliometric study based on keyword co-occurrence, author and reference co-citations, and bibliographic coupling. The paper thus maps the key features of P2P lending research. Although many of the most cited papers are purely financial, some focus on behavioral finance. The trend in this field is toward innovative finance based on new technologies. The conclusions of this study provide valuable insight for researchers, managers, and policymakers to understand the current and future status of this field. The variables that affect new financial contexts and the strategies that promote technology-based financial environments must be investigated in the future.

Keywords Crowdlending · P2P lending · Bibliometrics

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1 Introduction

Crowdfunding is an innovative form of finance, and analysis of the factors that influence the performance of crowdfunding projects is necessary (Chen et al. 2020). The success of crowdfunding is built on the digitalization of society and the increasing presence of the Internet (Bouncken et al. 2015). This scenario requires knowledge and collaboration at all levels (Bouncken et al. 2021). Crowdfunding has gained in popularity since the 2008 financial crisis and is of particular relevance for small and medium-sized enterprises (SMEs), especially startups. Using platform mediation, crowdfunding gathers together small contributions from a large number of investors to finance projects with varying objectives (Cholakova and Clarysse 2015). Crowdfunding covers a wide range of approaches, including reward-based crowdfunding, equity crowdfunding, donation crowdfunding, and crowdlending. Crowdlending has received considerable attention from researchers in recent years (Bruton et al. 2015). This interest is expected to continue to intensify, hence the motivation for this paper.

Crowdlending transactions mainly take place in online environments, where lenders and borrowers engage in convenient, trustworthy exchanges. Peer-to-peer (P2P) lending involves platforms that join lenders and borrowers, who seek funding to carry out their projects. Accordingly, P2P lending platforms act as intermediaries between lenders and borrowers. They facilitate exchanges through credit screening services, posted interest rates (Wei and Lin 2017; Franks et al. 2021), default prediction (Franks et al. 2016), and formal and informal lending procedures (Allen et al. 2019).

One of the main concerns about P2P lending platforms is the need for all parties to have robust, accurate, timely information. To meet this need, borrowers and lenders use signals to transmit their intentions and positions in the lending market. Specifically, the better informed party uses signals to send information to the other party and thus aid the exchange between the two to make up for missing information. These signals overcome problems of information asymmetry that can arise with P2P transactions. To avoid information imbalances, these signals, in addition to attracting funding, must provide consistent and accurate information (Connelly et al. 2011), communicate abilities (Connelly et al. 2011), help build reputation (Walsh et al. 2015), generate credibility (Leischnig and Enke 2011), highlight the quality of offerings (Helm and Özergin 2015), and develop co-creative offerings (Patterson 2016). P2P lending transactions still face information asymmetry problems (Dorfleitner et al. 2016). Thus, lenders often have to make decisions based only on information published by borrowers without being sure about its authenticity (Klafft 2008a, b). The communication process, choice of communication channels, and organizational social capital can significantly influence the effect of signals in reducing or eliminating information asymmetries.

A growing stream of research has examined the role of social capital in facilitating (or hindering) economic exchanges (Granovetter 2005; Guiso et al. 2004). Social capital refers to features of social organizations such as networks, rules,

and trust. These features develop from informal interactions or norms of universal reciprocity. They are then preserved by mutual commitment and cooperation (Putnam 1995; Adler and Kwon 2002). According to Granovetter (2005), social capital works best when created by the actions, patterns, or processes of those outside the economic setting in question. Thus, social capital can facilitate transactions with third parties outside the dyad that actually creates the social capital. Social connections can be beneficial because, in addition to conveying information flows between parties, the ties they generate offer a valuable cue for outsiders to infer the quality of the agents involved. In sum, by providing information and mutual benefits, social capital can mitigate potential inefficiencies caused by information imbalances, thus enhancing market efficiency (Durlauf and Fafchamps 2005). The negative implications of information asymmetries in the P2P lending market have led to the use of rating-based models to help evaluate and rank loans according to their risk or likelihood of default (Bastani et al. 2019). Together with risk variables, the evaluation process also considers loan returns. Ultimately, lenders face a multi-objective problem corresponding to traditional portfolio optimization (Deb et al. 2011). What is not so traditional is the context in which these financial transactions occur. Technology is revolutionizing P2P lending for two reasons. First, technology is increasingly present in the models (e.g., machine learning and neural networks) used to evaluate loans and thus mitigate information asymmetries in lending exchanges. Second, technology is also present in the process of P2P lending, namely in the way that P2P platforms operate (e.g., through blockchain or artificial intelligence).

This paper analyzes the P2P lending literature. Specifically, it examines why and how the concept of P2P lending has evolved from crowdsourcing and crowdfunding and explores which concepts or research lines are evolving and what direction the research will take in the future. To answer these questions, a bibliometric study was conducted. Bibliometric studies use statistical analyses of scientific publications (Pritchard 1969) to provide objective, impartial information on a specific field of research (Zupic and Čater 2015). To date, no bibliometric study has been conducted on this topic. Therefore, it is important to analyze the degree of research progress of P2P lending studies. This analysis can reveal the most important authors, references, journals, and keywords, together with the most relevant connections between them. As in recent previous research (Dana et al. 2021; Mas-Tur et al. 2020), bibliographic coupling, word co-occurrence, and co-citation analysis were used. Bibliometric methods were used to analyze the latest research on P2P lending and understand how this research topic has evolved and how it will continue to evolve in the future. Specifically, the study aims to describe the current research on P2P lending, identify the most relevant authors, publications, and journals, detect the most recurrent keywords from 2003 to February 2021, map the relationships between the key elements of this research field, and identify the fundamental topics at the P2P lending research frontier. In-depth analysis of previous findings in a particular field is necessary for that field to advance (Zupic and Čater 2015). Therefore, this bibliometric study contributes to building a complete picture of P2P lending research by considering all publications on the topic since its inception. The conclusions of the study can provide valuable insight for researchers to understand the current status

and future of the field, for managers to search for new developments to improve performance and compete, and for policymakers to design strategies to promote growth and development.

The rest of the paper is organized as follows. Section 2 develops the conceptual framework. Section 3 describes the method. Section 4 presents and discusses the results. Section 5 indicates the limitations and practical implications. And finally, Sect. 6 shows the main conclusions as well as the future lines of research.

2 Theoretical framework

2.1 Crowdfunding

The phenomenon of the crowd (Franzoni and Sauermann 2014) has given rise to advances such as citizen science. This area considers the active participation of different individuals in scientific projects (Cappa et al. 2016, 2018). There is thus a need to assess the openness–performance relationship (Moretti and Biancardi 2020). The intersection between citizen science and the phenomenon of the crowd forms the basis of crowdfunding, which has become a prominent research topic. Crowdfunding is a type of outsourcing where funds are raised from a crowd of individuals. More specifically, crowdfunding refers to the use of a large number of individuals or groups to finance projects through small contributions pledged online without the need for standard financial intermediaries (Mollick 2014). Crowdsourcing allows organizations to externalize problem-solving tasks to obtain solutions from the crowd (Garcia Martinez 2015), whereas crowdfunding allows the crowd to play a complementary role, not only in the solution of tasks but also in the mobilization of capital (Ordanini et al. 2011). Pre-COVID-19, these transactions were already becoming increasingly important. However, the pandemic has forced organizations that used the Internet as a secondary business channel to prioritize innovative solutions using online platforms (Al-Omoush et al. 2020).

Crowdfunding has driven the democratization of the financial sector. It has helped promote entrepreneurial finance (Assenova et al. 2016; Block et al. 2018) and has connected lenders and entrepreneurs. The strength of crowdfunding lies in the widespread adoption and social acceptance of the Internet. This adoption and acceptance has created the framework to attract a multitude of online supporters and investors (Agrawal et al. 2015; Short et al. 2017). Using platform-mediated approaches, a large number of small investors can finance different types of projects—from nonprofit to innovative new ventures—that would otherwise not have had access to traditional financing. To initiate the process, entrepreneurs provide information to potential funders about the project through crowdfunding platforms. These platforms offer a marketplace where fund seekers can interact with crowds (Bruton et al. 2015). This information, which must capture funders' attention, ranges from income figures or business plans to the aspirations and promises of entrepreneurs.

Crowdfunding projects differ depending on the potential reward or the motivations of entrepreneurs and funders. There are two main types of crowdfunding: profit-based crowdfunding and donation- or reward-based crowdfunding.

In donation-based crowdfunding, contributors do not receive rewards, or if they do, these rewards are merely symbolic. The motivation of funders in this case is intrinsic (Gerber and Hui 2013). In reward-based crowdfunding, the motivation of funders may be both extrinsic, when they receive some reward, and intrinsic, when they receive nonpecuniary tangible (prototypes) or intangible (experiences) rewards in exchange for their support (Cholakova and Clarysse 2015). Within reward-based crowdfunding, Coakley and Lazos (2020) differentiated between equity crowdfunding and debt crowdfunding. In equity crowdfunding, funders receive shares or enter a revenue-sharing scheme in return for their contribution. The motivation is primarily extrinsic (Cholakova and Clarysse 2015; Colombo et al. 2015; Vismara 2018). In debt crowdfunding, also known as peer-to-peer (P2P) or marketplace lending, supporters receive interest as compensation for the risk and duration of their lending (Allison et al. 2013; Bruton et al. 2015). The motivation ranges from intrinsic to extrinsic depending on the financial returns (Ordanini et al. 2011). The complexity of the process and the need for investors to become involved are also criteria for classifying crowdfunding. Equity crowdfunding, lending crowdfunding, and reward-based crowdfunding are, in that order, the most complex forms of crowdfunding. As such, they require greater involvement. Conversely, donation crowdfunding involves less complexity and supporter involvement (Hornuf and Schwienbacher 2018).

Scholars have studied crowdfunding from different points of view, including crowdfunder motivation (Ordanini et al. 2011), crowdfunder types and definitions (Mollick 2014; Schwienbacher and Larralde 2012), signaling (Burtch et al. 2013), success factors and dynamic aspects (Kuppuswamy and Bayus 2017), the geographic distribution of investments (Agrawal et al. 2011), social capital (Lin et al. 2013; Mollick, 2014), local altruism and social capital (Giudici et al. 2018), communication (Courtney et al. 2017), narratives (Parhankangas and Renko 2017), fund seekers' education, gender, and professional background (Barbi and Mattioli 2019), fund seekers' social ties (Simon et al. 2019), professional funding (Roma et al. 2017), consumer perceptions (Wehnert et al. 2019), and science and technology (Colombo et al. 2015; Sauermann et al. 2019).

2.2 P2P lending

The concept of P2P lending, similar to that of matchmaking (Evans and Schmalansee 2016), refers to operations through multi-sided platforms and virtual marketplaces to facilitate transactions between agents. The main objective of P2P markets is to engage buyers and sellers in convenient, trustworthy transactions. Although P2P lending is linked to finance, its increasing importance is due to the rise of matchmakers such as Amazon and eBay and the appearance of fintech startups such as Monzo and Funding Circle. This novel form of financing fits with the concept of 'ingenious' or creative solutions' that combine novelty and value (Lampel et al. 2014). P2P lending involves a two-sided platform that brings together a crowd of individuals and borrowers (predominantly SMEs in need of credit). In exchange for a commission for hosting the lending campaign, crowdlending platforms offer SMEs the chance to obtain financing from investors who pay no commission and expect

some kind of financial rewad. The reputation of P2P platforms in relation to credit risk assessment, together with the informal network of relationships among companies, can determine the ability of these companies to obtain P2P loans from a wide range of investors. Thus, active P2P platforms in the SME credit market act as intermediaries between investors (small investors and financial institutions) and firms, providing a wide variety of services such as credit screening (Wei and Lin 2017; Franks et al. 2021). There are indirect network externalities between small investors and financial institutions. Investments by institutions, which perform their own monitoring, provide a guarantee for the crowd. This guarantee helps reduce information asymmetries (Cumming and Hornuf 2020). Some authors claim that small investors tend to herd after institutional investors in equity-based crowdfunding. Similar strategies occur in P2P business lending (Asterbo et al. 2018). The crowd's endorsement for campaigns, the so-called "wisdom of the crowd" (Mollick and Nanda 2016), can likewise act as an indirect network externality for institutions.

P2P marketplaces provide different sources of external debt finance. These sources range from P2P business loans to invoice finance. This form of financing habitually involves three agents: the funding platform, the borrowing firm (usually SMEs), and the crowd of investors. Although P2P lending is considered similar to bank lending, there are major differences regarding regulatory arbitrage and disintermediation (Coakley and Huang 2020). For instance, P2P loans are not subject to Basel III capital requirements. Therefore, P2P lending platforms have a relative advantage in terms of their lending rate when compared with commercial banks. In addition, for tax purposes, investors can offset bad loan losses with other crowdfunding income. Although some authors argue that P2P loans complement rather than compete with conventional banking (Milne and Parboteeah 2016), others argue that P2P lending has major advantages by combining the information advantages of informal lending with the pooling and risk-sharing benefits of financial intermediation (Allen et al. 2019). The main disadvantage of P2P loans versus bank deposits lies in their lack of protection.

2.3 Information asymmetry

According to Spence (1973), signaling theory explains how signals help fill gaps in information between different parties by sending signals to make up for that missing information. The most informed party sends signals (observed variables) to the less informed party, disclosing the necessary information to make the exchange possible. Initially, this theory was applied to situations where there was little information on the credibility or quality of a product, service, or supplier (Kirmani and Rao 2000). It can now be applied to any situation where there is an information imbalance or information asymmetry between parties. Information asymmetry can lead parties to suffer adverse selection (Akerlof 1970). This adverse selection occurs when decision makers cannot observe or judge a situation based on the information provided (Pouryousefi and Frooman 2019). Ultimately, it can lead to financial losses (Petersen and Rajan 2002). Signals provide consistent information to all parties. These parties use this shared information

(Connelly et al. 2011) to make transactions easier. Signals are useful for a wide variety of activities, most notably attracting financing (Ribeiro-Soriano et al. 2020).

Recently, the analysis of signaling and information asymmetries with respect to crowdfunding has captured the attention of researchers (Burtch et al. 2013; Courtney et al. 2017). This topic is highly relevant to crowdfunding, especially crowdlending (Ahlers et al. 2015; Courtney et al. 2017). P2P lending has a crucial difference with respect to the traditional financial credit market in that it involves no financial intermediaries (Lee and Lee 2012). These intermediaries are seen as repositories of soft information about credit quality (Petersen and Rajan 2002). For this reason, in P2P lending transactions, information is more difficult to verify, lenders are less sophisticated, the institutional framework is less developed, and information asymmetries frequently arise. In this context, signals are crucial for investors to reduce investment risk (Ahlers et al. 2015; Courtney et al. 2017). Borrowers signal and transmit information about themselves and the characteristics of the investment project, while lenders search for credit information and screen loan applicants (Yan et al. 2015).

In addition to signaling, there is still no clear evidence as to what other variables can improve overall trust in P2P lending projects. Trust management, which can significantly promote fundraising performance (Zheng et al. 2016), is crucial in financial contexts where the risk and complexity derived from economic transactions are important variables (McKnight et al. 1998). P2P lending involves financial transactions that are extremely trust intensive (Guiso et al. 2008). In many cases, investment opportunities are analyzed based only on the project information that is available online. Therefore, it is difficult for lenders to ensure the authenticity and integrity of borrowers' information (Klafft 2008a, b). It is also difficult for them to know whether they are dealing with a legitimate fund seeker. Although lawmakers are developing regulations in many countries, the overall outcome of these efforts is not yet clear.

The P2P literature states that P2P investors can infer the creditworthiness of borrowers by observing the lending decisions taken by other P2P investors (Zhang and Liu 2012). Assuming acquainted investors have an information advantage in a system with posted prices, the decision to invest first could signal the quality of the project to unacquainted investors, who thus develop feelings of trust toward the project. In turn, unacquainted investors trust and expect to benefit from the monitoring capabilities and reciprocal insurance created by acquainted lenders who finance a larger share (Lee and Persson 2016). In addition, more financing from acquainted investors can offer a proxy of social network strength, which can enhance firm performance (Gronum et al. 2012). Borrowers' reputation is another important factor influencing trust in P2P lending projects. Developing a reputation based on telling the truth and using transparent disclosure can benefit borrowers now and in the future (Michels 2012). Borrowers with a better performance history are more likely to obtain loans and to do so at a lower cost. Thus, lenders use the reputation of borrowers as a signal in their lending decisions. In P2P loans, an effective reputation mechanism can discipline borrowers' behavior, reducing the probability of default (Ding et al. 2019).

2.4 Social capital

Social capital plays a vital role in mitigating information asymmetries because it can avoid potential inefficiencies triggered by information imbalances, thereby improving market efficiency (Durlauf and Fafchamps 2005; Cassar et al. 2007). According to Putnam (1995, p. 67), social capital relates to "features of social organization such as network, norm, and social trust that facilitate coordination and cooperation for mutual benefit." Nahapiet and Ghoshal (1998, p. 243) defined social capital as "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit." Under this definition, social capital has three dimensions: cognitive (shared language), relational (social trust), and structural (the presence or absence of social interaction ties between individuals). In P2P platforms, borrowers and lenders rarely know each other in person, so the third dimension is less applicable than the first two.

The characterization of group-level social capital has major implications for understanding the role of social capital in online P2P lending. The concept of group-level social capital varies depending on the study perspective. From the insider's perspective, social capital refers to a common asset accessible to all members (Coleman 1990), whereas from the outsider's perspective, it refers to the process by which individuals within the group use mutual recognition and support to emulate a privileged group where different kinds of capital are included (Bourdieu 1984). Authors have analyzed the factors that influence lending outcomes by studying how the borrower's group reliability and verifiability can improve (or fail to improve) funding performance. The role of contextual features such as the institutional environment has also been considered. In this sense, the right institutional environment can lead social capital to enhance online P2P lending performance by improving community solidarity (Chen et al. 2016). In addition to improve lending performance (Cassar et al. 2007), social capital has several benefits such as complementing credit information for specific borrowers (Lin et al. 2013), increasing the knowledge-sharing behavior of participants in a virtual context (Chang and Chuang 2011a, 2011b), and facilitating participants' access to valid information (Birley 1985). Although the benefits seem to be clear, authors have explored both the pro and the con arguments regarding social capital, concluding that both points of views require analysis (Light and Dana 2013). From a conventional point of view, social capital entails trusting reciprocal relationships (Mustafa and Chen 2010). However, too much social capital can lead to protecting mediocrity (Light 2010) and imposing mental conformity to entire groups (Aldrich and Kim 2007), among other detrimental outcomes.

Despite the increasing dependence on group social capital to reduce the uncertainty and risks derived from the fast-paced evolution of online platforms, the P2P lending marketplace is characterized by inaccurate and uncertain information due to anonymity and ubiquity. This social capital may deceive potential lenders and lead them into the wrong lending choices, which can harm their economic performance. Therefore, it is important to find a suitable signaling feature to help prospective lenders. When there is uncertainty surrounding a project, social capital, others' early contributions, and narratives can help crowdfunders' make decisions by reducing

information asymmetries (Herzenstein et al. 2011; Lin et al. 2013; Moss et al. 2015). These factors represent signals of trustworthiness that trigger herding behaviors (Skirnevskiy et al. 2017; Zhang and Liu 2012).

One important question is how social capital influences the formation of the behavioral biases that affect both individuals' decisions and P2P lending market performance. These biases include local bias, which represents a deviation from rational benchmarks and occurs when investors' decisions are biased toward local assets such as local firms or borrowers (Ofir and Wiener 2016; Hirshleifer 2001). This behavior is justified by the idea that greater geographic proximity means a lower risk of default probability (Karlan 2007) due to more active group monitoring (Hung 2006). For external lenders, the support of members of the nearby geographic group is interpreted as a powerful and encouraging signal. Recently, authors have found that local biases are commonly present in the P2P lending market (Jiang et al. 2020). They have tried to determine whether loans attracting local lenders perform better or worse than others. Decisions based on local biases have been found to lead to higher default risk, lower recovery rates, and lower realized return. These findings reflect worse market performance. Based on social capital theories, social capital seems to play an important role in forming local bias because it seeks to facilitate coordination, collaboration, and cooperation, providing mutual confidence among individuals.

2.4.1 Social networks

Social capital emerges when individuals are connected to each other. These connections have positive advantages for the individuals and their communities (Portes 1998). Greater complexity and uncertainty in the business environment has led to a focus on social networks (Mohrman et al. 1995). The literature generally focuses on analyzing the optimal network configuration instead of the embedded context of the social network, which significantly affects the role of social capital (Leyden 2003). In an online P2P lending market, there are two main types of social networks: friendship and group networks. There are important differences between the two. Whereas friendship networks mostly represent strongly embedded relationships created outside the objective online economic context (Durlauf and Fafchamps 2005; Lin et al. 2013), group networks are created in online environments with anonymous members between whom there is no interaction. In online P2P lending markets, the main differences relate to the absence or presence of physical connections between individuals and the motivation to create such networks (Putnam 1995). Several authors have studied which type of social network has the best economic performance. Lin et al. (2013) argued that friendship networks can provide better economic performance due to the social stigma cost of default. Other authors have concluded that a lack of connection, recurrent interaction, and closed structures may complicate the development and preservation of social capital by group networks (Nahapiet and Ghoshal 1998; Wasko and Faraj 2005). This process can in turn hinder the achievement of positive lending outcomes. Thus, an effective way to enhance social capital is through the establishment of obligations, norms, and sanctions (Knowles 2006). One problem could be that the constraints that shape human interactions in the P2P

lending market (North 1990) are fast evolving but are far from mature (Chaffee and Rapp 2012). Therefore, an emerging question is how best to define an online P2P lending market.

2.4.2 Communication

Online marketplaces have allowed P2P lending projects to spread useful signals of value for tangible or intangible contributions through different channels. Communication channels can influence how signals reduce information asymmetries through signal quantity (Schrammel et al. 2009), quality (Brown and Hillegeist 2007), or interpretation (Sunder 2003; Venkat et al. 2004), as well as the scattered experiences and limited attention of receivers (Hong and Stein 2007). Evaluating the suitability of communication channels involves analyzing the way in which each channel operates, which can affect information processing (Wicks 1992) and the credibility of the source. A signal is effective if it is reliable, which often leads to a cost of generating the signal, including delicate aspects such as the "economic cost of dishonesty" (Piñeiro-Chousa, et al. 2016). Furthermore, high levels of credibility can serve as a signal that allows one party to select another one from a long list of signalers (Vismara 2017).

In reference to channels and communication processes in online P2P lending, the key is to provide a mechanism to attenuate information asymmetries around loans offered on the platform. Platform owners must seek to manage the level of information asymmetries in their P2P environments to create more balanced marketplaces and improve the ability of P2P participants to process information about their online transactions (Caldieraro et al. 2018).

2.5 P2P lending risks and returns

The number of transactions made on P2P lending platforms has increased substantially in recent years. The P2P lending industry is a fast-growing financial market. P2P lending platforms such as Lending Club and Prosper have websites that encourage individuals to lend to projects and invite researchers to analyze the transaction process (Bachmann et al. 2011; Klafft 2008a, b; Serrano-Cinca et al. 2015). The first key idea is that two main actors participate in P2P lending transactions: borrowers, who seek money for diverse purposes, and lenders, who lend money to obtain a return (Zhao et al. 2016). Although both participate in the same project, their decision-making perspectives differ greatly (Wu and Hsu 2012). The second key idea relates to the applications ("listings") submitted by borrowers. Lenders can invest whatever amount they want in these listings, causing two possible outcomes. If the money received by a listing achieves its goal, then it becomes a loan and the funding process is finished (Guo et al. 2016). Conversely, if the money received by a listing does not reach its goal, then the process is also finished, although the intended goal is not achieved. Therefore, lenders have two main tasks: first, to select the loan, and second, to decide on the amount of money to invest.

To help lenders select the best loans, P2P platforms provide rating-based models. These models evaluate the level of risk of loans or the probability of default of borrowers. There are several methods to reduce the risk and probability of default (Bastani et al. 2019). Credit scoring methods are used to rank loans based on their expected probability of default, enabling lenders to minimize investment risks by funding the highest scoring loans (Guo et al. 2016; Malekipirbazari and Aksakalli 2015; Serrano-Cinca et al. 2015). Riskier loans have higher interest rates, so lenders can earn more by funding these loans, as long as borrowers pay. The payment structure (amounts and deadlines) of the loan is of interest for lenders because it makes it easy to measure borrowers' profitability in P2P lending transactions. Serrano-Cinca and Gutiérrez-Nieto (2016) proposed the internal rate of return as a measure of loan profitability and as an effective interest rate. Therefore, lenders should select loans with the highest internal rate of return. Using deep learning, authors have developed deep, dense convolutional networks (Kim and Cho 2018). Combining hard and soft information, other authors have proposed the examination of descriptive text in loan applications and other borrowers' historical information through topic modeling in conjunction with a classifier (Jiang et al. 2018). Recently, a five-fold cross-validation method, with six classification performance measurements, was used to discriminate between the best algorithms (logistic regression, artificial neural networks, and linear discriminant analysis) and the worst methods (k-nearest neighbors, classification, and regression tree) for default prediction in P2P social lending (Teply and Polena 2020).

Together with the risk of investment failure, lenders must evaluate loan returns (Serrano-Cinca and Gutiérrez-Nieto 2016). However, score-based models do not allow for the evaluation of risks and returns jointly (Finlay 2008). Faced with the two seemingly conflicting goals of minimizing risks and maximizing expected returns (Deb et al. 2011), lenders do not have to fund an entire loan. Instead, they can participate in different loans. Thus, they face a multi-objective problem, under traditional portfolio optimization theory (Markowitz 1952). Based on portfolio optimization, Malekipirbazari and Aksakalli (2015) showed that accounting for nonlinearity in the learning process improves default prediction. They proposed an instance-based model to predict the return and risk rates of loans in P2P lending. Similarly, Guo et al. (2016) proposed an instance-based model to estimate the risks and returns of loans based on historical data. Cho et al. (2019) used multiple regression analysis to provide an instance-based entropy fuzzy support vector machine model for P2P lending investments. Zhao et al. (2016) were the first to evaluate loans from a multi-objective viewpoint. They reported that lenders seek to meet multiple objectives such as nondefault probability, fully-funded probability, and winning-bidding probability. Two portfolio optimization strategies based on weighted objective optimization and multi-objective optimization were established for selecting lenders' portfolios. Bastani et al. (2019) proposed a two-stage scoring approach. Loans go from stage one to stage two depending on the probability of default prediction, measured as the internal rate of return through wide and deep learning.

According to Zhang et al. (2020), the effectiveness of the existing credit-score models can be questioned because data complexity can lead to poor classifications. Moreover, these models must be trained and updated online to adapt to

scenarios where P2P loan data grow rapidly and change frequently. They advocated new credit-scoring models based on data mining and machine learning (e.g., gradient boosting decision trees or neural networks). These models enable online training and updating and can handle multiple types of features. Babaei and Bamdad (2020) used artificial neural networks and logistic regressions to formulate investment decision making in P2P lending as a multi-objective portfolio. They thus estimated both the probability of default and the return of each loan.

3 Method

This section describes the search for scientific publications on P2P lending from 2003 to February 2021. Different bibliometric methods were used.

3.1 Data set

The Web of Science (WoS) database was used to search for publications on P2P lending. In addition to covering other types of publications, the WoS comprises the highest number of papers published in JCR-indexed journals. In comparison with other databases, it provides a large number of high-quality publications with high-quality content (Ball and Tunger 2006; Scaringella and Radziwon 2018). The WoS database was the only source used in this study. This approach is common in bibliometric studies and is advisable so that the data can be handled in a reliable and consistent way. The search engine of the WoS database uses Boolean operators (OR, AND, etc.). The search string used in the WoS Core Collection was TOPIC: ("peer to peer lending") OR TOPIC: ("crowdlending") OR TOPIC: ("P2P lending") OR TOPIC: ("peer to business lending") OR TOPIC: ("P2B lending") OR TOPIC: ("business to business lending") OR TOPIC: ("B2B lending") OR TOPIC: ("crowd lending") OR TOPIC: ("crowd-lending") OR TOPIC: ("peer-to-peer lending") OR TOPIC: ("peer-to-business lending") OR TOPIC: ("business-to-business lending") OR TOPIC: ("peer-to-peer (P2P) lending").

To obtain accurate results, only documents from the following categories were considered: Economics; Business finance; Business, Computer science information systems; Management; Computer science interdisciplinary applications; Operations research management science; and Social sciences interdisciplinary. To include all published documents on the study topic, no restrictions were established in relation to type of publication, year of publication, or language. As a result, information on 429 studies published from 2003 to February 2021 were downloaded, including the title, keywords, abstract, source, and information regarding the authors and references cited in each publication. A data cleansing process was applied (Zupic and Čater 2015). Microsoft Excel was used for the initial analysis. VOSviewer software was then used to process and analyze the data.

3.2 Sample description

Figure 1 shows the number of articles on P2P lending published each year. The study was carried out in February 2021 and the search did not return any papers from this year. The first document dates back to 2003. There was a constant but slow increase in the number of articles published from 2003 to 2013. Since 2014, there has been a substantial increase in publishing activity, especially from 2018 onward. In 2020, more than 90 papers were published on this topic. This result suggests that this research field is current and relevant. The relevance of this field motivated this research.

The categories with the most published papers are Economics, Finance, and Business. The number of papers published in the Management and Computer science categories is also high. This high number of publications reflects the importance of technology in revolutionizing finance, including P2P lending. Although some of the most cited papers in this research field are purely finance-oriented studies, some are related to behavioral finance. This finding reflects the importance of behavioral finance research today (López-Cabarcos et al. 2020) and the massive implications it has in explaining modern forms of financing (Table 1).

3.3 Bibliometric analysis

Bibliometrics refers to the quantitative study of bibliographic resources (Pritchard 1969). Following a systematic literature review (Kraus et al. 2020a, b), science mapping aims to identify the structural and dynamic features of a research field (Noyons et al. 1999) by identifying networks of elements (documents, authors, journals, and keywords) based on their relatedness and classifying them into different clusters (Zupic and Čater 2015). Co-citation analysis (Small 1973), the most frequently applied method, uses the reference set of publications in a database to identify its intellectual structure. Bibliographic coupling (Kessler 1963) is used to study documents that share a common reference. The research frontier of a given field can thus

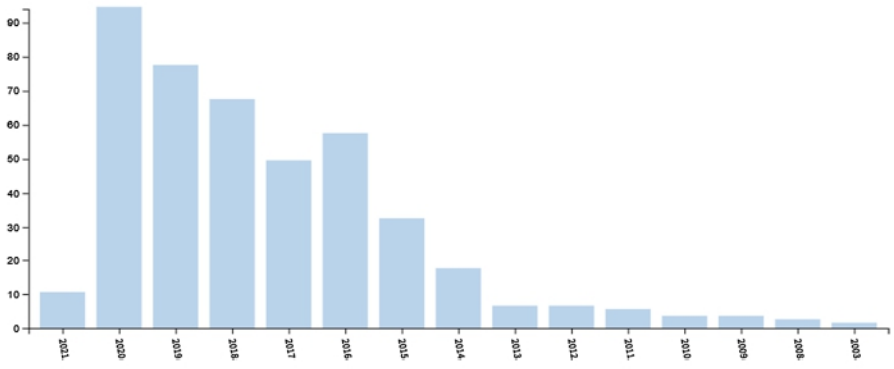

Fig. 1 Number of published articles. Source: WoS, retrieved March 5, 2021

Table 1 Main WoS categories and most cited papers

WoS Categories	Number of records	% of total
Economics	109	25.41
Business finance	105	24.48
Business	104	24.24
Computer science information systems	93	21.68
Management	90	20.98
Computer science interdisciplinary applications	40	9.32
Operations research management science	39	9.09
Social sciences interdisciplinary	26	6.06
Computer science theory methods	23	5.36
Engineering electrical electronic	23	5.36
Article	**Author**	**Citations**
Judging borrowers by the company they Keep: friendship networks and information asymmetry in online peer-to-peer lending	Lin et al. (2013)	333
Rational herding in microloan markets	Zhang and Liu (2012)	264
Trust and credit: the role of appearance in peer-to-peer lending	Duarte et al. (2012)	261
New financial alternatives in seeding entrepreneurship: microfinance, crowdfunding, and peer-to-peer innovations	Bruton et al. (2015)	235
What's in a picture? Evidence of discrimination from prosper.com	Pope and Sydnor (2011)	218
Evaluating credit risk and loan performance in online peer-to-peer (P2P) lending	Emekter et al. (2015)	155
Strategic herding behavior in peer-to-peer loan auctions	Herzenstein et al. (2011)	146
Home bias in online investments: an empirical study of an online crowdfunding market	Lin and Viswanathan (2016)	139
Herding behavior in online P2P lending: an empirical investigation	Lee and Lee (2012)	134
Tell me a good story and I may lend you money: the role of narratives in peer-to-peer lending decisions	Herzenstein et al. (2011)	125

Source: Authors based on WoS data

An item can belong to several categories

be identified. Keyword co-occurrence (Callon et al. 1983) considers the most frequently used keywords.

This study used these three methods to map the state-of-the-art of P2P lending research. Co-citation analysis of authors and references was used to identify the most relevant authors and studies on P2P lending (Boyack and Klavans 2010). Bibliographic coupling with sources was used to identify the most important journals that publish papers in this research field (Zupic and Čater 2015). Both techniques provided an overview of the past (co-citation) and present (bibliographic coupling) of this research area (Kovács et al. 2015). Finally, keyword co-occurrence was used to determine the core of the P2P lending research field (Su and Lee 2010). Keyword co-occurrence analysis studies the frequencies of specific words that are jointly mentioned (Kraus et al. 2020a, b).

VOSviewer software (van Eck and Waltman 2010) version 1.6.16 (CWTS 2020) was used for the analysis. The three analyses provide networks using maps formed by nodes and links. These nodes and links are grouped into nonoverlapping clusters. Authors, publications, journals, and words are the nodes, and the co-occurrences between them are the links. The size of a node represents the number of connections to other nodes. The closer two nodes are to each other, or the thicker the line that links them, the stronger the connection is between them (Waltman and van Eck 2019). The fractional counting option (Perianes-Rodriguez et al. 2016) was chosen in all analyses performed with VOSviewer software.

With VOSviewer software, it is possible to complement the visual interpretation with tables. These tables can be employed to analyze key metrics for each network, such as density (number of links in relation to the total potential number of links in the network) and degree (average number of links of the nodes in the network). A higher density and a higher degree reflect a more interrelated network (Arho 2019; Vogel and Güttel 2013). This software is useful for this kind of research because it provides a map based on a co-occurrence matrix. This map can be created following a three-step procedure: (1) compute a similarity matrix based on the co-occurrence matrix; (2) build a map by applying the VOSviewer mapping technique to the similarity matrix; and (3) translate, rotate, and reflect the map (Van Eck and Waltman 2010).

4 Results

The main results of the analysis are presented in this section. The key articles in this research field were mapped using co-citation analysis, bibliographic coupling, and keyword co-occurrence.

4.1 Co-citation analysis

Table 2 displays the top 10 results for the co-citation analysis of references and authors. The analysis of references reveals the basis of a specific research field. In this case, the analysis shows whether P2P lending studies are purely financial or

Table 2 Reference co-citation and author co-citation results

Reference co-citations				Author co-citations		
Title	Author(s)	Citations	Link strength	Author(s)	Citations	Link strength
Judging borrowers by the company they keep: Friendship networks and information asymmetry in online peer-to-peer lending	Lin et al. (2013)	144	136	Lin, M	177	169.2
Trust and credit: The role of appearance in peer-to-peer lending	Duarte et al. (2012)	107	102	Herzenstein, M	165	156.17
What's in a picture? Evidence of discrimination from prosper.com	Pope and Sydnor (2011)	99	98	Duarte, J	113	112.69
Evaluating credit risk and loan performance in online peer-to-peer (P2P) lending	Emekter et al. (2015)	86	77	Freedman, S	106	98.75
Herding behavior in online P2P lending: An empirical investigation	Lee and Lee (2012)	80	74	Pope, D.G	103	102.6
Rational herding in microloan markets	Zhang and Liu (2012)	63	60	Iyer, R	98	96.21
Tell me a good story and I may lend you money: The role of narratives in peer-to-peer lending decisions	Herzenstein et al. (2011)	62	62	Lee, E	87	85.33
Instance-based credit risk assessment for investment decisions in P2P lending	Guo et al. (2016)	61	47	Emekter, R	86	85.00
Strategic herding behavior in peer-to-peer loan auctions	Herzenstein et al. (2011)	61	58	Serrano-Cinca, C	75	71.04
Emergence of financial intermediaries in electronic markets: The case of online P2P lending	Berger and Gleisner (2009)	52	48	Zhang, J.J	65	64.00

Source: Authors based on VOSviewer results

adopt a behavioral finance perspective. The link strength measures the intensity of the linkages between references or authors. Based on this link strength, the results are consistent with those for the number of citations. The key references are Lin et al. (2013) and Duarte et al. (2012). The most important authors are M. Lin and M. Herzenstein.

Figure 2 presents the top 10 references resulting from the reference co-citation analysis. The minimum number of citations for a reference was set at 50. Of the 10,884 references considered in this study, 11 exceeded this threshold. The number of links was 55 (100% density), the total link strength was 406.5, and the degree was 10. To simplify the analysis of the references network, the references with the highest link strength were selected. A label represents each reference, and the font size denotes the number of times the reference was cited in the database. As mentioned earlier, a larger font size indicates that the reference has been cited more often. The distance between two references represents the probability that these references are cited together. Consequently, shorter distances indicate a higher probability of being cited together. The colors indicate whether there are different clusters of cited references. References in a cluster are more likely to be cited with other references in the same cluster.

The graph contains two clusters. The first (in red) comprises seven papers, primarily oriented to analyzing P2P lending from a behavioral point of view. Specifically, this cluster contains papers on trust or herd behavior (Duarte et al. 2012; Zhang and Liu 2012; Herzenstein et al. 2011). In addition, this cluster contains the most important paper in terms of number of citations and link strength. This paper is located in the center of the network (Lin et al. 2013). The second cluster (in green) comprises four papers that analyze P2P lending from a financial perspective. Lee

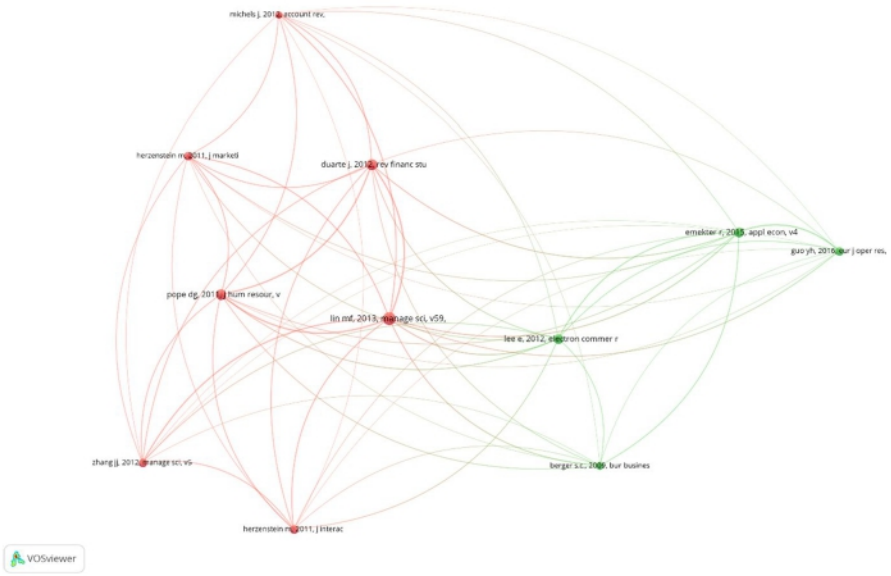

Fig. 2 Reference co-citation analysis

and Lee (2012) authored the most notable paper in this cluster. Despite forming part of this cluster, it addresses the topic from a financial as well as a behavioral perspective. Moreover, this paper is located very close to the center of the graph. Therefore, it is highly relevant and can act as a nexus between the two clusters. In conclusion, the papers by Lin et al. (2013) and Lee and Lee (2012) are at the core of this field and provide a basis for research in this area.

The author co-citation analysis reveals the most cited authors. These papers are generally among the top 10 most cited references. When considering the link strength of author co-citations, there are some slight differences with respect to the reference co-citation analysis. In this case, although the difference is very small, the author D. G. Pope is slightly more important than S. Freedman. There seems to be no divergence between the results of the author co-citation analysis and the reference co-citation analysis. These results indicate that M. Lin is the most cited author and that a paper by the same author has received the most citations. The other most cited authors are M. Herzenstein and J. Duarte. Figure 3 displays the density map of the co-citation analysis of authors. The minimum number of citations of an author was set at 30, with 39 (out of the 7,773) authors exceeding this threshold. There were 729 links (98% density), a total link strength of 1,124.04, and a degree of 37.4. The possibility that there were different authors with identical names or the same author with different names was checked. Such duplicate entries can greatly affect the results. No discrepancies were found. The most cited authors appear in red. In contrast, authors in green have the lowest number of citations. The position on the map denotes the proximity between authors. The closer they are, the greater the chance is that they are cited together. The map shows three groups of authors. The central group includes the most relevant authors (M. Lin, M. Herzenstein, and J.

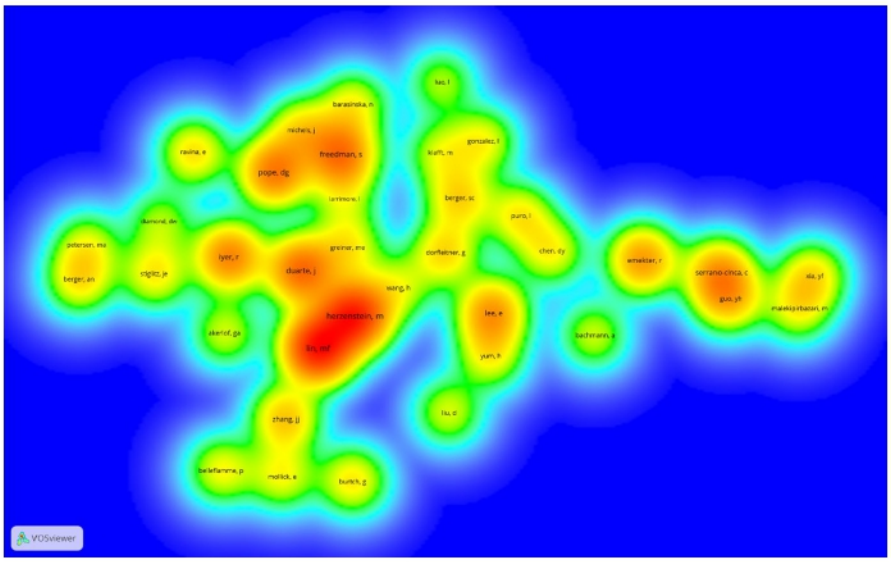

Fig. 3 Density map of author co-citation analysis

Duarte). The group located at the top of the map but very near the center is led by S. Freedman and D. G. Pope. These two groups include authors that study P2P lending from a behavioral as opposed to a financial point of view. This finding is consistent with those for Cluster 1 of the co-citation analysis of references. The group on the right includes Y. H. Guo, who analyzes P2P lending from a financial point of view. This finding is consistent with those regarding Cluster 2 of the co-citation analysis of references.

4.2 Bibliographic coupling of sources

To map the journals that publish research on P2P lending, the minimum number of documents of a source was set at five. Of the 283 sources, 11 exceeded this threshold. There were 55 links (100% density), a total link strength of 503.82, and a degree of 10. The minimum number of citations was also set to zero so as not to penalize more recent publications.

Table 3 shows the ranking of journals with the most published papers on P2P lending. The journal with the most publications (15) is *Electronic Commerce Research and Application*. It has the highest link strength (242.19), although it does not have the highest number of citations (390). The journal with the highest number of citations (785) is *Management Science*. It has a moderate link strength (75.78), implying that this journal includes highly cited publications in this field but that the publications are not closely related to the publications in other journals. Different results were observed for *Electronic Commerce Research* and *Journal of Management Information Systems*. They have published few papers on this topic (six and five, respectively, with 42 and 153 citations, respectively). However, their link strengths are quite high (115.23 and 110.15, respectively). Thus, their publications, despite being scarce, are relevant in this field.

Figure 4 shows that the journals that published the most papers on P2P lending during the second half of 2019 and 2020 were *Finance Research Letters*, *Emerging Markets Finance and Trade*, *European Journal of Finance*, and *IEEE Access*.

Table 3 Bibliographic coupling of sources

Source	Documents	Citations	Link strength
Electronic commerce research and applications	15	390	242.19
IEEE access	10	42	97.73
Finance research letters	8	31	71.15
Emerging markets finance and trade	7	14	91.57
Financial innovation	7	44	64.97
Electronic commerce research	6	42	115.23
European journal of operational research	6	275	92.74
Management science	6	785	75.78
European journal of finance	5	3	52.27
Journal of management information systems	5	153	110.15

Source: Authors based on VOSviewer results

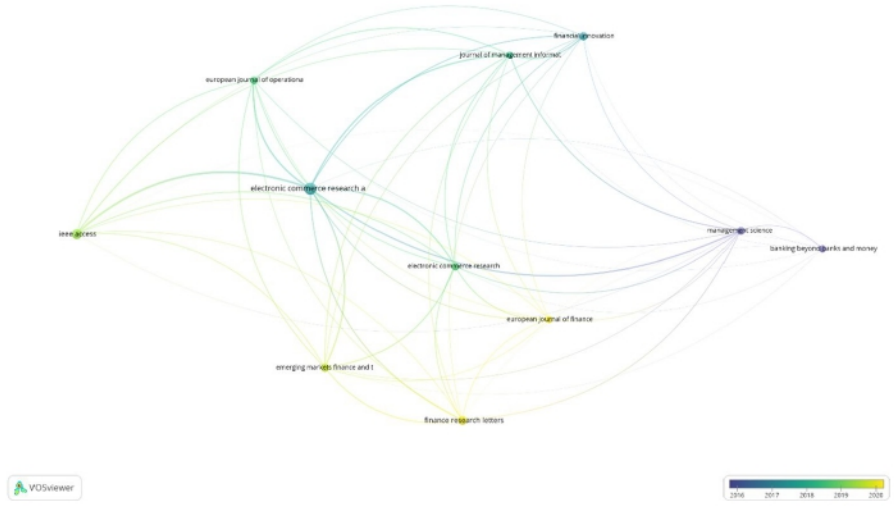

Fig. 4 Bibliographic coupling of sources by average year of publication

Finance Research Letters has published the most papers (8) and has the most citations (31). *Emerging Markets Finance and Trade* has the highest link strength (91.57).

4.3 Author keyword co-occurrence

Figure 5 shows the average year of publication of the documents with an author keyword. A threshold of five occurrences was used. Of the 1,131 considered, 43

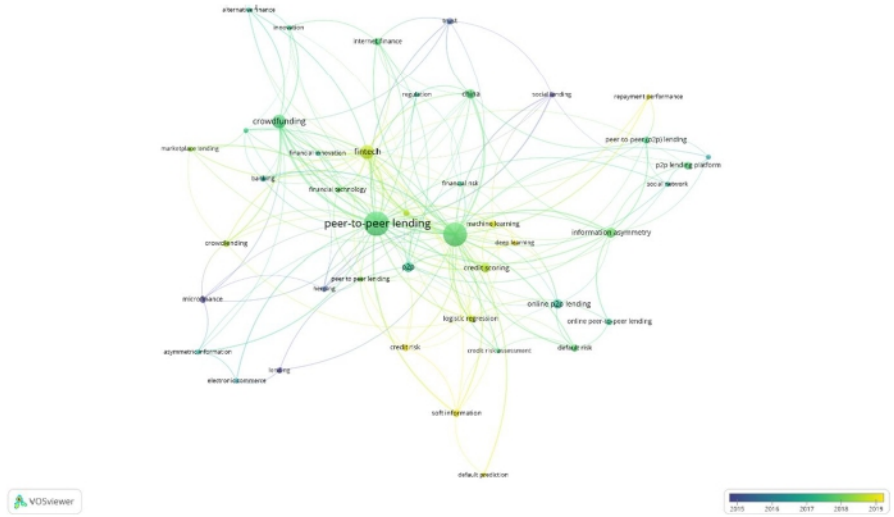

Fig. 5 Author keyword co-occurrence by average year of publication

keywords exceeded this threshold. The network is quite scattered, with 199 links (density of 22%) and an average number of links per keyword (degree) of 9.3. The results indicate that the most common keyword (107 occurrences) is "peer-to-peer lending". This keyword has the largest circle in the graph (link strength 60.00). This keyword appears in green at the center of the graph, which means that the documents containing this keyword were mostly published between 2017 and 2018. The next most important keyword is "P2P lending" (with 103 occurrences and a link strength of 59), followed by "crowdfunding" (with 36 occurrences and a link strength of 30), "fintech" (with 35 occurrences and a link strength of 30), "information asymmetry" (with 18 occurrences and a link strength of 15), "P2P" (with 18 occurrences and a link strength of 10), and "online P2P lending" (with 17 occurrences and a link strength of 4). These results appear in Table 4. This analysis reveals the recent appearance of the keywords "fintech", "machine learning", "deep learning", and "soft information. These keywords reveal the trend toward innovative finance based on new technologies such as blockchain, big data, and artificial intelligence. This conclusion is consistent with the results of the bibliographic coupling analysis with sources, which include technology-oriented journals such as *Electronic Commerce Research and Applications*, *IEEE Access*, *Financial Innovation*, and *Journal of Management Information Systems*. This result is also consistent with the WoS categories considered in the analysis, where the categories Computer science information systems, Computer science interdisciplinary applications, and Computer science theory methods are found to be relevant in this area.

5 Limitations and practical implications

Bibliometric analyses are subject to several limitations. Some limitations relate to the own application of the bibliometric techniques. For example, not always exists conceptual or methodological 'proximity' between publications that are jointly cited, as co-citation analysis proposes; or not always the number of citations means importance or relevance of a work, since citations can be the result of many factors influencing

Table 4 Author keyword co-occurrence

Keyword	Occurrences	Link strength
Peer-to-peer lending	107	60.00
P2P lending	103	59.00
Crowdfunding	36	30.00
Fintech	35	30.00
Information asymmetry	18	15.00
P2P	18	10.00
Online P2P lending	17	4.00
China	16	14.00
Credit scoring	16	14.00
P2P lending platform	11	4.00

Source: Authors based on VOSviewer results

researchers when writing their papers. A deep review of the publications considered in the study in the first case, and the use of citations patterns considering both total citations and citations excluding authors's self-citations in the second case, can help solve these limitations. Other common limitations are related to the method and choice of data. For example, although the search terms in this study were carefully selected, a broader or more restricted set of publications would have been obtained if other search terms had been considered. These differences would have influenced the study results. Moreover, some documents may have been overlooked because a single citation database was used. For example, the most up-to-date references that have not yet been assigned to a specific topic are not included in the WoS. In future studies, other databases (e.g., Scopus and Google Scholar) could be used to compare the findings with those from this study or simply to include a greater number of publications. All the analyses were performed using the most objective criteria possible. However, a certain degree of subjectivity is inevitable. For example, decisions must be taken when deciding on the number of authors or references to include in the analyses. Moreover, the author co-citation analysis only considered the first author of each document. Therefore, information on collaborating researchers was lost (Córdoba-Cely et al. 2012). However, this procedure is common in bibliometric studies. Finally, the analysis of authors considers their affiliations at the time of publication, which can lead to discrepancies. So, to avoid discrepancies and ensure exact correspondence between the authors' names in the database and those in the publications, a thorough search and correction process was performed. Despite these limitations, this paper still offers valid analysis of the most relevant research on P2P lending over the study period. This analysis in turn provides a structural and dynamic overview of the research field.

A comprehensive set of the most relevant publications on P2P lending from 2003 to February 2021 was analyzed. By examining the research frontiers in the field of P2P lending and assessing the extent to which this field can form a new and independent area of research, this study has important implications for researchers, firms, and policymakers. Researchers can build a picture of this novel research field. This picture can help them identify its core theoretical framework as well as the key topics that show the directions that research should take in the future. For example, innovative finance based on new technologies such as blockchain, big data, machine learning, and artificial intelligence is the most novel trend in this field. Moreover, managers, entrepreneurs, and all kinds of companies, especially those involved in P2P lending projects, can use this research to find evidence of the factors, advantages, weaknesses, and challenges affecting them. Finally, finding and applying theoretical and practical knowledge of P2P lending transactions can help policymakers target their efforts and design policies and programs that contribute to the effective and ethical functioning of the P2P lending market.

6 Conclusions and future research

Three bibliometric techniques were applied to WoS-indexed publications from 2003 to February 2021. The aim was to describe the knowledge frontier in P2P lending research. The analyses reveal the following: (1) the main P2P lending research

topics, (2) the consolidation of P2P lending as an independent research field, (3) the strong interconnectedness between the most common P2P lending research topics, and (4) the early development of the P2P lending research field.

An even greater technological revolution will surely take place in the financial sector. Therefore, alternative financial markets and new ways of understanding finance will continue to appear and to expand in the near future. In this revolution, the role of each agent must be clearly established. The changes that take place will reshape and influence the investment philosophy, behavior, and decision-making processes of investors and the expectations and motivations of borrowers. In the P2P lending market, decisions must be made considering information related to market trading volume, posted interest rates, monetary returns or default probability, and individual behavior associated with investor decisions. The motivations, expectations, and specific circumstances surrounding people are vital to determine the outcome of P2P lending transactions.

The study results suggest that future research on P2P lending should focus on the behavioral component of these transactions. For example, research should answer the question of how individual-related and context-related issues affect P2P lending transactions, considering the perspectives of both borrowers and lenders. Future research should also examine how to reduce information imbalances by avoiding the noise it generates, which can prevent these transactions from functioning correctly. It would also be valuable to analyze the moderating role of some variables (innovation orientation, entrepreneurial orientation of borrowers and lenders, and cultural values) in this causal relationship.

Researchers together with public institutions and organization should analyze the way to develop a framework for the risk management and profitability in the P2P lending market with the aim of generating a greater use and confidence around P2P financial products. Undoubtedly, this synergy could enhance the sustainability and development of the P2P lending market. Furthermore, most of the P2P lending studies are based on qualitative research that seeks to identify the shortcomings and opportunities of this alternative investment and financing formula, so there is a great potential for new quantitative research.

High-tech and decentralized financial environments are destined to prevail over more traditional areas. This scenario requires analysis of the variables that can affect these new financial contexts and decrease risks and the probability of failure. Aspects such as loan maturity, interest rates, platform size, participants' geographic location, and guarantees to reduce the likelihood of default must be analyzed in depth. One aspect that deserves special attention is the situation of information asymmetry that arises in P2P lending transactions. Information imbalances can greatly influence P2P lending outcomes, so mechanisms should be used to avoid or at least minimize such imbalances. Aspects derived from the concept of social capital or the disclosure of accurate information to the P2P lending market are two effective mechanisms to avoid both information asymmetries and the probability of default.

As the fourth industrial revolution takes hold, some questions must be answered. One key question is how to benefit from this revolution in new financial environments. Many countries and firms around the world are designing policies and

making strategic decisions to promote technology-based financial environments, which seem to be an essential part of the current and future economic context. The regulations established by governments and other authorities must keep up with the appearance of new financial products, services, and markets. This need to keep pace does not mean that regulations should hinder technological advances or innovation. However, authorities must use these regulations effectively to develop reasonable rules to guarantee a healthy future of the financial industry and protect the rights of all participants. Thus, there is an urgent need to educate individual investors (considering variables such as gender, age, and previous education) and design a valuable financial ethos capable of promoting a values-based foundation that benefits all areas of society.

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From crowdfunding to crowdlending: the cases of Acero watch and Perinet winery

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Abstract: Crowdlending is becoming an increasingly viable financing alternative for companies and individuals. This paper analyses the combined use of reward-based crowdfunding and crowdlending to finance ventures. It also examines the use of crowdlending to secure funding. Specifically, the paper studies the cases of two companies from different sectors (watchmaking and quality wine) and at different stages of the business life cycle (early years and maturity). The crowdlending projects, platforms and types of loans used by these two companies also differ. Analysis based on the case study method indicates that, for early-stage ventures, the combination of crowdfunding for business creation and crowdlending to support business operations is an effective way of securing funding an entrepreneurial venture. Moreover, crowdlending is the most suitable way to secure funding for a project at an existing firm. Using a crowdlending platform with a large community of investors ensures that borrowers achieve the funding they seek, as long as the loan offers high returns and low risk or the business idea has a positive impact on the planet or society.

Keywords: crowdlending; crowdfunding; entrepreneurship; fintech; wine; watches.

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1 Introduction

Companies and individual investors are increasingly diversifying their sources of financing whilst continuing to operate with their traditional banks. One source of alternative financing is crowdlending. Through technology, crowdlending allows companies and individuals to secure financing directly from individual members of the public and professional investors, who lend their capital in exchange for a return (Schneuwly, 2014).

From crowdfunding to crowdlending

Crowdlending is a result of changes in society. For example, there is an increasing need to diversify sources of financing, with companies becoming less dependent on bank financing (Lin et al., 2013). The rise of the Internet and new technologies is also a factor. Online communities mean that many individuals can easily be contacted to align interests (Schneuwly, 2014). Finally, crowdlending has been aided by the rise of the sharing economy. It is only through collaboration without intermediaries, institutions or companies that individuals' needs can be satisfied (Schweizer et al., 2017; Aslam et al., 2021).

The volume of money in the alternative financing market has dramatically increased in recent years due to the development of new technologies and credit restrictions. The latest report from the Cambridge Centre for Alternative Finance (Ziegler et al., 2019) indicates that the total volume of alternative finance worldwide is around €370 billion. The UK and the USA are the countries where crowdlending has experienced the greatest growth. In the UK, crowdlending accounts for hundreds of millions of pounds of loans and is governed by sophisticated legislation.

Worldwide, crowdlending is constantly expanding, and its growth prospects are good. This growth is driving a trend in the creation of increasingly specialised platforms. For example, MyTripleA specialises in certain products such as guaranteed loans, whereas Ecrowd! specialises in technological or efficiency improvement projects that create a positive social or environmental impact. The companies that develop these financial services platforms using powerful technologies are part of the fintech sector. This sector emerged to meet two needs: investors' need for greater autonomy in the management of resources and for profitable investments without having to travel and companies' need for alternative financing to diversify their sources of funding away from banks (Ziegler et al., 2019). Of the nine biggest fintech companies in Spain, MyTripleA, is the leader in the corporate lending sector.

Peer-to-Business (P2B) crowdlending plays a key role as an alternative form of financing for SMEs to raise the capital they need to grow their operations (Astrauskaitė and Paškevičius, 2018). However, the distinction between crowdfunding and crowdlending becomes blurred when a company uses these forms of financing at different stages of its life cycle. Not all types of crowdfunding (i.e. donation- and reward-based crowdfunding, crowdlending and crowdequity) are equally well suited to meeting the different resource requirements that arise at different stages of the business life cycle (Paschen, 2017). Moreover, not all types of crowdfunding are viable (Paschen, 2017). Therefore, the research question addressed by this study is, *at what stage of the business life cycle should crowdfunding and crowdlending be used?* This question is addressed from the business viewpoint. The perspective of the business life cycle and cognitive evaluation theory (Deci and Ryan, 1985) are applied as theoretical frameworks.

To answer this research question, this study focuses on two aims. First, the paper analyses the combined use of reward-based crowdfunding and crowdlending to finance business ventures. Second, the paper analyses the use of crowdlending by two companies from different sectors (watchmaking and quality wine), at different stages of the business life cycle (early years and maturity). The crowdlending projects, platforms and types of loans used by the two companies also differ. The case method is used to analyse reward-based crowdfunding by new ventures and crowdlending by two projects with different levels of risk that are financed with different types of loans (guaranteed vs. non-guaranteed). The main conclusion of the analysis relates to two areas. In relation to entrepreneurship, the combination of crowdfunding in business creation and crowdlending in business operations is effective. In relation to crowdlending, the choice of a platform with a large community of investors ensures that borrowers achieve the

funding they seek, as long as the loan offers high returns and low risk or the business idea is positive for the planet or society.

This paper has the following structure. The Section 2 briefly describes the distinction between crowdfunding and crowdlending. Section 3 describes the case method and the application of crowdfunding and crowdlending to entrepreneurship. Section 4 presents the results of the comparative analysis of crowdlending by two companies. Finally, Section 5 provides the conclusions, limitations and ideas for future lines of research.

2 The blurred line between crowdfunding and crowdlending

Technology enables new service models to enter the market (Lakshmi and Bahli, 2020). In the financial industry, technology gives customers more options. Dubbed fintech, these new business models offer an alternative to existing financial institutions (Dorfleitner and Braun, 2019). This alternative provides a solution for most entrepreneurs, who cite financial exclusion as the main problem they face in launching their ventures (Cicchiello et al., 2020; Sheneor and Munim, 2019).

One such business model is crowdfunding. By linking the supply and demand of capital from different areas of society, crowdfunding allows entrepreneurs and companies to attract funding (Solesvik, 2016). The motivations of entrepreneurs (Metallo et al., 2021) and companies for using this form of financing are extrinsic or intrinsic (Baber and Fanea-Ivanovici, 2021) and self-oriented or others-oriented (Pierrakis, 2019). Extrinsic motivation is driven by factors external to a given behaviour, whereas intrinsic motivation is related to an individual's own interests (Ryan and Deci, 2000). Others-oriented motivation is linked to positive attitudes towards Corporate Social Responsibility (CSR) and a concern for stakeholders (Pucheta-Martínez and Lopez-Zamora, 2018). Self-oriented motivation refers to the direct relationship between stakeholders and the central task (Ryu and Kim, 2018). In reward-based crowdfunding, investors are motivated to create an emotional connection with entrepreneurs and realise a project that leads to a reward (Cholakova and Clarysse, 2015). Motivation is more intrinsic than extrinsic because the financial reward per se is not the most important thing (Munim et al., 2020; Wuillaume et al., 2019).

Crowdfunding is a broad concept that covers different types of funding (Sheneor and Munim, 2019): donation and reward-based crowdfunding, crowdequity and crowdlending. These types of funding can be grouped into non-investment crowdfunding, in the form of donation- and reward-based crowdfunding, and investment crowdfunding, in the form of crowdequity and crowdlending (Sheneor and Munim, 2019). This grouping is based on the funders' expectations regarding compensation (Munim et al., 2020). Non-investment models (reward- and donation-based crowdfunding) offer non-financial returns to backers and donors, respectively. In contrast, investment models refer to loans (crowdlending) or equity (crowdequity) and offer financial returns to investors (Munim et al., 2020).

In a business context, one of the crucial differences between crowdfunding (donation- and reward-based crowdfunding) and crowdlending is that crowdfunding is about more than just funding. It also offers non-monetary benefits such as idea validation, product validation, market validation, market penetration or growth, and a loyal community of engaged customers (Paschen, 2017; Sheneor et al., 2021). The differences between crowdlending and crowdequity are summarised in Table 1. The remainder of this paper focuses on crowdlending.

Table 1 Differences between crowdlending and crowdequity

	Crowdlending	*Crowdequity*
Differences	• Loan-based funding • Individual investors • Non-subscription platforms	• Equity-based funding • Accredited or entrepreneurial investors • Subscription platforms (accredited investors) and non-subscription platforms (entrepreneurial investors)
Strategic benefits of the process	• Raises funds rapidly • Offers credit with low interest rates • Does not provide strong guarantees • Offers better returns for lenders	• Raises funds rapidly
Customers create partnerships and reduce downside loss potential	• Borrowers with liquidity • Guarantee fund	• Venture capitalists • Business angels
Cost to the entrepreneur	• Return of principal plus interest	• Equity, bond-like shares, securities, revenue or profit
Regulatory implications and burdens (Kshetri, 2015)	• Legal considerations vary massively from country to country	• Regulatory institutions are not equally developed in all countries

Source: Authors.

Through an online platform, crowdlending directly connects borrowers with lenders who grant credit to different loan applicants. Borrowers receive loans with lower interest rates than those offered by banks. They can raise funds more quickly without having to provide the type of guarantees demanded by banks (Pignon, 2017). Lenders, on the other hand, can achieve better returns on their investments than those offered by banks (Lin et al., 2003). They can also spread their investments across several projects (Bruton et al., 2015). When choosing a project, lenders evaluate loans according to the risk rating awarded by the platform. Otherwise, the platform will no longer be attractive to investors. Borrowers must be confident that they will receive the financing they seek in a reasonable amount of time and with a certain level of crowdlending investment. Finally, as predicted by cognitive evaluation theory (Deci and Ryan, 1985), lenders turn to crowdlending loans for both extrinsic and intrinsic reasons. Extrinsic reasons include higher economic performance and lower risk. Intrinsic reasons include those derived from investors' perceptions of CSR (as reported by the platform) and the importance of CSR in investors' decision making (Martínez-Climent et al., 2020).

In crowdlending, intrinsically motivated investors seek to help others, support social causes, enhance their image or become part of a community (Ryu and Kim, 2018; Sheneor and Munim, 2019). Accordingly, some platforms specialise in certain types of projects. Whilst some platforms focus on start-ups or new business ideas (Zhan and Liu, 2012), some focus on established companies such as SMEs and others on sustainability. Crowdlending is a form of social innovation (San-José and Retolaza, 2016). However, the distinction between crowdfunding and crowdlending is becoming increasingly

blurred. For example, Amazon has launched a sub-platform called Built It. This platform launches product ideas that are only manufactured if they reach the desired demand within a month. If the product idea receives no interest within this period, it is not created, and the money is returned.

The main weakness of crowdlending platforms is the risk of default by borrowers, causing the loss of lenders' investments. As a measure to overcome this weakness, some platforms guarantee the repayment of the principal and interest through their own liquidity or a guarantee fund (Ahern, 2018). A new type of crowdlending specialising in guaranteed loans has emerged. Owing to its novelty, it has received very little attention from academics. This type of crowdlending is characterised by offering investors guarantees on capital returns. These guarantees create greater confidence amongst investors, who may be unfamiliar with the platform or the associated projects. Lenders are guaranteed to receive the principal plus interest because, if the borrower defaults, a Reciprocal Guarantee Society (RGS) will pay. Sanchís-Pedregosa et al. (2020) reported that the success of crowdlending depends on the characteristics of the investors and the loans.

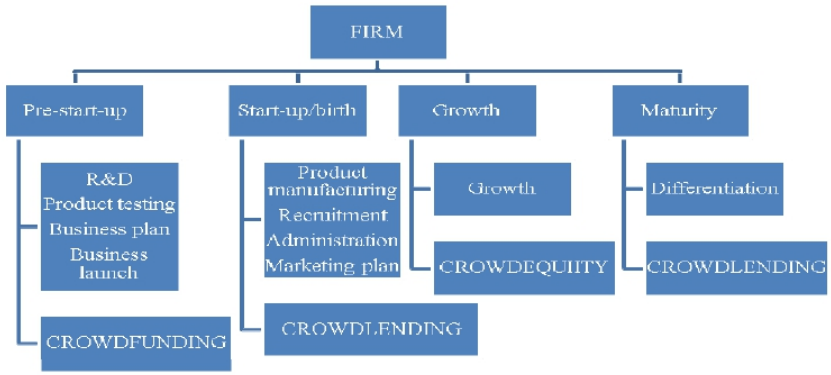
The key success factors of loan applications through crowdlending have been investigated (Han et al., 2018; Zhang and Liu, 2012; Lin and Viswanathan, 2016; Feng et al., 2015). The decision by a lender to invest in a collective loan through crowdlending is conditioned by trust in the borrower (Han et al., 2018), gregarious behaviour (Zhang and Liu, 2012) and geographical proximity to the borrower (Lin and Viswanathan, 2016). This decision is also influenced by the characteristics of the loan (Feng et al., 2015). With guaranteed loans, the lender's confidence in the borrower's solvency is a secondary factor because the loan is guaranteed to be returned. The interest rate is also of secondary importance because the interest rate is usually fixed (Sanchís-Pedregosa et al., 2020). Sanchís-Pedregosa et al. (2020) reported that the characteristics of guaranteed loans (e.g. no risk of non-payment) affect the success of crowdlending campaigns. Moreover, the often lower solvency of SMEs does not affect the success of crowdlending campaigns because the loans are guaranteed. Therefore, professional investors seem to be interested in guaranteed loans as part of their diversification strategy.

Accordingly, recent literature reviews reveal that the decisions of backers and investors depend on the crowdfunding model because the motivations behind campaigns with different crowdfunding models are likely to be driven by different antecedents (Sheneor and Munim, 2019). This idea is supported by the assertion that understanding the crowd is fundamental to understanding the type of crowdfunding (Josefy et al., 2017).

However, research on the choice of crowdfunding type at each stage of a company's life cycle is scant. Paschen (2017) argued that many companies are unsure about using crowdfunding because there is little guidance on how different types of crowdfunding provide value at different stages of the business life cycle and which type of crowdfunding is most suitable at each stage. To choose between different types of crowdfunding, a company must consider the stage of the business life cycle in which it finds itself, as well as the expected benefits of crowdfunding, the allocation of resources, and limitations in terms of the type of rewards it can realistically offer (Paschen, 2017). Figure 1 shows the most suitable type of crowdfunding at the pre-start-up, start-up, growth and maturity stages of the life cycle (Miller and Friesen, 1984) and the corresponding funding needs.

Based on Figure 1, two propositions relating to crowdfunding and crowdlending can be stated, with crowdequity to be addressed in future studies.

Figure 1 Stage of the business life cycle and type of crowdfunding



Source: Authors based on Paschen (2017).

Proposition 1: *Reward-based crowdfunding campaigns are suitable in the pre-start-up stage of the business life cycle to provide not only financial resources but also non-financial resources such as idea validation, product validation, market validation, market penetration or growth, and a loyal community of engaged customers.*

Proposition 2: *Crowdlending campaigns are suitable in the start-up (birth) and maturity stages of the business life cycle because they can provide funding not only to enable the manufacture of products and to launch businesses in the start-up stage but also to finance specific projects that create differentiation during maturity in competitive, heterogeneous contexts.*

3 Research method

The most suitable research method for this study was the case study method. Following the approach described by Yin (2012), we chose this method because of the blurred boundaries of alternative finance and the context (different stages of the business life cycle) in the cases of Acero Watch and Perinet Winery. This feature of the focal cases reduced the control of the research team. In addition, this method revealed the motivations of the decision makers in each company to use crowdlending: in one case for entrepreneurship and in the other case to solve a specific business problem.

Acero Watch is a Spanish watchmaker. The company was created only recently. Perinet Winery, in contrast, is an established producer of quality wine. In terms of characteristics at each stage of the business life cycle (Miller and Friesen, 1984), Acero Watch is a small firm (it has only one employee: the entrepreneur), is young (four years old) and depends heavily on its owner-manager. It operates in a placid, homogeneous environment. It has an informal, undifferentiated, highly centralised structure. It has crude information processing and decision-making methods. It takes considerable risks, acts innovatively (e.g. using alternative financing through crowdfunding and crowdlending) and operates a niche market strategy. Given these characteristics, Acero Watch is considered to be in the birth (Miller and Friesen, 1984) or start-up (Paschen, 2017) stage of the business life cycle.

Perinet Winery is a large, established company that has a broad ownership structure and operates in a competitive, heterogeneous environment. It has a formal, functional, centralised organisational structure. It has slow growth. It is consolidating its product-market strategy and is focusing on efficiently supplying a well-defined market. Given these characteristics, Perinet Winery is considered to be in the maturity stage of the business life cycle (Miller and Friesen, 1984).

The principles of the case study method described by Woodside (2010) were adopted as a guide to conduct this case study research. The principles described by Woodside (2010) are in line with firms' adaptations over time. These adaptations give rise to the stages of development that make up what is known in the literature as the organisational life cycle (Miller and Friesen, 1984). The unique contingencies facing each company depend on its context. A suitable design, such as the principles of Woodside (2010), is required to ensure congruence. This design must suit the firm's contextual and operational contingencies (Moores and Yuen, 2001). The two firms studied in this paper are at two different stages of the business life cycle. Therefore, the features of each stage follow different patterns in terms of strategy, structural characteristics, and leadership and decision-making styles at various stages of organisational development.

The principles of Woodside (2010) were taken as a guide for the present case study. First, the contingency and complex antecedent conditions of these firms were evaluated using the 'configural effects not net effects modelling' principle. This approach provides accurate results because small yet substantial changes to key contexts always change the outcome (Woodside, 2010). The next stage was to evaluate whether there was a double-whammy over-confidence bias based on the 'unconscious not conscious' principle.

Under the 'dynamic not cross-sectional' principle, data were collected from the same sources (e.g. entrepreneurship programme) for several weeks and years. These data enabled cross-lagged analysis through Qualitative Comparative Analysis (QCA).

Under the 'context not context-free' principle, multiple actors participated directly or indirectly in the immediate or previous contexts that were relevant to the main focus of the study on most human behaviours. Therefore, data were collected from multiple informants for multiple contexts. These data enabled confirmation or refutation of the accuracy of the findings and helped broaden the understanding of the contingencies that affect results in ways unique to each context (Woodside, 2010).

In Sub-section 3.2.1, the 'conjunctive-disjunctive not compensatory decision-making principle' is applied to analyse how the entrepreneur applied compensatory (conjunctive-disjunctive) or non-compensatory decision rules to evaluate the options and make a decision.

Finally, the entrepreneur's thinking was analysed based on the 'systems thinking not linear thinking' principle to evaluate the entrepreneur's decisions and associated actions.

Other principles were also considered during data collection. Data were gathered using in-depth interviews, indirect techniques and visual tools. The entrepreneur who created Acero Watch and a member of the management at Perinet Winery were interviewed. Under the 'multiple party not a single person' principle (Woodside, 2010), a family member of the Acero Watch entrepreneur was interviewed. This person was also a financial risk analyst. In addition, the manager of MyTripleA was also interviewed.

Indirect techniques were also used to collect opinions, seek objectivity and request data from the platforms. We consulted the platforms where the crowdfunding and crowdlending campaigns were run (Kickstarter, MyTripleA and Ecrowd!). Specifically, we analysed the content of the projects posted on these platforms. Finally, we applied the 'visual not just verbal data collection' principle and interpreted the data using visual

tools. These tools were used to interpret and analyse the data because these techniques helped retrieve information from the memories of the respondents. We examined photos of the entrepreneur's ancestors who provided knowledge of watchmaking. We also studied images of watch mechanisms, examined images of the inside of Perinet Winery, and visited the watch shop where the entrepreneur worked as a salesperson. These endeavours helped recover details related to the focus of the entrepreneurial venture.

3.1 Crowdfunding and crowdlending as enablers of entrepreneurship

3.1.1 Context: the background of the entrepreneur behind Acero Watch

This section looks at the complex antecedents of entrepreneurship to show that a few substantial, relevant, contextual changes can change the outcome (Woodside, 2010). We describe the context and circumstances of the entrepreneur to identify generic variables related to the specific context and the people close to the entrepreneur who helped shape the decision and generic variables related to knowledge of the product and knowledge of the target sector.

The entrepreneur's family had a background in watchmaking. A relative of the entrepreneur instilled in him a passion for watches. In 2014, the creator of Acero Watch started working in a high-end watch shop, winning an award for sales. He then began to think about creating a watch brand. In 2016, the entrepreneur left watchmaking and started working in the automotive sector as a sales consultant for high-end vehicles. Finally, in 2017, the entrepreneur decided to turn his passion into reality. A friend, who was also a financial risk analyst, advised him '*to focus, despite not knowing anything about crowdfunding, by using an entrepreneurship service provided by a banking foundation to help develop the entrepreneurship project.*' By this time, the entrepreneur had already made sketches of clock ideas.

The entrepreneur received finance through crowdfunding. Then the pandemic hit. The watches were being produced in China. '*I was planning on delivering the watches to those who had contributed to the crowdfunding campaign in June 2020. I had already lost time due to the Chinese New Year, where work almost completely stops in February. They always close for 15 or 20 days from the beginning of February to almost the end of March. You cannot work with them during this time.*' He knew about this period because it was around the time of the Chinese New Year when he had the prototypes made in 2018: '*you know that if you ask for something in January, you have a month in between because a watch takes 50 or 52 days to manufacture.*' However, the entrepreneur had not foreseen the COVID-19 pandemic. Thus, the entrepreneur's knowledge of the product (watches), sector (watchmaking) and market (mid- to high-end) helped the entrepreneur to start the venture.

Building on the ideas of Woodside (2010), we considered the entrepreneur's confidence bias to conclude whether the entrepreneur planned what he did and knew why he did it. The entrepreneur trusted his judgements about the venture more than the objective aspects of the venture. However, he was able to see this bias through tutorials from the entrepreneurship advisory service he used and was able to accept the recommendations. Thus, the entrepreneur concluded that his decisions and behaviour were not the only cause of his good performance.

The entrepreneur has no confidence bias, although he maintains that, '*entrepreneurs do not know if they are viable. They always believe they are, that they have a dream, that*

their idea is viable.' This declaration reflects the fact that entrepreneurs are driven by unconscious desires, emotions and fantasies (Metallo, 2021).

However, the Acero Watch entrepreneur received support from the entrepreneurship programme run by the foundation of the bank that supported the project. According to the entrepreneur, '*my dream was to have a mechanism like Swiss watches*.' However, his mentors from the entrepreneurship programme provided some advice: '*Make a statement. Prepare the budget. How many watches are you going to make and what's the retail price?*' They also complimented him on his design: '*your design is great. 'Acero' sounds good, but nobody knows the name. Do you want to sell a lot of watches for €800 or have your friends buy them for you?*' The entrepreneur's response was clear: '*I want to sell watches; this has to be a business*.' The mentors then advised him on what to do: '*we believe in the quality of what you're selling, but you have to target your market segment, and you're going to compete with high prices from well-known brands*.' The entrepreneur reached a conclusion: '*OK, I'm going to rethink it*.'

The entrepreneur received training for two and a half years. '*At the start, my morale was really high, but by the end, I was out on the floor because it was another reality check*,' said the entrepreneur in reference to the training.

As the opinions expressed by the entrepreneur show, his confidence was kept under control by the foundation's mentoring: '*The Foundation does a good job because entrepreneurs go through several cycles. Sometimes, they're completely despondent and you say, 'this is getting out of hand; it's crazy.' So if the foundation sees that you've been working and that you're a little disappointed, they will help you again. I had a difficult four or five months when I had to choose red watches, and I didn't know which red to choose because each trial cost a fortune. I couldn't see the right option, the viability. So the foundation really helped me*.' In 2018, the entrepreneur presented his idea to the foundation that was mentoring him.

Regarding the relationships between the generic and specific variables, the context (generic variable) of the entrepreneur throughout his life provided him with knowledge of the product and the manufacturing process, as well as the target market segment (specific variable). It can be deduced that the context of a person's life can lead that person to become an entrepreneur. In the early stages of the venture (pre-start-up stage), the entrepreneur did not know how to negotiate with suppliers (specific variable) and their environment. The entrepreneur's context at the time of launching the venture (start-up stage) required specific knowledge related to running the company. However, this interaction with suppliers provided knowledge for future negotiations. Once the supplier context was under control, the COVID-19 pandemic hit (generic variable), which did not influence the relationship with suppliers.

Finally, the entrepreneur had relatively high confidence in the product and the manufacturing process. However, this bias did not prevent the entrepreneur from modifying decisions after accepting suggestions from a close contact, who was also a financial analyst, and the entrepreneurship service. The entrepreneur attributed the good performance so far not only to hard work but also to the people who have collaborated in the project.

3.1.2 The entrepreneur and the entrepreneur's decision model: from crowdfunding to crowdlending

This section analyses the decision process at certain times during the venture: the first financing decision was to build the stock (Paschen, 2017). The crowdfunding campaign

also validated the business idea (Paschen, 2017). A later financing decision was to use crowdlending to buy stock. Drawing on the research by Woodside (2010), we analysed how the entrepreneur applied compensatory or non-compensatory decision rules to evaluate his options and make a decision.

Once the idea had been validated in 2018, a commemorative clock of the 8th centenary of Burgos Cathedral was made. The entrepreneur had enough capital to make seven clocks, thanks to a grant from the foundation's entrepreneurship mentorship programme. However, '*I didn't have enough money to release a stock of watches to the market. I gave myself three options: If you don't have funding, you can ask your family, you can ask a bank, or you can use crowdfunding.*'

'*I decided on crowdfunding because I could showcase my watches, and people would pledge money until I reached the figure that I needed to manufacture 200 or 300 watches. Crowdfunding was useful for financing and validating the idea with the market. For me, it was very important to be able to check whether what I liked also appealed to others, and therefore, if it was going to sell.*' These declarations validate Proposition 1 stated in Section 2.

The crowdfunding campaign was run on Kickstarter, one of the world's leading crowdfunding platforms. The goal was met. With the money raised, 250 watches were purchased to meet demand and build stock. The close contact of the entrepreneur (a professional financial risk analyst) expressed a certain degree of surprise: '*I was surprised in November 2019 when the entrepreneur was sure that he wanted to launch the project and was going to launch it through this platform (Kickstarter) because he didn't have a community of followers on social networks to guarantee that his campaign was going to be successful, nor did he have any guarantees from friends or relatives.*' However, even though Acero Watch did not have a social network, the chosen platform had a large community of investors which were introduced to Acero Watch. The company was thus able to showcase and sell its products and build a customer portfolio.

The entrepreneur secured the financing and bought the watches to send to the donors and build stock. The entrepreneur also used the crowdfunding campaign to advertise the product, initiate sales and create a client base. These marketing benefits have been confirmed in the literature (Paschen, 2017). According to the risk analyst, '*The goal was €20,000, which was very ambitious. The sales before the campaign were not even 10% of that. But he managed to get the rest of the sales mainly from local donors, who he later contacted and gave the product, covering 40 to 50% of the campaign. The rest of the backers were spontaneous sales throughout Spain, which I suppose were local people who bought the commemorative anniversary watch. There was also some exportation, although it was a minority (less than 10%). There were possible donors from other countries who initially provided sponsorship but then backed down: 40 to 50% of foreigners who joined the campaign didn't stay. Generally, these people should have known the platform, but there was no way to contact them to find out why they backed down. Perhaps they realised that the product would not reach them for another 2 or 3 months, but that's what happens with these campaigns. It's unusual for sponsors to leave once they've joined the campaign.*'

Table 2 shows the rewards that the entrepreneur gave the backers of the €21,000 crowdfunding campaign on Kickstarter. The campaign was launched on 5 December 2019 and ended on 5 January 2020, raising €21,916.

Table 2 Crowdfunding rewards for the Kickstarter campaign by the Acero Watch company

CONTRIBUTION	*19 € or more*	*159 € or more*	*199 € or more*	*218 € or more*	*358 € or more*
PRODUCT	Exclusive bow tie	'Centenario' by Acero Watch (solar watch) with strap of choice, plus another gift	'Centenario' by Acero Watch (automatic watch) with strap of choice	'Centenario' by Acero Watch (automatic watch) with strap of choice, plus another as a gift	'Centenario' by Acero Watch COMBO (automatic solar watch) with choice between different faces and straps, plus 2 free straps
SPONSORS	0	1	32	4	9
DELIVERY DATE	January 2020	April 2002	May 2020	May 2020	May 2020
REWARD	-	40% discount on retail price	40% discount on retail price	40% discount on retail price	40% discount on retail price

There were 62 new backers and six recurring backers (i.e. backers who had sponsored other Kickstarter projects). The platforms first launch the project to backers in their investor community. This community consists of investors who have pledged to projects that have been launched and successfully completed on the platform. Therefore, this process gives the entrepreneur an advantage over other alternatives in that the platform shares the campaign with the existing investors.

However, the 2020 Christmas campaign was approaching, and another round of financing was needed at the start of 2021: '*What do we do? We didn't see a new crowdfunding campaign as the right option because it would have meant presenting the same project, and the previous campaign had already validated the idea.' Acero Watch had left the pre-start-up stage and had entered the start-up stage.*

The risk analyst said the following regarding the idea of running a new crowdfunding campaign: '*To run another crowdfunding campaign, he would have had to do it with crowdequity. He wasn't interested because he didn't have any great ambitions, and he didn't want it to be all smoke and mirrors because at that time he was working for someone else. And now he doesn't know if he's going to continue working for someone else or focus on this project. He has a small venture, and if it becomes a big business, then fine. He used crowdlending to raise more money to buy more stock.' These statements validate Proposition 2, which states that crowdlending is the most suitable type of alternative finance during the start-up stage.*

Then the idea of crowdlending arose: '*Crowdlending offered a way to finance the campaign for the December and January watches. There was another dilemma. We had three options: crowdfunding, a bank loan or crowdlending.*' Together with the risk analyst, '*we launched a crowdlending campaign backed by an (RGS*).' The platform MyTripleA was used. According to the entrepreneur, '*we presented our project and its feasibility.*'

The entrepreneur analysed the pros and cons of crowdlending compared to other financing alternatives, as reflected in the following statements: '*crowdlending terms are much better than those of banks*'. Also, the loan was guaranteed by an RGS. '*The RGS offers very good terms. The RGS supports me if I can't pay the interest or return the capital. It's like when a relative guarantees a loan and doesn't ask for anything in exchange.*'

In the decision to choose crowdlending, the professional risk analyst applied the same reasoning as the entrepreneur. The advantages and disadvantages of each alternative were assessed. An overall score was given to each alternative, and the one with the highest score was chosen. The financial risk advisor reported the following during the interview:

> *'He also requested financing from a bank, and the bank's terms were much higher than the interest rate. I advised him to go to an RGS (…). They cover the operation and offer an interest rate of 2 or 2.5% and then you have the commissions of the guarantor. So, when he went to the bank, they advised him not to go to the guarantee society because they were going to give him a cheaper loan. The second interest rate they gave him when he already had the guarantee letter was 2%, 2.25%, practically the same, but they asked for a series of insurance policies such as life insurance for €60,000. He had a TAE of 10% or 12%, which was totally disproportionate. He already had a relationship with the bank since they knew him from his personal banking because he had a mortgage, etc. If he went to the RGS, he wouldn't have to change banks, so he went for crowdlending.'*

Therefore, in the decision process, when choosing between crowdfunding, a bank loan or crowdlending, the entrepreneur analysed the options by weighing the disadvantages against the advantages. The overall scores were then compared, and the alternative with the highest score was chosen, namely crowdlending. The entrepreneur applied a compensatory decision rule. This approach differs from a non-compensatory decision rule, where decision makers set minimum requirements for the alternatives and discard those that do not meet all requirements.

Finally, the entrepreneur mainly applied systematic, non-linear thinking because decisions are rarely final. Instead, certain actions lead to other decisions and so on. For example, the crowdfunding decision led the entrepreneur to use crowdlending. The entrepreneur did not find the optimal choice for this business idea simply thanks to cognitive resources. The entrepreneur generally did not know the likelihood of each outcome. The entrepreneur was rarely able to evaluate all outcomes with sufficient precision, and memories were weak and unreliable. Also, there may be no optimal decision for a given decision-making context.

4 Comparative analysis of crowdlending: two projects, two platforms, two loans and one goal

Acero Watch and Perinet Winery are two very different Spanish companies. As mentioned earlier, Acero Watch was created recently (in 2017) and operates in the watchmaking sector. Perinet Winery is an established company (1998) in the wine sector. Because Acero Watch has already been described, a brief description of Perinet Winery is now provided for context.

Perinet is a farm in the Protected Denomination of Origin (PDO) of Priorat, Spain, located approximately 90 minutes from Barcelona. The Perinet winery and vineyard are unique in Priorat. They are the result of a pioneering vision of combining a premium winery and a top tourist destination. The Perinet estate grows mainly local varieties such as Mazuelo (Carignan) and Garnacha, accompanied by international varieties such as Cabernet Sauvignon, Syrah and Merlot. The architecture of the winery is elegant and spectacular. Perinet produces wines that are made 100% on the estate and are sold in the international market of leading brands.

The founders of Perinet Winery began terracing in 1998 and finished planting the vines in 2002. The vineyards are built on terraces with the latest technological advances, with a high-density planting pattern. Perinet Winery has become a modern, innovative winery located in the heart of a traditional region. Different varieties, wines and techniques make Perinet Winery a place where the past and the future meet. Perinet Winery is part of the Alpha Omega Group (see https://youtu.be/EF2FEkhA3Mo).

4.1 Projects to be financed: reducing the carbon footprint and running the business

The project launched by Perinet Winery consisted of installing battery-powered isolated solar energy for its own consumption. The winery was receiving all its electricity from diesel-powered generators. This project consisted of installing 200 panels with a total power of 80 Kw and 60 batteries with a total power of 144 Kw.

The installation was designed by the Spanish company Solar. This clean, renewable energy source was expected to cut the winery's CO_2 emissions by 96 tonnes per year, in addition to eliminating noise pollution from the diesel-powered generators.

As mentioned earlier, Acero Watch (2021) decided to seek a second round of financing through crowdlending to fund a specific project. The project consisted of building a stock of pre-sold watches and supplies for e-commerce and for the 2021 Burgos Cathedral centenary campaign in authorised points of sale (watch shops, jewellers and possible alliances with Fundación VIII Centenary).

Therefore, the Perinet Winery project was a one-off sustainable project. In contrast, the Acero Watch project was related to business as usual.

4.2 Different crowdlending loans: a formalised collective loan versus a guaranteed loan

The Perinet Winery project sought 170,400 €. It could have been financed by a financial institution. However, the winery opted for crowdfunding because, in the words of the company's crowdlending applicant, '*it is quicker than a bank loan, in addition to having much more impact on our image as a company at the marketing level. It was the first time we used crowdfunding. We were not familiar with it before*.' These declarations show that image enhancement was an intrinsic motivation in the choice of crowdlending by the firm (Ryu and Kim, 2018; Sheneor and Munim, 2019).

Therefore, the project was financed through a collective crowdlending loan. This form of crowdlending is Peer-to-Business (P2B) lending, which refers to loans to companies.

Collective loans consist of pooling many small loans from individual investors. Partners, customers or employees of the company can also participate as investors in the collective loan. Surprisingly, however, the crowdlending applicant reported that '*most investors in this instance were outside the company. There were very few people from the local area. I assume they were investors from the platform who had already invested in similar projects*.' When platforms launch a campaign, they first offer it to their investor community.

Unlike crowdfunding, crowdlending does not require the borrower to offer a reward to lenders. However, Perinet Winery offered additional rewards to lenders, as expressed by the project applicant: '*Perinet is proud to have your support for our journey in becoming a more sustainable winery. As a thank you for your investment, we are offering the following gifts so that you can enjoy our winery and our wines:*

- *Investors lending up to €500: a visit with a tasting for two people*
- *Investors lending €525 to €1000: a visit with a tasting for two people and a bottle of wine*
- *Investors lending over €1000: a visit with a tasting for two people, a bottle of wine and a one-year membership to the Perinet Winemakers Club (with up to 20% off purchases of our wines)*

Once the collective loan has been formalised, each investor will receive a personalised code that they can exchange for their reward. This code must be used before 31 December 2021.'

The Acero Watch project sought only €15,000 and could have been financed by a bank. However, the company chose crowdlending, as explained earlier. The project was financed by an RGS-guaranteed loan. This form of crowdlending is an example of Peer-to-Peer (P2P) lending. Trust was conveyed by Acero Watch to future investors through the platform by explaining that 50% of the watches had already been sold, generating income close to the amount of financing requested. Therefore, investors faced little risk of not recovering the principal plus interest. In addition, if the company could not repay the loan plus interest, the RGS guarantee would help them pay because the entrepreneur was self-employed. Acero Watch did not provide additional rewards with the guaranteed loan.

4.3 Two platforms: Ecrowd! and MyTripleA

Ecrowd! was used by Perinet Winery. This Participatory Financing Platform (PFP) is licensed by the CNMV. It finances investments that involve technological or efficiency improvements and that generate a positive social or environmental impact. According to the crowdlending applicant, '*we chose this platform because we didn't know of any others. It was the first time we used crowdlending. The Ecrowd! manager provided us with this type of participation at all times. The basic terms were better than those of any bank. Also, some other wineries had already worked with them.*'

For the loan application, Ecrowd! made several demands of Perinet Winery: (1) an interview with the management; (2) a technical study and budget of the investment or the works to be carried out and (3) other documentation such as corporate tax returns (or audits from the year prior to the loan application), as well as VAT statements, the balance sheet and the income statement. Once they had provided this documentation, they signed a letter of intent.

Once Ecrowd! had accepted the request, it published the project on its platform so that investors could consult the proposal and decide whether to invest in the collective loan. Within five days, 100% of the target amount had been raised through the platform, although the estimated campaign duration was 24 days. The loan was then notarised. Ecrowd! did not impose conditions on Perinet Winery such as opening an account with another bank, taking out additional insurance policies or registering for credit cards or other types of contracts.

The advantage of Ecrowd! was that having the financing campaign on the Ecrowd! website offered a means of promotion for Perinet Winery. The company therefore received publicity by publicly investing in positive change and by financing it with loans from individuals instead of banks. The collective loan does not appear in the risk information centre of the Bank of Spain.

Ecrowd! and Perinet Winery agreed to the terms of the loan. Specifically, the terms of payment by Ecrowd! to the installation company were to pay an amount including VAT upon signing the contract electronically, in addition to the loan commissions. The rest was paid when Ecrowd! received the first copy of the agreement, minus the cost of the notary public if it had not already been paid for by Perinet Winery. Ecrowd! defined three deadlines for payment of the loan: one for signing the contract, one for sending all the equipment to the site and one for a much lower amount to start the solar energy installation. The terms stipulated a loan repayment duration of 72 months. Therefore, 72 monthly instalments were established. There was no obligation to repay any of the

principal in the first three months. The final due date was established as 25 November 2026, and the due date of the first monthly instalment was 25 December 2020.

The interest rates were 7.15% for late payment and 5.15% for the total. In both cases, the loan terms specified the amount due to investors (4% of the total interest and 6% of the late payment interest) and Ecrowd! (1.15% plus VAT of total interest and 1.15% plus VAT of the late payment interest). An agreement was reached regarding the opening costs (1.75% plus VAT) and the personal and unlimited guarantees of Perinet Winery.

Perinet Winery agreed to supply Ecrowd! with copies of all invoices and a copy of proof of payment as the works to complete the project were carried out. It also agreed not to assign, transmit or encumber the ownership and rights of the financed assets without the prior authorisation of Ecrowd!.

The investor relationship appears in the terms of the loan. It is also published on the Ecrowd! website, along with the amounts contributed.

Table 3 shows that 264 investors participated in the loan. The investments ranged in size from €50 (the minimum investment allowed by Ecrowd! and in fact most platforms) to €12,000. Half of the investments were between €300 and €12,000, and the other half were between €50 and €275. More than half of these smaller investments were €100 or less. The most common investment was €50. However, this trend was not observed in the range of €300 to €12,000. Finally, the terms of the contract stipulated the repayment schedule for the collective loan.

Table 3 Distribution of Ecrowd! investments in the Perinet Winery project

Investment (€)	*11,400–12,000*	*3000*	*2000–2500*	*1775–1975*	*1500*	*1050–1300*	*1000*	*800–950*	*625–775*
No. investors	2	10	9	4	6	9	16	6	7
Investment (€)	550–600	525	500	400–475	325–375	300	275	250	225
No. investors	8	6	16	9	4	20	4	12	3
Investment (€)	200	175	150	125	100	75	50		
No. investors	17	2	12	2	31	15	33		

Acero Watch used MyTripleA, a leading platform in Spain with extensive experience working with RGSs. This platform does not specialise in any area. It is open to projects of any type. However, they must be pre-approved by the risk department.

This crowdlending portal offers investors two products: medium- to long-term loans and short-term investments in factoring or advance invoices. With the medium- to long-term loans, investors choose between safe investments or medium-risk profitable investments. These investments are overseen by the CNMV. In the case of factoring or advance invoices, investors recover their investments and short-term profitability by investing in company invoices. This investment is not overseen by the CNMV. In the case of medium- or long-term loan investments, investors are not charged administration and management fees and are allowed to make investments as small as 50 €. Investors can choose between guaranteed loans (e.g. in the case of Acero Watch) or higher-risk investments. Investors can reinvest repayments and are provided with a tool to manage their investments.

The Acero Watch entrepreneur had requested a financing proposal from the bank. The terms were unattractive, despite the entrepreneur's close relationship with the bank. In the words of the risk analyst '*I advised him to go to an RGS because they would cover*

the operation, and the interest rate would be 2 to 2.5%. Although there's a commission associated with a guarantee, you receive a discount for being self-employed. Since he did not need to change banks, I advised him to use a crowdlending platform, namely MyTripleA.'

Acero Watch did not have to meet any requirements to receive a guaranteed loan because RGSs are designed to help applicants and finance projects as long the applicants finance the project with their own funds. The entrepreneur already had what he had asked for in the form of equity, subsidies received for prototypes and sales of the initial units.

When MyTripleA accepted the loan request by Acero Watch, it published the project on its platform so that investors could consult it and participate in the guaranteed loan. The total financing was collected in one day on MyTripleA, although the estimated duration was longer. The loan was then notarised.

MyTripleA did not impose conditions on Acero Watch such as opening an account with another bank, taking out insurance, applying for credit cards or similar.

The terms of payment to investors by Acero Watch (or the RGS if necessary) were a duration of 36 months with 36 monthly instalments (principal plus interest). The entrepreneur had to return the principal plus interest from the first month onwards. The final due date is 4 January 2023, and the payment date of the first monthly instalment was 4 January 2020.

Late payment interest was not applied. Total interest was 2% plus 12-month Euribor. The advisory expenses in the publication of the project were 1.5% plus VAT. The analysis and structuring expenses of the operation were 2.5% plus VAT. MyTripleA does not apply administration and management fees or opening costs. The loan was guaranteed by the RGS. This company would return the loan to investors within 90 days in the case of default. Investors therefore faced no risk.

Unlike Ecrowd!, MyTripleA does not publish the relationships of investors and their pledges. Eight investors invested between €150 and €5000. MyTripleA has more than 5000 investors who fund the proposals posted on the platform.

4.4 Results of the comparative analysis

As explained in the previous sections, Table 4 summarises the comparative analysis of the crowdlending cases of these two companies. The table highlights the common features and differences between the two cases.

First, although Acero Watch viewed crowdlending as more attractive than bank financing, Perinet Winery chose crowdlending because other wineries had done so before. These decisions may be related to different factors, one of which is the stage of the business life cycle (Paschen, 2017). In the start-up or birth stage, companies still lack resources. In the maturity stage, companies with resources seek new forms of financing that also let them promote their brand and product to future investors and improve their image or reputation.

As a discipline, crowdlending lies somewhere between finance and marketing. It helps companies secure financing whilst enhancing their image (Sheneor and Munim, 2019), depending on the type of project for which they request funding. An example of this enhanced image is Perinet Winery (see Table 4). The use of rewards in crowdlending could encourage those who are unfamiliar with this form of financing to use it. It could also accelerate campaigns by offering investors an extra reward in addition to the interest on the loan.

Table 4 Comparative analysis of the crowdlending cases of Acero Watch and Perinet winery

Elements	*Characteristics*		*Points*	
	Acero Watch	*Perinet Winery*	*Common features*	*Differences*
Life cycle	Introduction	Maturity	Innovation	Stages of the business life cycle
Sector	Quality watchmaking	Quality wine	Market segment	Different sectors
Project	Entrepreneurship	Differentiation	Need for funding	Entrepreneurship/investment in one-off project
Financing	Through third parties	Through third parties	Crowdlending	Guaranteed loan/formalised loan
Platform	MyTripleA	Ecrowd!	Crowdlending	General/specialised
Principal	€15,000	€170,400	None	Amount
Delay interest	None	7.15%	None	One demands it, the others do not
Total interest	2% plus Euribor	5.15%	None	Variable/fixed
Due date	36 months	72 months	None	Months without returning principal and interest
Risk	Low	High	Investment loan	Guaranteed by RGS/not guaranteed by RGS
Terms	Guarantee	No guarantee	Return principal plus interest	Guaranteed by RGS/not guaranteed by RGS
Rewards	None	Product-related	None	Depending on investments

Notably, within crowdlending, the terms of the loan may vary in relation to the obligations of the borrower to repay the principal plus interest. Guaranteed loans make borrowers exempt from repaying the principal plus interest if the financed project is unsuccessful. The principal and interest are covered by a separate company. This type of loan contributes to the success of the funding for the project because there is no risk that lenders will default on the repayment of the principal plus interest. The Acero Watch project was successfully completed thanks to the security offered by a guaranteed loan.

Although borrowers and lenders were geographically close in the case of the Acero Watch reward-based crowdfunding campaign, they were not in the case of the crowdlending campaign. In the case of Perinet Winery, the nature of the project (renewables) and the specialised platform (Ecrowd!) were more attractive than the geographical proximity of the lenders to the borrowers.

5 Conclusions, limitations and future lines of research

This section presents two types of conclusions linked to the aims of the paper. The first aim was to analyse the combined use of reward-based crowdfunding and crowdlending to finance business ventures. The second aim was to analyse the use of crowdlending by two companies in different sectors and different stages of the business life cycle.

Regarding the first aim, several conclusions can be stated. As described by Paschen (2017), entrepreneurs choose crowdfunding during the pre-start-up stage of the business life cycle and crowdlending during the start-up stage. They use crowdfunding for two purposes: financial (i.e. securing funding) and non-financial (i.e. product validation, market validation and product promotion). Therefore, the line separating crowdfunding from crowdlending depends on the stage of the business life cycle in which the company finds itself. Ultimately, the entrepreneur's motivation for using crowdfunding was intrinsic because the main interest was in validating the idea and securing funding for prototypes. In addition, the entrepreneur's motivation was directly related to the main goal, namely starting a business.

Regarding the second aim, Table 4 shows the common features and differences between the two cases. This information leads to several conclusions. First, companies use crowdlending not only in the start-up stage of the life cycle (Paschen, 2017) but also in the maturity stage. In this stage, companies use crowdlending to achieve differentiation in a given market and a heterogeneous, competitive environment. Crowdlending can be applied at various stages of the business life cycle (e.g. start-up and maturity) depending on the financing needs of the firm. Again, the stage of the business life cycle determines when crowdlending should be applied.

Second, as explained by Ziegler et al. (2018), this study confirms the existence of variations in crowdlending such as reward-based crowdlending and crowdlending with guaranteed loans. The differences in the types of loans and the terms offered by crowdlending platforms mean that companies must be aware of their options so that they can decide which one best suits their needs.

Third, funds are raised quickly, and this process depends less on the target amount than on the content of the project (Paschen, 2017) and the platform. Using a platform that specialises in a specific area and targets an audience with a high awareness in that area can influence the speed with which the funding is raised.

Fourth, although geographical proximity between lenders and borrowers is an important factor in the success of crowdfunding campaigns, other factors such as the type of loan, the nature of the project and the platform specialised in the type of project are influential in crowdlending.

Finally, for borrowers, motivation depends on the role of the crowdlending applicant. If he or she is an entrepreneur, the borrowers will have a self-oriented motivation. That is, there will be an emotional connection with goal attainment, and the behaviour will be more rational. If the crowdlending applicant is an employee, investors are intrinsically motivated due to the company's positive attitude towards CSR and due to their gregarious behaviour (i.e. some investors blindly follow others).

Regarding the limitations of this study, the results have a certain lack of generalisability. The aim is to correct this limitation with future quantitative research. Examples of such studies include analysing the success rate of projects financed by crowdlending depending on the platform (i.e. specialist vs. generalist and large vs. small communities of investors) and the type of loan. In the words of Woodside (2010, p.4) 'all case study researchers make mistakes but usually do improve with practice.'

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A synthetic indicator of market leaders in the crowdlending sector

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Abstract

Purpose – This study contributes to the limited literature on crowdlending by providing a data-driven analysis of the sector. A synthetic DP2 indicator is proposed to identify the leaders of the crowdlending market, the key factors behind their success and the medium-term competitive implications.

Design/methodology/approach – The study examines 17 crowdlending platforms and eight performance indicators. The information provided by these indicators is aggregated using a synthetic indicator based on the P_2 Distance (DP2) method.

Findings – Mintos, Evoestate, Peerberry, Bondster and Fellow Finance are the leading platforms. This method reveals the key variables in the identification of market leaders, namely year-on-year variation in the number of investors and year-on-year variation in lending per investor. The leaders in terms of lending volumes should not take their current situation for granted. Small and medium-sized platforms are pushing hard and may overtake the incumbents as market leaders.

Practical implications – Financial intermediation through crowdlending is becoming an increasingly popular alternative to traditional models. Changes in the sector are expected in the coming years due to the rise of platforms with a moderate amount of lending and solid year-on-year improvement. To become leaders and to attract both lenders and borrowers, platforms are encouraged to improve the information that they provide.

Originality/value – This paper offers the first analysis of market leadership in the crowdlending sector. It analyses the competitive market of the crowdlending sector based on its actors and key factors. These factors explain the differences in the market position of different platforms. Based on this analysis, the trends in this sector can be identified. This study is exploratory, so it offers empirical data that can be useful in the development of theories that apply to the sector.

Keywords Crowdlending, Synthetic indicator, Financial intermediation, Digital economy

Paper type Research paper

1. Introduction

New financial services based on information and communication technologies (ICTs) are already challenging the traditional financial sector (Maier, 2016; Fernandez *et al.*, 2019). In the last 15 years, several online financial intermediation systems have been developed. Digital technological ecosystems provide a platform to communicate and share products and services to existing and potential customers (Oppong *et al.*, 2020). Entrepreneurs have been found to use microfinance in contexts where there are severe constraints (Kimmit and Dimov, 2021). These so-called crowd financing platforms directly connect investors with individuals or companies seeking funding. One such group of systems consists of *crowdlending* systems. These systems, which offer financial intermediation through online platforms, enable a large number of investors to make small loans to a wide range of projects (Mollick and Robb, 2016). This process does not involve banks or other traditional financial intermediaries (Schneuwly, 2014).

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Lending through online platforms has grown massively in the last 10 years, attracting the attention of both investors and regulators (CGFS, 2017; Buchak *et al.*, 2017). The volume of loans intermediated through crowdlending platforms is difficult to estimate due to the scarcity of data on this market. However, specialist sources have estimated annual intermediated loans at around $241bn, with this annual amount expected to increase to $301bn by 2025 (Statista, 2021). The rise of these financing systems has already created real competition for the traditional financial industry. Although inertia and loyalty play a major role in the retention of business by traditional financing systems (Madill *et al.*, 2002), resentment towards the financial system can prove a powerful force in changing this inertia (Cai *et al.*, 2016; Lundahl *et al.*, 2009). Crowdlending platforms can potentially capitalise on this resentment, with image playing a crucial role (Manrai and Manrai, 2007). Crowdlending platforms compete to ensure that potential borrowers can finance their projects within a reasonable timeframe (Maier, 2016). Therefore, platforms strive to position themselves as the focus of capital attraction (Rogers, 2003; Ghahtarani *et al.*, 2020). The number of borrowers attracted by a platform influences the number of investors who choose that platform. Likewise, the amount of available funding influences the potential to attract projects (Havrylchyk and Verdier, 2018). The leaders of this relatively new sector have yet to emerge, and the contribution of this research is closely linked to this gap.

The present study is exploratory. No theoretical framework applicable to this type of activity can be used for a structural analysis of the market. However, certain theoretical frameworks have been applied to this sector to achieve other aims, as discussed later. Therefore, the aim of this study is to offer insight that not only contributes to the academic literature but also serves as a basis for future theoretical or applied research. Based on the review of the academic literature, a specific research gap was identified. No recent studies of the structure of this sector have explored its competitive framework (Coakley and Huang, 2020) or success factors from a dynamic perspective. Therefore, a need arises to add to earlier studies of the competitive context in the crowdlending sector at the international level (Agrawal *et al.*, 2011, 2014; Bholat and Atz, 2016). In addition to being somewhat out of date, these studies do not examine the factors driving change in market leadership. Specifically, this paper provides a ranking of the leading platforms in the crowdlending sector. This ranking is based on a synthetic indicator that aggregates information from several representative crowdlending subindicators. This study answers two research questions. First, which crowdlending platforms are leading the sector? The answer to this question will reveal the competitive framework in this sector and the profile of its leading firms. Second, which of the simple indicators have the greatest discrimination power in this index? That is, what are the key factors that define the leaders in this sector, as well as the potential changes in market leadership in the future? This research contributes to the academic literature on a virtually unexplored topic. Specifically, it analyses the competitive framework of the crowdlending sector in terms of the actors and factors that define it. As noted by Coakley and Huang (2020), there are very few empirical crowdlending studies. Therefore, this study contributes to filling a recently identified research gap.

To achieve the proposed aim, the study examines 59 preselected crowdlending platforms and eight preselected performance indicators. The information provided by these indicators is aggregated using a synthetic indicator based on the P_2 Distance (DP_2) method described by Pena (1977). This method has recently received attention from economics and business science researchers (Rodríguez *et al.*, 2019; Guaita *et al.*, 2020). Its properties and advantages with respect to alternative methods are described later in the paper. In short, its main strengths are that it eliminates redundant information from several indicators and allocates an objective weight to each indicator (Martín *et al.*, 2019a, b).

This paper continues as follows. First, a review of the main crowdlending studies is provided. This review offers insight into notable lines of research, conclusions and theoretical

frameworks. The next section presents the method adopted to construct the synthetic DP_2 indicator and the data sources used for this purpose. Next, the results are provided, revealing the ranking of the platforms in this sector. The factors that affect the position of these platforms in the ranking are also presented. The paper continues with a discussion, which links the research questions to the results and the literature. Finally, conclusions, recommendations and future lines of research are discussed.

2. An academic perspective of the development of crowdlending services

Technological advances have broadened the range of services offered within the financial industry (Niemand *et al.*, 2018). Some services have emerged through new financial technology companies, known collectively as "fintech" (Maier, 2016). One recent example is crowdlending. As explained earlier, crowdlending platforms offer financing in the form of loans derived from small contributions by individuals (Mollick and Robb, 2016). Through a crowdlending platform, these loans are linked to the needs of borrowers (Belleflamme *et al.*, 2015), which may be individuals (P2P) or entrepreneurs (P2B) seeking to finance their ventures. In both cases, the crowdlending platform first assesses the proposed project. If accepted, the project then appears on the platform, and potential investors can view details of the project. The risk assessment is therefore the responsibility of the platform and the investors themselves (Slimane and Rosseau, 2020). This system enables the sharing of know-how and collective intelligence (Chanal and Caron-Fasan, 2010), thus empowering the crowd (Dunleavy *et al.*, 2006). The first P2P business lending portals were Funding Circle and Thin Cats, both founded in the United Kingdom in 2010, although a P2P crowdfunding portal first appeared in 2004 in the form of Zopa in the United Kingdom (Coakley and Huang, 2020).

Crowdlending differs from other forms of crowd financing. In crowdlending, investors only invest in response to specific loan requests. Essentially, these platforms act as brokers between investors and borrowers, applying various intermediation fees during loan origination (Bholat and Atz, 2016). This distinction is the main difference with other online financing systems such as crowdfunding, where investors acquire a stake in another company (Ahlers *et al.*, 2015; Mastrangelo *et al.*, 2020). Crowdequity is one version of this system focussed on start-ups. In contrast, with donation-based platforms, investors are offered no compensation for their investment (Mollick and Robb, 2016). In reward-based crowd financing (Belleflamme *et al.*, 2015), there is no legal claim to any asset (Kshetri, 2015), and compensation takes the form of gifts or products offered by the funded company. Some portals support more than one crowd financing model (Dushnitzky *et al.*, 2016). On crowdlending platforms, investors can see the stage of the business life cycle of the financed company. The duration of loans ranges from 12 to 60 months, and they can be sold in secondary markets before maturing (Bholat and Atz, 2016). Some platforms specialise in loans for start-ups or new business ideas, whereas others specialise in financing mature companies (Zhang and Liu, 2012).

The potential of crowdlending has been boosted by the greater security offered by blockchain technology (Glaser, 2017; Dorfleitner and Braun, 2019; Porras *et al.*, 2019; Aslam *et al.*, 2021). In addition, it offers advantages such as flexibility and decentralisation (Astrauskaitė and Paškevi, 2018; Lehner, 2013). This system is also associated with lower costs, less inefficiency and larger numbers of potential investors (Christensen, 2013; Dorfleitner and Braun, 2019). Finally, crowdlending generally involves lower interest rates than traditional finance, enables funds to be raised quickly and requires fewer guarantees than bank financing (Pignon, 2017). From the point of view of lenders, returns are often higher than those on bank deposits (Lin *et al.*, 2013), and investors are able to invest in several projects (Bruton *et al.*, 2015). Ultimately, these platforms decentralise credit risks by distributing these risks across a group of lenders (Lenz, 2016). These advantages, together with the changing context and needs of businesses (Veselovsky *et al.*, 2018), have caused the

volume of crowdlending to increase considerably in a short time (Astrauskaitė and Paškevi, 2018; Lehner, 2013). P2P lending is becoming more common, not only in developed economies but also in emerging markets (Zhang *et al.*, 2016). These financing models can make huge contributions to the development of social finance (Brett, 2016). Crowdlending is considered a sustainable form of investment associated with both financial and social benefits (Schweizer *et al.*, 2017). This system of financial intermediation increases social awareness thanks to its associations with the basic concepts of the collaborative economy (Sanchís-Pedregosa *et al.*, 2020). This type of intermediation platform makes certain business models possible that would otherwise not be viable (Schweizer *et al.*, 2017). Moreover, these systems provide credit access to low-income individuals who would otherwise be unable to secure financing, whilst allowing investors with limited resources to invest in projects (Ashta and Assadi, 2009). This financing system can be viewed as a form of collaboration with other stakeholders. It is somewhat more beneficial for small and medium-sized enterprises (SMEs; Ratten *et al.*, 2019; Ode and Ayavoo, 2020). SMEs may even build collaborative links with other firms, in this case through financing, which can lead to business-to-business (B2B) commerce practices. These B2B practices offer additional advantages (Hamad *et al.*, 2015).

Despite these advantages, there are also weaknesses with this system. The main disadvantage relates to insolvency, which prevents borrowers from recovering their investment (Sanchís-Pedregosa *et al.*, 2020). The desire to prevent insolvency has led to the emergence of new crowdlending models where the platform guarantees the recovery of the investment and interest (Ahern, 2018). Another problem stems from information asymmetries, which can affect transactions on these platforms (Agrawal *et al.*, 2014). A more detailed discussion of the benefits of collective financing is provided by De Luca *et al.* (2019).

The following paragraphs complement the discussion so far by summarising other streams of research on the new phenomenon of crowdlending. The crowdlending academic literature has two limitations: its novelty and the lack of data on loans (Adhami *et al.*, 2019). This lack of data limits scholars' ability to conduct empirical studies (Coakley and Huang, 2020). Nevertheless, there have been a number of applied studies on the crowdlending industry (Agrawal *et al.*, 2011; Milne and Parboteeah, 2016; Cumming and Hornuf, 2020; Franks *et al.*, 2020), its implications for the banking sector (Haldane, 2013) and the role of these platforms as a marketplace for SMEs (Cumming and Hornuf, 2017).

Some research has focussed on the factors involved in attracting and retaining investors (Emekter *et al.*, 2015; Serrano-Cinca *et al.*, 2015; Martínez-Climent *et al.*, 2021), as well as the reasons for switching from traditional financing systems to crowdlending models (Maier, 2016; Coakley and Huang, 2020). In prior studies of user attraction and retention, one of the most commonly used theoretical frameworks is the technology acceptance model (TAM; Davis *et al.*, 1989) and its variants (Venkatesh and Bala, 2008). This model focusses on the processes of user adoption of technology-based innovations (Davis *et al.*, 1989; Agrebi and Jallais, 2015). A specific line of research relates to the study of the motivations that lead entrepreneurs to use these platforms (Belleflamme *et al.*, 2010). Another line of research focusses on the analysis of the characteristics of investors and their relationship with project success (Sanchís-Pedregosa *et al.*, 2020; Lin and Viswanathan, 2016). The success factors of loan requests have also been analysed (Sanchís-Pedregosa *et al.*, 2020). Such factors include the credit rating, interest rate, period, amount and entrepreneur's image and experience (Cumming and Hornuff, 2017; Yum *et al.*, 2012; Feng *et al.*, 2015; Cummins *et al.*, 2018; Dorfleitner *et al.*, 2016; Franks *et al.*, 2020). The keys to success of crowdlending platforms have been studied from different perspectives, one of which is the theory of the co-dependent organisation. Applied to this context, this theory suggests that a platform is successful if the platform, the loan applicants and the investors form a system of co-dependence (Ahrne *et al.*, 2016; Nielsen, 2018).

The processes of information transfer between investors have also been studied (Vismara, 2016), as have the information asymmetries in intermediation on these platforms (Yum *et al.*, 2012; Greiner and Wang, 2010). Numerous analyses of information asymmetries have been performed (Adhami *et al.*, 2019). Many of these analyses are based on the theory of reasoned action (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980), as well as the theories of incomplete information and adverse selection (Stiglitz and Weiss, 1981). Several authors have analysed how collective intelligence is utilised (Berkowitz and Souchaud, 2019; Chanal and Caron-Fasan, 2010). Studies of collective intelligence indicate that group decisions are more efficient than those of individuals (Surowiecki, 2004; Becker *et al.*, 2017). These processes have been studied from the perspective of the traditional theory of collective intelligence (Surowiecki, 2004). Few studies have gathered evidence on whether the returns on crowdfunded loans reflect their risks (Bento *et al.*, 2019). Studies of risk analysis are generally based on models of changes in attitude and trust-building processes (Greiner and Wang, 2010). Studies have also used pecking order theory, which indicates that firms preferring debt financing have high leverage ratios (Denis and Mihov, 2003). Some authors have focussed on the social aspects of these financing models, such as how these platforms can provide finance to the poorest areas of society (Singh *et al.*, 2018). A final line of research examines the impact of the design and usability of platforms on their success (Adhami *et al.*, 2019).

3. Method

3.1 Data selection and collection

Difficulties in accessing complete data on crowdlending have hindered applied research in this area. In this study, 59 active crowdlending platforms were preselected. These platforms covered almost the entire crowdlending sector in 2021. These platforms operate internationally. In fact, the academic literature indicates that geographical proximity has little influence on the investor–borrower link (Agrawal *et al.*, 2011; Bholat and Atz, 2016). Eight indicators of the current status and trends of the sector were also defined. These indicators are representative of these platforms' activity. The selection of indicators was heavily conditioned by data availability, which, as mentioned earlier, was extremely limited. All available data on the level of activity and performance were included in the study, even though this selection criterion reduced the number of platforms included in the study. The indicators are the total amount of lending intermediated on the platform in 2020, the annual change in this amount from 2019 to 2020, the number of investors in 2020, the annual change in number of investors from 2019 to 2020, the average returns in 2020, the lending per investor in 2020, the annual change in lending per investor from 2019 to 2020 and the ratio of supply to demand in 2020. These indicators are representative of the current status and trends of the sector, and crucially, data on these indicators are available for the major crowdlending platforms. Of the 59 preselected platforms, 17 had data on these eight indicators. These 17 platforms accounted for 78.6% of crowdlending credit in 2020, thereby offering reasonable coverage of the sector. Only these 17 platforms provided information on all the selected indicators. These platforms were therefore considered the most transparent. Data collection was made possible thanks to collaboration by www.todocrowdlending.com. This website provided the data following a specific request for the current study. According to the available data, the objective conclusion is that the performance of the platforms not included in the study varies greatly. The lack of data makes it difficult to give an accurate assessment in this regard.

3.2 Creation of the synthetic indicator

To create a synthetic indicator of the leading crowdlending platforms, the P_2 distance method described by Pena (1977) was used. This method made it possible to rank the platforms using a composite indicator that synthesised the information captured by the eight variables described earlier. This method was developed by Pena (1977) based on the idea of the

Ivanovic (1974) distance. The weighting system of the simple indicators was modified by replacing the correlation coefficient with the coefficient of determination, which acted as a corrective factor. This method has several advantages with respect to alternatives for constructing composite indicators such as data envelopment analysis (DEA) and principal component analysis (PCA). However, given the aims of this study, DEA could offer a viable alternative for analysis because it is a valuable method to measure the productive efficiency of decision-making. The DP_2 method eliminates redundant information provided by simple indicators when combined in a synthetic indicator. It also avoids the arbitrary assignment of weights to these indicators and resolves the problems that arise when aggregating information from variables that use different units of measurement (Somarriba and Pena, 2009). Other properties of the DP_2 are described in detail by Rodríguez *et al.* (2016, 2018a, b), Martín *et al.* (2019a, b) and Guaita *et al.* (2019).

The aim of this study is to identify the leading platforms in the crowdlending sector. To achieve this aim, a synthetic indicator is used. This indicator is based on variables that are representative of the activity of the platforms in this sector. DP_2 offered an excellent method to determine the differences between crowdlending platforms because this method uses deviation to a minimum to analyse these differences. Each platform was compared with a hypothetical baseline reference platform that took the minimum value in all simple indicators, thus giving it a value of zero on the DP_2 indicator (Rodríguez *et al.*, 2018a, b). The SD was used to overcome the problem of data expressed in different units. The variables were thus converted into abstract units (Somarriba and Zarzosa, 2016).

According to Pena (1977), the DP_2 indicator for the j-th platform is calculated as follows:

$$DP_2 = \sum_{i=1}^{n} \frac{d_{ij}}{\sigma_i} \left(1 - R^2_{i,i-1,\ldots,1}\right) \text{con } i = 1, \ \ldots., n; j = 1, 2, \ldots, m$$

where:

X_{ij} is the value of the i-th indicator for the j-th platform;

$d_{ij} = |x_{ij} - xi^*|$ is the difference between the value of the i-th indicator for the j-th platform and the minimum for the i-th *indicator* across all platforms;

n is the number of partial indicators;

σ_i is the SD of the i-th partial indicator; and

$R^2_{i,i-1,i-2,\ldots1}$ is the coefficient of determination for the regression of the partial indicator xi on $x_{i-1}, \ x_{i-2}, \ \cdots, x_1$ (already included), such that $R^2_1 = 0$.

The coefficient of determination ($R^2_{i,i-1,i-2,\ldots1}$) was used to measure the proportion of the total variance of the variable x_i explained by the linear regression with respect to the variables $x_{i-1}, \ x_{i-2}, \ \cdots, x_1$ (i.e. those that had already been included in the synthetic indicator). Pena (1977) defined the *correction factor* as $(1 - R^2_{i,i-1,i-2,\ldots1})$. The purpose of this correction factor when constructing a synthetic indicator is to eliminate duplicated information provided by the partial indicators, given the information provided by the indicators already included in the synthetic indicator. This duplication of information occurs as a result of the correlation between variables (Zermeño *et al.*, 2020). This procedure ensures that the DP_2 only takes in new information provided by each simple indicator (Somarriba *et al.*, 2015) and rejects redundant information. The correction factors act as weights for the partial indicators. The arbitrary assignment of weights to the partial indicators is thus avoided. If there is no correlation between partial indicators, their weighting in the indicator construction process would be the same.

The DP_2 synthetic indicator has all the mathematical properties required of an aggregation method (Pena, 2009). For these properties to hold, all variables must progress in the same direction (Salinas *et al.*, 2020). That is, an increase in their value means an improvement in the outcome measured by the synthetic indicator (in this study, better market position). There was no need to transform any of the preselected variables given that higher scores in all indicators reflected an improvement in the outcome. The DP_2 calculation method is based on an iterative process. In this process, the order in which partial indicators are included depends on the amount of information they provide as regards the outcome measured by the synthetic indicator. The absolute correlation coefficient for each variable with respect to the synthetic indicator was used to order the variables from highest to lowest correlation. Iterations were performed until the values of the synthetic DP_2 indicator converged, as described by Zarzosa (1996, 2005).

3.3 Amount of individual relative information provided to the DP_2 synthetic indicator and the discrimination power of the variables

In addition to the construction of a synthetic indicator of the leading crowdlending platforms, this method enables identification of the partial indicators that provide the greatest individual information. Therefore, the most decisive variables in explaining variations in the indicator between platforms can also be identified. To calculate the amount of individual relative information provided by the simple indicators, their discrimination power must first be calculated. The Ivanovic discrimination coefficient (1974) was used for this purpose. This coefficient reflects the degree of inequality in the distribution of the values for each simple indicator for the 17 selected platforms and is defined as follows:

$$\mathrm{DC} = \frac{2}{m(m-1)} \sum_{j,l>j}^{k_i} m_{ji} m_{li} \left| \frac{x_{ji} - x_{li}}{\overline{X_i}} \right|$$

Where:

m is the number of platforms in the set P;

x_{ji} is the value of the simple indicator X_i for platform j, and x_{li} is the minimum value taken by simple indicator X_i for platform l;

m_{ji} is the number of selected platforms where the value of X_i is x_{ji};

$\overline{X_i}$ is the mean of X_i; and

k_i is the number of different values that X_i takes in the set P.

The Ivanovic–Pena global information coefficient is calculated by combining the Pena correction factor (1977) and the Ivanovic discrimination coefficient (1974). This coefficient can be used to determine the overall information that the partial indicators provide to the synthetic indicator DP_2. This coefficient is defined as follows:

$$\mathrm{CIP} = \sum_{i=1}^{n} \mathrm{DC}\left(1 - R^2_{i,i-1,i-2,\ldots 1}\right)$$

Where n is the total number of partial indicators, $1 - R^2_{i,i-1,i-2,\ldots 1}$ is the Pena correction factor and DC_i is the Ivanovic discrimination coefficient. Finally, as per Zarzosa (1996), the individual relative information coefficient is defined as follows:

$$\alpha_i = \frac{\mathrm{DC}_i\left(1 - R^2_{i,i-1,i-2,\ldots 1}\right)}{\mathrm{CIP}}$$

This coefficient measures the relative importance of each simple indicator within the synthetic DP_2 indicator. Both the amount of useful information provided by each variable and its discrimination power are considered. The values of this coefficient range from 0 to 1. From an applied perspective, in this study, it helped explain differences between platforms in relation to the objective of creating a ranking of leading platforms.

4. Results

Using the method described in the previous section, a synthetic indicator of the leading crowdlending platforms was constructed. Table 1 presents the partial indicators employed in this study, which provide the information used to construct the synthetic indicator. Table 1 also lists the 17 selected platforms. The table indicates that the largest amount of credit was intermediated via Mintos (5,880m euros in 2020), followed by Twino (741m euros) and Fellow Finance (692m euros). In terms of number of investors, Mintos had the most (358,456 investors in 2020), followed by Housers (125,125) and Estrategu (67,756). The highest returns in 2020 were offered by projects listed on Bondster (14.95%), followed by those on Mintos (12.98%) and Lenndy (12.34%). In terms of the ratio of supply to demand, the best platforms were Debitum Network (2.41) and Evoestate (1.33).

Table 2 shows the values for the absolute correlation coefficient. This coefficient determines the order in which the variables enter the indicator construction process. The correction factor indicates the amount of new, non-redundant information contributed by the partial indicator when included in the construction of the synthetic indicator. The first variable included in the estimation was total annual lending (highest correlation coefficient). Thus, 100% of the information provided by this indicator was included in the DP_2 indicator. The rest of the indicators made smaller contributions in terms of the information they added to the process, although the contribution was at least 12% in all cases. The partial indicators that provided the most new information to the synthetic indicator were those that referred to

Platform	Lending (million €)	Var. lending	No. investors	Var. investors	Return	€ per investor	Var. € per investor	Ratio sup-dem
Bondster	53.6	47.74%	11,030	25.55%	14.95%	4859.5	17.67%	0.69
Debitum network	30.6	126.00%	5,941	39.76%	8.65%	5150.6	61.71%	2.41
Estateguru	287.2	61.24%	67,756	67.60%	11.52%	4239.0	−3.79%	0.82
Evoestate	3.7	291.49%	3,884	185.17%	10.91%	947.5	37.28%	1.33
Fellow finance	692.0	22.05%	17,078	11.50%	9.47%	40520.0	9.45%	0.79
Growly	25.5	12.30%	5,993	25.38%	6.57%	4251.6	−10.43%	0.79
Housers	120.3	9.88%	125,125	6.79%	8.59%	961.6	2.90%	0.30
Inversa	8.5	284.09%	750	112.46%	7.43%	6294.0	0.99%	0.01
IUVO	153.9	47.13%	23,259	29.33%	9.20%	6615.5	13.76%	0.96
Lenndy	38.5	14.19%	8,666	16.73%	12.34%	4438.0	−2.17%	−0.45
Mintos	5880.9	27.77%	358,456	43.55%	12.98%	16406.3	−10.99%	−0.27
Monethera	5.1	0.20%	1,900	−29.34%	11.30%	2689.5	41.80%	1.89
Peerberry	357.5	86.56%	29,272	62.62%	12.46%	12211.7	14.72%	0.65
Trine	45.4	42.15%	11,460	10.43%	6.20%	3958.1	28.73%	2.45
Twino	741.6	19.75%	23,308	19.48%	10.46%	31815.7	0.22%	0.10
Viainvest	242.1	26.66%	19,334	35.24%	12%	12521.5	−6.35%	−0.31
Zank	59.1	41.18%	11,858	14.73%	8.54%	4987.4	23.06%	0.11

Source(s): www.todocrowdlending.com

Table 1. Partial indicators (data for 2020 and variations from 2019 to 2020)

year-on-year variation in the number of investors (99.71%), returns (89.99%), lending per investor (60.00%) and year-on-year variation in lending per investor (59.71%).

Following the analysis of the structure of the synthetic indicator, the next step was to determine which partial indicators explained most of the differences between the platforms in the ranking. The individual relative information coefficient (Zarzosa, 1996) was used for this purpose. This indicator was calculated by combining the useful information provided by each partial indicator (expressed as the correction factor) with its discrimination power (expressed as the Ivanovic discrimination coefficient). Table 2 indicates that the combined relative contribution of three of the eight indicators was 71.3%. These indicators were total lending, year-on-year variation in the number of investors and year-on-year variation in lending per investor. The remaining five indicators contributed 28.7% of the information. Therefore, these three indicators largely explained any differences in the market position between the platforms considered in this study.

The last step in the presentation of the results consists of presenting the DP_2 synthetic indicator of the leading crowdlending platforms. Table 3 shows that, according to this method, the leading platform is Mintos. This platform also accounted for the largest amount of lending. It is followed in second place by Evoestate. This platform is not ranked highly in terms of the amount of lending, but its high overall ranking owes to excellent indicators in variation over time and above-average returns. Peerberry is the third-ranked platform. It ranks sixth in terms of total lending, and it improved favourably from 2019 to 2020, offering high returns and a high level of investment per investor. The lowest-ranked platforms are Trine, Housers and Growly. This low ranking is influenced by below-average data in the three key indicators of total lending, year-on-year variation in number of investors and year-on-year variation in average investment per investor. The only exception is the year-on-year variation in investment per investor associated with Trine. It is important to emphasise that the lowest positions in the ranking are not occupied by platforms with poor market position but platforms that occupy the lowest positions in a ranking of market leaders. The platforms included in this list are the most transparent in terms of the data they disclose. Therefore, merely appearing in this ranking is a sign of a strong market position and trust.

5. Discussion

Crowdlending platforms have developed considerably in recent years. Competition between platforms is becoming increasingly fierce. These companies compete to secure a strong position in the market because their success largely depends on their ability to attract both lenders and borrowers. The perceived image of the platform, and thus its position in the market, is critical. Research on the crowdlending sector remains scant. No studies have analysed the sector's competitive framework (Coakley and Huang, 2020), hence the relevance of the present study's contribution. Based on the development of a synthetic indicator of the

	Absolute corr. coeff.	Correcting factor	Ivanovic discr. coeff.	Rel. info. coeff.
Lending	0.63199	1.00000	0.11905	25.5%
Return	0.58376	0.89953	0.02845	5.5%
Var. investors	0.52814	0.99713	0.10144	21.7%
No. investors	0.49971	0.12804	0.10664	2.9%
Var. lending	0.38444	0.13638	0.09264	2.7%
€ per investor	0.28278	0.60002	0.08156	10.5%
Var. € per investor	0.09933	0.59714	0.18893	24.2%
Ratio sup-dem	0.07109	0.24287	0.13721	7.1%

Table 2. Synthetic indicator structure and relative importance of partial indicators

Platform	DP_2 indicator	Ranking
Mintos	9,9951	1
Evoestate	8,8109	2
Peerberry	6,5348	3
Bondster	6,0758	4
Fellow Finance	5,9048	5
Debitum Network	5,8918	6
Twino	5,5297	7
Estateguru	5,2807	8
Inversa	4,7415	9
Viainvest	4,6872	10
Monethera	4,3265	11
IUVO	4,0921	12
Lenndy	3,8678	13
Zank	3,3801	14
Trine	3,1548	15
Housers	2,6122	16
Growly	1,9045	17

Table 3. Synthetic indicator of the leading crowdlending platforms

leading crowdlending platforms, this paper offers a method to identify the market leaders in the crowdlending sector. This method is based on both static and dynamic variables, thereby enabling predictions regarding changes in the competitive context (Rodriguez *et al.*, 2019).

The results of the proposed indicator reveal a competitive framework in which the top-ranked platforms are not just those that intermediate the largest amount of lending. Regarding the first research question (i.e. Which crowdlending platforms are leading the sector?), the synthetic indicator suggests that the top positions in the ranking are occupied by Mintos, Evoestate, Peerberry, Bondster and Fellow Finance. Given the profile of these platforms, some conclusions about the trends in the sector can be formed. The position of each platform in the market, together with its progress over time, influences its ability to attract investors, given the importance of size, market position and image (Emekter *et al.*, 2015; Serrano-Cinca *et al.*, 2015; Martínez-Climent *et al.*, 2021). Arguably, the most important conclusion relates to the strength of certain platforms, which despite not intermediating a large amount of lending have improved favourably in the last year. This improvement corresponds to positive performance in several indicators. These results suggest that the top positions in terms of the amount of lending intermediated through the platform may change in the coming years. Regarding the second research question (i.e. Which of the simple indicators have the greatest discrimination power in this index?), this method reveals the key variables in the identification of market leaders, namely year-on-year variation in the number of investors and year-on-year variation in lending per investor. These factors lead to changes in the list of market leaders.

In this sector, the intensity of competition and the perception of the leading platforms are two factors that affect the ability to attract funds (Maier, 2016) and thus the survival of platforms. That is, crowdlending platforms will not appeal to either investors or potential borrowers without suitable reporting of their success or strong positioning (Roger, 2003). One

of the keys to generating trust lies in the way information is handled on the platform. This information must be complete and transparent in relation to any risks involved (Agrawal *et al.*, 2014). Thus, the theoretical framework based on the theory of incomplete information and adverse selection (Stiglitz and Weiss, 1981) may be well suited to evaluating the quality of crowdlending platforms, in addition to aspects related to usability and profitability. Transparency is also important in processes of new technology adoption or innovation, as in the case of the services offered by these platforms. This idea is consistent with the TAM (Venkatesh and Bala, 2008).

6. Conclusions

Crowd financing has established itself as a viable alternative to traditional financing. Its distinct advantages have gradually allowed this intermediation system to gain in prominence. Various models that fall under the umbrella term of crowd financing cover a wide range of needs of entrepreneurs and companies. Examples include crowdfunding, crowdequity, reward-based crowd financing and micro-donations. One of the most interesting aspects of this new form of finance relates to its ability to diversify investor risk through small contributions (Lenz, 2016). For entrepreneurs, it offers the possibility to raise funding through small contributions. However, there are also negative aspects, such as the scope for insolvency and asymmetric information. The lack of information presents a major limitation for research in this area (Agrawal *et al.*, 2014; Adhami *et al.*, 2019).

This research contributes to the academic literature on a virtually unexplored topic. Specifically, it analyses the competitive framework of the crowdlending sector in terms of the actors and factors that define it. As noted by Coakley and Huang (2020), there are very few empirical crowdlending studies. Therefore, this study contributes to filling a recently identified research gap. The proposed study is exploratory. There is no theoretical framework of these activities that would enable any other type of analysis. Therefore, the aim of this study is to offer insight that not only contributes to the academic literature but also serves as a basis for future theoretical or applied research.

Two key recommendations can be made based on the results of this research. Both of these recommendations are aimed at companies in the sector. First, there is a need to enhance the information that these platforms provide. The research conducted for this study shows that crowdlending platforms provide very little information. This lack of data availability conditioned the number of platforms included in the analysis. In the financial sector, particularly in new areas of financing, transparency is crucial. To become leaders and to attract both lenders and borrowers, platforms are encouraged to improve the information that they provide. As explained in the discussion, the amount of information provided by the platforms can affect their image, their ability to attract investors and even their social value. There are objective figures illustrating the current situation in this sector. As discussed in the method section, the 59 most important crowdlending platforms were selected. However, data on the selected variables were available for only 17 of these platforms, which reflects the lack of transparency in this regard. The second recommendation is associated with the expected changes in the sector in the coming years as a result of the rise of medium-sized platforms. The leaders in terms of the amount of lending they intermediate should not take their current situation for granted. Small and medium-sized platforms are pushing hard and may become leaders.

To bring this paper to a close, some research proposals to complement this study are proposed. To form a more accurate picture of the crowd financing sector, a horizontal comparison of the platforms would be of interest. That is, the platforms should be compared regardless of the intermediation model they follow. It would also be of interest to repeat this study with reliable data on all 59 platforms identified as crowdlending intermediaries. The lack of data is the primary limitation of this study, and it could be addressed through

collaboration with these companies. Regarding the application of theoretical frameworks in future analyses of the sector, the recommendation is for these analyses to focus on social exclusion. For example, it would be of interest to analyse these platforms from the perspective of the "market and social exclusion debate" (Burton, 2017), "social studies of finance" (Kear, 2017), the "financialization critique" (Ronald *et al.*, 2017) and the "moral approach: credit as a right" (Bayulgen, 2013).

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Research Article

Key factors of information management for crowdfunding investor satisfaction

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ABSTRACT

Crowdlending platforms are becoming increasingly important as a collective financing mechanism for entrepreneurs and small and medium-sized enterprises (SMEs), especially those at an early stage. This study, which is based on a survey of investors on a Spanish crowdlending platform, uses fuzzy-set qualitative comparative analysis (fsQCA) to examine investor satisfaction with crowdlending platforms. Specifically, the study examines communication policies and the quality of the investor experience based on the information provided by these platforms. The value of this article lies in its examination of the antecedents of crowdlending investor satisfaction. The analysis shows that the actions of ensuring that it is easy to browse the platform, frequently updating project details, offering a mobile application, publishing a blog with details of new developments and frequently sending investors emails with information to support their investment decisions increase investors' satisfaction with crowdlending platforms.

1. Introduction

Collective financing, also known as crowdfunding, is a rapidly evolving industry that is attracting great academic interest (Kreituss, 2017). It has become an important source of funding for companies and individuals in recent years (Ryoba, Qu, Ji, & Qu, 2020). The COVID-19 crisis has forced companies and individuals to learn and improve their existing digitalization skills (Ricarte, 2020; Soto-Acosta, 2020). This trend has affected the financial industry. To take a specific case, the crowdfunding industry is expected to grow in the coming years thanks to the digital transformation produced by the pandemic. This digitalization process is leading customers to change their decision-making processes by reducing personal consultation and assistance services and instead favouring digital media resources. Crowdfunding platforms are part of the digital economy, so it is important for lenders and lendees to develop a good brand image and reputation to inspire confidence in all agents in the industry (Bouncken & Barwinski, 2021; Bouncken & Kraus, 2021; Kraus, Roig-Tierno, & Bouncken, 2019). At the same time, the European banking sector has reduced its financing to small and medium-sized enterprises (SMEs) and entrepreneurs, whilst crowdfunding platforms have boosted their financing capacity, providing the market with a much needed source of capital (ECB, 2017). Crowdfunding is not the only alternative financing trend that has boosted the financing of the economy. Other funding alternatives such as initial coin offerings, direct lending funds and venture capital have also helped increase funding to companies (Capizzi, Bellavitis, & Johan, 2021; Piñeiro-Chousa, López-Cabarcos, & Ribeiro-Soriano, 2021; Sapkauskiene & Visinskaite, 2020).

Crowdfunding is an innovative form of financing that is part of the crowdsourcing trend that has become so popular in recent decades (Alfiero et al., 2014). Crowdsourcing can be defined as "the act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call" (Albors, Ramos, & Hervas, 2008; Bakici, 2020; Howe, 2006, 2015). Crowdfunding involves three key stakeholders: creators, who initiate projects, funders (or backers), who fund projects, and crowdfunding platforms, which bring creators and funders together (Kaur & Gera, 2017; Martinez-Climent, Costa-Climent, & Oghazi, 2019). SMEs and entrepreneurs seek financing through crowdfunding platforms by announcing the launch of their business projects to the marketplace. The investors on these platforms then individually decide whether to support each project through investment

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(Belleflamme, Lambert, & Schwienbacher, 2014).

Crowdfunding enterprises can have various aims. For instance, they may have altruistic goals, collecting donations to fund community projects, musicians, filmmakers and artists. This form of crowdfunding is known as donation-based crowdfunding (Bennett, Chin, & Jones, 2015; Burtch, Ghose, & Wattal, 2013). Alternatively, they may collect contributions from individuals who seek non-monetary rewards, usually the crowdfunded product itself. This form of crowdfunding is known as reward-based crowdfunding (Fleming & Sorenson, 2016; Kuppuswamy & Bayus, 2017; Mollick, 2014). Crowdfunding enterprises can also form part of the alternative finance system for business owners and entrepreneurs by channelling investors' contributions to campaigns in exchange for shares in the funded companies. This is known as equity-based crowdfunding (Agrawal, Catalini, & Goldfarb, 2014; Ahlers, Cumming, Günther, & Schweizer, 2015). Finally, they may request credit, with investors expecting to receive the principal plus interest. This is known as lending-based crowdfunding or crowdlending (Lin & Viswanathan, 2016).

Investors in crowdlending usually have a financial and/or social motivation (Rey-Martí, Ribeiro-Soriano, & Sánchez-García, 2016). They expect a return on their investment. Their focus is on the short term. They finance individuals and businesses, formalising the transaction through a lending contract (BOE, 2015). The legal status of a loan, and hence the obligation upon the borrower to return the principal plus interest to the lenders, means that this type of crowdfunding has low to medium risk. This level of risk is lower than in the other, business-oriented forms of crowdfunding (Hossain & Oparaocha, 2017).

Lending-based crowdfunding attracts most of the industry fundraising around the world (Agrawal, Catalini, & Goldfarb, 2015). Spain is no different (Universocrowdfunding, 2020). However, trying to fund companies through crowdfunding platforms is challenging. Projects must first be assessed by the platform's risk department. If the operation is approved, the campaign then has a set period to achieve its funding goal. If all steps are successfully taken, borrowers will have access to lenders' money to finance their projects. Investors also face the risk that borrowers do not repay a loan. In such cases, they lose all of the invested capital. These eventual project failures are a major threat to the survival of crowdfunding platforms (Ralcheva & Roosenboom, 2020; Ryoba et al., 2020).

This study aims to identify the background factors that are positively related to the satisfaction of investors on crowdfunding platforms. The effects of the browsing experience, the updating of details of funding campaigns, the use of mobile applications, the creation of a blog to share knowledge and the frequency of communication with investors are analysed.

The remainder of the paper is organised as follows. Section 2 presents the propositions based on the literature review. Section 3 describes the data set and research method. Section 4 presents the results. Section 5 then discusses these results, offering some theoretical and practical implications, highlighting the limitations of the research and outlining some future lines of investigation. Finally, Section 6 presents the conclusions of the study, and fundraisers are provided with suggestions on how to improve their offerings.

2. Theoretical background

Crowdfunding has been studied by researchers from a number of perspectives. Business management scholars have studied it from the point of view of entrepreneurial opportunities and financial support for small enterprises and new firms (Bouncken, Komorek, & Kraus, 2015). In this paper, we examine crowdlending by studying some of the variables that influence the satisfaction of investors on crowdlending platforms, an area where we have detected a gap in the literature.

To build a sustainable business model, crowdfunding platforms must develop other skills that help them make good risk choices. Examples include developing good communication policies (Ryoba et al., 2020) and providing good customer experiences (Cornelius & Gokpinar, 2020). Communication can take place by updating project information and fostering communication within the community, especially between lenders and borrowers (Block, Hornuf, & Moritz, 2018). Customer experience refers to customers' overall experience based on thoughts about the brand and interactions (Oh, Teo, & Sambamurthy, 2012). For Internet firms, a business model that offers an online experience for customers is the key to building a competitive advantage (Soriano & Peris-Ortiz, 2011; Soriano, 2010; Weber, 1999). Crowdfunding is an online business model within the financial technology (FinTech) industry (Cai, 2018). Therefore, communication and customer experience are key factors for market success and hence positive ratings by users.

The literature on communication policies and customer experience in crowdfunding platforms focuses on the influence of these factors on the success of fundraising campaigns (Block et al., 2018; Dorfleitner, Hornuf, & Weber, 2018; Fondevila, Rom, Mata, Santana, & Masip, 2015; Kraus, Richter, Brem, Cheng, & Chang, 2016; Mollick, 2014; Olarte-Pascual, Sierra-Murillo, & Ortega, 2016; Ryoba et al., 2020). However, there is a lack of literature on the importance of communication and investor experience as key factors for satisfaction with crowdfunding platforms.

Customer satisfaction can be defined as satisfaction with a firm's products and various aspects of the firm (Yang & Peterson, 2004), along with the assessment of the acquired product or service after its purchase (Choi, Wilson, & Fowler, 2013). This facet of satisfaction depends on the purchase experience (Kotler, 1997). This factor is an important part of other customer feelings such as the perceived value of services and products and loyalty to the company (Bloemer, de Ruyter, & Wetzels, 1999; Cronin, Brady, & Hult, 2000; Kim & Park, 2019; Oliver, 1999; Zeithaml, Berry, & Parasuraman, 1996). Loyalty directly depends on customers' trust in the firm, which is crucial in the financial sector (Ali, Ally, Clutterbuck, & Dwivedi, 2020), and the perceived quality of its products (Bolton, 1998; Reichheld, Markey, & Hopton, 2000). Customer satisfaction is crucial not only to the marketing strategy of companies but also to their profitability (Anderson, Fornell, & Lehmann, 1994) and competitiveness (Deng, Yeh, & Sung, 2013; Hennig-Thurau & Klee, 1997; Weitz & Jap, 1995).

However, scholars have cited financial and investment services as difficult for customers to assess (Brown, Pope, & Voges, 2003; Parellada, Soriano, & Huarng, 2011). Furthermore, these evaluations are difficult to standardise (Pham & Ahammad, 2017). As crowdfunding platforms offer investment opportunities, customer experiences may be biased by specific experiences with past investments (Alba, Lynch, Weitz, & Janiszewski, 1997). To assess customer satisfaction with crowdfunding platforms in the most effective way, we follow the approach of Maute and Forrester (1991), who advocate focusing on search and experience qualities to decouple outcomes and perceived satisfaction. The selection of platform experience metrics is an important step in the research process to cover the most relevant issues in this respect.

2.1. Browsing experience

Crowdfunding platforms' websites (Kshetri, 2015) should be easy and reliable to browse given their online nature. A good browsing experience leads to a lower mental workload. Therefore, platforms can focus on improving the browsing experience to offer investors a good experience and prevent irritation, which can be detrimental to the crowdfunding company (Jimenez-Molina, Retamal, & Lira, 2018). Providing users with a high-quality experience is a key factor for customers to select a service provider (Isak-Zatega, Lipovac, & Lipovac, 2020). Quality of experience is determined by two main factors. *Average time to get first data* refers to the period in which users access the website and receive initial information. *Average time to connect to TCP* (TCP being the abbreviation for transmission control protocol) refers to the average time to establish and maintain a network interchange through application programmes that exchange data (Isak-Zatega & Lipovac, 2016).

Research by Isak-Zatega et al. (2020) showed that the two aforementioned factors are strongly related to quality of experience and hence to customer satisfaction. Based on these statements, we formulate the first proposition.

Proposition 1. Having a good browsing experience satisfies crowdfunding (crowdlending) investors.

2.2. Updating the marketplace

Crowdlending websites are organised into marketplaces where borrowers request financial backing and lenders offer investment based on the information published by the platform and the borrower (Moreno-Moreno, Sanchís-Pedregosa, & Berenguer, 2019; Riedl, 2013). Studies have examined crowdfunding and crowdlending success factors (Calic & Mosakowski, 2016; Courtney, Dutta, & Li, 2017; De Crescenzo, Ribeiro-Soriano, & Covin, 2020; Lukkarinen, Teich, Wallenius, & Wallenius, 2016), especially in relation to the borrower (Barasinska & Schäfer, 2014; Cordova, Dolci, & Gianfrate, 2015; Giudici, Guerini, & Rossi-Lamastra, 2013; Yuan, Lau, & Xu, 2016). These studies have shown links between company characteristics (firm age, sector, CEO age, CEO gender, etc.) and the money raised in funding campaigns. The literature also explores the factors of crowdfunding platforms that lead campaigns to succeed, based mainly on marketing KPIs such as language style, the number of words, videos and pictures in project descriptions, updates (Block et al., 2018; Li, Rakesh, & Reddy, 2016; Parhankangas & Renko, 2017; Zhou, Lu, Fan, & Wang, 2018), and the platform's ability to foster communication amongst lenders and between lenders and borrowers (Moritz, Block, & Lutz, 2015; Wang, Li, Liang, Ye, & Ge, 2018). Prior studies have shown that updating the content of web pages improves user loyalty and engagement (Schneider, 2005). However, there is a lack of literature on internal platform factors such as the frequency with which details of new funding campaigns are published and the relationship of this factor with investor satisfaction. We therefore formulate the second proposition.

Proposition 2. Frequently publishing details of funding campaigns satisfies crowdfunding (crowdlending) investors.

2.3. Mobile applications

To improve investors' relationships with companies, it is important to encourage investor engagement (Dovaliene, Masiulyte, & Piligrimiene, 2015). This engagement is related to the "interactive experience of customer co-creation in the context of creating relations with other stakeholders" (Banyte & Dovaliene, 2014). Customer engagement has been shown to be an important driver of high levels of investor satisfaction, perceived value and loyalty (Brodie, Ilic, Juric, & Hollebeek, 2013; Hollebeek, 2011; Leckie, Nyadzayo, & Johnson, 2016; Mollen & Wilson, 2010; Rajah, Marshall, & Nam, 2008).

M-shopping has only recently become an alternative for searching for, browsing, comparing and purchasing products and services online (Marriott, Williams, & Dwivedi, 2017). Offering clients an investment or purchase alternative suited to current investor habits is virtually essential for any company. In an online business model, investor engagement can be enhanced by offering users mobile applications (Dovaliene et al., 2015). The success of mobile applications in business environments can be measured by user satisfaction (Lettner, Holzmann, & Loesch, 2013; Wang, Ou, & Chen, 2019). Research on mobile applications in the financial sector has shown that high-quality apps positively affect user satisfaction (Tam & Oliveira, 2016; Wu & Wan, 2016) and loyalty (Zhou, 2018). In light of these observations, the third proposition can be formulated.

Proposition 3. Having a mobile application satisfies crowdfunding (crowdlending) platform investors.

2.4. Corporate blog

Blogs offer an online communication tool where a range of contents can be posted (Kanter, Fine, & Zuckerberg, 2011). Blogs are useful for communicating with the user community, as well as for information, research and issue identification (Porter, Trammell, Chung, & Kim, 2007). They are used to influence the media and public agenda and to improve a firm's credibility and the trust of customers (Drezner & Farrell, 2004; Johnson & Kaye, 2004). Blogs reflect the personality of authors and companies (Assis, Ferreira, & Andrade, 2020). Therefore, they can be used to convey the values and aims of a firm, as well as future projects. They can also be used to discuss issues with past funding campaigns and to explain how these issues were resolved. Prior studies have shown that well-managed corporate blogs increase the web traffic rank (Brecht, Cudreasova, & Zhou, 2010), user motivation, functionality and customers' trust in companies' intellectuality (Hidayanto, Razaad, Shihab, & Hasibuan, 2014). Corporate blogs build bidirectional communication channels, characterised by interactivity (Kondratyeva & Zavyalova, 2015). Customers interpret this aspect as added value. However, the study by Kondratyeva and Zavyalova (2015) revealed pros and cons. Hsu and Tsou (2011) showed the importance of corporate blogs in customer experiences and purchase intention, or in this case in the decision-making processes of investors. One of the aims of this paper is to study the influence of the corporate blog of a specific crowdlending platform on perceived customer satisfaction.

Proposition 4. The existence of a blog where the platform reports news satisfies crowdfunding (crowdlending) investors.

2.5. Communication with investors

Corporate communication can be defined as company communication covering everything an organisation does and tells its stakeholders (Balmer & Gray, 1999). Corporate communication is useful to associate a firm with certain values and behaviours aligned with the company's mission and purpose (Balmer & Yen, 2017). Modern communication in Internet-based business models such as crowdfunding platforms relies on electronic communication to reach its target audience and share messages. This modern kind of communication is critical (Balmer & Yen, 2017), especially in the highly digitalised financial sector, which plays a key role in producing and receiving information. Zheng, Li, Wu, and Xu (2014)) advocate the use of project-related information through various channels to improve communication and understanding between entrepreneurs (Soriano & Martínez, 2007) and backers. Electronic communication can take several forms, including e-mail, social media and blogs (Olanrewaju, Hossain, Whiteside, & Mercieca, 2020). In recent years, social media and social networks have become a part of daily life (Dwivedi, Kapoor, & Chen, 2015; Shiau, Dwivedi, & Yang, 2017). To understand customers' characteristics and needs, financial institutions should ensure good communication with them (Kirakosyan & Dănăiață, 2014). Prior studies have highlighted the relationship between good marketing communication and loyalty (Hanninen & Karjaluoto, 2017) and between communication and customer satisfaction (Kirakosyan & Dănăiață, 2014; Pengnate & Riggins, 2020). Laukkanen, Sinkkonen, and Laukkanen (2009) reported a relationship between resistance to use Internet banking and information policies, showing that communication is a key driver of beginning to use digital finance applications such as crowdfunding. Moritz et al. (2015) explored how investor communication reduces information asymmetries and influences the decision-making processes of investors in the crowdfunding industry, finding strong correlations between communication and these factors. The aim of this article is to verify the findings of previous research in this area. Based on these arguments, we formulate the following proposition:

Proposition 5. Communicating frequently with investors satisfies crowdfunding (crowdlending) customers. (Fig. 1)

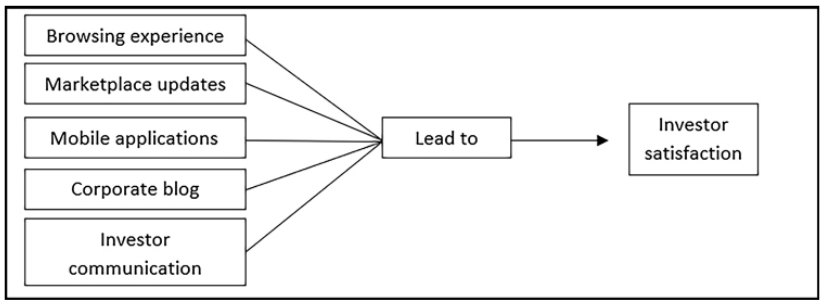

Fig. 1. Relationships between the conditions and outcome.

3. Research method

3.1. Design and sample

At the end of 2019, there were 50 crowdlending platforms operating in the Spanish financial market (Universocrowdfunding, 2020). Only 30 of them had been licensed by the official regulator (CNMV, 2020). This discrepancy may arise because some of these platforms' activities, such as crowdfactoring, are not yet subject to the law that regulates the sector (BOE, 2015). Colectual is an officially licensed crowdlending platform working with projects from all over Spain. It has been an active market player since 2015. Its focus is on national small and medium-sized enterprises (SMEs). At the end of 2019, the Colectual community consisted of 2308 investors (Colectual, 2020) who finance the funding campaigns appearing on the platform.

To study the determinants of customer satisfaction amongst the Colectual investor community, we distributed a 45-item questionnaire to investors asking for details of how five key internal drivers affected their satisfaction with Colectual. This questionnaire was produced in collaboration with the managing board of Colectual. Demographic questions were also included to study the user community. The questionnaire was completed by 206 investors. We selected 97 valid answers for this study. We considered all questionnaires that were answered completely to be valid.

3.2. Method

Fuzzy-set qualitative comparative analysis (fsQCA) was used to explore how certain conditions (known as factors or independent variables in quantitative methods) causally combine to produce the outcome (known as the dependent variable in quantitative methods). This method enables analysis of the necessary and sufficient conditions to achieve the outcome (Ragin, 2008; Roig-Tierno, Kun-Huang, & Ribeiro-Soriano, 2016). De Crescenzo et al. (2020) summarised the main steps of this method previously established by Fiss (2007) and Ragin (2008): "(i) Identify the relevant conditions and cases. (ii) Calibrate the conditions and the outcome. Transform the raw data in fuzzy data (values from 1 to 0, where 1 implies presence of the condition and 0 implies absence of the condition). (iii) Analyse the necessary conditions to achieve the outcome. (iv) Construct the truth table. Truth tables are used to assess which possible logical combinations of causal conditions lead to the outcome (or absence of the outcome)" (p. 350). Our truth table had 32 rows because we considered five causal conditions in this analysis.

FsQCA 3.0 software, developed by Ragin and Davey (2016) and the R package developed by Medzihorsky, Oana, Quaranta, and Schneider (2018) were used to conduct the analysis. A detailed review of papers using fsQCA in business and management research is provided by Kraus, Ribeiro-Soriano, and Schüssler (2018).

3.3. Outcome, causal conditions and calibration

The outcome was the satisfaction of crowdlending project investors with the crowdlending platform. Five conditions related to the information provided by the crowdfunding platform were considered. These conditions, taken from the earlier literature review, are the ease of browsing the platform, the frequency with which project details are posted on the website, the creation of a mobile application (continuous variable), investors' awareness of the company's blog and the number of emails sent by the company to investors to provide information to aid their decision making (communication between the company and investors). Table 1 describes the outcome and conditions.

The raw data were calibrated as fuzzy values using the method described by Ragin (2008). Calibrated scores ranging from 0 to 1 were constructed. To transform the raw data into fuzzy values, the calibration process requires three thresholds: one for full membership (≥ 0.90), one for full non-membership (≤ 0.10) and one for the crossover point (0.5). Table 2 shows the thresholds used for the calibration.

When there is not enough theoretical knowledge (Ragin, 2008), scholars accept the use of percentiles for calibration (e.g. García-Castro, Aguilera, & Ariño, 2013; Khedhaouria & Thurik, 2017; Meuer, 2014; Woodside, Feurer, & Baumbach, 2016). The indications given by De Crescenzo et al. (2020) and Kraus et al. (2016) were followed to set the breakpoints for full membership (90th percentile), the crossover point (50th percentile) and full non-membership (10th percentile) in this study.

To calibrate the outcome (crowdlending project investors' satisfaction with the crowdfunding platform), the breakpoints for full membership (90th percentile), the crossover point (50th percentile) and full non-membership (10th percentile) were defined as 9.4, 7.9 and 5.6, respectively. Awareness of the blog (or absence of awareness) was operationalised as a dichotomous condition that specified whether the investor was aware of the blog in each case. The three conditions assessed on a 10-point Likert scale were calibrated (ease of browsing the platform, frequency of project publications and number of emails sent to investors). The last condition (whether the platform offers a mobile app)

Table 1
Outcome and conditions: description and label.

Type	Label	Description	Codification
Outcome	SATIS	Satisfaction of crowdlending project investors with the crowdfunding platform	Fuzzy value
Condition	NAV	Ease of browsing the platform	Fuzzy value
Condition	FPP	Frequency of publication of project details on the website	Fuzzy value
Condition	APL	Creation of a mobile application (continuous variable)	Fuzzy value
Condition	BLOG	Investors' awareness of the company's blog	Crisp value
Condition	EMAIL	Number of emails sent by the company to investors to provide information to aid their decision making	Fuzzy value

Table 2
Calibration of the outcome and conditions.

	Thresholds		
	Full membership	Crossover point	Full non-membership
SATIS	9.4	7.9	5.6
NAV	9	7.9	6
FPP	8	5.9	3
APL	48.8	19.9	5.6
EMAIL	8	4.9	4

Note: As per Crilly, Zollo, and Hansen (2012), the values of 0.5 were dropped in fsQCA 3.0 and were replaced with 0.49.

was initially a continuous variable that was calibrated to form a fuzzy-set condition. Percentiles were used for all conditions. Table 2 shows the calibration values assigned to the fuzzy sets.

4. Results

FsQCA enabled the identification of causal configurations that lead to the satisfaction (or the absence of satisfaction) of crowdlending project investors with the crowdfunding platform. The proposed models can be specified as follows:

Model A: Satisfaction (high) = f(fsNAV, fsFPP, fsAPL, BLOG, fsEMAIL)

Model B: ~Satisfaction (~high, or low) = f(fsNAV, fsFPP, fsAPL, BLOG, fsEMAIL)

The symbol (~) indicates the absence of an outcome or condition.

The results of the fsQCA for the factors that lead to the outcome of satisfaction (or non-satisfaction) are presented below.

4.1. Analysis of necessary conditions

The first step was to examine the conditions that were necessary for the presence and absence of the outcome (see Table 3). Necessary conditions are those that must occur for the outcome to occur. A condition is considered necessary if its consistency is higher than 0.9 (Schneider & Wagemann, 2012). As Table 3 shows, no conditions had consistency scores that exceeded the consistency cut-off of 0.9 for either presence of the outcome (i.e. crowdlending project investors' satisfaction with the crowdfunding platform) or absence of the outcome (i.e. crowdlending project investors' dissatisfaction with the crowdfunding platform).

4.2. Analysis of sufficient conditions

For this analysis, consistency cut-offs of 0.80 for satisfaction (presence) and 0.76 for non-satisfaction (absence) were adopted. According to Rihoux and Ragin (2009), the cut-off should be greater than 0.75 for a condition to be considered sufficient for a given outcome. A frequency threshold of 1 was adopted for the outcome. A frequency threshold of 1 was adopted for presence and absence too. In fsQCA, it is possible to analyse conditions that combine and causally connect as paths leading to an outcome and the absence of that outcome – in this case, high (presence) or low (absence) satisfaction of crowdlending project investors with a crowdfunding platform. In standard fsQCA, three possible solutions are given: complex, parsimonious and intermediate. Table 4 shows the parsimonious and intermediate solutions. The results are presented using the notation established by Fiss (2011).

Table 3
Analysis of necessary conditions.

	Satisfaction		Non-satisfaction	
	Consistency	Coverage	Consistency	Coverage
fsNAV	0.804177	0.798246	0.499047	0.469697
~fsNAV	0.465756	0.495090	0.785639	0.791844
fsFPP	0.762603	0.723651	0.554332	0.498761
~fsFPP	0.471781	0.527510	0.692862	0.734561
fsAPL	0.613979	0.696197	0.518323	0.557276
~fsAPL	0.609560	0.571671	0.717433	0.637974
BLOG	0.633661	0.553509	0.539081	0.446491
~BLOG	0.366339	0.456000	0.460919	0.544000
fsEMAIL	0.710584	0.650607	0.689897	0.598933
~fsEMAIL	0.561960	0.656500	0.597543	0.661896

The analysis of sufficient conditions yields two models: one for satisfaction (high) and one for absence of satisfaction (low). According to Schneider, Schulze-Bentrop, and Paunescu (2010), both models are acceptable, with a solution consistency greater than 0.75 (0.830 and 0.799, respectively). Despite this relatively high solution consistency, Eng and Woodside (2012) and Ragin (2008) recommend a threshold of 0.8. The solution coverage, which reflects the extent to which the six configurations for high satisfaction and the five configurations for low satisfaction explain the data, is also high for both models (0.792 and 0.741, respectively).

Consistency reflects the degree to which specific configurations are subsets of the outcome. Configurations for which the consistency is greater than 0.75 should be considered sufficient. Based on this threshold, all configurations leading to a high or low satisfaction are sufficient.

Raw coverage measures the extent to which the configurations explain the outcome. Unique coverage measures the proportion of cases that are members of the outcome set and that are explained solely by an individual configuration. A high coverage value indicates a configuration that explains a large proportion of the outcome for satisfaction of crowdlending project investors with the crowdfunding platform.

We consider all of the six configurations that explain high satisfaction except the first. This configuration was omitted from the analysis because its coverage was only 0.252. There was no reason to rule out any configuration based on the consistency scores (Ragin, 2008).

Configuration 2 has the highest coverage (45 %). According to this configuration, investor satisfaction is high when it is easy to browse the company's platform, the company frequently updates project details on its website and the company shows an interest in creating a mobile application to carry out its operations. This configuration has a consistency score of 0.938.

Configurations 3 and 4 have a coverage of 39.3 % of cases. According to Configuration 3 (consistency = 0.898), investor satisfaction is high when browsing the company's platform is easy, the company frequently updates project details on its website and investors are familiar with the company's blog. According to Configuration 4 (consistency = 0.931), investor satisfaction is high when browsing the company's platform is easy, the company shows an interest in creating a mobile application and investors receive emails that provide them with information to aid their decision making.

According to Configuration 5, in 37.3 % of cases, crowdlender satisfaction is high when the platform frequently updates project details on its website, shows an interest in creating a mobile application and sends a high number of emails to provide investors with information to aid their decision making. This configuration has a consistency score of 0.865.

Finally, Configuration 6 suggests that, in 35.2 % of cases, crowdlender satisfaction is high when browsing the platform is easy, investors are aware of the company's blog and investors receive enough emails to gather information to aid their decision making. This configuration has a consistency score of 0.894. All except for one of the configurations leading to high investor satisfaction suggest that all the conditions in the study are positively associated with the outcome.

We now analyse the configurations leading to the absence of the outcome. Configurations 7–11 describe paths to the absence of crowdlender satisfaction. For this outcome, we only analyse Configurations 7 and 9, which have the highest coverage. According to Configuration 7, in 55.7 % of cases, crowdlender satisfaction is low when browsing the platform is not easy, even though investors receive a high number of emails providing information to aid their decision making. This

Table 4
Analysis of sufficient conditions.

	Satisfaction (high)						Absence of satisfaction (low)				
ConF.No.	1	2	3	4	5	6	7	8	9	10	11
NAV		●	•	•		●	○	◦	◦		◦
FPP	●	•	•		●			○	◦	◦	•
APL		●		•	●				•		◦
BLOG	○		•			●		○		◦	•
EMAIL	•			•	•	•	•			•	
Raw coverage	0.252	0.450	0.393	0.393	0.373	0.352	0.557	0.286	0.334	0.250	0.226
Unique coverage	0.089	0.029	0.038	0.022	0.017	0.046	0,121	0.032	0.035	0.030	0.033
Consistency	0.806	0.938	0.898	0.931	0.865	0.894	0.814	0.870	0.864	0.859	0.790
Solution coverage	0.792						0.741				
Solution consistency	0.830						0.799				

Note: As per Fiss's (2011) notation, the solutions are grouped by their "core" structures, where black circles indicate the presence of the condition, white circles indicate the absence of the condition, large circles indicate a core condition (i.e. the condition appears in both the parsimonious solution and the intermediate solution), small circles indicate that the condition only appears in the intermediate solution, and blank spaces indicate that the condition may be present or absent (i.e. it is irrelevant).

configuration has a consistency score of 0.814.

According to Configuration 9, in 33.4 % of cases, crowdlender satisfaction is low when it is not easy to browse the platform and the platform does not frequently update project details, even if it already offers a mobile application. This configuration has a consistency score of 0.864.

5. Discussion

The results corroborate the second proposition, namely that the frequent updating of project posts on the website increases investor satisfaction. In many cases, investors need a wide offering to select the projects that they consider financially viable, given that they usually work to strict investment criteria (Block et al., 2018; Li et al., 2016; Parhankangas & Renko, 2017; Zhou et al., 2018).

The fourth proposition suggests that crowdlending investors are satisfied when platforms use a blog to report any developments that take place. Our results confirm the importance that crowdlending investors attach to the added value of having a corporate blog (Kondratyeva & Zavyalova, 2015). Through this channel, they expect to receive high-quality content that enhances their experience and increases their satisfaction with the platform.

Given the growing multichannel focus and the increasing speed in decision making, the third proposal, which is supported by the results, suggests that the development of a mobile application positively affects user satisfaction and gives users more real-time information on the available offering.

The first proposition suggests a relationship between the quality of the browsing experience and investor satisfaction. The results confirm the findings of Isak-Zatega et al. (2020), with most configurations suggesting that investors' perceived ease of use in terms of browsing increases investor satisfaction with the platform. By contrast, when investors perceive a poor browsing service, their level of satisfaction is lower.

Studies such as those of Kirakosyan and Dănăiaţă (2014) consider electronic communication a crucial variable for customer satisfaction. Our research also shows the importance that investors attach to smooth communication with the platform to help them make decisions. The number of emails sent by the platform to aid investors' decision making acts as an indicator of communication. According to the fifth proposition, this condition is important in achieving investor satisfaction with the platform.

5.1. Theoretical contributions

The theoretical focus of this research centres on user satisfaction with a given crowdfunding platform. Traditionally, the crowdfunding literature has focused on the opportunities that these types of platforms offer SMEs by providing an alternative source of financing (Bouncken et al., 2015).

The literature focuses on the entrepreneurial opportunities offered by crowdfunding platforms (Block et al., 2018; Dorfleitner et al., 2018; Fondevila et al., 2015; Kraus et al., 2016; Mollick, 2014; Olarte-Pascual et al., 2016; Ryoba et al., 2020). We believe that placing the theoretical focus on the design of the elements that make up the platform represents a novel approach. Users' interactions with the platform determine the success of the user experience and allow companies to create content and design the platform in accordance with the elements that users value most positively.

5.2. Implications for practice

The research presented in this paper provides valuable empirical evidence to support all five propositions. Our findings provide insight for crowdlending stakeholders to understand the importance of two issues in relation to the satisfaction of investors: the quality of communication policies and investors' experience with the platform.

Given that ease of use is a powerful driver of investor satisfaction, it is important to verify that a given crowdlending platform does not have any technical problems that make browsing difficult. Data loading time and network communication have also been cited as factors that determine the quality of the user experience. Along these lines, efforts must be aimed at ensuring that investors can process the information on the website quickly. Fast sites increase user satisfaction and improve overall website quality.

Communication is a complex process whereby information is constantly being exchanged. In this process of information transfer, platforms' email communications with investors are important to avoid investor dissatisfaction if investors perceive a poor standard of communication with the platform. The information shared through communication can mitigate information asymmetries between project creators and backers. By nurturing the role of communication, project creators can increase the satisfaction of crowdlending investors using features such as the number of updates, the polarity of published comments and the readability of updates, allowing investors to process information easily. Backers can use communication to learn about the quality and potential of projects.

As the study shows, it is also important to have a wide offering on the platform at both the sector and company level so that clients can target investments based on their investment criteria. The study also confirms the importance that investors attach to platforms' corporate blogs. Having a suitable, thoughtful blog with a clearly defined strategy is vital to generate website traffic and thus increase the likelihood of attracting new investors. Through the corporate blog, valuable content can be constantly generated under a clearly defined strategy to improve the investor experience. A blog can dynamically boost a platform's status through high-quality content, providing social networks with useful content and thus generating traffic on the platform's website.

As well as following technical criteria, investors also positively value intangible elements. For example, a blog capable of sharing tacit knowledge about the sectors and companies promoted on the platform will create value for clients. Thus, the use of a range of multimedia formats and multichannel platforms will have a positive impact on the explicit and tacit knowledge that investors need to make decisions.

5.3. Limitations and future research directions

The following research limitations may serve as a starting point for further research. First, a quantitative study and an experimental approach might be helpful to show how crowdlending investors' satisfaction with crowdfunding platforms is influenced by information and communication content. Second, subjective perceptions should be reduced in further research. Third, research by Täuscher, Bouncken, and Pesch (2020) has shown that legitimacy depends on cognitive and normative legitimacy. This factor is important in continuing to fuel growth in the crowdfunding industry and establish it as a well-respected and real alternative to traditional financing institutions. Fourth, the selected projects were rooted in a specific national context. Our findings have limited generalisability. Different results may be observed by analysing other crowdlending projects or other platforms in other countries. A comparison of results may contribute to a better understanding of crowdlenders' satisfaction with crowdfunding platforms versus the influence of information and communication content.

6. Conclusions

The use of crowdfunding investment platforms in Europe is at an incipient stage. Investors typically prefer established markets with greater liquidity and a wider range of investment opportunities. However, the current growth rates suggest that this market is developing and that it will increase its market share. This growth will increase the financing channels for companies whilst giving investors the chance to achieve higher rates of return than with classic risk-free assets.

So that crowdlending platforms continue to grow, it is important to know what positively affects investors' use of technological platforms. By analysing the conditions related to the information provided by crowdfunding platforms (communication content), this study contributes to the discussion of crowdlending investors' satisfaction with crowdfunding platforms. The configurations leading to crowdlender satisfaction were identified using fsQCA.

The results of this empirical study show how important certain variables related to crowdlending platforms' communication policy and the crowdlending investor experience are for investor satisfaction. The theory presented in this article helps address the five research questions tested earlier.

Crowdfunding platforms should be easy to browse given their online nature. Providing users with a high-quality experience is a key factor for

customers to select a provider. This factor is crucial for attracting potential funders and collecting the necessary funds to develop the projects hosted on these platforms. Platform technologies could suggest improvements for founders of projects that investors consider to have low potential.

Authorship contributions

Conception and design of study: S. Ribeiro-Navarrete, D. Palacios-Marqués, C. Lassala, K. Ulrich;

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