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Tesis Doctoral

Mecanismos y factores determinantes que pueden favorecer las estrategias de Gobierno Abierto en los gobiernos locales

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Abstract

This thesis has focused on the study of the implementation of new Open Government strategies carried out by public administrations in recent decades in order to better adapt them to the needs of citizens. In this regard, the current state of research on Open Government has been analyzed through a systematic literature review using the PRISMA methodology (Cooper, 2015), which has allowed us to understand the current research trends and the future of research in this field.

Based on the results verified in the systematic literature review, three additional investigations have been carried out on a sample of 145 Spanish local governments with over 50,000 inhabitants, representing over 50% of the Spanish population. The first study examines the dimension of open government data and transparency related to Open Government Data (OGD) projects, specifically analyzing factors related to access to OGD projects and the volume and format of data published in OGD projects. The main results indicate that the intention of the governments in the sample is to increase open data portal initiatives and improve the level of information dissemination as a way to legitimize government actions to public scrutiny. This is evidenced by the divergences found between the local governments of the sample from the context in which information is disseminated.

In the second study, the analysis is extended not only to OGD portals but also to transparency portals to find evidence of the level of compliance with the main components of government transparency, according to the different Open Government strategies adopted by local governments in Spain. The study seeks to analyze the different components of government transparency offered by the official websites of local governments and how these components can be influenced by the Open Government strategy followed or adopted by each local government. Components analyzed range from information disclosed to the format in which information is offered, the frequency of updates, accessibility and usability of information, and the comprehensibility of information disclosed about public decisions. All these components are essential for a good transparency policy.

Finally, in the third study, the different models of electronic participation existing in different cities and their varying levels of development were analyzed. In this regard, the results showed the different online and offline participation channels

currently offered by the cities in the sample. Overall, after conducting a cluster analysis and a difference test, and considering Arstein's study (Arstein, 2019), the results demonstrate that the different e-participation models are determined by the city profile. Therefore, among these cities, those that stand out for presenting higher levels of development are the so-called smart cities, which are primarily characterized by having a higher population and population density, inhabited by citizens with high levels of education.

Resumen

Esta tesis se ha centrado en el estudio de la implementación de nuevas estrategias de Gobierno Abierto, llevadas a cabo por las administraciones públicas en las últimas décadas con el fin de adaptarlas mejor a las necesidades de los ciudadanos. En este sentido en primer lugar se ha analizado el estado de la investigación actual en temas de GA, a través de una revisión sistemática de literatura, utilizando la metodología PRISMA (Cooper, 2015), la cual nos ha permitido conocer la tendencia de investigación actual en temas de GA y el futuro de la investigación en este ámbito.

En este sentido y tomando en consideración los resultados verificados en la revisión sistemática de literatura, se han realizado otras 3 investigaciones sobre una muestra de 145 gobiernos locales españoles, con más de 50.000 habitantes, y que representan más del 50% de la población española. En el primer estudio, hemos estudiado la dimensión de datos de gobierno abierto y transparencia relacionados con los proyectos de Datos Abiertos de Gobierno (DAG), analizando específicamente los factores relacionados con el acceso a los proyectos GA y el volumen y formato de los datos publicados en los proyectos DAG. Los principales resultados parecen indicar que la intención de los gobiernos de la muestra se centra en acrecentar las iniciativas de portales de datos abiertos y así mejorar en el nivel de divulgación de información, como una manera de legitimar las acciones del gobierno al escrutinio público. Por tanto, esto se ve evidenciado en las divergencias encontradas entre los gobiernos locales de la muestra, desde el punto de vista del contexto en el cual se divulga la información.

Seguidamente en el segundo estudio, se amplía el análisis no solo a los portales de DAG, sino también a los portales de transparencia para encontrar evidencias sobre el nivel de cumplimiento de los principales componentes de la transparencia gubernamental, según las diferentes estrategias de GA adoptadas por los gobiernos locales en España. El estudio busca analizar los diferentes componentes de transparencia gubernamental que ofrecen las páginas web oficiales de los gobiernos locales y cómo estos componentes pueden verse influenciados por la estrategia de GA seguida o adoptada por cada gobierno local. Se analizan componentes que van desde la información divulgada hasta el formato en que se ofrece la información, la frecuencia de actualización, la accesibilidad y usabilidad de la información y la

comprensibilidad de la información divulgada sobre las decisiones públicas. Todos estos componentes son esenciales para una buena política de transparencia de la información.

Finalmente, en el tercer estudio se han analizado los distintos modelos de participación electrónica que existen en las diferentes ciudades y sus diferentes niveles de desarrollo. En ese sentido los resultados han evidenciado los distintos canales de participación en línea y fuera de línea que ofrecen actualmente las ciudades de la muestra. En términos generales, luego de realizar un análisis de conglomerados y un test de diferencias, y tomando en consideración el estudio de Arstein (Arstein, 2019), los resultados demuestran que los diferentes modelos de e-participación están determinados por el perfil de ciudad. Por tanto, entre estas ciudades las que más destacan por presentar mayores niveles de desarrollo, son las denominadas ciudades inteligentes, las cuales se caracterizan principalmente por tener mayor cantidad de habitantes y de densidad de población, las cuales están habitadas por ciudadanos con altos niveles educativos.

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Introducción

1. Introducción

El gran avance en el desarrollo e implementación de las nuevas tecnologías de la información y las comunicaciones (TICs) han abierto las puertas a una nueva revolución, la denominada revolución digital (Webster, 2014). En este contexto, las sociedades han sido objetos de una transformación sin precedentes, debido principalmente a la irrupción de las tecnologías emergentes, permitiendo nuevas formas de interacción social con base en dichas tecnologías (Tung y Chen, 2022).

En este sentido, Internet es uno de los principales responsables en permitir nuevas formas de interacción entre sus usuarios (Emaldi et al., 2020). Aunque, resulta importante destacar que Internet también ha sufrido un proceso de evolución a lo largo de las últimas décadas, pasando de la Web 1.0, que únicamente permitía mostrar sitios web estáticos y sin posibilidad de interacción con las mismas, a la Web 2.0 que consiste en un cambio de paradigma, en donde la nueva generación de sitios web permiten que los usuarios puedan interactuar, colaborar y compartir información a una escala global y de una forma nunca vista (Tung y Chen, 2022).

En los primeros años de la Web 2.0 fueron las empresas las pioneras en implementar estas tecnologías, con el fin de potenciar sus respectivas organizaciones, mediante el marketing colaborativo, es decir, permitir que tanto clientes como usuarios puedan crear y agregar valor a dichas organizaciones (Kaplan y Haenlein, 2010). Posteriormente, fueron las administraciones públicas las que se han visto inmersas en este proceso de migración hacia la Web 2.0, de tal forma que paulatinamente la han implementado en diversos procesos de gestión pública en base a este nuevo paradigma (Naranjo-Zolotov et al., 2019).

De esta forma, los gobiernos apoyados en las TICs se encuentran abocados a la creación de nuevas condiciones que permitan el intercambio fluido y bidireccional de información entre gobiernos y ciudadanos, basada en una cultura de producción e intercambio y apertura de información más participativa y colaborativa en los últimos años (Gil-García et al., 2020).

En este nuevo escenario, surge el concepto de Gobierno Abierto (GA), el cual se encuentra basado en la necesidad de establecer gobiernos más abiertos, es decir, establecer nuevas formas de gobierno que permitan dar mayor transparencia, participación, colaboración para poder hacer frente a las nuevas demandas y necesidades de los ciudadanos (OECD, 2014). El GA cuenta con tres pilares fundamentales que también suelen ser denominados dimensiones del GA (Park et al., 2020).

La primera dimensión es la **transparencia**, la cual establece que la información pública y los datos gubernamentales deben encontrarse disponibles, de fácil comprensión y, además, deben ser reutilizables (Alcaide-Muñoz et al., 2017; Alcaide-Muñoz et al., 2022b). De esta forma, la disponibilidad de información referente a políticas públicas permitirá que los interesados puedan comprender, participar y colaborar en las decisiones de interés público (Yuan y Gascó-Hernandez, 2021). Asimismo, se establecen los mecanismos que facilitan el acceso a los datos por parte de los interesados, para que estos puedan aplicar procesos de transformación sobre dichos conjuntos de datos permitiéndoles cotejar la información recogida o bien les sea posible extraer nuevos conocimientos a partir de los datos e información disponible. Actualmente, este conjunto de datos es conocido como datos abiertos del gobierno (DAG). En este contexto, los esfuerzos del gobierno para permitir el acceso y disponibilidad de los datos abiertos han tenido a las tecnologías emergentes como importante soporte, permitiendo que éstas vayan adquiriendo un rol de fundamental importancia en este ámbito (Alcaide-Muñoz et al., 2022b).

En segundo lugar, nos encontraríamos con la **participación**, la cual establece que los ciudadanos, a través de los canales de comunicación establecidos (plataformas web, redes sociales, aplicaciones móviles, etc.) que a menudo involucran la utilización de las tecnologías emergentes, tengan la posibilidad de involucrarse dentro de un proceso democrático de toma de decisiones en la gestión pública y, por lo tanto, con capacidad para incidir en las mismas (Rodríguez-Bolívar, 2017; Rodríguez-Bolívar y Alcaide-Muñoz, 2019). De este modo, una participación efectiva requiere de un diálogo continuo y mutuo entre el gobierno y los ciudadanos, con el fin de que estos puedan proponer ideas, formular propuestas de políticas públicas, regulaciones y leyes, etc. (Park et al., 2020). Asimismo, esta dimensión permite que los ciudadanos dispongan de canales adecuados, y que no se base en la existencia de un sistema de recepción de quejas y sugerencias, sin que exista una interacción bidireccional, favoreciendo la creación de redes de comunicación entre el ciudadano, las empresas y la administración pública (ONU, 2013). En este sentido, hay estudios (Gil-García et al., 2020) que manifiestan que con la implementación de este tipo de canales y herramientas de comunicación se pretende aumentar la confianza de los ciudadanos en los gestores públicos y gobernantes mediante la aplicación de este conjunto de

reformas innovadoras y de esta manera facilitar la participación de la ciudadanía en los asuntos públicos.

Finalmente, nos encontramos con la dimensión de la **colaboración y/o co-creación**. Esta dimensión se refiere a situaciones específicas en las cuales los gobiernos trabajan en conjunto con ciertas organizaciones o personas con el fin de mejorar un servicio, proceso o función específica dentro del gobierno (McDermott, 2010). Esto supone que las partes interesadas se involucren en todo el proceso desde la detección del problema, formulación de políticas, y las posibles soluciones a través de la co-creación, favoreciendo una adecuada toma de decisiones (Toots et al., 2017). Cabe destacar que en esta dimensión, al igual que en las anteriores, las tecnologías emergentes resultan fundamentales y esto se debe principalmente a que mediante su implementación se generan nuevas oportunidades que permiten impulsar la creación conjunta de servicios públicos, lo que redundará en la creación de valor público (Harrison et al., 2012; Rodríguez-Bolívar y Alcaide-Muñoz, 2022). Asimismo, en algunos estudios se sostiene que la intención es permitir a los ciudadanos a colaborar y co-crear en los asuntos públicos. De forma, que el gobierno se beneficie al fomentar la participación ciudadana, mejorar la calidad de los servicios que presta a la ciudadanía, y por ende aumentar su capital social (Alteri et al., 2015; Voorberg et al., 2015).

En este contexto, Gil-García et al. (2020) indican que el GA es producto de una sinergia multidimensional que se produce debido a las interacciones entre la transparencia, participación y colaboración. En consecuencia, para abordar correctamente el GA resulta necesario tener una comprensión adecuada e integradora de los pilares que lo componen, de tal forma, a tener previsibilidad acerca de sus potenciales efectos sobre la sociedad.

Junto a todo lo comentado, conviene destacar que en cada una de las dimensiones del GA las tecnologías emergentes se encuentran incorporadas como herramientas de soporte, propiciando favorablemente la implementación del GA, esto se debe principalmente al vertiginoso avance tecnológico de los últimos años (Rodríguez-Bolívar y Alcaide-Muñoz, 2022). Por ejemplo, el Internet de las Cosas (IoT) que incorpora sensores diseñados e implementados para propósitos específicos (Haibe-Kains et al., 2020), los cuales se encargan de la generación de inmensas cantidades de datos que pueden ser transmitidos tanto en tiempo real como en forma asíncrona (Gao et al., 2021), así como también, la Inteligencia Artificial (IA) que permite realizar análisis de grandes volúmenes de datos para la detección de patrones y comportamientos con el objetivo de optimizar procesos y ayudar a la toma adecuada de decisiones (Harrison y Luna-Reyes, 2022).

Consecuentemente, se espera que una mayor adopción e implementación de las tecnologías emergentes permitan que los ciudadanos accedan a una mayor cantidad de información, al igual que herramientas para el procesamiento de dichas informaciones, lo que podría permitir así a los ciudadanos una mayor transparencia, participación y colaboración ciudadana en los asuntos de interés público (Alcaide-Muñoz et al., 2022b).

En este contexto, durante los últimos años, organizaciones internacionales tales como Organización para la Cooperación y Desarrollo Económico, Unión Europea, Banco Mundial, entre otras han emprendido iniciativas y grupos de trabajo para impulsar la implementación del GA (Criado y Ruvalcaba-Gomez, 2018). Este tipo de proyectos permite mejorar los niveles de transparencia, favoreciendo el acceso a una mayor cantidad de información pública, con el objetivo de que los interesados puedan tener una base para participar y colaborar en los asuntos públicos (Schnell, 2020). Adicionalmente, debe destacarse que en el año 2011, con la finalidad de dar a conocer los objetivos del GA e impulsar su adopción a través del seguimiento y evaluación de los planes de acción nacionales, surge la *Open Government Partnership* (OGP), que es una organización multilateral la cual tiene adherido a más de 70 gobiernos nacionales alrededor del mundo (Park y Kim, 2022).

Concretamente, Rodríguez-Bolívar (2019) indica que el proceso de instauración de los pilares fundamentales del GA permiten una mejora sustancial de los servicios públicos tanto en eficiencia como en efectividad. De esta forma, incentivando la innovación, desarrollo económico y brindando fundamental sustento a todas las partes interesadas (gobiernos, ciudadanos y sector privado), con el fin de que estos trabajen e interactúen de forma coordinada y colaborativa para proporcionar respuestas adecuadas al contexto actual de su ámbito de desenvolvimiento.

Adicionalmente, el entorno y contexto de las ciudades inteligentes (CI) han favorecido el desarrollo tecnológico y de innovación, lo que a su vez ha permitido fomentar la participación y cooperación entre gobiernos, ciudadanos y organizaciones, con el fin de lograr un impacto en el aumento de la calidad de vida de las personas (Pereira et al., 2017; Rodríguez-Bolívar y Alcaide-Muñoz, 2019). En consecuencia, en los últimos años los gobiernos han realizado diferentes esfuerzos para la implementación de nuevas tecnologías, con el fin de que los ciudadanos asuman el rol de usuarios activos de los nuevos servicios puestos a su disposición, es decir, que en la medida de sus necesidades interactúen, propongan y sean testigos de las nuevas reformas llevadas a cabo mediante su participación y colaboración (Rodríguez-Bolívar, 2017; Rodríguez-Bolívar et al., 2013).

No obstante, los esfuerzos realizados en este ámbito por las administraciones públicas han sido irregulares (Park y Kim, 2022), lo que permite plantear como objetivo principal de esta tesis, el análisis de los modelos de GA implementados por los gobiernos locales, centrándonos en las dos primeras dimensiones de este concepto, transparencia y participación de los ciudadanos en los asuntos públicos. Teniendo en cuenta el rol que juegan las tecnologías para facilitar el desarrollo de ambas dimensiones, de forma que posibiliten a las administraciones públicas avanzar en medidas innovadoras dirigidas a evaluar, gestionar e impulsar la sostenibilidad, la transparencia digital, la participación y la colaboración ciudadana. Además, se pone especial énfasis en el análisis de los factores claves que subyacen el nivel de implantación y desarrollo de estas iniciativas.

De esta forma, en este trabajo de tesis doctoral se analiza particularmente al gobierno de España, considerando que a lo largo de los últimos años han sido formulados una gran cantidad de planes de acción (Alcaide-Muñoz et al., 2016b), con la expresa intención de alinearse a las directrices emanadas de la Unión Europea (UE) y que configuran la actual Agenda Digital para Europa 2020-2030, la cual tiene como objetivo “abordar la creación de espacios y servicios digitales seguros, la consecución de condiciones de competencia equitativas en los mercados digitales con grandes plataformas, y el fortalecimiento de la soberanía digital de Europa, al tiempo que contribuye al objetivo europeo de neutralidad climática de aquí a 2050” (Gobierno de España, 2020). Además, junto a estos planes mencionados, el gobierno de España ha promulgado legislaciones al respecto entre las que destacan la Ley 11/2007 de Implantación de la Administración Electrónica, Ley 37/2007 sobre reutilización de la información del sector público, y la Ley 10/2013 de Transparencia, Acceso a la Información Pública y Buen Gobierno.

Específicamente, el foco de análisis considerado en este trabajo de tesis doctoral se basa en el estudio de los grandes municipios españoles, teniendo en cuenta que los mismos han realizado grandes esfuerzos en esta dirección (Rodríguez-Bolívar, 2017). Además de acuerdo con la Ley 7/1985 sobre las Bases de Regímenes Locales, los municipios son los responsables de brindar diferentes servicios a los ciudadanos (alumbrado público, recolección de residuos, parques públicos, servicios sociales, servicios culturales y protección del medio ambiente), por lo que tienen una relación más estrecha con las necesidades de los ciudadanos y administran grandes presupuestos (Cegarra-Navarro et al., 2012). Por tanto, todo este escenario ha llevado a los municipios a ser pioneros en la innovación de políticas públicas, impulsándolos a ser los primeros en adoptar nuevas tecnologías y a emprender reformas importantes en el sector público (Criado y Ruvalcaba-Gomez, 2018). Concretamente, la muestra utilizada para esta investigación se ha enfocado en aquellos municipios con una

población de más de 50.000 habitantes -los llamados grandes municipios-, porque son los que mayormente han dedicado sus esfuerzos para introducir iniciativas de GA en sus propósitos de gestión (Ley 57/2003 para la modernización de los gobiernos locales).

En este contexto, existen diversas investigaciones donde se analizan las iniciativas de GA que han sido llevadas a cabo en países de alrededor del mundo (Park y Kim, 2022; Piotrowski, 2017; Puron-Cid y Rodríguez Bolívar, 2018), en las cuales se ha identificado la motivación de los ciudadanos en la participación del GA (Wijnhoven et al., 2015; Wirtz et al., 2019), los beneficios y las barreras de adopción de los datos del GA (Huang et al., 2020). De igual forma, existen estudios previos que han analizado la divulgación de información económico-financiera por parte de las administraciones públicas, y los factores determinantes que influyen en esta transparencia (Alcaide-Muñoz et al., 2017; Rodríguez-Bolívar et al., 2013; Sáez-Martin et al., 2017).

En resumen, la mayoría de los estudios sobre GA se han centrado en analizar los tres pilares que lo componen: transparencia, participación y colaboración, relacionados con el uso de las nuevas tecnologías de la información. Sin embargo, estas investigaciones tienden a tratar las tres dimensiones del GA de manera aislada, en lugar de considerarlo como un concepto multidimensional (Gil-García et al., 2020). Como resultado, hay una falta de evaluaciones integrales en la literatura existente sobre GA, lo que puede generar opiniones parciales, encontrándonos con que pueda haber dimensiones que reciban poca atención y se estén desarrollando a un menor ritmo (Grimmelikhuijsen y Feeney, 2017).

Para abordar esta brecha en la literatura y contribuir a un cuerpo de conocimiento multidisciplinar más integrado y completo sobre GA, en este trabajo de tesis doctoral se lleva a cabo una revisión sistemática de literatura utilizando el marco analítico de Tai (2021). Este marco ofrece una especificación clara de las dimensiones micro y macro del GA, permitiendo un análisis detallado del concepto en su totalidad.

2. Revisión sistemática de literatura

En esta sección se brinda una visión general acerca de las investigaciones relacionadas al GA y su evolución en los últimos años. Con este propósito ha sido realizada una revisión sistemática de literatura tomando en cuenta el periodo de tiempo comprendido entre los años 2011 a junio del 2022. Para ello, partimos de que el

concepto de GA ha sido utilizado desde la década de 1940 con diferentes connotaciones en la literatura de investigación (Hansson et al., 2015) y además como se ha mencionado anteriormente, muchos estudios no han considerado al GA como una disciplina holística, sino que han tratado las distintas etapas de su desarrollo de forma aislada (Grimmelikhuisen y Feeney, 2017), por lo que cobra especial interés la realización de un profundo análisis acerca de las investigaciones publicadas en las principales áreas del conocimiento y así adquirir distintas perspectivas sobre el GA.

Para ello, procedemos a llevar a cabo el registro y posterior análisis de artículos publicados en revistas catalogadas en el *Journal Citation Reports* (JCR). Dado que, según Small (1973) uno de los instrumentos metodológicos más utilizados para la clasificación de artículos, autores y revistas científicas es el desarrollo minucioso de una revisión sistemática de la literatura de un campo de conocimiento o de un tópico de investigación. Emprender este tipo de revisiones de literatura, permite definir al dominio científico de una disciplina (Alcaide-Muñoz y Rodríguez- Bolívar, 2015; Paul, 2004; Rodríguez-Bolívar et al., 2016) mediante el análisis de las contribuciones recogidas en las revistas académicas que componga el campo de conocimiento objeto de análisis (Alcaide-Muñoz et al., 2017; Gutiérrez-Nieto y Serrano-Cinca, 2019).

Las revistas académicas incluyen artículos revisados por pares, lo cual garantiza que la recopilación de investigación sea de alta calidad, el cual es un criterio utilizado en otras revisiones sistemáticas de literatura (Alcaide-Muñoz y Rodríguez- Bolívar, 2015; Alcaide-Muñoz et al., 2016a; Alcaide-Muñoz et al., 2017; Rodríguez-Bolívar et al., 2018; Ruijter y Martinius, 2017). Por tanto, esta investigación se centra en el análisis de artículos y no en otro tipo de publicaciones, ya que se considera que estas (tesis, monografías, libros y capítulos) podrían ofrecer una limitada visión del tema en cuestión (Alcaide-Muñoz y Rodríguez- Bolívar, 2015; Alcaide-Muñoz et al., 2014; Rodríguez-Bolívar et al., 2016; Rodríguez-Bolívar et al., 2018). En consecuencia, tomando en consideración que el dominio científico del GA, es decir, las publicaciones científicas relacionadas a este tema, se encuentran publicadas en revistas catalogadas en los campos de conocimiento de la Administración Pública y Ciencias de la información (Wirtz et al., 2019). Por lo que, con esta revisión sistemática de literatura pretendemos responder a la siguiente pregunta de investigación:

PI (1) ¿Cuántos artículos sobre GA se han publicado en revistas JCR en los campos de investigación de la Administración Pública y Ciencias de la Información?

Como ha sido mencionado previamente, las principales fuentes de difusión de las investigaciones científicas son las revistas académicas (Alcaide-Muñoz et al.,

2017; Gutiérrez-Nieto y Serrano-Cinca, 2019). Además, las mismas establecen altos estándares de calidad debido a que se encuentran supeditadas a un estrecho proceso de revisión, por lo que pueden ser consideradas indicadores de calidad de la productividad científica (Legge y Devore, 1987). Es por ello que en esta revisión sistemática se lleva a cabo el análisis de las principales revistas internacionales JCR que incluyen al GA como una de sus principales áreas de interés. Teniendo en cuenta lo manifestado, en este trabajo se plantea la siguiente pregunta de investigación:

PI (2) ¿Cuáles son las revistas JCR que publican con mayor frecuencia sobre GA catalogadas en los campos de investigación de la Administración Pública y Ciencias de la Información?

Las revisiones sistemáticas de literatura proporcionan información importante acerca del estado del arte, brindando hallazgos confiables y precisos, permitiendo establecer futuras líneas de investigación (Cooper, 2015; Rodríguez-Bolívar y Alcaide-Muñoz, 2022; Rodríguez-Bolívar et al., 2016; Rodríguez-Bolívar et al., 2018). Por lo tanto, resulta interesante conocer la evolución cronológica de artículos y las últimas tendencias de investigaciones, así como el camino a seguir para el desarrollo de investigaciones futuras en temas de GA. De acuerdo con lo manifestado, se presenta la siguiente pregunta de investigación:

PI (3) ¿Cuáles son los tópicos de investigación sobre GA más analizados en las publicaciones en el campo de la Administración Pública y Ciencias de la Información?

2.1. Enfoque metodológico

El enfoque metodológico utilizado en esta revisión sistemática de literatura para las preguntas de investigación detalladas previamente se encuentra basado en la metodología conocida como *Preferred Reporting Items for Systematic Review and Meta-Analyses* (PRISMA) (Cooper, 2015; Moher et al., 2009).

El método PRISMA consiste en un procedimiento sistemático para la revisión del estado del arte correspondiente al área de investigación de interés, el cual es llevado a cabo mediante la elaboración de resúmenes basados en las evidencias e investigaciones disponibles. En este sentido, Cooper (2015) indica que las revisiones sistemáticas permiten alcanzar precisión y fiabilidad en los descubrimientos que serán aportados a la comunidad académica.

Además, Liberati et al. (2009) indican que uno de los principales rasgos de la metodología PRISMA consiste en la necesidad de determinar e incluir un conjunto

de criterios de selección. Por lo tanto, resulta fundamental que los investigadores establezcan y demuestren a priori los criterios de selección utilizados, considerando que dichos criterios permitirán establecer el enfoque metodológico a desarrollar y además minimizar los posibles sesgos durante las fases de recopilación y análisis de la literatura.

Actualmente, la utilización del método PRISMA se encuentra ampliamente extendido en diversas áreas de las ciencias (Alzubaidi et al., 2021; Cooper, 2015; Rodríguez-Bolívar y Alcaide-Muñoz, 2022; Sokouti y Sokouti, 2018), lo cual se debe principalmente a la rigurosidad y transparencia en los protocolos de recolección de datos que implementa dicha metodología. Específicamente, en el ámbito de la administración pública es posible encontrar diversos trabajos que han aplicado PRISMA para temas tales como el GA (Tai, 2021), la transparencia (Alcaide-Muñoz et al., 2014; Cucciniello et al., 2017), la adopción de redes sociales en el sector público (Dekker et al., 2020), implementación de las tecnologías emergentes en los servicios públicos (Rodríguez-Bolívar y Alcaide-Muñoz, 2022) y como la gobernanza puede apoyar la innovación colaborativa en el sector público (Lopes y Farias, 2022).

A continuación, se desarrollan los conceptos relacionados a los criterios de selección que se han tomado en cuenta en la revisión de literatura llevada a cabo en este trabajo de tesis. Es importante destacar, que los criterios de selección garantizan que los objetivos de la investigación puedan ser sustentados, así como también, que los resultados alcanzados sean fielmente reproducibles. De esta forma, tomando en cuenta lo expresado en (Moher et al., 2009), en esta investigación los criterios de elegibilidad se articularon de la siguiente manera:

1. **Factor de impacto de las revistas.** Este criterio sirve para determinar la importancia relativa de una revista en su área. Para ello, y con el fin de determinar la cantidad de revistas a analizar, se han tomado en cuenta los estudios de (Alcaide-Muñoz et al., 2017; Rodríguez-Bolívar et al., 2016; Sáez-Martin et al., 2017), los cuales han realizado revisiones sistemáticas de literatura en temas relacionados con el GA, y han identificado las principales áreas académicas que contienen más aportes en esta materia, es decir, los campos de conocimiento de la Administración Pública y Ciencias de la Información. Seguidamente, acudimos a la base de datos del Instituto para la Información Científica (ISI) y localizamos las dos categorías consideradas en este trabajo de investigación, es decir, las revistas catalogadas dentro de ambas áreas de conocimiento que han sido mencionadas previamente. De esta forma, se considera el listado de dichas áreas de conocimientos con el objetivo de conocer con

exactitud cuáles son las revistas JCR que serán objeto del filtrado de selección o rechazo.

2. **Rango de años de publicación.** Este criterio se considera con el fin de establecer un rango de tiempo para la selección de las publicaciones relacionadas con el tópico de investigación objeto de análisis. En este sentido, Tai (2021) expresa que establecer un rango de tiempo permite disminuir los sesgos de selección. Por lo tanto, esta revisión toma como punto de partida el año 2011 hasta junio del año 2022. Cabe destacar, que el año de inicio de esta revisión de literatura se alinea con la creación del *Open Government Partnership* (Partnership, 2017).
3. **Idioma.** Con este criterio se establece que se tendrán en cuenta únicamente artículos escritos en los idiomas: inglés o castellano. El inglés es principalmente el idioma vehicular en el que se trasmite el conocimiento en las áreas objeto de estudio, donde se publican principalmente los artículos sobre GA. Por otra parte, la inclusión del castellano se debe a que en los últimos diez años entre las revistas JCR se han incluido revistas que utilizan principalmente este idioma para difundir y publicar sus artículos, por tanto, su no consideración supondría eliminar contribuciones que favorecen la evolución, desarrollo y madurez del campo de conocimiento del GA (Rodríguez-Bolívar et al., 2016).
4. **Selección e identificación de revistas JCR catalogadas dentro de los campos de conocimiento de Administración Pública y Ciencias de la Información.** Seguidamente, y como guía para el primer descarte selectivo de la muestra, se ha tenido en cuenta el “objetivo de la revista”, la cual se ha definido leyendo el “*Aim and Scope*” de cada revista encontrada en las dos categorías principales: “Administración pública” y “Ciencias de información” consideradas. Posteriormente y con el fin de realizar una investigación exhaustiva acerca del estado del arte sobre el tema de interés, es decir, GA, han sido definidos un conjunto de descriptores tales como: “gobierno abierto”, “datos de gobierno abierto”, “transparencia”, “rendición de cuentas”, “e-participación”, “colaboración” e “innovación pública” que serán utilizados para la selección e inclusión de artículos correspondiente a esta revisión de literatura científica. De esta forma, en cada artículo que haya sido incluido para su posterior análisis será posible identificar en el título, resumen o palabras claves uno o más de los descriptores que han sido detallados previamente. Por lo tanto, luego de realizar las primeras búsquedas de literatura científica y aplicar los filtros correspondientes en el repositorio digital del Instituto para la Información Científica (ISI), ha sido posible identificar las revistas que tienen mayor cantidad de publicaciones con temas relacionados al GA. Cabe destacar que

los artículos correspondientes a ediciones especiales si han sido tomados en cuenta en esta revisión de literatura, debido a que en dichos artículos se profundizan y prestan especial atención en la comprensión y el análisis del tema estudiado (Alcaide-Muñoz y Rodríguez- Bolívar, 2015; Alcaide-Muñoz et al., 2014; Rodríguez-Bolívar et al., 2016)

2.2. Procedimiento de selección y codificación

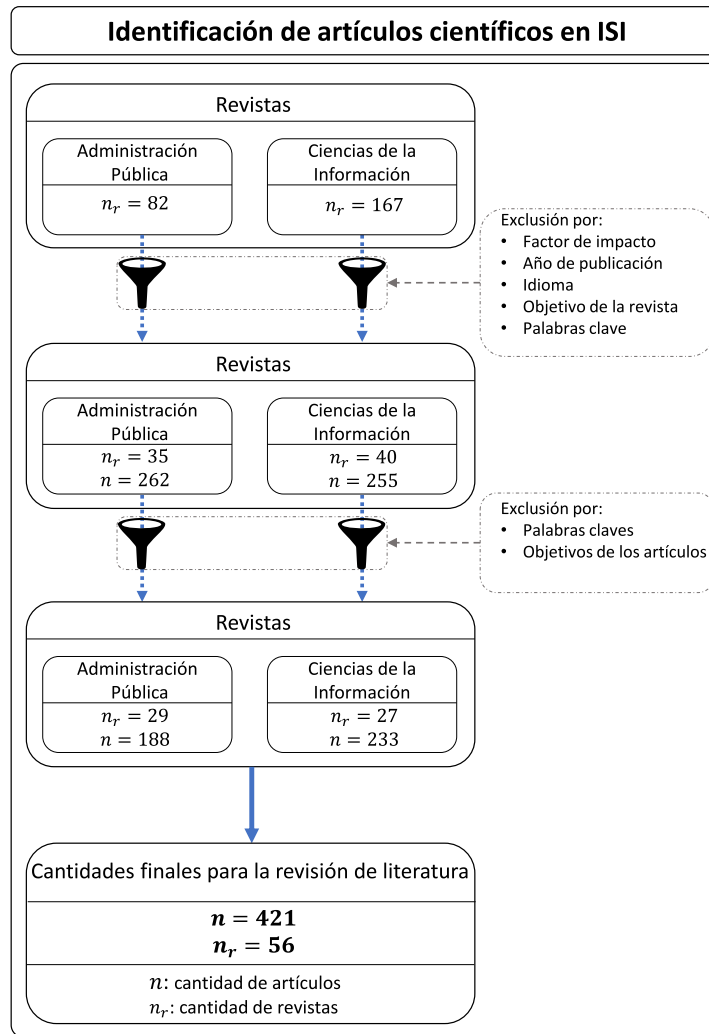
En la Figura 1, es posible observar el diagrama de flujo correspondiente a la revisión de literatura de este trabajo, basado en la metodología PRISMA (Cooper, 2015; Moher et al., 2009). En primer lugar, se han tomado en cuenta las dos principales categorías del repositorio del ISI que se encuentran dedicadas a la publicación de temas relacionados acerca del GA, dichas categorías son: Administración pública y Ciencias de la información. Luego, una vez realizadas las búsquedas correspondientes en ambas categorías ha sido posible obtener la cantidad total revistas de cada área.

En este sentido, en la categoría de Administración Pública se han contabilizado un total de 82 revistas y, por otro lado, en la categoría de Ciencias de la información se cuenta con un total de 167 revistas. Posteriormente, se han aplicado los filtros que permiten realizar el primer descarte selectivo de las revistas que no cumplen con los requisitos referentes a los objetivos de esta investigación. En este contexto, los primeros filtros utilizados para proceder a la selección-rechazo de las revistas han sido el/los objetivo/s y la/s línea/s editorial/es de las revistas. Con estos primeros filtros ha sido posible identificar las revistas en cuyos objetivos entrarían la consideración de estudios y análisis del GA.

Una vez identificadas las revistas cuyos objetivos son afines a la publicación de estudios sobre GA, se procede a hacer una búsqueda interna en cada una de ellas. Para lo cual, utilizamos los descriptores previamente definidos. Con este segundo proceso de selección obtenemos lo siguiente: en la categoría de Administración Pública contamos con 35 revistas las que publican un total de 262 artículos, y en la categoría de Ciencias de la Información son 40 revistas que recogen un total de 255 artículos.

Seguidamente, los artículos obtenidos son objeto de un análisis individual para la aplicación de los criterios de selección, es decir, estos filtros establecen que deben ser verificados si los objetivos de cada artículo se alinean con el objetivo de este trabajo de investigación y además se verifican que las palabras claves que han sido determinadas previamente se encuentren en cada uno de los artículos analizados, y

Figura 1: Diagrama de flujo de datos para identificación y selección de los artículos.



Fuente: Elaboración propia basada en la metodología PRISMA véase -: <http://www.prisma-statement.org/>.

por tanto, si el artículo realmente está analizando el tópico de investigación objeto de análisis. En consecuencia, y una vez concluido el anterior proceso de selección de artículos científicos nuevamente se reduce la cantidad de revistas y artículos. De esta forma, se cuenta en la categoría de Administración Pública con un total de 29 revistas que corresponden a 188 artículos, mientras que en la categoría de Ciencias de la Información se cuenta con un total de 27 revistas que corresponden a 233 artículos. Finalmente, la revisión sistemática de literatura será llevada a cabo con una muestra total de 56 revistas, de las cuales incluyen un total de 421 artículos -ver Tabla 1-.

Tabla 1: Artículos sobre GA encontrados en cada una de las revistas ISI (2011–2022).

| Posición | Nombre abreviado | Factor de Impacto | Artículos de GA |
|--|-----------------------------|-------------------|----------------------|
| 1 | Policy Soc | 10,104 | 2 |
| 2 | Public Adm. Rev. | 8,144 | 23 |
| 3 | J. Publ. Adm. Res. Theory | 6,160 | 3 |
| 5 | Public Manag. Rev. | 6,004 | 19 |
| 6 | Policy Sci. | 5,121 | 1 |
| 7 | Amer. Rev. Public Adm. | 4,929 | 7 |
| 8 | Policy Stud. J. | 4,775 | 1 |
| 11 | Public Adm. | 4,013 | 4 |
| 12 | J. Policy Anal. Manage. | 3,917 | 1 |
| 14 | Governance | 3,331 | 6 |
| 15 | Policy Polit. | 3,297 | 6 |
| 17 | Regul. Gov. | 3,203 | 3 |
| 18 | Adm. Soc | 3,121 | 14 |
| 19 | Public Money Manage. | 3,040 | 4 |
| 20 | Int. Public Manag. J. | 2,951 | 1 |
| 21 | J. Chin. Gov. | 2,915 | 2 |
| 22 | Public. Policy Adm. | 2,909 | 2 |
| 23 | Public Perform. Manag. Rev. | 2,806 | 27 |
| 28 | Public Personnel Manage. | 2,600 | 2 |
| 30 | Int. Rev. Adm. Sci. | 2,397 | 21 |
| 33 | Policy Stud. | 2,152 | 2 |
| 34 | Aust. J. Public Adm. | 2,140 | 1 |
| 35 | J. Comp. Policy Anal. | 2,126 | 1 |
| 36 | Sci. Public Policy | 2,087 | 1 |
| 37 | Local Gov. Stud. | 2,059 | 12 |
| 42 | Can. Public Adm. | 0,984 | 5 |
| 43 | Transylv. Rev. Adm. Sci. | 0,892 | 5 |
| 44 | Gest. Polit. Publica. | 0,733 | 3 |
| 45 | Lex Localis-J. | 0,660 | 9 |
| Cantidad total de artículos de Adm. Pública | | | 188 (44,66 %) |
| 1 | Int. J. Inf. Manage. | 18,958 | 6 |

| | | | |
|--|-------------------------------|--------|-----------------------|
| 2 | J. Strateg. Inf. Syst. | 14,682 | 2 |
| 3 | Inf. Manage. | 10,328 | 2 |
| 4 | Telemat. Inform | 9,140 | 6 |
| 5 | Eur. J. Inform. Syst. | 9,011 | 2 |
| 8 | Gov. Inf. Q. | 8,490 | 130 |
| 10 | Inf. Syst. J. | 7,767 | 1 |
| 12 | Inf. Process. Manage. | 7,466 | 2 |
| 14 | J. Organ. End User Comput. | 7,400 | 2 |
| 19 | Inf. Organ. | 5,387 | 2 |
| 20 | J. Assoc. Inf. Syst. | 5,346 | 1 |
| 23 | Telecommun. Policy | 4,497 | 3 |
| 25 | Soc. Sci. Comput. Rev. | 4,418 | 14 |
| 29 | Scientometrics | 3,801 | 1 |
| 31 | Prof. Inf. | 3,596 | 22 |
| 34 | J. Glob. Inf. Technol. Manag. | 3,444 | 2 |
| 35 | J ASSOC INF SCI TECH | 3,275 | 2 |
| 38 | Online Inf. Rev. | 2,901 | 11 |
| 40 | J. Health Commun. | 2,742 | 1 |
| 42 | Inf. Soc. | 2,522 | 2 |
| 43 | J. Inf. Sci. | 2,462 | 1 |
| 47 | J. Doc. | 2,034 | 2 |
| 49 | Aslib J. Inf. Manag. | 1,935 | 5 |
| 54 | Data Technol. Appl. | 1,713 | 1 |
| 59 | Rev. Esp. Doc. Cient. | 1,271 | 7 |
| 64 | Ref. Serv. Rev. | 0,933 | 1 |
| 68 | Inf. Res. | 0,744 | 2 |
| Cantidad total de artículos de Ciencias de la Información | | | 233 (55,34 %) |
| Cantidad total de artículos | | | 421 (100,00 %) |

Fuente: Elaboración Propia

Además, en esta investigación hemos utilizado una lista de verificación basada en la metodología PRISMA véase-: <http://www.prisma-statement.org/>, la cual hemos adaptado a nuestra investigación (véase Tabla 2). Por tanto, el procedimiento llevado a cabo para obtener la muestra correspondiente al conjunto de artículos seleccionados de cada una de las revistas ha sido realizado mediante una revisión sistemática y minuciosa de cada artículo. Con este fin, han sido verificados tanto el título como el resumen y las palabras claves de cada uno de ellos (Alcaide-Muñoz y Rodríguez- Bolívar, 2015; Alcaide-Muñoz et al., 2014; Plümper y Radaelli, 2004; Rodríguez-Bolívar et al., 2016). Por otro lado, en el caso de que los objetivos de los artículos no estuvieran claramente definidos en sus respectivos resúmenes se procedía a dar lectura a la introducción de cada uno de los artículos, con la finalidad de clarificar los objetivos establecidos en los mismos. En ese sentido hemos procedido a examinar cada uno de los artículos incluidos en nuestra base de datos

y posteriormente catalogado manualmente uno a uno, utilizando el *software MS Excel* por: 1) Datos del artículo: nombre de la revista, artículo, año de publicación y resumen del artículo; 2) Agrupación de artículos por palabras clave; 3) Objetivo de la investigación del artículo; 4) Tópico de investigación del artículo. Es importante mencionar que los tópicos de investigación utilizados para catalogar cada artículo, está basado en el estudio de (Tai, 2021). A través de esta clasificación se han identificado por un lado artículos referentes al marco conceptual y aspecto teórico del GA en los últimos años y por otro se han identificado artículos referentes al desarrollo e implementación del GA, resaltando sus diferentes niveles y enfoques tomados en cuenta de acuerdo con los objetivos de investigación de cada artículo.

Tabla 2: Lista de verificación.

| Elemento | Descripción |
|---|---|
| Datos del artículo | Información básica del artículo: (p. ej. nombre de la revista, artículo, año de publicación y resumen del artículo). |
| Agrupación de artículos por palabras clave | Los artículos fueron clasificados según las palabras clave para mejor identificación y guía del autor. |
| Objetivo del artículo | La intención principal del documento científico. |
| Codificación del artículo previamente determinado | Codificación de cada artículo, tomando en consideración los tópicos de investigación del estudio de (Tai, 2021): |
| | 1. Conceptualización y aspectos teóricos del GA |
| | 1.1. Aspectos y marco teórico del GA |
| | 1.2. Recomendaciones resultantes de revisiones sistemáticas de la literatura |
| | 2. Etapas de desarrollo e implementación del GA |
| | 2.1. Datos/Transparencia |
| | a. Ciudadanos |
| | b. Gobiernos |
| | c. Sociedad en general |
| | 2.2. e-Participación |
| | a. Ciudadanos |
| | b. Gobiernos |
| | c. Sociedad en general |
| | 2.3. Colaboración y co-creación |
| | a. Ciudadanos |
| | b. Gobiernos |
| c. Sociedad en general | |
| | Esto se extraerá en primer lugar del resumen o de la sección introductoria de acuerdo con el objetivo principal del artículo. |

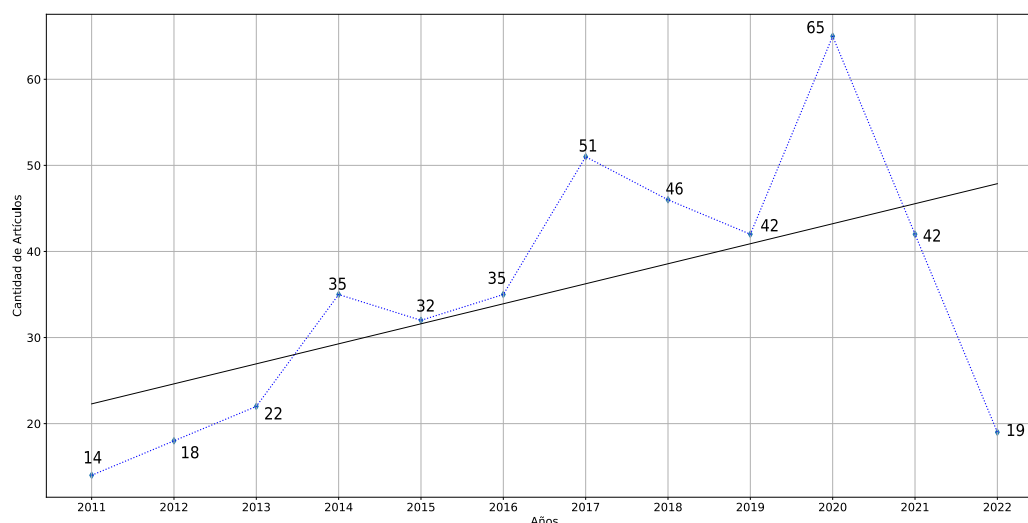
Fuente: Elaboración propia.

2.3. Análisis de resultados

PI (1) ¿Cuántos artículos sobre GA se han publicado en revistas JCR en los campos de investigación de la Administración Pública y Ciencias de la Información?

En el horizonte temporal comprendido entre los años 2011 a junio del 2022 se ha producido un auge en el desarrollo e implementación de las TICs, específicamente, en el ámbito de la administración pública ha significado un notable cambio en los procesos y maneras de interactuar entre el gobierno y los ciudadanos, despertando el interés de investigadores y académicos en el área (Rodríguez-Bolívar et al., 2016), lo cual se ve reflejado en el aumento de las publicaciones sobre temas de GA en revistas de reconocido prestigio internacional. En la Figura 2 se puede observar que entre los años 2011 y 2020 se produce una progresión creciente en la cantidad de publicaciones de artículos, alcanzando su punto más elevado en el año 2020 con 65 artículos publicados en dicho año. Luego, se observa que en el año 2021 se reduce la cantidad de publicaciones, tendencia que parece que continuará en el 2022 aunque no se haya analizado las contribuciones de año completo.

Figura 2: Evolución cronológica (2011-2022) de los artículos publicados sobre GA en Administración Pública y Ciencias de la Información.



Fuente: Elaboración propia.

En ese sentido y respondiendo a la pregunta de investigación en cuestión, como indica la Tabla 1 la cantidad de trabajos publicados sobre GA está muy equilibrada entre ambas áreas de conocimiento, aunque hay una pequeña diferencia ya que el 55,34% de los estudios han publicados en el área de Ciencias de la Información,

mientras que el resto (44,66 %) se exponen en revistas del área de la Administración Pública.

En el caso de las revistas de Ciencias de la Información, la Tabla 3 muestra que el 57,78 % de los artículos publicados se encuentran recogidos en una sola revista, *Government Information Quarterly*, las cuales corresponden al total de 130 sobre los 233 artículos incluidos en esta área de conocimiento.

PI (2) ¿Cuáles son las revistas JCR que publican con mayor frecuencia sobre GA catalogadas en los campos de la Administración Pública y Ciencias de la Información?

La Tabla 3 muestra que las principales revistas de Administración Pública interesadas en publicar artículos que analicen el tópico de investigación objeto de análisis son: *Public Performance and Management Review* (13,78 %), *Public Administration Review* (11,73 %), *Internacional Review of Administrative Sciences* (10,71 %), *Public Management Review* (9,69 %) y *Administration & Society* (7,14 %). Todas ellas recogen un total de 104 artículos que constituyen el 53,05 % del total de los artículos publicados dentro de esta área de conocimiento. Todas ellas excepto *Administration & Society*, están especialmente interesadas en artículos que consideran evaluar las distintas etapas de desarrollo e implementación del GA relacionados con la transparencia y específicamente en artículos enfocado en el análisis desde la perspectiva de las administraciones públicas.

Al respecto, las revistas *International Review of Administrative Sciences* (77,78 %), *Public Performance and Management Review* (73,91 %) y *Public Administration Review* (57,14 %) están especialmente interesadas en publicar artículos centrados en el análisis de datos de gobierno abierto/transparencia desde la perspectiva de las administraciones públicas, es decir, analizando el fenómeno desde el lado de la oferta. Aunque la *International Review of Administrative Science* (35,71 %) y la *Public Administration Review* (33,33 %), si están algo más interesadas en acoger estudios e investigaciones que analicen la perspectiva de la ciudadanía sobre la divulgación de información, transparencia y el acceso a los datos de gobierno abierto.

Así también, tanto *Public Management Review* como *Public Administration Review* publican una alta proporción de artículos (29,41 % y 28,57 %, respectivamente), que analizan como los nuevos modelos de gestión pueden facilitar la participación electrónica en los asuntos públicos desde el punto de vista de la oferta. Del mismo modo, desde el punto de vista de la demanda, se analiza la predisposición de los ciudadanos a participar en los asuntos públicos, así como los factores determinantes que lo predicen. La revista *Administration & Society* es la única revista de este grupo

Tabla 3: Principales tópicos de investigación de GA abordados en las revistas líderes en los campos de la Administración pública y Ciencias de la Información.

| Tópicos de Investigación/ Revistas | Revistas de Administración Pública | | | | Revistas de Ciencias de la Información | | | | | |
|---|------------------------------------|--------------|--------------|--------------|--|--------------|--------------|--------------|---------------|--------------|
| | PPMR (%) | PAR (%) | IRAS (%) | PMR (%) | AS (%) | GIQ (%) | PI (%) | SCCR (%) | OIR (%) | RED (%) |
| (1) Conceptualización y aspectos teóricos del GA | 14,81 | 8,70 | 14,29 | 10,53 | 78,57 | 13,85 | 4,55 | 14,29 | 0,00 | 28,57 |
| (a) Aspectos y marco teórico del GA | 25,00 | 50,00 | 33,33 | 0,00 | 100,00 | 38,89 | 100,00 | 0,00 | 0,00 | 50,00 |
| (b) Recomendaciones resultantes de revisiones sistemáticas de la literatura | 75,00 | 50,00 | 66,67 | 100,00 | 0,00 | 61,11 | 0,00 | 100,00 | 0,00 | 50,00 |
| (2) Etapas de desarrollo e implementación del GA | 85,19 | 91,30 | 85,71 | 89,47 | 21,43 | 86,15 | 95,45 | 85,71 | 100,00 | 71,43 |
| 1. Datos/Transparencia | 73,91 | 57,14 | 77,78 | 35,29 | 63,64 | 58,04 | 90,48 | 41,67 | 63,64 | 80,00 |
| a. Ciudadanos | 17,65 | 33,33 | 35,71 | 0 | 28,57 | 13,85 | 5,26 | 20,00 | 0,00 | 0,00 |
| b. Gobierno | 76,47 | 66,67 | 50,00 | 100,00 | 57,14 | 75,38 | 84,21 | 80,00 | 85,71 | 100,00 |
| c. Sociedad en general | 5,88 | 0,00 | 14,29 | 0,00 | 14,29 | 10,77 | 10,53 | 0,00 | 14,29 | 0,00 |
| 2. E - Participación | 21,74 | 28,57 | 5,56 | 29,41 | 18,18 | 29,46 | 4,76 | 50,00 | 27,27 | 20,00 |
| a. Ciudadanos | 40,00 | 33,33 | 0,00 | 60,00 | 100,00 | 27,27 | 0,00 | 50,00 | 33,33 | 0,00 |
| b. Gobierno | 60,00 | 66,67 | 100,00 | 40,00 | 0,00 | 63,64 | 100,00 | 50,00 | 66,67 | 100,00 |
| c. Sociedad en general | 0,00 | 0,00 | 0,00 | 0,0 | 0,00 | 9,09 | 0,00 | 0,00 | 0,00 | 0,00 |
| 3. Colaboración y co-creación | 4,50 | 14,29 | 16,67 | 35,29 | 18,18 | 12,50 | 4,76 | 8,33 | 9,09 | 0,00 |
| a. Ciudadanos | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 14,29 | 100,00 | 0,00 | 100,00 | 0,00 |
| b. Gobierno | 100,0 | 100,0 | 100,00 | 100,00 | 100,00 | 71,43 | 0,00 | 100,00 | 0,00 | 0,00 |
| c. Sociedad en general | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 14,29 | 0,00 | 0,00 | 0,00 | 0,00 |
| TOTAL¹ | 13,78 | 11,73 | 10,71 | 9,69 | 7,14 | 57,78 | 9,78 | 6,22 | 4,89 | 3,11 |

¹ **Fuente:** Elaboración Propia El valor del porcentaje referente a artículos publicados por cada revista en relación con el total de artículos de la muestra en el área de Administración Pública y Ciencias de la Información. Abreviatura de las revistas: PPMR, *Public Performance and Management Review*; PAR *Public Administration Review*; IRAS, *International Review of Administrative Sciences*; PMR, *Public Management Review*; A&S, *Administration & Society*; GIQ, *Government Information Quarterly*; PI, *El Profesional de la Información*; OIR, *Online Information Review*; RED, *Revista Española de Documentación*.

de cinco que suele publicar más artículos sobre conceptualización y aspectos teóricos del GA (78,57 %) - ver Tabla 3.

Junto a estos resultados, también podemos comprobar que de las cinco principales revistas que más publican artículos sobre GA en el área de conocimiento de Administración Pública, la revista que más está apostando por recoger artículos que aporten conocimiento sobre la implementación de las tecnologías que favorezcan la innovación de las administraciones públicas, que traten la colaboración y co-creación de servicios públicos es la revista *Public Management Review* (35,29 %).

En cuanto, a los artículos recogidos en las revistas del área de conocimiento de Ciencias de la Información, las cinco principales revistas que publican más artículos sobre GA son: *Government Information Quarterly* (57,78 %), *El Profesional de la Información* (9,78 %), *Social Science Computer Review* (6,22 %), *Online Information Review* (4,89 %) y *Revista Española de Documentación Científica* (3,11 %), entre todas ellas han publicado artículos que representan el 81,78 %, que suponen un total de 184 artículos del total de la categoría de Ciencias de la Información.

Estas cinco revistas están especialmente interesadas en recoger artículos que traten el análisis de las etapas de desarrollo e implementación del GA, especialmente centrandolo en la divulgación de información, transparencia y datos de gobierno abierto, especialmente analizados desde la visión de las administraciones públicas. Aunque la revista *Social Science Computer Review* (50,0 %) está especialmente interesada en recoger contribuciones que analicen el fenómeno de la participación de la ciudadanía en los asuntos públicos, mostrando especial interés con respecto a las otras cuatro revistas anteriormente señaladas.

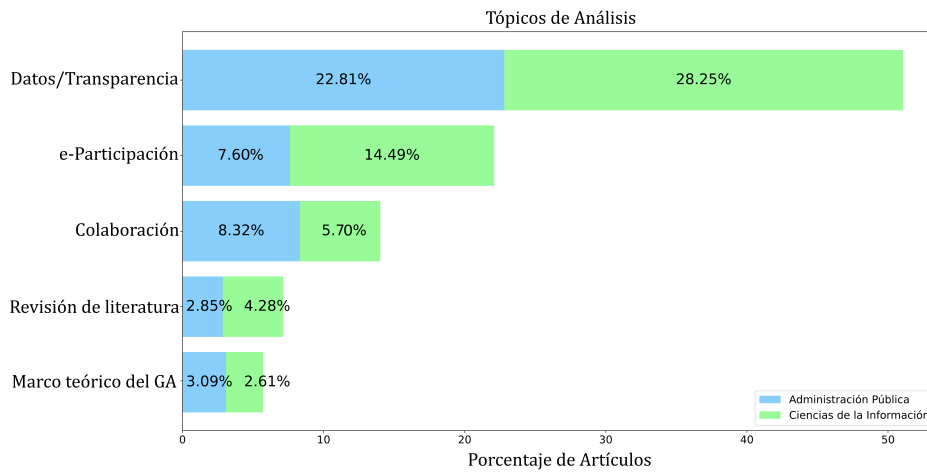
En el área de las Ciencias de la Información no se desprende una tendencia tan clara como la que hemos encontrado en el área de la Administración Pública, cuando se trata de recoger estudios que analicen la innovación pública, aunque la *Government Information Quarterly* (12,50 %) es la que está más interesada en este tipo de tópicos de investigación.

PI (3): ¿Cuáles son los tópicos de investigación sobre GA más analizados en las publicaciones en el campo de la Administración Pública y Ciencias de la Información?

Los resultados de nuestro estudio muestran (ver Figura 3), que el tópico de investigación que más se ha tratado por parte de los académicos en ambas áreas de conocimiento es el tópico de datos de gobierno abierto/transparencia, analizado desde el punto de vista de las administraciones públicas. Este tópico ha supuesto un 51,06 % de los artículos publicados en el total de la muestra, existiendo una pequeña

diferencia entre ambas áreas, ya que Ciencias de la Información parece estar más interesada en este tipo de artículos al publicar el 28,25 %, frente al 22,81 % del área de las Administraciones Públicas. Siendo menos tratados los otros dos pilares del GA, como la participación electrónica (22,09%) entre gobierno y ciudadanos, colaboración y co-creación(14,02 %) relacionados con artículos acerca de la implementación de nuevas tecnologías y la modernización de los procedimientos de gestión de las administraciones públicas. Estos resultados son concluyentes con las evidencias recogidas en el estudio de Hansson et al. (2015) donde también ponen de manifiesto que se presta menos atención al enfoque democrático que permite la participación de los ciudadanos en los asuntos públicos y favorecen la colaboración y co-creación junto con las administraciones públicas, lo que ha demostrado la implementación desigual de este nuevo paradigma de gestión del GA (Tai, 2021).

Figura 3: Tópicos de investigación en las áreas de la Administración Pública y Ciencias de la Información.



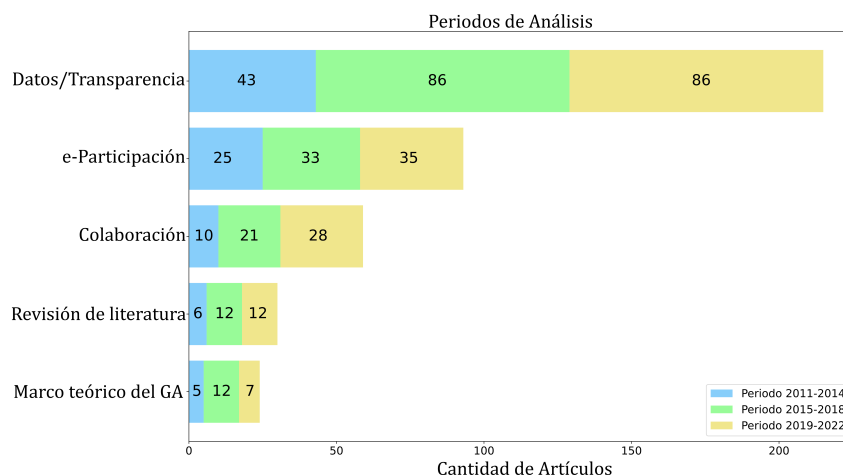
Fuente: Elaboración propia.

En cuanto, al resto de tópicos podemos observar que los estudios que analizan los aspectos del marco teórico del GA suponen un 5,7%, mientras que las revisiones de literatura suponen un 7,13%. Estos resultados son coherentes con los alcanzados por Tai (2021), que pone de manifiesto que existe una brecha entre la conceptualización del GA y su implementación.

La Figura 4 muestra que en el horizonte temporal (2011-2014), la cantidad anual de publicaciones abarcó diversos temas, específicamente los tópicos con más publicaciones en ese periodo se encuentran relacionados al tópico de datos de gobierno abierto/transparencia, y al tópico de participación electrónica, enfocados ambos desde el punto de vista de las administraciones públicas. En ese sentido y como se

ha mencionado anteriormente en este primer periodo destaca la creación del *Open Government Partnership* (OGP) en el año 2011, el cual ha impulsado a los países en prácticas de GA alrededor del mundo, lo cual podría deberse al aumento de publicaciones relacionadas con la investigación en el área (89 artículos). En este grupo se encuentran artículos tales como el de (Guillamón et al., 2011) que analiza el impacto de los factores políticos y económicos en la transparencia financiera municipal, el estudio de Esteller-Moré y Otero (2012) que realiza una evaluación de factores que determinan los niveles de transparencia presupuestaria, y nos encontramos con el primer estudio meta-analítico sobre los factores determinantes que influyen en la divulgación de información económico financiera por parte de las administraciones públicas (Rodríguez-Bolívar et al., 2013).

Figura 4: Evolución cronológica de los principales tópicos de investigación sobre GA en los distintos periodos considerados.



Fuente: Elaboración propia.

En cuanto al tópico de participación electrónica, a manera de ejemplo se destaca el estudio de (Ellison y Hardey, 2014), que analiza el uso de las redes sociales en el gobierno local, el estudio de Panopoulou et al. (2014) que analiza los factores determinantes de la e-participación. Así también encontramos el estudio de Cegarra-Navarro et al. (2014), el cual realiza un análisis del proceso participativo desde la perspectiva del ciudadano tomando en cuenta el Modelo de Aceptación de Tecnología (TAM).

En el periodo (2015-2018) se puede visualizar un gran aumento en el número total de artículos publicados (164 artículos), de entre los cuales destacan nuevamente los mismos tópicos de investigación que en el periodo anterior pero en este periodo si bien han aumentado las publicaciones con estas tendencias de investigación, las

mismas tomaron un rumbo distinto ya que artículos tales como (Wang y Lo, 2016) destacan el análisis de determinantes relevantes de la adopción de datos abiertos, así también (Bonsón et al., 2015) destaca el impacto de la participación electrónica a través de herramientas de participación en línea. En esta etapa se puede visualizar un aumento de investigaciones centrada en los datos del GA y el uso de nuevas herramientas para la participación en línea (redes sociales, blogs, plataforma web, aplicaciones móviles, etc.), desde el punto de vista de las administraciones públicas. Así también, desde este periodo se puede notar un mayor número de publicaciones referentes al tópico de colaboración y co-creación donde el trabajo de (Gascó, 2017) se utiliza como referencia, al evaluar el papel de los *livings labs* como intermediarios de la innovación abierta pública y (Loukis et al., 2017) que analizan el fomento de la innovación abierta en el sector público a través del monitoreo de redes sociales.

En el último período (2019-2022) se observa un nuevo aumento de publicaciones (168 artículos). En este periodo se encuentran artículos relacionados al tópico de datos de gobierno abierto/transparencia, los cuales investigan acerca de las nuevas tecnologías emergentes y su uso en la transparencia gubernamental. A modo de ejemplo, nos encontramos con el estudio de Bagozzi et al. (2021) que analiza como los métodos de *Big Data* también pueden beneficiar las habilidades de los profesionales para monitorear y mejorar los mecanismos de transparencia emergentes en el sector público, el estudio de Yfantis et al. (2021) sobre aspectos en el uso del *Blockchain* para lograr la transparencia y la rendición de cuentas para la toma de decisiones de interés público. Así también destacan estudios acerca del uso de datos abiertos del gobierno y su uso de manera a facilitar la participación y colaboración tales como el estudio de McBride et al. (2019) que analiza el impulso que ofrecen los datos abiertos a los servicios públicos co-creados impulsados por DAG.

Es importante destacar que a partir del año 2019 se puede observar un cambio de tendencia respecto a los anteriores períodos (ver Figura 4) debido a que se observa un aumento en el número de publicaciones interesadas en investigar temas relacionados con el tópico de participación electrónica y colaboración, tales como el estudio de Cortes-Cediel et al. (2021) que analiza la implantación de modelos participativos en las ciudades inteligentes, el estudio de Meijer y Boon (2021) que analiza las plataformas digitales para la co-creación de valor público o el estudio de Allen et al. (2020) que analiza la coproducción ciudadana a través de la e-participación sobre el desempeño de un servicio público.

3. Motivación y objetivos

En la actualidad, es posible hacer una retrospectiva del proceso atravesado por una importante cantidad de gobiernos tendientes a implementar nuevas reformas administrativas basadas en los fundamentos del GA (Park y Kim, 2022). En este sentido, organizaciones y gobiernos han dedicado una ingente cantidad de recursos a lo largo de los últimos años para dar alcance a los objetivos propuestos. No obstante, el nivel de desarrollo alcanzado en relación con la implementación del GA no ha sido uniforme para los distintos gobiernos a lo largo del tiempo, ya que estos se han supeditado a los distintos contextos y jurisdicciones (Tavares y da Cruz, 2020).

Es por ello, y tomando en consideración los resultados verificados en la Sección 2.3 de esta revisión sistemática de literatura, resulta de especial importancia plantear como objetivo principal de esta tesis doctoral el análisis de los modelos de GA tomando en consideración los esfuerzos emprendidos por las Administraciones Públicas para la implementación de estas iniciativas. Esto nos permitirá conocer el escenario actual de las políticas de GA implantadas, lo que podría beneficiar a gestores públicos y gobernantes a la hora de tomar medidas, emprender iniciativas, poner en práctica proyectos o elaborar planes estratégicos que favorezcan la implementación exitosa de estas iniciativas.

Además, las evidencias alcanzadas en los estudios recogidos en esta tesis doctoral supondrán un valor añadido a la comunidad académica, que permitirá conocer los factores determinantes que pueden influir a la hora de implementar y desarrollar estrategias de GA, tanto en su dimensión de datos de gobierno abierto y transparencia, como en la dimensión de participación electrónica. Todo ello permitirá establecer futuras líneas de investigación que serán presentadas finalmente en este trabajo de tesis.

Por tanto, a continuación, se detallan los principales objetivos considerados en esta tesis:

1. Identificar los principales factores determinantes (socio demográficos, económicos y/o políticos) que subyacen a un mayor desarrollo enfocado desde la dimensión de datos de gobierno abierto y transparencia. Para ello se analizarán tanto la forma en que se accede a los proyectos de OG en los sitios web oficiales de los grandes municipios españoles, como el contenido y el formato de la información de los datos publicados en los proyectos de DAG.
2. Analizar los diferentes componentes de la transparencia gubernamental (catálogo de datos, formato en que se ofrece la información, la frecuencia de

actualización de la información divulgada, la accesibilidad y usabilidad de la información divulgada o de la información divulgada sobre las decisiones públicas y su comprensibilidad), que ofrecen las páginas web oficiales de los gobiernos locales españoles, y cómo estos componentes pueden verse influenciados por la estrategia de GA seguida o adoptada por cada gobierno local, y si la adopción de las diferentes estrategias de GA se debe a factores institucionales, organizacionales y/o contextuales.

3. Analizar los canales de e-Participación que ofrecen los grandes gobiernos locales españoles (SLG), con la intención de poder determinar los diferentes modelos de e-participación adoptados, y si estos modelos están definidos por el perfil (características) tanto de las ciudades como de los ciudadanos. De esta manera se buscará determinar que los factores demográficos (perfil del municipio) y sociales (perfil del ciudadano) motivan a los gestores públicos a ofrecer diferentes niveles de e-participación.

4. Estructura de la tesis

En esta introducción hemos expuesto la principal motivación de este trabajo de investigación así como el trabajo relacionado a este ámbito. Además, hemos recopilado información mediante una revisión sistemática de literatura, en la cual hemos identificado a través de un análisis de revistas de relevancia en el área de Administración Pública y Ciencias de la Información (Wirtz et al., 2019), los tópicos de investigación que más se están investigando actualmente y las futuras líneas de investigación. Una vez que tenemos una idea más concreta del avance y evolución del conocimiento en el tópico de investigación sobre GA, pasamos a presentar los diferentes capítulos que configura esta tesis doctoral. Todos ellos son estudios empíricos que han analizado las iniciativas emprendidas por los gobiernos municipales españoles en materia de datos de gobierno abierto/transparencia y participación electrónica.

En el Capítulo 1 se presenta el primero de nuestros estudios empíricos titulado *Factors in the adoption of open government initiatives in Spanish local governments* en el que se pretende identificar aquellos factores que influyen en el acceso a datos gubernamentales abiertos, así como también, el volumen y formato de los mismos que actualmente se encuentran publicados en proyectos de GA en los grandes municipios españoles.

En el Capítulo 2 se presenta la investigación *Different Approaches to Government Transparency embedded into Open Government Strategies*, el cual está centrado en el

análisis de los portales de transparencia, con la intención de encontrar evidencias sobre el nivel de cumplimiento de los principales componentes de la transparencia gubernamental según las diferentes estrategias de GA adoptadas por los gobiernos locales.

En el Capítulo 3 podremos encontrar un estudio empírico titulado *Different cities, different e-Participation models. An empirical research on Spanish municipalities*, en el que nos centramos en analizar los canales de e- Participación que ofrecen los grandes municipios españoles, con la intención de poder determinar los diferentes modelos de e-Participación adoptados, y si estos modelos vienen definidos por el perfil (características) de los municipios. Además, el estudio busca determinar si los factores sociodemográficos motivan a los gestores públicos a ofrecer diferentes niveles de e-Participación

Finalmente, esta tesis concluiría con una sección de conclusiones, donde además de poner en relieve las principales evidencias alcanzados con el desarrollo de estos estudios empíricos, también podremos de relieve las implicaciones prácticas que estos hallazgos supondrán para gestores públicos y líderes políticos. Finalizando, con una sección de futuras líneas de investigación, que marcarán el camino a seguir para futuros trabajos, que permitirán generar valor añadido a la academia y contribuir a a la madurez de este campo de conocimiento.

5. Contribuciones

Como resultado de la realización de esta tesis doctoral se han obtenido un conjunto de contribuciones: un artículo publicado en una revista de reconocido prestigio, un capítulo de libro y un congreso internacional. Los contenidos de estas contribuciones abarcan la investigación realizada en la tesis doctoral y que se encuentran desarrolladas en los correspondientes capítulos recogidos en este documento, tal y como se indica a continuación.

- Alcaide Muñoz, L., Rodríguez Bolívar, M.P. and Villamayor Arellano, C.L. (2022). Factors in the adoption of open government initiatives in Spain Local Governments. *Government Information Quarterly*, 39, 101743. <https://doi.org/10.1016/j.giq.2022.101743>

En este artículo se analiza el contenido de la información y formato de los datos publicados por los gobiernos locales, con la intención de identificar los factores que podrían verse afectados en este nivel de desarrollo de las iniciativas de GA.

Por lo tanto, esta investigación es especialmente relevante para académicos, administradores públicos y políticos, ya que ayuda a comprender cómo se pueden promover las iniciativas de datos de gobierno abierto para implementar nuevos modelos de gobernanza y lograr niveles más altos de participación ciudadana en el proceso democrático. Los resultados, hallazgos y evidencias de este artículo están recogidos íntegramente en el Capítulo 1 de esta tesis doctoral.

- Alcaide Muñoz, L., Rodríguez Bolívar, M.P. and Villamayor Arellano, C.L. (2019). Open Government initiatives in Spanish Local Governments: An examination of the State of the Art, in Rodríguez Bolívar, M.P., Bwalya, K.J. and Reddick, C.G. (Eds.). Governance models for creating public value in open data initiative. *Public Administration and Information Technology*, Springer, 31, 123-139.

En este capítulo de libro se analiza los esfuerzos emprendidos por los gobiernos locales españoles referentes a la implementación de las iniciativas y proyectos de GA con el objetivo de tener una idea de cómo estas iniciativas han sido puestas en práctica, con la intención de incrementar los niveles de acceso, apertura y transparencia de estos gobiernos locales. Las evidencias alcanzadas indican que los municipios españoles están inmersos en un proceso de implementación estratégica de iniciativas de GA, que no han seguido una planificación y adopción homogénea. Los resultados, hallazgos y evidencias de este capítulo de libro se encuentran recogidos en los capítulos 2 y 3 de esta tesis doctoral.

- Rodríguez Bolívar, M.P. Villamayor Arellano, C.L. and Alcaide Muñoz, L. (2020). Demographical attributes explaining different stages of OG development in Spanish Local Governments. 19th IFIP WG 8.5 International Conference, EGOV 2020, Linköping, Sweden, Proceedings Lecture Notes in Computer Science, 387-399.

Este estudio empírico analiza el uso de canales tecnológicos a disposición de los ciudadanos por parte de los gobiernos locales españoles para mejorar la transparencia, la participación y la colaboración ciudadana. Los hallazgos muestran que el tamaño del municipio, la densidad poblacional, la edad de la población y el nivel educativo de los habitantes podrían influir en los modelos de participación ciudadana implementados en los grandes municipios españoles.

Los resultados, hallazgos y evidencias de este capítulo de libro se encuentran recogidos en los capítulos 2 y 3 de esta tesis doctoral.

Factors in the adoption of open government initiatives in Spanish local governments

The Open Government Data (OGD) projects have spread rapidly in recent years, given that they involve a great transformative potential, whose aims to guarantee transparent government and stimulate the participation and citizenry engagement. It seems that there is a lack of studies analysing factors regarding both the access to OG projects and the volume and format of data published into OGD projects. Therefore, this paper seeks to identify main factors affecting both the way of accessing the OG projects and the volume and format of data published into OGD projects in larger Spanish municipalities (with more than 50,000 inhabitants and a sample of 145 municipalities). Our main findings seem to point out the intention of sample governments to increase their information disclosure as a way for enhancing their reputation or government's image introducing OGDs initiatives. Also, it reveals differences among analysed municipalities regarding the context in which the information is disclosed.

1.1. Introduction

Governments have implemented new governance models over the last decade, so as to create more participative and collaborative governments. These initiatives imply that governments are more open, which, in turn, means that citizens have greater accessibility to more information, and that governments are more able to cope with new demands and needs (OECD, 2014). Open Government Data (OGD) projects, and in particular the development of OGD portals, as part of Open Government (OG) policies in general (Ubaldi, 2013; Wirtz et al., 2018), have proliferated since the mid-2000s (Ubaldi, 2013), and especially in recent years (Nikiforova & McBride, 2021).

The OGD phenomenon involves a cultural change, with great transformative potential, and aims to guarantee transparent government and to stimulate the participation

and engagement of citizens (Janssen et al., 2012). There are also high hopes that these initiatives will forge democratic processes by improving transparency, participation, and collaboration, and providing opportunities for the design and co-creation of public services (Yuan & Gascó-Hernandez, 2021).

OGD projects have recently become relevant due to the introduction of emerging technologies (Gao & Janssen, 2020). For example, governments can take advantage of the potential that artificial intelligence (AI) offers to analyse data which could help to make decision-making processes more efficient, creating public value (Harrison & Luna-Reyes, 2022). The Internet of Things (IoT) is also creating a large amount of data which is collected by sensors (Gao et al., 2021), given that these technologies could open data in real time and provide IoT-based tools for citizens to analyse them (Haibe-Kains et al., 2020). The implementation of these emerging technologies could thus allow citizens to access both a greater amount of information and the tools for its management and manipulation, favouring citizen participation in public affairs.

Despite the emerging technologies and their potential for the management and analysis of OGD, previous research has shown that their impact could be relatively limited (Wang & Lo, 2016). The only academic studies until now have been case studies about the potential of emerging technologies to achieve the goal of OGD (Tai, 2021), and, as far as we know, there has been little analysis of factors involving both access to OG projects and the information content and format of data published as OGD projects in a local government context (Sandoval-Almazán et al., 2021).

The academic literature offers empirical studies on transparency (Sáez-Martín et al., 2021; Tejedo-Romero & Araujo, 2020), however our study takes the Organisation for Economic Co-operation and Development (OECD) OGD concept (<https://www.oecd.org/gov/digital-government/open-government-data.htm>) as its basis, seeing OGD as datasets available to be used, reused and freely distributed, which favours citizen participation, and promotes business creation and innovative citizen-centric services. We thus analysed the information content and format of data published by local governments and tested the factors that could be affected at this level of OG initiative development. This research is therefore especially relevant for academics, public managers, and politicians, in helping to understand how OGD initiatives could be promoted to implement new governance models and achieve higher levels of citizen engagement in the democratic process.

Moreover, empirical evidence about actions, initiatives, good practices, and public policies could favour the development of OGD initiatives. This paper seeks to

identify the main factors affecting both how OG projects on official municipal websites are accessed, and the information content and format of the data published in OGD projects. The study involves empirical research into large Spanish local governments (SLG) (with more than 50,000 inhabitants and a sample of 145 municipalities) and the smart initiatives implemented in these municipalities regarding the implementation of OGD projects.

1.2. The analysis of OGD projects and their determinant factors

1.2.1. Background to the analysis of OGD portals

There has been increased interest in establishing OG strategies in recent years (Nikiforova & McBride, 2021). Local governments have been more motivated to undertake reforms in their organisations involving the implementation of these projects (Nikiforova & McBride, 2021; Sandoval-Almazán et al., 2021), mainly because they are more accessible to citizens, there is greater demand for them, and in the belief that creating a more transparent (Yuan & Gascó-Hernandez, 2021) and participatory environment favours economic growth in their regions, which then increase the quality of life of citizens (Rodríguez-Bolívar, 2019).

OG strategies have been especially focused on OGD projects (Wirtz et al., 2018), particularly with the development of OGD portals (Lourenço, 2016) for promoting transparency, accountability, and value creation by making government data available to all (Emaldi et al., 2020). Perceptions of public managers (Sandoval-Almazán et al., 2021), civil society organizations and public officials involved in open government actions (Ruvalcaba-Gomez & Renteria, 2020) differ greatly, not only among the different groups of stakeholders but also within them, with the result that different OGD strategies.

The academic literature includes empirical studies which analyse both different aspects of OGD portals -regulatory issues, technical challenges, etc.- (Gascó-Hernández et al., 2018; Ruvalcaba-Gomez & Renteria, 2020; Sandoval-Almazán et al., 2021), and different approaches related to the data disclosed -usability evaluation, structure and data organisation, features and information content or data catalogues (Ansari et al., 2022; Lourenço, 2015; Nikiforova & McBride, 2021; Thorsby et al., 2017; Wang et al., 2021).

We identified studies which analysed the usability of OGD portals, on the basis that OGD portals contribute positively towards public sector reforms. These include studies undertaken by Nikiforova and McBride (2021) and Wang et al. (2021), which found that the help functions of OGD portals were insufficient. Máchová et al. (2018) and Ansari et al. (2022) also found weaknesses in their analyses of OGD portals and suggested that they have not yet reached their full potential due to their limited use. They indicated the need to supplement OGD with visualisations to make the data more engaging, useful, and understandable, their findings suggested that the opinions of citizens (bottom-up strategic initiatives with more citizen participation) should be considered in the design and development of these OGD portals (Máchová et al., 2018; Nikiforova & McBride, 2021), which represent a change in the role of citizens as coproducers of public services and users of open data (Moon, 2020). The use of advanced OGD portals with embedded visualisations and analytics tools, and collaboration with research centres in user studies to improve these portals is also necessary (Ansari et al., 2022).

There are studies that analyse structure and data organisation from the perspective of transparency (Klein et al., 2018; Lourenço, 2015), and the features and information content of OGD portals -i.e. data catalogue- (Corrêa et al., 2017; Lněnička et al., 2021; Thorsby et al., 2017). Klein et al. (2018) noted that OGD portals need to address several mechanisms so that society can effectively discover, extract, and utilise the data, and (Lourenço, 2015) concluded that OGD portals do not possess key elements needed to support citizen engagement. Corrêa et al. (2017) and Thorsby et al. (2017) found that OGD portals were still in an incipient stage (they did not comply with the basic requirements stated), and that there was a large variation in the capabilities of OGD portal services (data format variety, analytics tools, and data modelling available) according to the public policy and investment followed, which requires hard work to develop and analyse the features to improve the way that citizens understand the data, with the support of graphs and analysis tools (Lněnička et al., 2021; Thorsby et al., 2017).

Although valuable, research has until now focused on evaluation studies that have tried to describe the state or situation of OGD portals (Matheus & Janssen, 2020). These studies provided recommendations on how to design and develop OGD portals (best practices for their design and information content), but they do not identify the possible factors or drivers that could explain the different levels of development of these initiatives. There is thus a research gap in identifying the factors that could affect both access to OG projects and OGD information content (data catalogue), and the data format that is published, which are crucial in order to work with and improve transparency through OGD. This analysis of OGD initiatives will therefore

help us to suggest critical recommendations about actions, initiatives, good practices, and public policies that could favour their development.

1.2.2. Determinant factors of OGD. Hypothesis formulation

As noted previously, many authors indicate that the creation of OGD Portals (OGDPs) focused on improving governmental transparency and accountability is a fundamental OG strategy, by making a large catalogue of information available to all (Emaldi et al., 2020) in the formats required for creating public value (Linders & Wilson, 2011). Based on a solid theoretical framework (stakeholder theory, institutional theory, legitimacy theory, the goal setting theory, and partisan politics matters thesis), this paper analyses how the demographic, economic, political and city profile factors affect ways to access OG projects, as well as the information disclosed in OGDPs or municipal official websites (see Table 1.1).

1.2.2.1. Demographic Factors

Size of local government (POP)

According to stakeholder theory (Jensen & Meckling, 1976), policymakers and public managers do not have the same interests as citizens, which means they need to be held accountable for their actions to demonstrate that they have acted according to their responsibilities. Local governments with a large population are under increased pressure regarding their political decisions and the management of public resources, with citizens and taxpayers demanding high transparency in order to monitor their actions and management (Rodríguez-Bolívar et al., 2013; Tejedero-Romero & Araujo, 2018), and to increase trust in politicians and public managers through transparent behaviour. The size of local government has thus been one of the most analysed factors in prior research (Alcaide-Muñoz et al., 2017), arguing that large SLGs have greater human, technical, technological, and financial resources to undertake innovative initiatives favouring access and information disclosure, and improving transparency in public management. Previous empirical studies have demonstrated the existence of a positive and significant relationship between the size of governments and information transparency (Alcaide-Muñoz et al., 2017; Sáez-Martin et al., 2017). We will therefore test hypotheses H1.1. and H1.2. as summarised in Table 1.1.

Population Density (DEN)

Table 1.1: Variables analysed, hypothesis tested, and descriptive results

| Variables | Sign | Acronym | Description | Calculation | Mean | Median | Std. Dev. | Min. | Max. |
|--|------|---------|--|--|-----------|-----------|-----------|--------|-----------|
| Access the OG section item | | OGS | Access the open government sections | Items described in Table 1.4 | 0.22 | 0.00 | 0.31 | 0 | 1 |
| Open government data item | | OGD | Disclosed open government data via ODP or municipal official websites | Items described in Table 1.4 | 0.54 | 0.47 | 0.08 | 0.22 | 0.98 |
| Independent Variables | | | | | | | | | |
| Ln_population | + | POP | ¹ Population residing in the region | Nepertian logarithm of the population | 11.62 | 11.16 | 0.72 | 10.83 | 14.97 |
| <i>H1.1. The population size of the municipality has a positive relationship with the way to access OG projects</i> | | | | | | | | | |
| <i>H1.2. The population size of the municipality has a positive relationship with the disclosed information on the OGDs or municipal official websites.</i> | | | | | | | | | |
| Population density | + | PDEN | ¹ Population residing in the municipality per km ² | Population divided by km ² | 2,455.73 | 1,126.52 | 3,114.58 | 54.80 | 18,894.93 |
| <i>H2.1. The population density has a positive relationship with the way to access OG projects</i> | | | | | | | | | |
| <i>H2.2. The population density has a positive relationship with the disclosed information in the OGDs or municipal official websites.</i> | | | | | | | | | |
| Municipal wealth | + | GDPpc | ¹ GDP per capita | GDP/Inhabitants | 21,725.83 | 20,542.00 | 5,047.83 | 14,989 | 51,002 |
| <i>H3.1. The municipal wealth has a positive relationship with the way to access OG projects</i> | | | | | | | | | |
| <i>H3.2. The municipal wealth has a positive relationship with the disclosed information in the OGDs or municipal official websites.</i> | | | | | | | | | |
| Fiscal pressure | + | PRE | ³ Percentage of taxes pay by citizens | Percentage of taxes in relation to DGP | 0.02 | 0.02 | 0.01 | 0.009 | 0.064 |
| <i>H4.1. The fiscal pressure has a positive relationship with the way to access OG projects</i> | | | | | | | | | |
| <i>H4.2. The fiscal pressure has a positive relationship with the disclosed information in the OGDs or municipal official websites.</i> | | | | | | | | | |
| Political ideology | + | POL | ² Indicator of ideology in political party | 0 = Progressive 1 = Conservative | 0.36 | 0.00 | 0.48 | 0 | 1 |
| <i>H5.1. The political ideology of the governing body of the municipality has a positive relationship with the way to access OG projects.</i> | | | | | | | | | |
| <i>H5.2. The political ideology of the governing body of the municipality has a positive relationship with the disclosed information in the OGDs or municipal official websites.</i> | | | | | | | | | |
| Political Fragmentation | - | FRG | ² Indicator of political fragmentation | Number of political parties with seats/total councillors | 33.19 | 40.00 | 11.61 | 12.50 | 69.56 |
| <i>H6.1. The political fragmentation has a negative relationship with the way to access OG projects.</i> | | | | | | | | | |
| <i>H6.2. The political fragmentation has a negative relationship with the disclosed information in the OGDs or municipal official websites.</i> | | | | | | | | | |
| Political stability | + | STA | ² Number of consecutive years in power | Number of years | 6.28 | 4.00 | 4.61 | 3 | 15 |
| <i>H7.1. The political stability has a positive relationship with the way to access OG projects.</i> | | | | | | | | | |
| <i>H8.2. The political stability has a positive relationship with the disclosed information in the OGDs or municipal official websites.</i> | | | | | | | | | |
| Smart city | + | SC | ⁴ Municipalities that are smart cities | 0 = No smart city 1 = smart city | 0.05 | 0.00 | 0.21 | 0 | 1 |
| <i>H8.1. The consideration of a municipality as a smart city positively favours the way to access OG projects.</i> | | | | | | | | | |
| <i>H8.2. The consideration of a municipality as a smart city positively favours the disclosed information in the OGDs or municipal official websites.</i> | | | | | | | | | |

Source: Own elaboration

¹INE (Statistic Institute of Spain) www.ine.es; ²Ministry of Interior (<http://www.infoelectoral.mir.es/>); ³Finance and Public Administration (<http://www.minhap.gob.es>); ⁴IESE Business School (<http://citiesinnovation.iese.edu/indicescm/>).

We have collected all variables in May and June 2021.

Population density is other important factor to be analysed within the framework of stakeholder theory (Jensen & Meckling, 1976) and institutional theory pronouncements (Powell & DiMaggio, 2012). Institution theory holds that the design of organisations is not considered a rational process but, rather, a process conditioned by internal and external factors that lead organisations to resemble each other more closely over time (Powell & DiMaggio, 2012): organisations respond to external pressures by adopting structures and practices that are considered legitimate and socially acceptable, thus producing homogeneous practices and structures. Municipalities with similar population densities could have similar characteristics that will lead them to undertake similar initiatives, provide services under similar conditions, and manage the organisation in a similar way.

Dense cities facilitate social interactions by flowing both knowledge and innovative ideas (Glaeser & Gottlieb, 2006), and it makes them potentially more interested in introducing Information and Communication Technology (ICT)-based initiatives (smart city initiatives) (Neirotti et al., 2014). Prior research indicates that public managers and governors of municipalities with a high population density could be more pressured by citizens to be more transparent (Homsy & Warner, 2015), provide better and more efficient public services, or management available resources more efficiently (Arcelus et al., 2015), and being more obliged to meet their demands. Both these theories and prior research support the idea that higher population density could lead to increasing stakeholder pressure on local governments and the need to develop smart city initiatives. Under these theoretical lenses, organisations must be managed in a sustainable manner and attend to citizens' interests and needs, which would require the greater commitment and dissemination of public information.

Studies have found that internet access and availability increase in urban areas where the population density is higher (Gandía & Archidona, 2008). In the case of public information disclosure, Lowatcharin and Menifield (2015), explained that population density positively affects the level of governmental transparency. We will test hypotheses H2.1. and H2.2 as summarised in Table 1.1.

1.2.2.2. Economic Factors

Municipal wealth (GDPpc)

Studies (Rodríguez-Bolívar et al., 2013; Sáez-Martín et al., 2021) have found that the economic status of citizens positively affects the disclosure of public financial information, and thus transparency. Alcaide-Muñoz et al. (2017) and Gandía and

Archidona (2008) demonstrated that municipalities with high-income citizens pay more taxes, and that they therefore demand more information to monitor political decisions and the investment of public resources.

Legitimacy theory (Weber, 2018) argues that the legitimacy of an organisation's actions is affected by the dissemination of information to stakeholders (Archel et al., 2009). In particular, the greater the chances of a public policy having a negative impact, the greater the need to try to influence the process through information disclosure. On the basis of institutional theory (Powell & DiMaggio, 2012) and Weber's legitimacy theory (Weber, 2018) policymakers thus respond to pressure from their environments and adopt structures and legitimate and socially acceptable practices in the disclosure of financial statements, with the aim of being financial accountable to citizens.

Research (Alcaide-Muñoz et al., 2017; Garcíea-Tabuyo et al., 2017; Sáez-Martin et al., 2017) has showed that there is a positive relationship between municipal wealth and the online disclosure of public information and transparency. We will test hypotheses H3.1. and H3.2 as summarised in Table 1.1.

Fiscal pressure (PRE)

Based on the principal-agent model, (Ferejohn, 1999) showed that payment of the highest taxes is associated with a higher level of fiscal transparency. Citizens thus demand greater transparency in the exercise of public functions by politicians to accountable for the management of public resources (Araujo & Tejedo-Romero, 2018). According to the pillars of agency theory (Jensen & Meckling, 1976), policymakers and public managers do not have the same interests as citizens, and hence, in a context of asymmetric information, external users (citizens) employ public governmental financial statements to inform themselves of the actions of policymakers and public managers. This premise has been tested in prior research, and fiscal pressure has been found to be one of the most significant economic determinants for its positive relationship with transparency (Alcaide-Muñoz et al., 2017; Rodríguez-Bolívar et al., 2013).

Studies have also found that citizens have an incentive to assess local financial conditions when they paid high taxes (Alcaide-Muñoz et al., 2017) When citizens pay a high level of taxes, they expect to receive more and higher quality public services. If they perceive that the quantity and quality of public services received are not balanced with the amount of taxes paid, they will demand greater information transparency from public managers to monitor how they manage their financial resources. We will test hypothesis H4.1. and H4.2 as summarised in Table 1.1.

1.2.2.3. Political Factors

Political ideology (POL)

According to institutional theory, and specifically considering the mimetic isomorphism stream, political parties with the same ideology will tend to respond to pressure from their environments and adopt structures and practices that are considered legitimate and socially acceptable by their ideological followers (Powell & DiMaggio, 2012). Indeed, it has been demonstrated that the political ideology of a governmental party significantly affects the style of public administration management. The partisan politics matters thesis argues that left-wing parties tend to adopt social policies and carry out initiatives which increase public spending and public investments (Ashworth et al., 2005).

Tejedo-Romero and Araujo (2018, 2020) found that left-wing parties are more prone to carry out projects that promote transparency and information disclosure than right-wing political parties. Ya Ni and Bretschneider (2007), however, found that governments with a conservative ideology tend to implement programs and activities of an economic nature, while progressive politicians are more likely to focus on social policies and citizen engagement. There are also empirical studies that have not found significant evidence in this regard (García-Tabuyo et al., 2017). We thus propose to test hypotheses H5.1. and H5.2 as summarised in Table 1.1.

Political fragmentation (FRA)

According to Roubini and Sachs (2014), weak governments may be tempted to overestimate tax revenues to increase their spending levels. Goal setting theory (Locke & Latham, 2002) suggests that weak governments may not establish clear goals and may try to satisfy all demands with the aim of winning the next electoral campaign. It is also more difficult to reach consensus in a coalition government, and performance usually decreases. By contrast, if public managers and politicians know what they are aiming for, they are motivated to exert more effort, which increases performance. In other words, people with specific and challenging goals perform better than those with vague goals (Locke & Latham, 2002).

According to prior research (Volkerink & de Haan, 2001), the number of parties in the cabinet is positively correlated with higher deficits due to their link with indecision and depends to a larger extent on taxation (Geys & Revelli, 2011). Fragmented governments also demonstrate problems with coordination and seem to be less effective in undertaking reforms and policies, which can affect the implementation of OG initiatives and projects (Puron-Cid, 2014).

Empirical studies (Alcaide-Muñoz et al., 2017; Rodríguez-Bolívar et al., 2013) have shown that the more fragmentation there is, the more incentive to offer information transparency, because politicians who are seeking more votes try to meet the needs of voters as far as possible. According to this theoretical lens and these prior findings, we will test hypotheses H6.1. and H6.2 as summarised in Table 1.1.

Political stability (STA)

Jochimsen and Thomasius (2014) used goal setting theory to suggest that a politician with more years in power has more experience of setting specific and viable objectives. As the implementation of ICTs and adoption of OGD initiatives in a government tend to require political support for both the assignment of adequate resources and the establishment of strategic objectives in a scheduled time horizon (Puron-Cid, 2014), the political stability of a local government could fit well with the implementation of OGD initiatives.

Although there are no empirical studies that analyse the relationship between political stability and the online disclosure of public information, Rodríguez-Bolívar (2017) found a significant positive relationship between financial sustainability and the number of years that a political party has been in power, which suggests that experienced politicians have more knowledge with which to establish rational objectives and achieve goals. We will therefore test hypotheses H7.1. and H7.2 as summarised in Table 1.1.

1.2.2.4. City Profile

Smart city (SC)

The framework of smart cities has favoured technological development and innovation, creating a participative and collaborative environment among governments and citizens in order to increase the quality of life of citizens (Rodríguez-Bolívar, 2019). In this context, sharing data on public services, even dating back to the 2000s, has become very relevant considering the need for information transparency and public participatory governance in decision making (Open Knowledge Foundation, 2015). Indeed, in a smart city context, open data initiatives seek to promote greater citizen engagement in public decisions, implementing collaborative and participative city governance (Pereira et al., 2017), fostering co-creation and collective intelligence, and supporting innovation, and can also be useful in providing solutions to many socio-economic and environmental problems (Ubaldi, 2013).

One of the main derivatives of the open data initiatives is the provision of government data portals (Weerakkody et al., 2017), especially in a smart city context, where open data initiatives can be shaped. According to Burns and Andrucki (2021), open data platforms in smart cities can increasingly serve as a core strategy for achieving “smartness” (Barns, 2016), because it assumes a singular individuated process of subjectivation as the origin of the smart city and its governance models (Burns & Andrucki, 2021). In practical terms, open data government platforms can help governments to learn from other organisations and agencies in delivering better services (Agrawal et al., 2014), and also help citizens to get involved in the processes of the government and create value for both (Agrawal et al., 2014). Indeed, according to Pereira et al. (2017), open data initiatives improve the delivery of public value in smart city contexts. It would thus be interesting to determine the expected effect that Smart cities could have on both information transparency and the implementation of OGD initiatives. We will therefore test hypotheses H8.1. and H8.2 as summarised in Table 1.1.

1.3. Empirical Research

1.3.1. Sample selection

Navarro-Galera et al. (2021) found that Spanish regional and local governments have had difficulty controlling the public deficit and suffered a deterioration in their financial positions. This led to a marked worsening of public finances, jeopardising the financial sustainability of public services, and also led to hard management cut-backs, which favoured the implementation, evolution and maturity of technological initiatives and projects. Indeed, SLG implemented new technological advances (Crisado & Ruvalcaba-Gomez, 2018), with the aim of improving the delivery of online public services (Rodríguez-Bolívar, 2017), favouring citizen participation in public policies, by disclosing a greater amount of information (Alcaide-Muñoz et al., 2017).

The central government of Spain launched an ambitious OG strategy, adopting the OG Partnership philosophy in 2011, following the Recommendations of OECD on the Digital Strategies of the Government (OECD, 2014). This OG strategy has been implemented in several staggered phases and involves four OG plans (www.transparencia.gob.es). All previous above comments make SLGs are a good basis for our research, and the empirical evidence collected could also be useful and interesting for governments in other countries around the world.

This research focuses on SLGs because they are the closest level of government to citizens and manage the largest number of services (Law 7/1985, Regulation of Bases of Local Regimes). They also represent the highest level of debt in the Spanish public sector, and in recent years, have suffered huge management cuts and financial difficulties (Navarro-Galera et al., 2021), which has prompted citizens to demand more public information. Our sample selection includes SLGs with a population over 50,000 inhabitants, which assumes a series of competencies and responsibilities which are supposed to deliver complex and efficient public services (Rodríguez-Bolívar, 2017). They also manage a high level of activity that is more suitable for innovation in public policy (Criado & Ruvalcaba-Gomez, 2018), and pushes them to be early adopters of new technologies.

The sample data for this research was collected in two stages (during May and June 2021). Firstly, we searched local governments of areas with more than 50,000 inhabitants in the Spanish National Institute of Statistics (INE) database. This search provided 145 local governments, which represent more than 50% of the Spanish population (<https://www.ine.es/>). These municipalities have large populations, and have assumed a series of responsibilities and competences, in addition to adopting leadership behaviours regarding new technologies (as noted previously), but they are a heterogeneous group. We thus split these municipalities into three groups (using population density as indicator, based on institutional theory) in order to gain an idea of the defining characteristics in the municipalities of our sample (see Table 1.2).

There are two clearly differentiated groups (from the three existing groups), municipalities with low and high population density. In the first group, we find municipalities characterised by a population size below the median (88,096 inhabitants), inhabitants with an average age over 35 years (a population somewhat older than the two remaining groups), and an unemployment rate above the median with a poorly developed business fabric. In contrast, the second group is characterised by municipalities with population sizes above the median, and younger inhabitants with a high unemployment rate, although it has a more developed business fabric.

Table 1.2: Characteristics of the local governments in study’s analysed sample

| 145 SPANISH LOCAL GOVERNMENTS | | | |
|-------------------------------|-------------|----------------|--------------|
| | Low Density | Medium Density | High Density |
| | | | |

| | | | |
|--|---|---|--|
| Municipalities | Albacete, Alcalá de Guadaira, Alcoy, Almería, Aranjuez, Arganda del Rey, Ávila, Badajoz, Cáceres, Cartagena, Chiclana de la Frontera, Ciudad Real, Córdoba, Cuenca, El Ejido, El Puerto Santamaría, Elche, Estepona, Ferrol, Guadalajara, Huesca, Jaén, Jerez de la Frontera, Linares, Lleida, Lorca, Lugo, Mérida, Mijas, Molina del Segura, Motril, Murcia, Orihuela, Pinto, Ponferrada, Pontevedra, Sagunto, San Bartolomé de Tijarana, Sanlúcar de Barrameda, Santiago Compostela, Segovia, Siero, Talavera de la Reina, Toledo, Utrera, Velez Málaga, Zamora, Zaragoza | Alcalá de Henares, Algeciras, Alicante, Arona, Benidorm, Boadilla del Monte, Burgos, Castellón de la Plana, Cerdanyola del Vallés, Collado Villalba, Dos Hermanas, Elda, Gandía, Getafe, Gijon, Huelva, Irún, La Rozas, Logroño, Majadahonda, Málaga, Manresa, Marbella, Ourense, Oviedo, Palencia, Palma de Mallorca, Paterna, Pozuelo de Alarcón, El Prat de Llobregat, Reus, Rivas-Madrid, Roquetas de Mar, San Cristobal de la Laguna, San Sebastián de los Reyes, San Vicente del Raspeig, San Cugat del Valles, Santa Cruz de Tenerife, Santa Lucia de Tijarana, Telde, Torrelavega, Torrent, Torrevieja, Valdemoro, Valladolid, Vilanova I La Geltrú, Vila-real, Vitoria | Alcobendas, Alcorcón, Arrecife, Avilés, Badalona, Barakaldo, Barcelona, Benalmadena, Bilbao, Cádiz, Castelldefels, Ceuta, Cornellá del Llobregat, Coruña, Coslada, Donostia/San Sebastián, Fuengirola, Fuenlabrada, Getxo, Girona, Granada, Granollers, Las Palmas, Leganés, León, L'Hospitalet del Llobregat, Línea de la Concepción, Madrid, Mataró, Melilla, Mollet del Vallés, Mostoles, Pamplona, Parla, Rubí, Sabadell, Salamanca, San Fernando, Sant Boi de Llobregat, Santa Coloma de Gramenet, Santander, Sevilla, Tarragona, Terrassa, Torrejón de Ardoz, Torremolinos, Valencia, Vigo, Viladecans |
| | Population | | |
| Over the median | 33.33% | 50.00% | 65.31% |
| Under the median | 66.67% | 50.00% | 34.69% |
| Young population 15 to 35 years | | | |
| Over the median | 29.71% | 52.08% | 67.35% |
| Under the median | 70.83% | 47.92% | 32.65% |

| | | | |
|--|--------------------|---|---|
| GDP per capita | | | |
| Over the median | 29.17% | 58.33% | 61.22% |
| Under the median | 70.83% | 41.67% | 38.78% |
| Unemployment Rate | | | |
| Over the median | 64.58% | 50.00% | 65.31% |
| Under the median | 35.42% | 50.00% | 34.69% |
| Debt per capita | | | |
| Over the median | 47.92% | 43.75% | 57.14% |
| Under the median | 52.08% | 56.25% | 42.86% |
| Number of companies | | | |
| Over the median | 33.33% | 56.25% | 59.18% |
| Under the median | 66.67% | 43.75% | 40.82% |
| Political Ideology | | | |
| Conservatives | 25.00% | 45.83% | 30.61% |
| Progressives | 75.00% | 54.17% | 63.39% |
| SPANISH SMART CITIES | | | |
| | Low Density | Medium Density | High Density |
| Municipalities | Murcia, Zaragoza | Gijon, Málaga, San Sebastian de los Reyes, Valladolid | Barcelona, Bilbao, Fuenlabrada, Madrid, Sevilla, Terrassa |
| Population | | | |
| Over the median | 100% | 100% | 100% |
| Young population 15 to 35 years | | | |
| Over the median | 100% | 100% | 100% |
| GDP per capita | | | |
| Over the median | 50.00% | 66.67% | 100% |
| Under the median | 50.00% | 33.33% | - |
| Unemployment Rate | | | |
| Over the median | - | 33.33% | 14.29% |
| Under the median | 100% | 66.67% | 85.71% |
| Debt per capita | | | |
| Over the median | 100% | 66.67% | 71.43% |
| Under the median | - | 33.33% | 28.57% |
| Number of companies | | | |
| Over the median | 100% | 100% | 100% |
| Political Ideology | | | |
| Conservatives | 100% | 25.00% | 50.00% |
| Progressives | - | 75.00% | 50.00% |

Source: Statistics National Institute (<https://www.ine.es/>)

Notes: We calculated tertiles of cities using population density: Low density 54.80 to 822.32 inhabitants/km²; Medium density 822.33 to 2,343.72 inhabitants/km² and high density 2,343.73 to 18,094.93 inhabitants/km². We try to homogenise cities according to the inhabitants that provide public services for each km² (Arcelus et al., 2015).

We collected data regarding Spanish smart cities. Considering that the definition of SCs is still evolving and there is no “best formula” for transforming every city into an SC (Mozūriūnaitė & Sabaitytė, 2021), our sample selection process included Spanish cities recognised as SCs in two widely accepted world rankings according to the characteristics required by these rankings: 1) a European project sponsored by Asset One Immobilienentwicklungs AG (<http://www.smart-cities.eu>) - we collected seven municipalities from this ranking with a large population classified as SCs; and 2) the EUROCITIES network (<http://www.eurocities.eu>) - we collected five municipalities from this ranking with a large population classified as SCs). The sample SCs are municipalities with large populations, where the inhabitants are young people and there is a low unemployment rate (see Table 1.2). These cities have a GDP per capita over the median with high business activity, although their levels of indebtedness are high; also over the median. In brief, our sample selection is composed of a total of 145 SLGs - twelve of which are considered SCs.

1.3.2. Dependent variables

We analysed the SLGs’ official websites using two items (see Tables 1.3 and 1.4). The first item (Open Government Sections “OGS”) allowed us to analyse the ways that local governments offer access to OG so that citizens can see and use their content: we analysed the means of accessing the OG section. We accessed the municipalities’ official websites (all URLs are found in Table 1.4), and then we observed the type of access each municipality offered to the OG section (Table 1.3 Subitem 1 weighted 0.25). When the municipality had a specific OG section that, if clicked, took us to a specific OG website, it was assigned a score of 1; if this click sent us to a specific section of the official webpage of the municipality, and not to a specific OG portal, a score of 0.5 was assigned; finally, if the municipality had a differentiated OG portal that could not be accessed from the official web page of the municipality, then a score of 0.25 was assigned, and where there was no OG section or portal, a score of 0 was assigned.

Next, we proceeded to determine whether the OG web page allowed us to make an advanced search of the published databases (Table 1.3 Subitem 2 weighted 0.25), if it offered this tool, it would be assigned a score of 1, and otherwise it would receive a score of 0. We also determined whether the OG web page offered information on the municipality strategic plan (Table 1.3 Subitem 3 weighted 0.25), assigning a score of 1 for information, and otherwise a score of 0. Finally, if this website had a news section (Table 1.3 Subitem 4 weighted 0.25-), then it was assigned a score of 1, and otherwise it was assigned a score of 0. These three subitems (Subitems 2,

3 and 4) had a weight of 0.25 each. The first item (OGS) was therefore scored as follows:

| |
|---|
| <p><i>How the municipalities offer access to the OG sections (Item 1) (Max. punctuation 1)</i> Subitem 1-0.25 x (1/0.5/0.25/0) + Subitem 2-0.25 x (0/1) + Subitem 3-0.25 x (0/1) + Subitem 4-0.25 x (0/1)</p> |
|---|

The second item (OGD) allows us to recollect the disclosed information content (data catalogue or types of information) and formats used by local governments to disclose the OGD via OGDs or municipal official web pages (see Table 1.4). We examined the different sections of the data catalogue or types of information (Subitem 1 weighted 0.5), into which the information is divided, each type of information offered is scored with a 1 and otherwise with a 0. Given that there are eighteen different types of information, the score obtained in this first subitem is divided by eighteen and then weighted by 0.5.

We continue with the formats in which information is disclosed (Subitem 2 weighted 0.5). We found three different categories of data format: easy-processing data, less easy-processing data, and difficult-processing data. We listed twelve types of data formats in easy-processing data (1. easy-processing data weighted 0.6), assigning a score of 1 for each if available and 0 otherwise. The total score is the sum of the score obtained in the 12 formats divided by 12 and weighted by 0.6. In the second category (less easy-processing data) (2. Less easy-processing data weighted 0.3) we found eight different types of data formats, and assigned a score of 1 for each if available and 0 otherwise. The total score is the sum of the score obtained in the eight formats divide by 8 and weighted by 0.3. Finally, in difficult-processing data (3. difficult-processing data 0.1), we only listed one type of data format (.pdf format), assigning a score of 1 if the municipality had information disclosed in pdf format and 0 otherwise. We summed each punctuation obtained in each different categories of data format to reweigh it by the score of 0.5 assigned to Subitem 2 in Table 1.4. The second item (OGD) was therefore scored as follows:

| |
|--|
| <p><i>OGD (data catalogue and format) (Item 2) (Max. punctuation 1)</i> Subitem 1-0.50 x (0/1 with total 18 type of information/18) + Subitem 2-0.50 x [1. Easy-processing data 0.6 x (0/1 with total 12 easy-processing formats/12) + 2. Less easy-processing data 0.3 x (0/1 with total 8 less easy-processing formats/8) + 3. Difficult-processing data 0.1 x (0/1 with total 1 difficult-processing format)]</p> |
|--|

1.3.3. Independent variables and method

We selected eight variables as factors linked with the hypotheses defined in the previous section. All information about the variable acronyms, hypothesis, their

Table 1.3: Characteristics between innovators in OGD and non-innovators

| Variables | Innovators in OGD | | | | | Non-innovator in OGD | | | | |
|-----------|-------------------|-----------|-----------|--------|-----------|----------------------|-----------|-----------|--------|-----------|
| | Mean | Median | Std. Dev. | Min. | Max | Mean | Median | Std. Dev. | Min. | Max |
| OGS | 0.73 | 0.81 | 0.32 | 0.13 | 1.00 | 0.19 | 0.00 | 0.28 | 0.00 | 1.00 |
| OGD | 0.46 | 0.46 | 0.03 | 0.42 | 0.50 | 0.46 | 0.47 | 0.05 | 0.17 | 0.50 |
| POP | 13.20 | 13.01 | 1.05 | 12.05 | 14.97 | 11.55 | 11.36 | 0.57 | 10.83 | 13.44 |
| PDEN | 5,478.86 | 5,010.80 | 5,103.07 | 682.84 | 16,503.50 | 2,328.42 | 1,440.04 | 2,911.88 | 54.80 | 18,894.93 |
| GDPpc | 24,699.38 | 22,831.00 | 3,434.15 | 21.581 | 29.807 | 21,592.75 | 20,710.00 | 5,126.14 | 14,989 | 51,002 |
| PRE | 0.02 | 0.03 | 0.01 | 0.01 | 0.03 | 0.02 | 0.02 | 0.01 | 0.009 | 0.064 |
| POL | 0.50 | 0.50 | 0.53 | 0.00 | 1.00 | 0.33 | 0.00 | 0.47 | 0.00 | 1.00 |
| FRG | 34.63 | 35.50 | 8.97 | 24.40 | 48.10 | 39.77 | 40.00 | 12.58 | 12.00 | 84.00 |
| STA | 4.00 | 2.50 | 5.07 | 1.00 | 16.00 | 4.91 | 4.00 | 5.05 | 1.00 | 16.00 |
| SC | 0.63 | 1.00 | 0.52 | 0.00 | 1.00 | 0.05 | 0.00 | 0.22 | 0.00 | 1.00 |

Source: Own elaboration

Note: Innovators (early adopters) in OGD: Barcelona, Gijón, Madrid, Pamplona, Santander, Valencia, Valladolid and Zaragoza (Orange Foundation available at: https://www.proyectosfundacionorange.es/docs/eE2014/Datos_Abiertos_2014_resumen_ejecutivo.pdf)

Table 1.4: Scoring Item 1: The way sample municipalities offer access to their open government sections (OGS)

| QUESTIONS | SCORE | WEIGHTING | PERCENTAGE |
|---|----------|-----------|------------|
| SUBITEM 1.- On the local government website, is there a specific section of open government? | Σ a to d | 0.25 | |
| a. There is a section which link a different page of open government | 1 | | 21.38% |
| b. There is an open government tab, but it is inside the official local government website | 0.5 | | 19.31% |
| c. There is an independent Web site without a link in the official website of the local government | 0.25 | | 0.00% |
| d. There is no open government page/section | 0 | | 59.31% |
| SUBITEM 2.- Does the webpage allow an advanced search of open government databases? | 0/1 | 0.25 | 18.62% |
| SUBITEM 3.- Does the local government offer information on the Open Government Action Plan? | 0/1 | 0.25 | 12.41% |
| SUBITEM 4.- Is there a news section? | 0/1 | 0.25 | 22.76% |
| Total Access the OG sections (max. punctuation) | | 1 | |
| OTHER INFORMATION ABOUT OG (NOT INCLUDED IN PREVIOUS ITEM) | | | |
| Local governments have open government data portals | | | 46.21% |

Source: Own Elaboration

descriptions, and calculation is detailed in Table 1.1. In order to identify the factors that affect the two indexes (OGS and OGD), six regression models were used to predict the effect of all independent variables, considered simultaneously. The National Statistical Institute in Spain uses three groups to stratify the municipalities according to their population: municipalities between 20,000 and 50,000 inhabitants (small municipalities, not analysed in this study); municipalities between 50,000 and 100,000 inhabitants (medium municipalities); and over 100,000 inhabitants (large municipalities).

Considering this stratification (www.ine.es) and prior research (Royo et al., 2020), we separated the 145 local government into two groups based on their population size: municipalities of 50,000 to 100,000 inhabitants and municipalities over 100,000 inhabitants. We thus offer the following regression analysis: 1) with all local governments (all sample selection) (EQ1); 2) local governments with a population over 100,000 inhabitants (EQ2), and 3) local governments with a population between 50,000 and 100,000 inhabitants (EQ3) (see Table 1.6).

At this point of study we have two variables to which we have paid special attention: population density and population size. Table 1.2 gives us indications that population density could be a relevant attribute for characterising different aspects of municipalities. Previous studies (Arcelus et al., 2015; Homsy & Warner, 2015) have demonstrated that population density affects governors in both undertaking transparency strategies and in the management of public services. Finally, population size is also a variable that has been widely analysed in prior studies on transparency (Alcaide-Muñoz et al., 2017; Rodríguez-Bolívar et al., 2013), finding

that the highest-populated municipalities exert greater pressure on public managers to be transparent in the management of public resources.

Considering the structure presented by the dependent variables (OGS and OGD), the associations between the dependent and independent variables were tested using OLS regression analysis (STATA v.16), which produced the equations shown in Table 1.6.

1.4. Analysis of the Results

1.4.1. Descriptive analysis

Table 1.1 shows that although there is a great dispersion in the design of OG websites by SLGs, the public information disclosed is very similar (low standard deviation). It should be noted that sample municipalities show different population density, municipal wealth, and political fragmentation and stability (all have high values of standard deviation). This high level of dispersion reflects the different municipalities included in the sample selection, from highly populated cities (like Madrid or Barcelona), to large cities with higher area but less industry and generation of wealth. By contrast, the political ideology, the fiscal pressure, and the smart city profile are remarkably similar among sample local governments (see the median and standard deviation).

Similarly, in Table 1.5 we can see that the governments that were innovators in OGD show a higher level of development in OG sections (mean 0.81), although the level of transparency is very similar to the non-innovators or laggards (mean 0.46 versus 0.47), the minimum score of the most innovative is higher than 0.42. The innovators are municipalities with a higher population density, and municipal wealth, and six of them are considered SCs (50.00%).

Table 1.4 confirms previous results regarding how the municipalities offer access to the OG sections, because only 19.31% of local governments often have an OG section on their websites, using a link to an OG tab inside the official local government website. Most of the websites do not allow an advanced search of OG databases, and do not offer information about the OG Action Plan (see Table 1.3). These results indicate that the initiatives are in an infancy stage in SLGs, which means that there is much room for future improvement if local governments want citizen engagement via both monitoring their activities and involving them in public decisions.

Table 1.5: Scoring Item 2: Open government data disclosed on the OGDs and municipal official websites

| QUESTIONS | SCORE | WEIGHTING | PERCENTAGE |
|--|--------------------|--------------------------|------------|
| SUBITEM 1.- Disseminate information on (data catalogue or types of information) | Σ a to r/18 | 0.50 | |
| a. Map of the city – typography network | 0/1 | | 80.69% |
| b. Security in public places | 0/1 | | 97.93% |
| c. Environment | 0/1 | | 96.55% |
| d. Urban planning | 0/1 | | 99.31% |
| e. Rural environment and fishing (conservation of roads and rural coats) | 0/1 | | 55.86% |
| f. Culture and leisure (historical-artistic heritage) | 0/1 | | 99.31% |
| g. Commerce – Industry | 0/1 | | 92.41% |
| h. Supplies | 0/1 | | 91.03% |
| i. Social services – employment | 0/1 | | 96.55% |
| j. Public Transport | 0/1 | | 98.62% |
| k. Sport | 0/1 | | 98.62% |
| l. Energy (public lighting) | 0/1 | | 64.14% |
| m. Economy (budget and public accounts) | 0/1 | | 98.62% |
| n. Payment and municipal taxes | 0/1 | | 99.31% |
| o. Education | 0/1 | | 95.86% |
| p. Legislation and justice | 0/1 | | 98.62% |
| q. Demography | 0/1 | | 84.14% |
| r. Health (participation in the management of primary health care) | 0/1 | | 93.10% |
| SUBITEM 2.- Format in which information is disclosed: | | (Σ 1 +2+ 3) 0.50 | |
| 1. Easy-processing data | Σ a to l/12 | 0.60 | |
| a. CSV | 0/1 | | 40.00% |
| b. XLS | 0/1 | | 21.38% |
| c. XML | 0/1 | | 19.31% |
| d. XLSX | 0/1 | | 4.83% |
| e. WMX | 0/1 | | 0.69% |
| f. RDF | 0/1 | | 13.10% |
| g. PRJ | 0/1 | | 1.38% |
| h. SHP | 0/1 | | 7.59% |
| i. SHX | 0/1 | | 1.38% |
| j. JSON | 0/1 | | 20.00% |
| k. CPG | 0/1 | | 1.38% |
| l. GEOJSON | 0/1 | | 5.52% |
| 2. Less easy-processing data | Σ a to h/8 | 0.30 | |
| a. ZIP | 0/1 | | 5.52% |
| b. DBASE | 0/1 | | 0.69% |
| c. WMTS | 0/1 | | 2.07% |
| d. DBF | 0/1 | | 1.38% |
| e. DAT | 0/1 | | 0.69% |
| f. KML | 0/1 | | 8.97% |
| g. KMZ | 0/1 | | 3.45% |
| h. SBN | 0/1 | | 0.69% |
| 3. Difficult-processing data | | 0.10 | |
| a. PDF | 0/1 | | 80.69% |

| | | | |
|---|--|---|--|
| Total Information Disclosed (max. score) | | 1 | |
| Spanish municipalities' URLs (municipal official website's URL; OGD website's URL NA (not available) | | | |

Albacete (<http://www.albacete.es/>; NA); Alcalá de Guadaíra (<https://www.alcaladeguadaira.es/>; NA); Alcalá de Henares (<https://www.ayto-alcaladehenares.es/>; <https://opendata.ayto-alcaladehenares.es/>); Alcobendas (<https://www.alcobendas.org/es/>; <https://datos.alcobendas.org/dataset/>); Alcorcón (<https://www.ayto-alcorcon.es/>; NA); Alcoy (<https://www.alcoi.org/es/portada/>; <https://opendata.alcoi.org/es/>); Algeciras (<http://www.algeciras.es/es/index.html>; NA); Alicante (<https://www.alicante.es/es/>; <http://datosabiertos.alicante.es/>); Almeria (<https://www.almeriaciudad.es/>; NA); Aranjuez (<https://www.aranjuez.es/>; NA); Arganda del Rey (<https://www.ayto-arganda.es/>; <https://datosabiertos.ayto-arganda.es/>); Arona (<http://www.arona.org/>; <http://datos.arona.org/dataset/>); Arrecife (<https://www.arrecife.es/>; NA); Ávila (<http://www.avila.es/>; NA); Avilés (<https://aviles.es/>; NA); Badajoz (<https://www.aytobadajoz.es/es/ayto/portada>; <http://datos.aytobadajoz.es/es/>); Badalona (<http://ajuntament.badalona.cat/>; <https://www.seu-e.cat/es/web/badalona/dades-obertes>); Barakaldo (<https://www.barakaldo.eus/portal/web/barakaldo/>; <https://www.opendatabizkaia.eus/es/organizacion/barakaldo/>); Barcelona (<https://ajuntament.barcelona.cat/es/>; <https://opendata-ajuntament.barcelona.cat/es/>); Benalmadena (<https://www.benalmadena.es/>; NA); Benidorm (<https://benidorm.org/es/>; NA); Bilbao (<https://www.bilbao.eus/cs/Satellite?c=Page&cid=3000005415&pagename=Bilbaonet/>; <https://www.bilbao.eus/opendata/es/inicio/>); Bobadilla del Monte (<https://www.ayuntamientoobadilladelmonte.org/>; NA); Burgos (<http://www.aytoburgos.es/>; NA); Cáceres (<https://www.ayto-caceres.es/>; <http://opendata.ayto-caceres.es/dataset/>); Cádiz (https://institucional.cadiz.es/portada_2017; NA); Cartagena (<https://www.cartagena.es/>; https://www.cartagena.es/open_data.asp?cat=3&subcat=6); Castelldefels (<https://www.castelldefels.org/es/>; <https://seu-e.cat/ca/web/castelldefels/dades-obertes>); Castellón de la Plana (http://www.castello.es/web30/pages/inicio_web10.php?id=val; <http://www.castello.es/frontral/transparencia/pages/index.php>); Cerdanyola del Vallés (<http://www.cerdanyola.cat/>; <https://www.seu-e.cat/ca/web/cerdanyoladelvalles/dades-obertes>); Ceuta (<https://www.ceuta.es/ceuta/>; NA); Chiclana de la Frontera (<https://www.chiclana.es/>; NA); Ciudad Real (<https://www.ciudadreal.es/>; <https://www.ciudadreal.es/gobierno-abierto.html>); Collado Villalba (<http://www.colladovillalba.es/es/>; NA); Córdoba (<https://www.cordoba.es/>; NA); Cornellá de Llobregat (<https://www.cornella.cat/>; <http://dadesobertes.cornella.cat/>); Coruña (<https://www.coruna.gal/web/es?argIdioma=es>; <https://www.coruna.gal/encifras/es/datos-abiertos>); Coslada (<http://coslada.es/semsys/ciudadanos/portal/inicio>; NA); Cuenca (<https://www.cuenca.es/?AspxAutoDetectCookieSupport=1>; <https://gobiernoabierto.cuenca.es/catalogo>); Donostia/San Sebastián (<https://www.donostia.eus/taxo.nsf/fwHome?ReadForm&idioma=cas>; <https://www.donostia.eus/datosabiertos/>); Dos Hermanas (<http://www.doshermanas.es/>; NA); El Ejido (<https://elejido.es/>; NA); Elche (<https://www.elche.es/>; NA); Elda (<http://www.elda.es/>; NA); Estepona (<https://ayuntamiento.estepona.es/>; NA); Ferrol (<https://www.ferrol.gal/>; <https://osabiertos.fuengirola.es/>); Fuenlabrada (<https://www.ayto-fuenlabrada.es/>; NA); Gandia (https://www.gandia.es/aytg/web_php/index.php?lang=10; https://www.gandia.es/aytg/web_php/index.php?contenido=subapartados_woden&id_boto=410&lang=1); Getafe (<https://www.getafe.es/>; <https://gobiernoabierto.getafe.es/datos>); Getxo (<https://www.getxo.eus/es/>; <https://www.getxo.eus/es/gobierno-abierto/opndata>); Gijón (<https://www.gijon.es/es/>; <https://www.gijon.es/es/datos>); Girona (<https://web.girona.cat/>; <https://www.girona.cat/opendata/>); Granada (<https://www.granada.org/>; NA); Granollers (<https://www.granollers.cat/>; <https://www.seu-e.cat/ca/web/granollers/dades-obertes>); Guadalajara (<https://www.guadalajara.es/es/>; NA); Huelva (<https://www.huesca.es/inicio>; <http://194.179.101.132/areas/transparencia/datos-abiertos-rss/>); Huesca (<http://www.huelva.es/porta1/>; NA); Irún (<https://www.irun.org/es/>; NA); Jaén (http://www.aytojaen.es/portal/p_1_principall.jsp?codResi=1; NA); Jerez de la Frontera (<https://www.jerez.es/>; NA); Las Palmas (<https://www.laspalmasgc.es/es/>; <http://datosabiertos.laspalmasgc.es/>); Las Rozas (<https://www.lasrozas.es/>; <https://www.lasrozas.es/el-ayuntamiento/datos-abiertos>); Leganés (<https://www.leganes.org/portal/>; NA); León (<https://sede.aytoleon.es/manutenimiento/index.html>; NA); L'Hospitalet de Llobregat (<https://www.l-h.cat/>; <https://www.l-h.cat/>);

nos (<https://www.torremolinos.es/>; NA); Torrent (<https://www.torrent.es/torrentPublic/inicio.html>; <http://datosabiertos.torrent.es/>); Torreveja (<https://torrevieja.es/es>; NA); Utrera (<https://www.utrera.org/>; NA); Valdemoro (<https://www.valdemoro.es/>; NA); Valencia (<https://www.valencia.es/>; <https://www.valencia.es/dadesobertes/es/>); Valladolid (<https://www.valladolid.es/es>; <https://www.valladolid.es/es/temas/hacemos/open-data-datos-abiertos>); Velez-Málaga (<https://www.velezmalaga.es/>; NA); Vigo (<https://hoxe.vigo.org/>; <https://datos.vigo.org/es/?l>); Viladecans (<https://www.viladecans.cat/ca>; <https://www.seu-e.cat/es/web/viladecans/dades-obertes>); Villanova i la Geltrú (<https://www.vilanova.cat/>; <https://www.seu-e.cat/es/web/vilanovailageltru/dades-obertes>); Vila-real (https://www.vila-real.es/portal/p_1_principal1.jsp?codResi=1&language=ca; NA); Vitoria (<https://www.vitoria-gasteiz.org/we001/was/we001Action.do?accionWe001=ficha&accion=home>; <https://www.vitoria-gasteiz.org/j34-01w/catalogo/portada?idioma=es>); Zamora (<http://www.zamora.es/>; NA); Zaragoza (<https://www.zaragoza.es/sede/>; <https://www.zaragoza.es/sede/portal/datos-abiertos/>)

Source: Own Elaboration

On the other hand, 46.21% of local governments have open data portals, which shows the potential for future improvement. The data in Table 1.4 indicates that, in general, sample local governments disclose information about all areas analysed in this research. Most information disclosed in the sample local governments was information about urban planning, municipal taxes (including payments) and about culture and leisure. Finally, most of sample governments use the .pdf format (non-easily processing data) which does not allow citizens to make their own reports easily. CSV and GEOJSON are also used as formats but not at a high level in our sample.

1.4.2. Empirical Results from Models

Findings indicate that there is a positive and significant relationship ($\beta = 0.229$; $\beta < 0.050$) between the population and ways to access the OG section for all sample local governments (see Table 1.6). This seems to confirm the basis in stakeholder theory (Jensen & Meckling, 1976), according to which public managers and governors are more motivated to implement OG initiatives in large municipalities to demonstrate that they have acted according to their responsibilities (we cannot reject H1.1). Similarly, the population density has a positive and significant relationship ($\beta = 0.191$; $\beta < 0.005$; $\beta = 0.206$; $\beta < 0.010$; $\beta = 0.028$; $\beta < 0.005$) to the different ways of accessing the OG sections in all tested models. According to the stakeholder and institutions theories (Jensen & Meckling, 1976; Powell & DiMaggio, 2012), public managers and policymakers may feel more pressure to implement OG projects when the municipality has a high population density (we cannot reject H2.1), in all models.

Municipal wealth has a positive and significant relationship with the ways to access OG projects ($\beta = 0.134$; $\beta < 0.010$), and this relationship is higher and more significant when we analysed large municipalities (over 100,000 inhabitants) ($\beta = 0.316$; $\beta < 0.005$). According to the legitimacy and institutional theories (Powell & DiMaggio, 2012; Weber, 2018), politicians and public managers must respond to pressures from their citizenship and adopt OG initiatives to improve transparency (we cannot reject H3.1). This relationship is not significant in municipalities with a population between 50,000 to 100,000 inhabitants, however, so it seems that when we analyse medium-sized municipalities the pressure is reduced, and the public managers are less motivated to undertake this type of initiative (legitimacy and institution theories).

Political stability is the only political factor that has a negative and significant relationship with how citizens can access OG projects, as when we considered all local governments (Model 1) ($\beta = -0.159$; $\beta < 0.010$) in the rest of models it had no significance (we reject H5.1 and H6.1, but support H7.1). This evidence is contrary to goal setting theory (Jochimsen & Thomasius, 2014). It seems that when politicians and governors win elections and come to lead the municipality, they are more prone to implement OG initiatives. The fiscal pressure borne by citizens has a positive and significant effect on how the local government offers access to OG projects in large municipalities ($\beta = 0.323$; $\beta < 0.001$). When the citizens pay high taxes, they demand greater access to municipal issues (we cannot reject H4.1), which is in accordance with agency theory (Jensen & Meckling, 1976). The fact that a municipality is surrounded by technological SC facilities makes it more likely that municipalities will undertake OG projects ($\beta = 0.281$; $\beta < 0.050$; we cannot reject H8.1).

Table 1.7 shows that there is a positive and significant relationship ($\beta = 0.241$; $\beta < 0.050$; $\beta = 0.294$; $\beta < 0.050$) between population density and public information disclosure, so public managers are more prone to disclose information when there is a high level of population density (we cannot reject H2.2), which confirms stakeholder and institutional theories (Jensen & Meckling, 1976; Powell & DiMaggio, 2012). There is no significance in municipalities with a population between 50,000 to 100,000 inhabitants.

We can observe that, in the case of municipal wealth, and according to legitimacy and institutional theories (Powell & DiMaggio, 2012; Weber, 2018), the data shows a positive and significant relationship with the disclosed information and format used (we cannot reject H3.2), in all models: when citizens have a higher economic

Table 1.6: Estimation results for the model of how sample municipalities offer access to OG projects

| Variables | Acronym | EQ1 | | EQ2 | | EQ3 | |
|---|---------|--------------------|--------------|--------------------|--------------|--------------|--------------|
| | | Coefficients | t-Statistics | Coefficients | t-Statistics | Coefficients | t-Statistics |
| Ln_population | POP | 0.229 | 2.411** | - | - | - | - |
| Population density | PDEN | 0.191 | 2.385** | 0.206 | 1.706* | 0.280 | 2.584** |
| Municipal wealth | GDPpc | 0.134 | 1.653* | 0.316 | 2.605** | 0.027 | 0.978 |
| Political ideology | POL | 0.073 | 0.842 | -0.037 | -0.264 | 1.187 | 0.239 |
| Political Fragmentation | FRG | -0.053 | -0.579 | -0.191 | -1.239 | 0.355 | 0.724 |
| Political stability | STA | -0.159 | -1.693* | -0.055 | -0.314 | -1.231 | 0.701 |
| Fiscal pressure | PRE | 0.115 | 1.483 | 0.323 | 2.844*** | -0.385 | 0.222 |
| Smart city | SC | 0.158 | 1.721* | 0.281 | 2.375** | - | - |
| R ² | | 0.265 ⁺ | | 0.381 ⁺ | | 0.106* | |
| EQ1 (all local governments) – OGS or OGD = $\beta_0 + \beta_1 \text{POP}_i + \beta_2 \text{PDEN}_i + \beta_3 \text{DPCPC}_i + \beta_4 \text{POL}_i + \beta_5 \text{FRG}_i + \beta_6 \text{STAI}_i + \beta_7 \text{PRE}_i + \beta_8 \text{SC}_i$ | | | | | | | |
| EQ2 (over 100,000 inhabitants) – OGS or OGD = $\beta_0 + \beta_1 \text{PDEN}_i + \beta_2 \text{DPCPC}_i + \beta_3 \text{POL}_i + \beta_4 \text{FRG}_i + \beta_5 \text{STAI}_i + \beta_6 \text{PRE}_i + \beta_7 \text{SC}_i$ | | | | | | | |
| EQ3 (50,000 to 100,000 inhabitants) – OGS or OGD = $\beta_0 + \beta_1 \text{PDEN}_i + \beta_2 \text{DPCPC}_i + \beta_3 \text{POL}_i + \beta_4 \text{FRG}_i + \beta_5 \text{STAI}_i + \beta_6 \text{PRE}_i$ | | | | | | | |

Source: Own elaboration

Significant at 0.001⁺; Significant at 0.01^{***}; Significant at 0.05^{**}; Significant at 0.1^{*}

Table 1.7: Estimation results of the model of information disclosed in the OGDs or municipal official websites

| Variables | Acronym | EQ1 | | EQ2 | | EQ3 | |
|-------------------------|---------|--------------------|--------------|--------------|--------------|--------------|--------------|
| | | Coefficients | t-Statistics | Coefficients | t-Statistics | Coefficients | t-Statistics |
| Ln_population | POP | 0.092 | 1.019 | - | - | - | - |
| Population density | PDEN | 0.241 | 3.136** | 0.294 | 2.290** | 0.138 | 1.298 |
| Municipal wealth | GDPpc | 0.266 | 3.446*** | 0.231 | 1.790* | 0.282 | 2.340** |
| Political ideology | POL | 0.036 | 0.435 | 0.026 | 0.175 | 0.190 | 1.557 |
| Political Fragmentation | FRG | -0.083 | -0.946 | -0.108 | -0.657 | -0.080 | -0.641 |
| Political stability | STA | -0.194 | -2.159** | -0.051 | -0.276 | -0.203 | -1.602 |
| Fiscal pressure | PRE | 0.076 | 1.021 | 0.280 | 2.318** | 0.013 | 0.115 |
| Smart City | SC | 0.224 | 2.548** | 0.236 | 1.871* | - | - |
| R ² | | 0.328 ⁺ | | 0.300*** | | 0.141** | |

Source: Own elaboration

Significant at 0.001⁺; Significant at 0.01^{***}; Significant at 0.05^{**}; Significant at 0.1^{*}

level, they tend to demand more information so that they know how the financial resources are managed.

Political stability is the only political factor that has a negative and significant relationship with transparency when we considered all local governments (Model 1) ($\beta = -0.194$; $\beta < 0.050$). There is no significance in the other models (we reject H5.2 and H6.2, but not reject H7.2). This evidence is contrary to goal setting theory (Jochimsen & Thomasius, 2014), as with access to the OG section.

Fiscal pressure supported by the citizens positively and significantly affects transparency in large municipalities ($\beta = 0.280$; $\beta < 0.050$). When citizens pay high taxes, they demand more information (we cannot reject H4.2). This evidence is in accordance with agency theory (Jensen & Meckling, 1976). Similarly, when the municipality is a smart city, local governments are more transparent and disclose more information ($\beta = 0.224$; $\beta < 0.050$; $\beta = 0.236$; $\beta < 0.100$; we cannot reject H8.2).

1.4.3. Discussion

This section examines and explains the main contributions of the findings of our research, as well as their implication for public policies and future research directions in the OG initiatives area. We analyse the impact of our findings on both theoretical foundations and practical experiences found in previous research concerning information transparency and OG initiatives.

1.4.3.1. Theoretical implications

The present study has theoretical implications for OG research in a local government context. Initially, the authors observed that public officials have been under pressure to modify governance tools due to the rapid population growth in cities, which has made OG initiatives relevant in this new scene (Royo-Montañés & Benítez-Gómez, 2019). Public managers and politicians should thus consider OG projects as tools for the new collaborative governance models implemented in cities.

Most of information disclosed in OGS and OGDPs is mainly disclosed in the pdf format, which is a widely-accepted and commonly used format mainly for reading, since it does not allow citizens to edit their own reports easily, so as to make decisions or participate in public affairs. Our findings thus seem to confirm the use of ICT by policymakers to increase the legitimacy of public actions, but not for promoting

citizen engagement in public decisions. This could be a reaction to the citizen pressure on policymakers, with the increasing urban challenges due to rapid urban population growth, seeking to adopt structures, and also legitimate and socially acceptable practices for being accountable to citizens (legitimacy theory) (Weber, 2018). This is the first and main contribution of our research.

Although governments seem to understand that ICTs offer great potential in information transparency, they are not adding public value to the information they are disclosing. Our findings, contrary to goal setting theory (Jochimsen & Thomasius, 2014), indicate that incoming politicians foster the implementation of OG initiatives, mainly in cases of corruption involving Spanish politicians, but this implementation is not focused on improving citizen engagement, or as noted previously, for legitimacy purposes. This is another main contribution of our research.

Our findings confirm the pillars of agency theory (Jensen & Meckling, 1976), showing a link between fiscal pressure and OG initiatives in sample large-size cities. These sample cities were characterised by high economic and educational level citizens who demand information to monitor public policies and their effect on financial information from local government, perhaps due to their higher financial contribution through taxes, which is especially relevant for information transparency in large municipalities (see Table 1.6).

Finally, our findings seem to indicate that municipalities do not show a mimetic isomorphism stream when they design their information transparency models implementing OG initiatives. In fact, contrary to the main propositions posed by institutional theory, the political ideology is not a significant attribute regarding access to OG projects, or in the disclosure of information in the OGDs or municipal official websites. This finding raises questions about prior findings regarding the policymakers with left-wing ideologies as the main drivers of improving information transparency (Tejedo-Romero & Araujo, 2018, 2020) or right-wing parties as the main drivers for citizen engagement and knowledge sharing concerning the technological innovation of public services (Rodríguez-Bolívar, 2015a).

Similarly to prior research (Puron-Cid, 2014), our findings show both the non-significant character of the political fragmentation of OG initiatives and the greater difficulty in fragmented governments of approving and undertaking reforms, policies, and these initiatives. In brief, our contradictory findings regarding prior research seem to be caused by the complex political contexts in which municipalities work. Future research should therefore undertake more in-depth studies focused on the institutional arena of sample municipalities with the aim of identifying patterns in OG initiative models.

1.4.3.2. Practical implications

Our research also has practical implications. Firstly, findings seem to indicate that the need to implement ICT initiatives and the way they are implemented is affected by the context. The cases of corruption involving Spanish politicians in recent years could have been good motivation for incoming politicians to promote these initiatives in SLGs. In fact, the context in which information transparency is developed can help us to understand the underlying forces that are supporting OG initiatives and the implementation of OGDs. Public managers and politicians should therefore examine the context in which the local government is running before implementing and designing their OG initiatives, which is a good avenue for future research (in-depth analyses of different contexts to identify the main drivers for implementing and designing OG initiatives).

While focusing on the way OG initiatives are implemented, our research has found that only a few local governments have created specific links to an OG and undertaken initiatives OGDs, which could mean the involvement of these governments in increasing their accountability to the public. We believe that the policies related to the process of adoption of OG projects in a complex political environment is a promising area of study. The results of future studies could strengthen the connection between OG projects and the traditional concerns of public administration.

Local governments in municipalities with larger populations, higher fiscal pressure, and citizens with higher economic levels usually make more efforts in the design of an OG website, facilitating citizens to access the information they disclose. Similar results are obtained regarding the disclosure information in the OGDs or municipal official websites but, in this case, the main demographic attribute is the population density and not the population size. This finding suggests public managers and politicians should analyse these attributes, which could be the main drivers for them to adopt open information policies and collaborative models of governance.

Finally, as noted by Pereira et al. (2017), the smart city context seems to promote more information transparency because city governments are aware of the potential that technologies have to create interactive and participatory urban environments that favour the co-creation and co-design of public products and services. Indeed, for truly effective local governance, it is essential that public managers and politicians not only govern effectively, efficiently, and economically, but that they also engage citizens in open and participative information sharing and decision-making (Rodríguez-Bolívar, 2017).

1.5. Conclusions

Our study provides interesting new insights concerning the main factors affecting both the ways of accessing OG projects in municipal official websites and the information content and format of data published in OGD projects. Firstly, the findings show that sample local governments, irrespective of their profiles and characteristics, work at a different pace in the development of OG strategies and the implementation of OGDPs. A novel finding of our research is the intention of sample governments to increase their information disclosure as a way to improve their reputation or the government's image, introducing OGDPs initiatives as the main action in their transparency policies, given that these projects have increased their implementation over time (Royo-Montañés & Benítez-Gómez, 2019).

Nonetheless, our study also reveals differences among analysed municipalities regarding the context in which information is disclosed. Attributes focused on the institutional context, and the municipality attributes were significant in promoting the implementation of OGS and OGPs initiatives. Politicians and public managers should pay attention to these attributes when designing new collaborative governance models and implementing OG initiatives for achieving a higher level of citizen engagement in public affairs. In fact, the focus of our research on a particular setting is a main limitation of our paper and provides a good avenue for future research.

Our experience focusing on large SLGs reveals that they are not using them to enhance citizen engagement in public affairs and public services co-creation. The main questions for future research are: a) Are the findings of this research because the implementation of OG initiatives are still in the early stages? b) Are the findings affected by the context of the study (Spain) where there is currently a traditional bureaucratic model of production in local government? c) Do OG initiatives allow the creation of public value for society? d) Are there any differences in the information disclosed in a government's transparency section and in the ODGP, and are both initiatives affected by the same factors? e) Do open government portal initiatives involve participation initiatives that complement and facilitate this direct interaction with public managers? Future research should analyse all these questions to better understand the OG initiatives and the implementation of OGDPs, their success in improving accountability, and in allowing collaborative models of governance in cities, especially in smart cities, where there are fertile grounds for these technological tools and, indeed, our research indicates that they are increasingly and better used by local governments for information transparency.

Different Approaches to Government Transparency embedded into Open Government Strategies

2.1. Introduction

In the last years, governments have implemented Information Technologies and Communications (ICTs) with the aim of opening up to the public, providing greater information access to citizens (Alcaide-Muñoz et al., 2022b; Sáez-Martín et al., 2021; Tejedo-Romero & Araujo, 2020) for monitoring purposes. In the last years, with the increasingly emergence of emerging technologies, public administrations are adopting them to deliver better and citizen-centered public services with the aim at meeting the citizen needs (Gesck & Leyer, 2022; Rodríguez-Bolívar & Alcaide-Muñoz, 2022).

With the growing implementation of Open Government (OG) initiatives and policies (Zuiderwijk et al., 2019), governments are getting more transparent and are taking steps towards greater citizen participation in public affairs (Rodríguez-Bolívar & Alcaide-Muñoz, 2022; Ruijter et al., 2020), mainly on greater collaboration in the co-creation and design of public policies and public services (Yuan & Gascó-Hernandez, 2021).

Previous studies have revealed that public organizations have focused their efforts on undertaking an Open Government Data (OGD) project (Emaldi et al., 2020; Sandoval-Almazán et al., 2021) through the implementation of online portals to improve government transparency, accountability, and value creation by making a greater amount of data available to the citizenry on the web. Hence, in previous literature, we can find studies that have analyzed different aspects of these OGD portals -regulatory problems, technical challenges, etc- (Gascó-Hernández et al., 2018; Ruvalcaba-Gomez & Renteria, 2020; Sandoval-Almazán et al., 2021). Other

studies have focused on evaluating the usability of the portals, structure and organization of the data, their characteristics and content of the information or the data catalogs offered (Ansari et al., 2022; Lourenço, 2015; Thorsby et al., 2017; Wang et al., 2021).

In this regard, regarding the studies that have analyzed the structure and organization of the OGD portals, Klein et al. (2018) showed that these portals should address various mechanisms so that society can discover, extract, and use data effectively, and Lourenço (2015) concluded that OGD portals do not have the key elements necessary to support citizen participation. In addition, Corrêa et al. (2017) and Thorsby et al. (2017) found that OGD portals were still in an early stage (they did not meet some basic requirements) and the large variation in the capabilities of OGD portal services presented (data variety of formats, data modeling and analysis tools available) according to the public policy and investment followed, which requires hard work to make citizens understand the data with the aim of graph support and analysis tools (Lněnička et al., 2021; Thorsby et al., 2017).

Although these studies and their evidence are valuable, up to now, research has focused on evaluation studies to describe the current state or situation of OGD portals (Matheus & Janssen, 2020). This research aims to go a step further and add value to the existing academic literature in government transparency, expanding the analysis not only to the OGD portals but also to the transparency portals, with the intention of finding evidence on the level of compliance with the main components of government transparency -see Table 2.1-, according to the different OG strategies adopted by local governments. To achieve this aim, our study will offer evidence on the characterization of a representative sample of Spanish municipalities -Spanish Local Governments (SLGs) with more 50,000 inhabitants- based on the OG strategy adopted, and whether the adoption of the different OG strategies is due to institutional, organizational, or contextual factors.

Table 2.1: Item of Disclosure of public information – Transparency

| QUESTIONS | SCORE | WEIGHTING |
|--|---------------------------------|-----------|
| SUBITEM 1.- Disseminate information on (data catalogue or types of information) | $\Sigma(\text{from a to r})/18$ | 0.20 |
| a. Map of the city – typography network | 0/1 | |
| b. Security in public places | 0/1 | |
| c. Environment | 0/1 | |
| d. Urban planning | 0/1 | |
| e. Rural environment and fishing (conservation of roads and rural coats) | 0/1 | |
| f. Culture and leisure (historical-artistic heritage) | 0/1 | |
| g. Commerce – Industry | 0/1 | |
| h. Supplies | 0/1 | |

| | | | |
|--|---|---------------------------|------------------------------|
| i. | Social services – Employment | 0/1 | |
| j. | Public Transport | 0/1 | |
| k. | Sport | 0/1 | |
| l. | Energy (public lighting) | 0/1 | |
| m. | Economy (budget and public accounts) | 0/1 | |
| n. | Payment and municipal taxes | 0/1 | |
| o. | Education | 0/1 | |
| p. | Legislation and Justice | 0/1 | |
| q. | Demography | 0/1 | |
| r. | Health (participation in the management of primary health care) | 0/1 | |
| SUBITEM 2.- Format in which information is disclosed: | | | (Σ 1 +2+ 3) 0.20 |
| 1. Transferable | | Σ (from a to l)/12 | 0.60 |
| a. | CSV | 0/1 | |
| b. | XLS | 0/1 | |
| c. | XML | 0/1 | |
| d. | XLSX | 0/1 | |
| e. | WMX | 0/1 | |
| f. | RDF | 0/1 | |
| g. | PRJ | 0/1 | |
| h. | SHP | 0/1 | |
| i. | SHX | 0/1 | |
| j. | JSON | 0/1 | |
| k. | CPG | 0/1 | |
| l. | GEOJSON | 0/1 | |
| 2. Less Transferable | | Σ (from a to h)/8 | 0.30 |
| a. | ZIP | 0/1 | |
| b. | DBASE | 0/1 | |
| c. | WMTS | 0/1 | |
| d. | DBF | 0/1 | |
| e. | DAT | 0/1 | |
| f. | KML | 0/1 | |
| g. | KMZ | 0/1 | |
| h. | SBN | 0/1 | |
| 3. No transferable | | | 0.10 |
| | PDF | 0/1 | |
| SUBITEM 3.- Are the databases updated? | | | (Σ 1 to 3 / 3) 0.20 |
| 1. Data owned by local governments | | Σ (a + b)/2 | |
| a. | When a declaration appears indicating that it is updated | 0/1 | |
| b. | If the information is monthly/quarterly/half-yearly | 0/1 | |
| 2. Are the databases publication date specified? | | 0/1 | |
| 3. Interested parties (Stakeholders) can sign up for a newsletter/tool that communicates/advises of the availability of a new database? | | 0/1 | |
| SUBITEM 4.- Free databases | | | (Σ (1 + 2) / 2) 0.20 |
| 1. Are the databases free (free of charge)? | | 0/1 | |
| 2. Are the databases disclosed under an open data license? | | 0/1 | |
| SUBITEM 5.- Information decisions and understandable information | | | (Σ (1 + 2) / 2) 0.20 |
| 1. Is information provided on the decisions made in municipal plenary sessions? | | 0/1 | |

| | | |
|---|--------------------|----------|
| 2. Understandable information (the presence of ratios or graphs with explanatory comments) | $\Sigma a + b / 2$ | |
| a. Ratios and graphs or figures that support the information are included | 0/1 | |
| b. Comments that try to explain the information | 0/1 | |
| Total Disclosed Information (max. punctuation) | | 1 |

Source: Own elaboration

The remainder of the paper is as follows. The next section presents the different OG strategies that local governments can adopt, which assume different levels of development of government transparency and interaction with citizens. Together with these strategies, the different components of government transparency are presented, together with the hypotheses that our study want to test. Next, the dependent variable will be presented with all its subitems, to move on to the independent variables and the research methodology carried out in this study. Finally, the analysis of results and the conclusions and discussions of this study will be presented.

2.2. Different strategies in OG and the different approaches to government transparency

2.2.1. Different OG Strategies

As previously mentioned, the implementation of new technologies in local governments has been a key element in public sector management, offering multiple opportunities to open up to their citizens, not only for being more transparent in decision-making, but also for allowing citizens to express their opinions -through complaints and suggestions (Nabatchi, 2012; Oliveira & Garcia, 2019), or in participatory budgeting processes (Jung, 2022). In addition, it has improved citizen participation in the co-creation and co-design of solutions to face social problems (De Jong et al., 2019).

In this regard, the implementation of OG initiatives has led local governments to ensure the equity of access to all citizens in the formulation of public policies and the improvement of effectiveness by taking advantage of the knowledge and resources of citizens in strategic planning processes (Moreno-Carmona et al., 2020). Nonetheless, the way in which OG initiatives have been approached by different local governments have been very diverse (Alcaide-Muñoz et al., 2022a; Lee &

Kwak, 2012). Hence, we can find OG initiatives that focus simply on cataloging information and making it accessible to the citizens -initial phases of transparency-. Others use open data platforms offering a large quantity and quality of data in easily transferable formats -data transparency-. Also, other OG projects focus on promoting citizen participation -citizen participation-, which in turn favors the open collaboration of citizens in public affairs -co-creation-. And finally other OG projects use ubiquitous computing applications and emerging technologies to achieve universal public engagement -ubiquitous engagement-. These different approaches and implementation of OG initiatives allows us to identify three main different patterns of OG strategies characterizing how local governments are defining their relationship with citizens.

Firstly, in an incipient phase of local governments relationship with the citizenry, municipalities are only limited to complying with the established regulatory frameworks and experimenting with regulatory transparency (information practice -OECD, 2016- or initial conditions and data transparency - Lee and Kwak, 2012). Under this strategy, the local governments put established rules on transparency and accountability into operation, becoming a first phase of opening to the public where citizens are mere observers of the information provided by the public organizations, keeping a passive role. This model forms the backbone of OG reforms (Lee & Kwak, 2012; OECD, 2016), but it does not provide the intellectual capital needed to drive smart city development (Leydesdorff & Deakin, 2011). Alcaide-Muñoz et al. (2022a) named this first phase as “experimentation” and the strategy followed by local governments could be named “push strategy”, which allows to lay the foundation for implementing a real model of public participation and collaboration.

In a second step, local governments are aware that only complying with information disclosure regulations is not enough because the transparency portal created in the initial phase is not a tool with the necessary capacities to collect citizen opinions and suggestions on the management of public affairs (Alcaide-Muñoz et al., 2022a). Moreover, at this stage, public managers are aware of the ICTs potentialities to enhance their communication with citizens (using social networks or offering better quality data). Hence, these governments do not only have a transparency portal to disclose government information but also a public participation platform to improve citizen communication, especially seeking to collect their opinions, complaints, and suggestions (consultation practice -OECD, 2016- or open participation-Lee and Kwak, 2012-).

In this phase there is no two-way communication between the local government and citizens, since the latter are not very motivated to offer their opinions, suggestions,

and complaints, because these may or may not be heard -public managers continue to retain all the management power and make public decisions-. Therefore, the channels opened by the local government fulfill the function of accountability and of "sounding out" public opinion by obtaining valuable information from citizens, but not allowing them a real means of participation and collaboration in public decision-making (Alcaide-Muñoz et al., 2022a).

Finally, in the third phase called "institutionalization" (Alcaide-Muñoz et al., 2022a) governments go one step further by creating an OG platform that allow effective citizen participation and collaboration (engagement practice - OECD, 2016- or open collaboration and ubiquitous engagement-Lee and Kwak, 2012-). In this third phase, the full opening of the local government to the citizenry is achieved using emerging technologies, and the two-way communication between both interlocutors is favored, involving citizens in public decision-making processes. This greater development is achieved because the local government is aware of the importance of information transparency as a key element for citizens to form an opinion and to be able to participate and collaborate openly through electronic channels. Hence, there is a two-way communication between the local government and the citizens, and even between the citizens themselves, being involved in the creation or configuration of public policies, being able to vote online, present participatory budgets, see the complex adoption process of a project, etc. Under this paradigm, a conversational democracy is implemented, and the OG strategy is named "networking" or "mingling", since citizens are fully integrated into the decision-making processes of the municipality. Citizens are co-producers of government policies and play an active role in public decisions.

Therefore, these different OG strategies are a key piece because they reveal the feeling of the local government regarding the digitization of its management processes and its vision on transparency and citizen participation in public affairs. The different OG models will give rise to different levels of information disclosure, this information being offered in different formats, the data being up-to-date and so on, in short, offering different levels of development of government transparency.

2.2.2. Different components of government transparency

There are many previous studies (Sáez-Martín et al., 2021; Tejedó-Romero & Araujo, 2018) that have analyzed the disclosure of economic and financial information in the public sector. Over time, local governments have developed and improved their web portals not only to offer a greater quantity and quality of information, tools, and

communication channels with citizens, but also to improve their usability (Alcaide-Muñoz et al., 2022b; Ansari et al., 2022; Gascó-Hernández et al., 2018; Wang et al., 2021). Therefore, our study seeks to analyze the different components of government transparency offered by the local governments' official web pages, and how these components could be influenced by the OG strategy followed or adopted by each local government.

These components are not only focused on the information disclosed (subitem 1 -data catalogue-), but also concerning the format in which the information is offered (subitem 2), the updating frequency of the information disclosed (subitem 3), the accessibility and usability of the information disclosed (subitem 4) or the information disclosed concerning public decisions and their understandability (subitem 5). Whereas the first one is based on the information content (subitem 1), the following ones are mainly focused on the accomplishment of the qualitative characteristics of the information disclosed (subitems 3 and 5 –timeliness, relevance, and understandability of the information-) or on the context in which the information is disclosed (subitems 2 and 4 –accessibility and usability of the information-). All these components have been called as essential for a good information transparency policy (Caba-Pérez et al., 2005; Rodríguez-Bolívar et al., 2007).

Data catalogue

Thus, the first component of government transparency considered in our research is the information catalogue, i.e., the type of information offered by the local governments (Subitem 1 -Table 2.1-). Based on the agency theory (Jensen & Meckling, 1976) that fosters the information disclosure as a means for accountability purposes, Grimmelikhuisen and Meijer (2012) indicate that the availability of information about a public organization is relevant for citizens to monitor its internal workings and performance.

This way, data catalogue has been considered by prior research (Ansari et al., 2022; Thorsby et al., 2017; Wang et al., 2021) as a key aspect to examine how transparent a public organization is. This component has therefore become an elementary piece to be present in any transparency local governments' web pages. Like Thorsby et al. (2017) our data catalog subitem collects a wide variety of categories and incorporates the possibility of different types of data sets in each category, being more extensive and complete than that offered by the Open Knowledge Foundation City Census (<http://census.okfn.org/en/latest/>) or in other prior studies (Ansari et al., 2022; Wang et al., 2021).

Under the OG strategies previously discussed in this research, it is expected that the data catalogue should be present in the three strategies, since it would be the initial piece of the construction of a transparency portal - incipient phase of government transparency-. In fact, supported by institutional theory, organizations must adopt their structures and practices to respond to external pressures, achieving the legitimacy they seek (Ribeiro & Scapens, 2006), which leads organizations to have homogeneous structures and practices (Powell & DiMaggio, 2012). Taking this into account, the following hypothesis is derived:

H1: The information disclosed will depend on the type of OG strategy adopted by local governments.

Format of the information disclosed

The second component is the format in which information is disclosed (Subitem 2 -Table 2.1-), which has been considered a main data quality problem in prior research on OG data (Roa et al., 2019). Based on the agency theory (Jensen & Meckling, 1976), in a context of asymmetric information and in an environment of uncertainty, the databases offered by the governments would serve to inform citizens of public managers and politicians' decisions. Also, for legitimizing purposes of governmental actions, decisions and policies, theory of legitimacy (Weber, 2018) indicates the need of using easily accessible and transferable formats of the government information disclosed so that citizens are duly informed.

In this regard, the use of a standard open data format would increase the interoperability and integration of government data (Jiménez et al., 2014). Therefore, it is expected that the higher developed OG strategy implemented (citizen involvement strategy or the networking strategy), the higher transferable formats used in the information disclosed, so that allowing citizens to use them creating their own reporting for decision-making purposes. By contrast, government transparency portals in an incipient stage (experimenting strategy) are expected not to meet basic requirements concerning the variety of formats in which the data is offered (Corrêa et al., 2017; Thorsby et al., 2017). Based on these presumptions, the following hypothesis is derived:

H2: The format of information disclosed will depend on the type of OG strategy adopted by local governments.

Updating of database

The third component is the updating of database (Subitem 3 -Table 2.1-). Based on the agency theory (Jensen & Meckling, 1976), public managers and citizens will

demand updated information to know both the current situation of the government actions and the decisions taken by public managers and politicians, especially to make citizens understand public sector decisions and legitimize the adopted public policies (theory of legitimacy-Weber, 2018-). Indeed, according to Grimmelikhuijsen and Meijer (2012), information timeliness is a crucial element of policy outcome transparency since it enables citizens to obtain information about government policies when these still matter.

In this regard, timeliness is a key element so that citizens have reliable and timely information allowing them to have a broad view of the current state of the public management and, therefore, make their suggestions, complaints, or participate in decision-making processes. Therefore, it is expected that the higher developed OG strategy implemented (citizen involvement strategy or the networking strategy), the most up-to-date data disclosed. The following hypothesis is derived:

H3: The updating information disclosed will depend on the type of OG strategy adopted by local governments.

Free databases

The fourth component is the free access to the database (free of charge) (Subitem 4 -Table 2.1-). According to the agency theory (Jensen & Meckling, 1976), citizens will demand government information access to have a clear view of the current situation of the public entity management. Else, it could be viewed as if governments are seeking to hinder this issue, which could erode citizen trust in governments (legitimacy theory-Weber, 2018-).

This component is closely related to the previous one, since government data not only have to be updated but also must be offered free of charge so that citizens do not have a barrier or limitation that prevents them from accessing the government information necessary to form an opinion on the management carried out by politicians. As this component is not only necessary for decision-making purposes, but also for accountability purposes, following the isomorphism principle proposed by the institutional theory (Powell & DiMaggio, 2012; Ribeiro & Scapens, 2006), it is expected that the pressure from the citizenry to make government information freely accessible will be the same for all governments and therefore, it is expected that the free access to government information should be accomplished by all local governments regardless of the OG strategy implemented. In brief, governments are expected to show a homogeneous behavior in this regard. The following hypothesis is therefore derived:

H4: The freeness information disclosed will depend on the type of OG strategy adopted by local governments.

Information about plenary sessions and understandable information

Finally, the last component is whether the local government provides information on the decisions taken and whether the information provided is understandable (Subitem 5 -Table 2.1-). In this sense, previous studies (Drew & Nyerges, 2004; Grimmelikhuijsen & Meijer, 2012) have highlighted that the importance of comprehensibility of government information is a key dimension. To offer more understandable information requires hard development work so that citizens understand the data, with the support of graphs and analysis tools (Lněnička et al., 2021; Thorsby et al., 2017).

In addition, previous studies (Grimmelikhuijsen & Meijer, 2012; Levi & Stoker, 2000) showed that providing information about the decisions taken in the plenary sessions by the government team increases trustworthiness, which is a key ethical dimension that focuses on government intentions. Honesty on the part of public managers and politicians concerning the information disclosed is also demanded by citizens, which implies that the governments fulfill their commitments and tells the truth (Grimmelikhuijsen & Meijer, 2012; Kim, 2005; McKnight et al., 2002). These information policies rest on the need of solving information asymmetry -agency theory (Jensen & Meckling, 1976)- in a context in which citizens do not have the information control, especially, if public managers and politicians would like to legitimize their decisions -theory of legitimacy (Weber, 2018)-.

In addition, the lack of information and communication about the decisions taken by the government team can have negative consequences for the political party(ies) that are in rule, which makes public managers and politicians to pertinently communicate the decisions made -institutional theory (Ribeiro & Scapens, 2006)-. As this information is based on accountability purposes, it is expected that all local governments will report on the decisions taken in their plenary sessions, regardless of the OG strategy implemented. By contrast, to make information understandable using tools, graphs, ratios, or figures is expected to be present in more developed OG strategies (citizen involvement and networking strategies) since government will be interested in citizens to have full knowledge and understandable information to participate in decision-making processes. Therefore, the following hypothesis is derived:

H5: The compressibility information disclosed will depend on the type of OG strategy adopted by local governments.

Organizational factor

The organizational factor analyzed in this study is composed by the financial resources of sample SLGs received from the European Regional Development Fund (ERDF) into two national plans (2014-2020) (Orejon-Sanchez et al., 2022). Previous studies (Taylor, 2018; Zhenbin et al., 2020) have shown that financial constraints are a significant barrier to implementing and fostering innovation in public services. An OECD (2017) study concluded that the elimination of restrictions in the budget process and the introduction of financial incentives were key elements to stimulate public innovation. Likewise, Puron-Cid (2014) showed that obtaining and the way of managing financial resources (centralized-decentralized models) are fundamental pieces in the adoption of OG initiatives. Considering this previous evidence, we test the following hypothesis:

H6: The organizational factor could influence on the information transparency provided under each type of OG strategy adopted by local governments.

Institutional factors

This study considers three main institutional factors: political ideology, political fragmentation, and political stability as relevant in the OG strategy used by the governments. According to Ribeiro and Scapens (2006), political ideology significantly influences the management style of a public organization. In addition, under the lens of the Partisan Political Matters (PPM) thesis, progressive parties tend to adopt social policies and carry out initiatives that increase public spending and public investments (Ashworth et al., 2005). In this regard, Meijer (2012) affirmed that conservative parties are more proactive in including business values as a philosophy in public sector management. Likewise, under the statements of institutional theory-current of mimetic isomorphism- political parties with the same ideology will tend to respond to external pressures and adopt similar structures and behaviors, which you consider legitimate and socially acceptable (Powell & DiMaggio, 2012). Considering these theoretical supports it seems that political ideology will influence on the information transparency provided under each OG strategy adopted by SLGs.

Regarding political fragmentation, political parties that govern in coalition or by agreements may be tempted to overestimate tax revenues to increase their spending levels (Roubini & Sachs, 2014). Hence, under the statements of the goal setting theory (Locke & Latham, 2002), the most fragmented governments may not establish clear objectives and try to satisfy all needs and demands with the intention of improving their results in the next election campaign. This can be an obstacle, since it is more difficult to reach a consensus and make the planned initiatives come true,

and the deficit skyrockets due to their indecisions (Volkerink & de Haan, 2001). In short, governments that do not have to negotiate their decisions with other political parties will have specific goals that they can adopt better than vague goals (Locke & Latham, 2002). Therefore, it seems that fragmented governments could have coordination problems and appear less effective in undertaking reforms and policies, which would affect the adoption of innovative initiatives (Alcaide-Muñoz et al., 2023; Puron-Cid, 2014).

Finally, political stability is also a factor that influences the adoption of innovative initiatives (Alcaide-Muñoz et al., 2022b). According to goal setting theory (Jochimsen & Thomasius, 2014), politicians who have been in power for longer have more experience in setting specific and achievable goals, how the public organization is managed, and have a longer time horizon to advance in the initiatives that they have been adopting throughout one legislature. In this sense, the adoption of innovative initiatives such as OG initiatives requires the planning of different departments of a public organization, the adoption of human and financial resources, etc., which requires long-term planning, making necessary that the political party manages a public organization for more than one legislature. Considering all the above, the following hypothesis is derived:

H7: The institutional factors could influence on the information transparency provided under each type of OG strategy adopted by local governments.

Contextual factors

This research considers six main contextual factors grouped into three main perspectives: citizens' profile (age of the population, level of education and participation level), cities' profile (population density and Smart City branding) and economic attribute (tax pressure). Regarding the age of the population, previous research (Ahmad & Khalid, 2017; Tavares & da Cruz, 2020; Van Deursen & Van Dijk, 2009) showed that it is a predictor of behavior of citizens towards the use of ICTs, mobile devices, applications, and adoption of e-Government. Indeed, Van Deursen and Van Dijk (2009) demonstrated that young people play a more active role in society, using applications and technologies that favor the implementation of online processes by public organizations. Other authors (Basu, 2019; Lowatcharin & Menifield, 2015; Rosenberg, 2019) revealed that older people are the most demanding of online information and the most likely to use public participation channels. Therefore, the age of the population is expected to play an important role in the adoption and development of innovative initiatives by governments.

Regarding the educational level of the citizenry, according to Al-Shafi and Weerakkody (2010), users with a higher educational level consider that ICTs play an important role in both the labor market and the academic career. Indeed, citizens with higher qualifications tend to show a more proactive attitude towards the adoption of innovative initiatives (Schmidhuber et al., 2017; Winters, 2011) and a more active roles using e-Government information and services (García-Tabuyo et al., 2017), which improves their quality of life (Giffinger & Haindlmaier, 2010). In short, it is expected that citizens with higher qualifications tend to easily use both new technologies and innovative initiatives adopted by governments.

As for the level of electoral participation, bearing in mind that politicians are more motivated by their own interests than by maximizing the common benefit -agency theory (Jensen & Meckling, 1976)-, citizens will demand open and transparent public organizations, demanding government information to know how public resources are being managed and public policies are made (Alcaide-Muñoz et al., 2022b; Rodríguez-Bolívar & Alcaide-Muñoz, 2019). Therefore, it is expected that municipalities where there is a high level of electoral participation will demand more developed OG strategies to have higher-quality information and higher interaction possibilities with public managers and politicians.

Concerning the population density, based on the agency theory framework (Jensen & Meckling, 1976) and the institutional theory pronouncements (Powell & DiMaggio, 2012), organizations feel pressured by citizens to offer more information and be more transparent, which could conduct to a more advanced OG strategy. According Powell and DiMaggio (2012), governments will respond to external pressures by adopting structures and behaviors that allow them to legitimize their decisions. Hence, denser cities are more motivated to consider innovative ideas to put them into practice (Glaeser & Gottlieb, 2006), potentially making them more interested in introducing ICT-based initiatives (Neirotti et al., 2014).

The context of Smart Cities (SCs) favors technological development, the adoption of innovative initiatives, the creation of a participatory and collaborative environment between governments and citizens, promoting the co-creation and co-design of public services (Khan & Krishnan, 2021). Previous studies (Burns & Andrucki, 2021) affirmed that open data platforms in SCs can increasingly serve as a core strategy for achieving “smartness” (Barns, 2016), because it assumes a singular individuated process of subjectivation as the origin of the smart city and its governance models (Burns & Andrucki, 2021). In addition, recent studies (Alcaide-Muñoz et al., 2022b) showed that cities considered smart offered greater openness to the stakeholders and their open data portals are more developed. Therefore, it is ex-

pected that cities considered smart will offer innovative and advanced initiatives that favor integrated participation and higher levels of information, favoring the citizen involvement in public affairs.

Finally, the citizens demand greater transparency in both public functions and the management of public resources when the tax pressure is higher. This is supported by the different interests shown public managers and politicians -agency theory (Jensen & Meckling, 1976)-, which makes citizens the need to know the public decisions taken and how the taxes collected are being managed, with the aim at monitoring the common benefits reached by public policies. In this regard, recent study has shown that the tax pressure has a positive and significant effect on how governments offer their OG initiatives and projects (Alcaide-Muñoz et al., 2022b).

Considering the previous comments concerning the contextual factors, the following hypothesis is derived:

H8: The contextual factors could influence on the information transparency provided under each type of OG strategy adopted by local governments.

2.3. Empirical research

2.3.1. Sample selection

To answer the research question of this study, we focused on Spanish Local Governments (SLGs) with more than 50,000 inhabitants. This sample selection is motivated by the continuous reforms that have led these municipalities in order to push the digital modernization of their organizational structures and process management (Alcaide-Muñoz et al., 2022b). In this sense, an ambitious digitalization strategy for public administrations 2021-2025 was launched from the Central Government of Spain (Spanish Government, 2021a), framed under the Plan for Digital Spain 2026 (Spanish Government, 2021b) and the Recovery, Transformation and Resilience Plan (Spanish Government, 2021c). Due to these continuous processes of transformation and digital innovation, the SLGs fits well with the aim of our research, and the empirical insights found could be also useful and interesting for the surrounding governments. In such a way, that the evidence can be compared, and if they are not the same, look for the moderating factors of these divergences (way of implementing the digital plans, their administrative culture, adopted infrastructures, etc.).

Likewise, Spanish local governments are the closest level of government to citizens and manage the largest number of services (Law 7/1985, Regulation of Bases of Local Regimes). Moreover, they have suffered continuous budget cuts due to the continuous economic crises (Navarro-Galera et al., 2021) and the enormous efforts made to meet the needs resulting from the covid-19 pandemic, which has prompted citizens to demand more public information. Therefore, SLGs with a population with more than 50,000 inhabitants assume a series of competencies and responsibilities that are supposed to deliver complex and efficient public services (Alcaide-Muñoz et al., 2022b). They also manage a high level of activity that is more suitable for innovation in public policy (Criado & Ruvalcaba-Gomez, 2018), and pushes them to be early adopters of new technologies.

Our sample selection was recollected from the Spanish National Institute of Statistics (INE) database. This search provided 145 local governments, which represent more than 50% of the Spanish population (<https://www.ine.es/>). Once we have the list of municipalities, we accessed their official web pages (during October and November 2022) to collect all the information needed to evaluate the item showed in Table 2.1.

2.3.2. Research methodology

2.3.2.1. Dependent variable

We analyzed all the SLG's official websites (transparency and OG portals) using five subitems (see Table 2.1). The first subitem (disclosed information content) allowed us to analyze data catalogue or types of information. We examined the different sections of data catalogue or types of information (Subitem 1 weighted 0.2), into which the information is divided, each type of information offered is scored with a 1 and otherwise with a 0. Given that there are eighteen different types of information, the score obtained in this first subitem is divided by eighteen and then weighted by 0.2. The first subitem was therefore scored as follows:

Transparency (data catalogue) (Subitem 1) (Max. punctuation 0.2)
Subitem 1 = 0.20 x (0/1 with total 18 type of information/18)

We continue with the formats in which information is disclosed (Subitem 2 weighted 0.2). Based on (Alcaide-Muñoz et al., 2022b), three different categories of data format are identified in this research: easy-processing data, less easy-processing

data, and difficult-processing data. We listed twelve types of data formats in easy-processing data (1. easy-processing data weighted 0.6), assigning a score of 1 for each if available and 0 otherwise. The total score is the sum of the score obtained in the 12 formats divided by 12 and weighted by 0.6. In the second category (less easy-processing data) (2. Less easy-processing data weighted 0.3) we found eight different types of data formats and assigned a score of 1 for each if available and 0 otherwise. The total score is the sum of the score obtained in the eight formats divided by 8 and weighted by 0.3. Finally, in difficult-processing data (3. difficult-processing data weighted 0.1), we only listed one type of data format (.pdf format), assigning a score of 1 if the municipality had information disclosed in pdf format and 0 otherwise. We summed each weighted punctuation obtained in each different categories of data format to reweigh it by the score of 0.2 assigned to Subitem 2 in Table 2.1. The second subitem was therefore scored as follows:

Transparency (format) (Subitem 2) (Max. punctuation 0.2)

Subitem 2 = 0.2 x [1. Easy-processing data 0.6 x (0/1 with total 12 easy-processing formats/12) + 2. Less easy-processing data 0.3 x (0/1 with total 8 less easy-processing formats/8) + 3. Difficult-processing data 0.1 x (0/1 with total 1 difficult-processing format)]

The third subitem is conducted to know whether the databases are updated (Subitem 3 weighted 0.2). This subitem has three items: if the information is owned by the municipality; if the municipality specifies the date on which the data has been published; and if interested stakeholders can subscribe to a newsletter to be able to receive notifications when new data and information are published. If the municipality offers information about its property, in which the publication date is specified and allows stakeholders to receive notifications of new publications if they sign up for a newsletter, then it will receive a 1 in each of the sections, all of them weighted to 0.2 -see Table 2.1-. The third subitem was therefore scored as follows:

Transparency (databases up to date) (Subitem 3) (Max. punctuation 0.2)

Subitem 3 = 0.2 x [1. Data owned by local governments = [a. When a declaration appears indicating that it is updated 0/1 + b. If the information is monthly/quarterly/half-yearly 0/1] /2 + 2. Are the databases publication date specified? 0/1 + 3. Interested parties can sign up for a newsletter that communication of the availability of a new database? 0/1]

The fourth subitem is whether the databases are freely accessible (Subitem 4 weighted 0.2). We checked two items: a) if the database is free of charge and b) if the database is disclosed under an open data license -see Table 2.1-. Each item

is scored 1 or 0 whether the item is accomplished or otherwise. The fourth subitem was therefore scored as follows:

Transparency (databases is free) (Subitem 4) (Max. punctuation 0.2)
Subitem 4 = 0.2 x [1. Are the databases free of charge? 0/1 + 2. Are the databases disclosed under an open data license? 0/1]]

Finally, the fifth subitem (Subitem 5 weighted 0.2) has two items: a) if there is information about the decisions taken in the municipal plenary sessions and b) if the information is understandable -see Table 2.1-. Each item is scored 1 or 0 whether the item is accomplished or otherwise. The fifth subitem was therefore scored as follows:

Transparency (information decisions and understandable information) (Subitem 5)
(Max. punctuation 0.2)
Subitem 5 = 0.2 x [1. Is information provided on the decisions made in municipal plenary sessions? 0/1 + 2. Understandable information (the presence of ratios or graphs with explanatory comments)]

2.3.2.2. Independent variables and methodology tool

Our research considers eleven variables as main factors influencing government transparency in different OG strategies (organizational, institutional, and contextual factors). All information about these variables' acronyms, their descriptions, and calculation is detailed in Table 2.2.

To achieve the objective of this study, the data analysis was performed in four steps. Firstly, we analysed the official web pages of the SLGs to identify what type of OG strategy they had implemented/adopted: experimenting (the citizens are spectators of the government information published in a transparency portal), citizen involvement (the LGs have a transparency portal together with a public participation platform where they capture citizens' opinions and suggestions) or networking strategy (the LGs have an integrated OG platform with information and channel of participation which allow involve citizenry in public decision-making processes) (Alcaide-Muñoz et al., 2022a). Secondly, we carried out difference tests considering the different aspects of transparency under the different OG strategies implemented by the municipalities in our sample. We carried out Kruskal-Wallis and ANOVA tests (depending on the distribution of the variable -see Kolmogorow Smirnov normality test in Table 2.3-). Thirdly, we showed descriptive statistics for

Table 2.2: Definitions of variables

| | | Variables | Acronyms | Description | Calculation |
|-------------------------------|--------------------------|--------------------------|--|---|--|
| Items | | Disseminated Information | DIS | Disclosure Information | Description in Table 2.2 – Subitem 1 |
| | | Information Format | FOR | Information Format | Description in Table 2.2 – Subitem 2 |
| | | Databases update | UPD | Database update | Description in Table 2.2 – Subitem 3 |
| | | Free databases | FRE | Free databases | Description in Table 2.2 – Subitem 4 |
| | | Information decisions | DEC | Information decisions and understandable information | Description in Table 2.2 – Subitem 5 |
| Organizational Factors | | OG Strategies | OG | Patterns of OG strategies how LGs are defining their relationship with citizens (Alcaide et al. 2022a) | First step – Strategy of Experimenting Second step – Strategy of Citizen involvement Third step – Strategy of Networking |
| | | Financial Resources | FIN | European Regional Development Fund (ERDF) through five calls divided into two national plan (2014-2020) | Orejon-Sanchez et al. (2022) |
| Institutional Factors | | Political Ideology | POL | ² Indicator of ideology in political party | 0 = Progressive 1 = Conservative |
| | | Political Fragmentation | FRA | ² Indicator of political fragmentation | Number of political parties with seats/total councilors |
| | | Political Stability | STA | ² Number of consecutive years in power | Number of years |
| Contextual Factors | Citizens' profile | Age of the population | AGE_1830 | ¹ Numbers of inhabitants between 18 to 30 years | Percentage of inhabitants between 18 to 30 years |
| | | | AGE_3140 | ¹ Numbers of inhabitants between 31 to 40 years | Percentage of inhabitants between 31 to 40 years |
| | | | AGE_4150 | ¹ Numbers of inhabitants between 41 to 50 years | Percentage of inhabitants between 41 to 50 years |
| | | | AGE_5164 | ¹ Numbers of inhabitants between 51 to 64 years | Percentage of inhabitants between 51 to 64 years |
| | | | AGE_65 | ¹ Numbers of inhabitants with more 64 years | Percentage of inhabitants with more 64 years |
| | Level of Education | SECEDU | ¹ Level of inhabitants with secondary education | Percentage of inhabitants with secondary education | |
| | | SUPEDU | ¹ Level of inhabitants with superior education | Percentage of inhabitants with superior education | |
| | Participation Level | PART | ² Participation Level in the last election campaign | Percentage of participation level | |
| | Cities' profile | Population density | PDEN | ¹ Population residing in the municipality per km ² | Population divided by km ² |
| | | Smart City | SC | ⁴ Municipalities that are Smart Cities | 0 = No Smart City 1 = Smart City |
| Economic Attribute | Tax Pressure | PRE | ³ Percentage of taxes pay by citizens | Percentage of taxes in relation to GDP | |

Source: Own elaboration

¹INE (Statistic Institute of Spain) www.ine.es; ²Ministry of Interior (www.infoelectoral.mir.es);

³Finance and Public Administration (www.minhap.gob.es) ;

⁴IESE Business School (www.citiesinmotion.iese.edu/indirecim/)

Table 2.3: Results of Kolmogorov Smirnov Test for the different components of transparency

| Variables | Kolmogorov Smirnov Statistical | Variables | Kolmogorov Smirnov Statistical |
|-----------|--------------------------------|-----------|--------------------------------|
| DIS | 0.197*** | FRE | 0.290*** |
| FOR | 0.264*** | DEC | 0.221*** |
| UPD | 0.174*** | | |

Source: Owner elaboration from information of STATA17 software; Sig. *** 1%; ** 5% and * 10%.

Table 2.4: Results of Kolmogorov Smirnov Test for organizational, institutional, and contextual factors

| Variables | Kolmogorov Smirnov Statistical | Variables | Kolmogorov Smirnov Statistical |
|-----------|--------------------------------|-----------|--------------------------------|
| FIN | 0.488*** | AGE_65 | 0.034 |
| POL | 0.410*** | SECEDU | 0.290*** |
| FRA | 0.097*** | SUPEDU | 0.284*** |
| STA | 0.359*** | PAR | 0.486*** |
| AGE_1830 | -0.105*** | PDEN | 0.217*** |
| AGE_3140 | 0.347*** | SC | 0.541*** |
| AGE_4150 | 0.201*** | PRE | 0.184*** |
| AGE_5164 | 0.080** | | |

Source: Owner elaboration from information of STATA17 software; Sig. *** 1%; ** 5% and * 10%.

the different analyzed variables under the different OG strategies, so that we can determine the relevant influential factors (organizational, institutional, and contextual) affecting government transparency on the municipalities included into each of the OG strategies adopted. Finally, we again carried out Kruskal-Wallis and ANOVA tests (depending on the distribution of the variable -see Kolmogorow Smirnov normality test in Table 2.4-). On this occasion, we identify if the organizational, institutional, and contextual factors have a significant influence on the implementation of different transparency patterns showed under each one of the OG strategies.

2.3.2.3. Analysis of results

In Table 2.5 we can observe the estimation of the results with the Kruskal-Wallis test, which allows us to see if there are differences between the different components of government transparency under the different OG strategies implemented. In this regard, we can observe how in all the previously explained government transparency complements the null hypothesis of homogeneity/equality is rejected. Therefore, we consider that there are differences in the data catalog offered by the local

Table 2.5: Estimation results of Kruskal-Wallis for the different aspects of transparency and OG strategies

| Variables | Experimenting - Citizen involvement | Experimenting - Networking | Citizen involvement - Networking | Accept H0 / Reject H0 |
|-----------|-------------------------------------|----------------------------|----------------------------------|-----------------------|
| DIS | 2.337** | 2.377** | -0.067 | Reject H0** |
| FOR | 6.934*** | 7.171*** | -0.105 | Reject H0*** |
| UPD | 4.036*** | 5.936*** | 1.339 | Reject H0*** |
| FRE | 6.653*** | 6.307*** | -0.555 | Reject H0*** |
| DEC | 6.594*** | 7.621*** | 0.537 | Reject H0*** |

Source: Owner elaboration from information of STATA17 software. Sig. *** 1% and ** 5%.

governments, in the format that these data are offered, in the updating of these data, in which the data is free of charge, and that the local governments offer information on the decisions made in the plenary decisions, as well as that they seek to make its data more understandable by offering citizens tools to understand the data, and all of them will depend on the OG strategy adopted by each local government (H1, H2, H3, H4 and H5 are supported).

Moreover, these differences are concentrated in the comparison between an experimenting OG strategy (initial/incipient) with the others two more-developed OG strategies (citizen involvement and networking). This is due to the approach offered on the local governments' web portals. In the experimenting OG strategy, the local governments offer a transparency portal with a set of data, which is not yet very developed because they do not offer two-way communication channels with citizens who cannot offer their suggestions and their opinions or their complaints. This strategy model is a reputational strategy on the part of local governments or an initial phase of implementation of a government transparency strategy, where they seek to offer an image of openness and transparency in their management. But their data is not usually offered in transferable formats, nor is it usually very up-to-date, and it is not usually offered with analysis tools, graphs, or figures to make the information more understandable for citizens.

However, results show no differences between the other two more developed OG strategies (citizen involvement and networking). These OG strategies involve more advanced government transparency models, where greater quantity and higher quality data are offered, so that the data are updated and offered in more transferable formats, letting citizens know the decisions taken by public managers, and more complex data is accompanied by ratios, graphs or figures that seek to explain these data. Both strategies also seek the participation of citizens, at different levels. The first one (citizen involvement) is only about knowing the opinion of citizens, whereas the second one (networking) seeks effective participation and citizen involvement

in public affairs. Nonetheless, both types of participation require quantity, quality, timely and updated information to be effective.

Table 2.6 collects the descriptive statistics of the different analyzed variables based on the adopted OG strategy. The 60% of the SLGs analyzed in our sample adopt an experimenting OG strategy, of which only 18.39% have received funding from the Central Government of Spain in the European Regional Development Fund call (2014-2020). In addition, 63.22% of the municipalities are led by progressive politicians, who have been in power for at least two political legislatures (mean political stability 5.963). They are also municipalities with a high population density, but none of them are considered SCs.

Table 2.6: Descriptive statistics for the different analyzed variables under the different OG strategies

| | Variables | Mean | Median | Std. Dev. | Min. | Max |
|--|-----------|----------|----------|-----------|---------|-----------|
| Strategy of Experimenting | | | | | | |
| Organizational Factors | FIN | 0.185 | 0.000 | 0.396 | 0.000 | 1.000 |
| Institutional Factors | POL | 0.410 | 0.000 | 0.501 | 0.000 | 1.000 |
| | FRA | 29.604 | 27.180 | 9.781 | 12.500 | 54.550 |
| | STA | 5.963 | 3.000 | 4.519 | 3.000 | 15.000 |
| Citizens' Profile | AGE_1830 | 15.064 | 15.002 | 12.467 | 13.027 | 17.675 |
| | AGE_3140 | 20.844 | 17.259 | 19.913 | 13.228 | 20.208 |
| | AGE_4150 | 15.714 | 15.531 | 0.807 | 14.487 | 17.892 |
| | AGE_5164 | 18.555 | 18.336 | 2.366 | 14.705 | 23.649 |
| | AGE_65 | 16.873 | 16.764 | 4.798 | 4.193 | 26.142 |
| | SECEDU | 25.245 | 9.588 | 31.572 | 18.771 | 30.000 |
| | SUPEDU | 6.219 | 2.080 | 8.493 | 0.478 | 36.500 |
| Cities' Profile | PAR | 1.439 | 0.324 | 5.855 | 0.206 | 30.740 |
| | PDEN | 3739.559 | 1804.800 | 4648.142 | 153.340 | 18894.930 |
| Economic Attribute | SC | 0.150 | 0.000 | 0.362 | 0.000 | 1.000 |
| Strategy of Citizen involvement | | | | | | |
| Organizational Factors | FIN | 0.184 | 0.000 | 0.395 | 0.000 | 1.000 |
| Institutional Factors | POL | 0.410 | 0.000 | 0.251 | 0.000 | 1.000 |
| | FRA | 29.604 | 27.180 | 9.781 | 12.500 | 54.550 |
| | STA | 5.963 | 3.000 | 4.519 | 3.000 | 15.000 |
| Citizens' Profile | AGE_1830 | 15.064 | 15.003 | 1.247 | 13.028 | 17.675 |
| | AGE_3140 | 20.844 | 17.258 | 19.914 | 13.228 | 20.208 |
| | AGE_4150 | 15.714 | 15.531 | 0.807 | 14.487 | 17.892 |
| | AGE_5164 | 18.555 | 18.336 | 2.366 | 14.705 | 23.648 |
| | AGE_65 | 16.873 | 16.764 | 4.798 | 4.193 | 26.142 |
| | SECEDU | 25.245 | 9.589 | 31.572 | 18.77 | 30.000 |
| | SUPEDU | 6.219 | 2.080 | 8.4933 | 4.785 | 36.500 |
| Cities' Profile | PAR | 1.439 | 0.324 | 5.856 | 0.206 | 30.740 |
| | PDEN | 3739.559 | 1804.800 | 4648.142 | 153.340 | 18894.930 |
| | SC | 0.150 | 0.000 | 0.362 | 0.000 | 1.000 |

| | | | | | | |
|-------------------------------|----------|----------|----------|----------|---------|-----------|
| Economic Attribute | PRE | 0.022 | 0.022 | 0.007 | 0.009 | 0.046 |
| Strategy of Networking | | | | | | |
| Organizational Factors | FIN | 0.290 | 0.000 | 0.461 | 0.000 | 1.000 |
| Institutional Factors | POL | 0.320 | 0.000 | 0.475 | 0.000 | 1.000 |
| | FRA | 33.818 | 33.330 | 11.452 | 15.380 | 54.170 |
| | STA | 4.935 | 3.000 | 3.558 | 3.000 | 15.000 |
| Citizens' Profile | AGE_1830 | 15.163 | 15.532 | 3.061 | 0.029 | 19.425 |
| | AGE_3140 | 16.288 | 17.730 | 5.303 | 0.039 | 22.404 |
| | AGE_4150 | 15.043 | 15.520 | 2.885 | 0.039 | 17.036 |
| | AGE_5164 | 17.020 | 17.252 | 3.829 | 0.041 | 22.538 |
| | AGE_65 | 15.077 | 15.384 | 4.400 | 0.052 | 22.508 |
| | SECEDU | 18.179 | 4.244 | 3.033 | 0.115 | 19.300 |
| | SUPEDU | 6.586 | 1.086 | 6.201 | 0.254 | 24.089 |
| Cities' Profile | PAR | 0.325 | 0.331 | 0.080 | 0.154 | 0.496 |
| | PDEN | 3663.216 | 2274.660 | 3848.039 | 54.8000 | 16586.320 |
| Economic Attribute | SC | 0.100 | 0.000 | 0.301 | 0.000 | 1.000 |
| | PRE | 0.025 | 0.021 | 0.009 | 0.016 | 0.063 |

Source: Owner elaboration from information of STATA17software

The municipalities that adopt citizen involvement strategy represent 18.62% of the SLGs analyzed in our sample. The 18.52% of these local governments have received funding from the Central Government of Spain in the European Regional Development Fund call (2014-2020). Most of these local governments are led and managed by progressive parties (59.26%), that lead to the government at least two political legislatures (mean political stability 5.963). Like the local governments under the experimenting OG strategy, municipalities under the citizen involvement have a high population density, although the 14.81% of them are considered SCs.

On the other hand, the 21.38% of the SLGs analyzed adopt the networking OG strategy. In this case, the 29.03% of the municipalities have received funding from the Central Government of Spain in the European Regional Development Fund call (2014-2020). Like the SLGs previously analyzed, they are managed by progressive parties (67.74%) that have been led for shorter time-period political legislatures (mean political stability 4.935), so in some municipalities there have been changes in political orientations, which could be an indication that more transparent strategies have been adopted, which favors the participation of citizens. Also, they are municipalities that bring together a higher percentage of citizens with a higher educational level, high population density and some of them (14.29%) are considered SCs.

Finally, results of Kruskal-Wallis and ANOVA test for the influence of organizational, institutional, and contextual factors on the different aspects of transparency under

Table 2.7: Estimation results of Kruskal-Wallis and ANOVA Test for the influence of organizational, institutional, and contextual factors on the different aspects of transparency under each OG strategy

| Variables | Experimenting - Citizen involvement | Experimenting - Networking | Citizen involvement - Networking | Accept H0 / Reject H0 |
|---------------------|-------------------------------------|----------------------------|----------------------------------|-----------------------|
| FIN | 0.014 | 1.252 | 0.983 | Accept H0 |
| POL | 0.372 | -0.448 | -0.667 | Accept H0 |
| FRA | -1.454 | 0.142 | 1.329 | Accept H0 |
| STA | -0.816 | -1.816 | -0.760 | Accept H0 |
| AGE_1830 | -3.323*** | -1.847* | 1.314 | Reject H0*** |
| AGE_3140 | -0.168 | 0.668 | 0.671 | Accept H0 |
| AGE_4150 | 0.108 | -0.986 | -0.874 | Accept H0 |
| AGE_5164 | 1.126 | -0.831 | -1.602 | Accept H0 |
| AGE_65 ¹ | | | | 1.911 |
| SECEDU | 2.003** | -0.290 | -1.907** | Reject H0* |
| SUPEDU | 2.821** | 0.564 | -1.913** | Reject H0** |
| PAR | -1.312 | -0.715 | 0.430 | Accept H0 |
| PDEN | 2.451** | 2.788*** | 0.870 | Reject H0*** |
| SC | 3.127*** | 2.151** | -0.970 | Reject H0*** |
| PRE | -1.117 | 0.511 | 1.341 | Accept H0 |

Source: Owner elaboration from information of STATA17 software; Sig. *** 1% and ** 5%.

NOTE: ¹This statistic is ANOVA test because this variable shows a normal distribution.

each OG strategy are collected in Table 2.7. In general terms, we can observe that contextual factors are the ones that have influence on the OG strategy adopted, therefore H8 is supported but H6 and H7 are rejected. In this regard, municipality with younger population (population aged from 18 to 30 years old) motivates public managers and politicians to undertake more ambitious and developed OG strategies, offering greater government transparency.

Likewise, having a qualified population (with secondary and superior education level) also motivates SLGs to undertake more advanced OG strategies, even though there are differences between adopting a citizen involvement OG strategy or a networking OG strategy. In addition, having a high population density is also a boost for public managers and politicians to adopt and undertake more developed OG strategies. And finally, the fact that the city is considered a SC is also an influential factor in the adoption of more advanced OG strategies. This result could be due to the presence of fundamental and key elements (infrastructures, human capital, resources and so on) in these cities making these OG initiatives to be implemented more quickly, easily, and successfully (Alcaide-Muñoz et al., 2022b).

2.3.3. Discussion and conclusions

This study has analysed the government transparency of SLGs, focusing its attention on the different OG strategies and how these different models of managing OG by local governments influence the different forms of government transparency offered. In addition, it has also been analysed how institutional, organizational, and contextual factors could influence on information transparency provided under each OG strategies adopted by SLGs.

In this sense, this study has identified that the vast majority of SLGs have adopted an incipient OG experimenting strategy, where most of the information disclosed is in .pdf format, which, as is well known, is used mainly for reading, since it does not allow that citizens edit their own reports with ease, to make decisions or participate in public affairs. Therefore, this evidence confirms that public managers and politicians do not use all the potential that ICTs to promote citizen participation in public decisions. This could be the result of pressure and demands from citizens to public managers and politicians to offer information and be transparent, and to report on the decisions taken and how they are managing public resources -legitimacy theory-(Weber, 2018).

However, if public managers and politicians believe in the potential that ICTs must promote openness to the exterior, to disseminate information, that this information is of better quality, more transferable, and that all of them favor the participation of citizens in public affairs, the OG strategies adopted by municipalities are more developed (citizen involvement and networking strategies). Therefore, the adoption of emerging technologies favors the quantity and amount of information available, timelines, relevance, understandability, accessibility, and usability of the information transparency provided under each type of OG adopted by SLGs.

Although, it is true that all the SLGs analysed have adopted a transparency portal that many have been developing, evolving, and improving over time, offering different alternatives for government transparency. This could be a reaction to citizen pressure on public managers –legitimacy theory (Weber, 2018)-, with increasing urban challenges due to rapid urban population growth (Alcaide-Muñoz et al., 2022b), who seek to adopt acceptable structures and practices to be accountable to citizens (population density is a determining factor in the OG strategy adopted).

Similarly, our evidence shows that SLGs seem to understand the potential that ICTs have to offer greater openness to the exterior, but the added public value offered is quite low. Hence all SLGs have reached the initial and incipient phase of the OG

strategy -experimenting strategy-. This could also be explained by legitimacy theory (Weber, 2018), since SLGs feel pressured from the outside to be more open and transparent. This has also been helped by Law 19/2013 on transparency, access to public information and good governance, which has added greater pressure on public managers and politicians. Hence our evidence has shown that the different components of government transparency show differences when the experimenting OG strategy is compared with the other two more advanced strategies (Alcaide-Muñoz et al., 2022a). However, there is no difference between the citizen involvement OG strategy and networking OG strategy.

Our findings confirm that the cities that have adopted OG networking strategies have citizens with higher levels of education who demand information to monitor the public policies adopted by the SLGs. In addition, they also bear greater fiscal pressure compared to the citizens living in the SLGs that adopt the other two strategies, so they will be interested in knowing the destination that politicians give to the taxes collected -see Table 2.6-. This evidence is confirmed with the differences test collected in Table 2.7, where significant differences are evidenced between the two most advanced OG strategies (citizen involvement and networking) when the population has secondary and higher education. These findings confirm the pillars of agency theory (Jensen & Meckling, 1976), showing a relationship between the tax pressure borne by citizens, who have high levels of education, and the open government strategies implemented by SLGs.

On the other hand, our findings show that political factors (political ideology, political stability, and political fragmentation) are not significant attributes on information transparency provided under each type of OG strategies adopted by SLGs. Although these findings are consistent with the findings reached in the study by Alcaide-Muñoz et al. (2022b), are contrary to the evidence obtained by the studies by Tejedo-Romero and Araujo (2018, 2020), which revealed that progressive politicians are considered the main drivers of improving information transparency.

However, the debate and queries about this issue are greater when we analyze the evidence obtained by Rodríguez-Bolívar (2015a), who stated that progressive parties are the main drivers of citizen participation and the exchange of knowledge on technological innovation of services. Similarly, Alcaide-Muñoz et al. (2023) concluded that local governments with a conservative ideology are more motivated to undertake smart initiatives and disclose information about the formal strategic planning they are carrying out to make these projects a reality. In short, in this study we cannot offer evidence that is supported by the theory of Partial Political Matters (PPM) (Ashworth et al., 2005).

Regarding fragmentation and political stability, no evidence has been found to show that they are determining factors that influence when a government implements or adopts different levels of OG strategy. Therefore, we cannot confirm the evidence obtained in other previous studies (Alcaide-Muñoz et al., 2023; Puron-Cid, 2014). Nor can we confirm the pillars of the goal setting theory (Jochimsen & Thomasius, 2014).

The receipt of funding from the Spanish central government is also not a significant factor driving SLGs to undertake or adopt one OG strategy or another. Our findings show that a greater number of SLGs (29.03%) that have implemented a networking OG strategy have received funding from the European Regional Development Fund (2014-2020), but this is not a determining factor that implies having adopted different strategy. Therefore, these findings make us think that more than receiving financial resources to undertake these initiatives, the key is that public managers and politicians believe in the potential of ICTs to undertake this type of initiatives and that the potential that has this type of initiatives to legitimize governance.

Considering everything mentioned so far, our experience focused on the analysis of large SLGs reveals that they are not using ICTs to improve citizen participation in public affairs, which favors the co-creation and co-design of the public services, only a few (21.38%) are those who are in this dynamic. Hence, the main studies for future research are: a) future studies should analyze more institutional and organizational factors than those analyzed in this study, in order to find explanations for much of the evidence found here; b) it would be interesting to know the opinion that public managers and politicians have on the subject analyzed in this study; c) it would be interesting to undertake similar studies in other countries around us where the context and administrative culture were different and see what evidence they would reach, and find an explanation for them; d) it would also be interesting to know the opinion of the citizens regarding these initiatives adopted, and to know if they really meet their expectations.

Finally, with these final reflections, the authors believe that this research topic, focused on government transparency, determining factors and OG strategies adopted are fertile ground to analyze how emerging technologies would be a revulsion that favors their evolution and development.

Different cities, different e-Participation models. An empirical research on Spanish municipalities

New strategies regarding Open Government (OG) have been implemented in cities around the world to better adapt them to citizens' needs. Nonetheless, online and offline citizen participation channels coexist in different cities and few studies have considered why these different citizen participation models are offered by local governments as well as their levels of development. Hence, this research work is motivated by the analysis of the implementation status of the citizens participation initiatives carried out by large Spanish municipalities -municipalities with more than 50,000 inhabitants- and the need to analyze the drivers of the different e-Participation models. Overall, by a cluster analysis and test of differences, and based on Arnstein's ladder (Arnstein, 2019), the results show that the city profiles influence on e-Participation models. In this sense, one the main findings are that the largest municipalities, which are considered smart cities, tend to have more developed participation models. In addition, these cities are mainly characterized by having a high population density and citizens with high educational levels.

3.1. Introduction

The adoption of Information Communication and Technologies (ICTs) by public sector organizations has undertaken huge investments that have given rise to enormous changes in management, organization, governance and even in the way they provide public services. According to Piotrowski (2017), one of the most important reforms carried out by governments worldwide has been Open Government (OG) initiatives, where technology plays a key role as a catalyst for the development of these initiatives by improving transparency, participation, and collaboration (Bisogno et al., 2022).

Nonetheless, recent studies have determined that the initiatives of Open Government Data (OGD) and the transparency portals are those of the most developed ones (Alcaide-Muñoz et al., 2022b; Park & Gil-Garcia, 2022), mainly driven to increase the legitimacy of public actions, but not for promoting citizen engagement in public decisions (Alcaide-Muñoz et al., 2022b). But transparency is a means to a higher end since it is considered a tool for promoting citizen participation (Scholl & Luna-Reyes, 2011). Indeed, e-Participation strengthens the relationship between a government and its citizens, favoring transparency by governments and achieving the inclusion of society in public decision-making (Alarabiat et al., 2021).

E-Participation platforms have therefore proliferated in many countries around the world in recent years, under the belief of changing the nature of interactions between citizens and governments (Coelho et al., 2022; Randma-Liiv, 2022). As a good example of this, we can find numerous participatory budget initiatives (Bartocci et al., 2022; Mattei et al., 2022), which arise from the need to improve the provision of public services, satisfy the growing needs of citizenry, and address multiple social change (Michels, 2011). But the implementation of public budgeting models has been very diverse (Sintomer et al., 2008), each government has implemented it according to its interpretation, with the current regulations, considering the customs and administrative cultures in the country (Bartocci et al., 2022).

In addition, e-Participation platforms can sometimes act as inhibitors or barriers to democratic and open participation due to be controlled by governments (Porwol et al., 2016; Rodríguez-Bolívar & Alcaide-Muñoz, 2019), and prior studies have also demonstrated that some e-Participation projects have registered low levels of participation (Naranjo-Zolotov et al., 2019; Oliveira & Garcia, 2019), mainly due to some limitations such as the digital divide, the design and usability of available websites as well as the personal capacity of citizen or trust in the democratic process (Rodríguez-Bolívar & Alcaide-Muñoz, 2019; Vassil & Weber, 2011).

With the intention of counteracting the citizenry's apathy, governments have increased their use of social media or instant messaging tools (Lev-On & Steinfeld, 2015; Massarani et al., 2021) to interact and engage with citizens. In addition, governments are recently making efforts to use emerging technologies, which promote better communication channels (Rodríguez-Bolívar & Alcaide-Muñoz, 2022; Simonofski et al., 2021). These emerging technologies seek to solve the limitations that the current participation channels show, favoring a more fluid interaction between participants (Iandoli et al., 2018; Segura-Tinoco et al., 2022). This greater fluidity will allow governments to better manage information, making citizens feel more involved and confident, since their opinions would be heard and considered,

which could lead to active collaboration between citizens and government. Participation is a key element for this collaboration to take place and result in a citizen co-production, aimed at finding solutions that could improve the quality of public services provided.

Nonetheless, prior research (Sandoval-Almazan & Gil-Garcia, 2012; Wijnhoven et al., 2015) has showed different evidence and levels of interaction between governments and citizens in making decisions of public interest based on the social capital factors (Choi & Song, 2020), perhaps due to both its continuous evolution (Rodríguez-Bolívar & Alcaide-Muñoz, 2019) and the increasing implementation of emerging technologies in this field in the last years (Rodríguez-Bolívar & Alcaide-Muñoz, 2022), which makes think that e-Participation could be considered an incipient field of knowledge that has not reached maturity.

In this framework, our study focuses on analyzing the e-Participation channels offered by the large Spanish local governments (SLGs), with the intention of being able to determine the different e-Participation models adopted, and whether these models are defined by the profile (characteristics) of both the cities and the citizens. Concretely, our study seeks to determine if demographic (municipality profile) and social (citizen profile) factors motivate public managers to offer different levels of e-Participation.

To achieve the aim of this study, we focused on SLGs (with more than 50,000 inhabitants), whose has enacted several laws in this regard and has formulated numerous action plans (Alcaide-Muñoz et al., 2016b), identifying the different levels of e-Participation. In addition, we want to determine the diverse e-Participation models and whether these models could be moderated by the city profile.

3.2. Different e-participation models

As a result of development of the new ICTs during the last years, original opportunities for citizen participation emerged (Kersting, 2016; Weiss, 2020). Although there are numerous definitions of participation, here we focus on political participation aimed at solving collective or community problems (the targeting perspective - Van Deth, 2016-, or civic engagement - Weiss, 2020-), not focused on voting rights (the locus perspective - Van Deth, 2016-), that is, the individual and organized act to influence government decision-making (Barnes & Kaase, 1979; Van Deth, 2014).

Despite numerous efforts by governments to expand opportunities for participation and access, few studies have analyzed the effectiveness of different systems to involve citizens in the policy-making process (Lim & Oh, 2016). In fact, although new participation channels vary according to the level of decision-making control, they could be classified into online and offline participation (Lim & Oh, 2016). The existing literature on offline participation analyzes its benefits to improve local government policy-making processes (Box, 1998; Walters et al., 2000) and highlights that offline participation channels between the government and citizens allow establishing a trust climate in the policy implementation processes, as long as these are well designed and institutionalized and can be representative of the community through intense deliberation in the decision-making process (Creighton, 2005).

On the other hand, online participation or e-Participation was defined as a new participatory channel differentiated by patterns observed in cyberspace where offline participation channel is not possible (Koop & Jansen, 2009; Macintosh et al., 2003). This kind of participation has limitations and barriers such as distance, time and other physical conditions do not limit participation (La Porte et al., 2002). Although, there are studies (Gibson & Cantijoch, 2013; Oser et al., 2013) that have shown that people interested in participating politically in an offline channel, also participate online, it is important to analyze the factors that predict it (Boulianne, 2015), and that influence or encourage e-Participation (Feezell, 2016).

As previously mentioned, many governments around the world have created their official websites, which are integrating e-Participation tools, such as participation platforms, social media -Facebook and Twitter- or instant messaging tools -Telegram and WhatsApp- (Bertot et al., 2010; Criado & Villodre, 2022). Moreover, given the limitations that governments have in being able to manage all the information and messages that citizens leave in these tools, the use of emerging technologies is trying to be used by these governments to expand and enrich the exchange of information between governments and between governments and citizens (Iandoli et al., 2018; Segura-Tinoco et al., 2022).

On the other hand, the level of participation has been different, since the tools offered by the governments allow different types of participation, such as online and survey or forums (Oliveira & Garcia, 2019; Zheng, 2017), or because citizens consider that the participation platform is not an appropriate environment to express their sincere opinions because it is a space controlled by the government (Porwol et al., 2016; Rodríguez-Bolívar & Alcaide-Muñoz, 2019). In our study, we focus on analyzing the different tools offered by SLGs, with the intention of determining the different participation models offered to citizens.

To determine the different levels of participation offered, this research is based on the Arnstein's participation Ladder (ALP) (Arnstein, 2019). Although the ALP model has been criticized, changed, and evolved (Salem, 2016) due to its static role vision of participation regardless stakeholders' expectations (Akers, 2022), rigidity and linear model approach (Tritter & McCallum, 2006), it is widely used because of its simplicity, coherence, and widespread application, hence his work has recently been used as framework for participatory models' evaluation (Akers, 2022; Contreras, 2019; Kotus & Sowada, 2017).

In this sense, our study does not seek to analyze the evolution presented through the different e-Participation rungs by sample municipalities, but to examine the different e-Participation models implemented and the influence of city profile on these implemented models. To achieve this aim, the eight rungs for citizen participation included into the ALP (Arnstein, 2019) are used but grouping them into three main approaches according to the power delegation level between government and citizens: a) non-participation; b) tokenism degree, and c) citizen power degree.

The first of them does not imply any participation since it only focuses mainly on manipulating and learning from "uneducated" citizens, while the second approach mainly deals with informing citizens of government decisions and inviting participation through opinions, but in which the decision-making power is maintained at the government level. In the third and final approach, the delegation of power occurs, and governments create the appropriate conditions and processes for citizens to participate and take part in the implementation of public policies and decisions. We considered the last two approaches, which assume participation by the citizen. These levels configured our dependent variable, which will be explained below.

3.3. Hypothesis formulation

We can find previous studies which have analysed the determining factors in the adoption of OG initiatives (Alcaide-Muñoz et al., 2022b; Fan & Zhao, 2017), as well as recent studies which analysed the factors that shape citizens' e-Participation (Alarabiat et al., 2021; Choi & Song, 2020; Guillamón et al., 2016; Stratu-Strelet et al., 2021). In this sense, Stratu-Strelet et al. (2021) analysed the institutional factors and their influence on e-Participation, highlighting that government leadership is a key driver in encouraging e-Participation above technological infrastructures.

Moreover, Alarabiat et al. (2021) and Guillamón et al. (2016) focused their research on the use of social networks for citizen participation. The first one analysed

the acceptance factors that influence intention to citizens' participation in public affairs via Facebook. The main findings are the citizens' attitude, participation efficacy and perceived behaviour control are the main factors that influence on e-Participation (Alarabiat et al., 2021). Similarly, Guillamón et al. (2016) focused on the factors influencing Facebook use, highlighting that population size, citizens' income level and level of indebtedness have an impact on Facebook use by local governments.

Finally, Choi and Song (2020) analysed factors influencing citizenry e-Participation using factors of technology acceptance model, factors of theory of planned behaviour, individual social capital factors and control variables. Although, this study used citizens age and education level, the individual social capital factors are the most important and significant in the influence of citizen participation.

Our research goes one step further and seeks to determine city profile influence on the participation management models adopted by municipal governments. Also, we analyse these adopted participation models considering the different channels used by local governments to communicate with citizens (offline and online), considering both participation platforms and social media. Therefore, based on solid theoretical framework (stakeholder theory, institutional theory, or agency theory), this paper identifies the city profile using sociodemographic characteristics, such as population size, population density, education level, and so on, to identify patterns of online and offline participation models -see Table 3.2-.

Population size

According to stakeholder theory (Jensen & Meckling, 1976), policymakers and public managers do not have the same interests as citizens, which means they need to be held accountable for their actions to demonstrate that they have acted according to their responsibilities. In addition, previous studies (Alcaide-Muñoz et al., 2017; Alcaide-Muñoz et al., 2022b) highlighted that large population's municipalities are under increased pressure regarding their political decisions and the management of public resources. Hence it is recognized that innovation in the adoption of new technologies is generally more notable in these municipalities (Bonsón et al., 2012), which provides greater opportunities for citizen participation (Bonsón et al., 2015), and involves a wide variety of online services. Nonetheless, previous literature (Novo Vázquez & Vicente, 2019) did not find significant any evidence that the municipality size should be a predictive power over e-Participation. Therefore, this issue is, up to now, blurred and deems a greater attention. This way, our research proposes to test the following hypothesis:

H1. The population size of municipalities could influence on the participation management models adopted

Population Age

According to prior research, age is both a crucial factor to understand people behavior on the use of ICTs, mobile system, and apps (Ahmad & Khalid, 2017), and a significant predictor of e-Government adoption by citizens (Ju et al., 2019; Tavares & da Cruz, 2020). Indeed, these studies have shown that younger people play a greater active role in society using new ICTs than elder citizens, thus reducing the latter their possibilities of adopting e-Government (Van Deursen and Van Dijk, 2009). Recent studies (Novo Vázquez & Vicente, 2019) confirm this issue showing a negative relationship between age and e-Participation, i.e., when age increases, the probability of e-Participation decreases.

By contrast, other research (Lowatcharin & Menifield, 2015) noted that elder population have a higher demand for online information and public participation. In fact, Budding et al. (2018) established that teenagers do not consume the product municipalities offered, mainly due to their young age. Based on these assumptions, we propose the following hypothesis:

H2. The population age could influence on the participation management models adopted

Population Density

Population density is another important factor to be analysed within the framework of stakeholder theory (Jensen & Meckling, 1976) and institutional theory pronouncements (Powell & DiMaggio, 2012). Based on institution theory pronouncements, the design of organisations is not considered a rational process but, rather, a process conditioned by internal and external factors that lead organisations to resemble each other more closely over time (Powell & DiMaggio, 2012). In this sense, organisations respond to external pressures by adopting structures and practices that are considered legitimate and socially acceptable, thus producing homogeneous practices and structures. Municipalities with similar population densities could have similar characteristics that will lead them to undertake similar initiatives, provide services under similar conditions, and manage the organisation in a similar way (Alcaide-Muñoz et al., 2022b).

Therefore, dense cities facilitate social interactions by flowing both knowledge and innovative ideas (Glaeser & Gottlieb, 2006), and it makes them potentially more interested in introducing ICT-based initiatives (Neirotti et al., 2014). Considering

these statements and evidence, a higher population density could lead to increasing stakeholder pressure on local governments and the need to develop e-Participation initiatives. Hence recent research (Sihal & Saha, 2021) affirms that when population density is higher, community action is more likely to be mobilised, which will promote government actions to involve citizens in support of proposed plans and local actions. Considering this finding, we propose the following hypothesis:

H3. The population density of municipality could influence on the participation management models adopted.

Smart City

The framework of Smart Cities has favoured technological development and innovation, creating a participative and collaborative environment among governments and citizens to increase the quality of life of citizens (Rodríguez-Bolívar, 2019). In this context, the OG initiatives seek to promote greater citizen engagement in public decisions, implementing collaborative and participative city governance (Akmentina, 2022), fostering co-creation and collective intelligence (Khan & Krishnan, 2021).

Recent research (He & Ma, 2021) reveals that when citizens feel that their opinions are considered by the government are more satisfied with public services, governmental decisions, and public policies which, in turn, lead to stronger trust in government. In this context, Pereira et al. (2017) affirmed that the ever more important role of citizens and closer interactions with government lead to a model of smart government. Therefore, the municipalities considered Smart Cities will offer more developed participation initiatives and higher levels of participation, favoring the involvement of citizens in public affairs. Based on these pieces of evidence, we propose the following hypothesis:

H4. The consideration of a municipality as a Smart City could influence on the participation management models adopted

Electoral Participation

According to agency theory (Verbeeten, 2008), politicians are presumed to be motivated solely by self-interest, which does not always maximize the principal's welfare (citizens). Given that the citizenship will demand a more information to monitor the government's decisions, the politicians will try to manage the government efficiently (Giroux & McLelland, 2003). In this sense, the ICTs have favored the dissemination of more information, so that citizens can be informed continuously, and monitor the government decisions (Rodríguez-Bolívar & Alcaide-Muñoz, 2019).

The appearance and use of new channels of communication and participation, such as social networks, e-Participation platforms, and so on, by governments have allowed citizens to have an increasingly active role in decision-making. The citizenship does not have to wait for the municipal elections to be able to express its opinion, but they can do so frequently on various topics. Indeed, previous studies (Oliver, 2001; Piotrowski & Van Ryzin, 2007) suggests that voter turnout levels, the frequency of contacts between citizens and local officials, and participation in political meetings can all be regarded as indicators of citizen involvement and commitment to participation in political matters. Therefore, we propose the following hypothesis:

H5. Electoral participation could influence on the participation management models adopted

Education Level

Previous studies (Bearfield & Bowman, 2017; Garcíea-Tabuyo et al., 2017) have highlighted that a more educated population will play an active role in the use of e-Government content and services and government decisions. Therefore, these citizens tend to both demand innovative initiatives and be an active part of these initiatives (Schmidhuber et al., 2017), exploring socially accepted and responsible strategies for change within a community (Volman & ten Dam, 2015). In short, citizens with higher qualifications tend to easily use new technologies, as well as show a more active behavior both in the participation of public decisions and in the monitoring of municipal management. Thus, the following hypothesis is derived:

H6. The citizens' level of education could influence on the participation management models adopted

Gender

Previous studies highlighted that gender plays an important role in the technology acceptance model due to the different socially constructed cognitive structure, between men and women, in the making decisions process (Venkatesh et al., 2003). Ahmad and Khalid (2017) highlighted that women are more empathetic and aware of the other's feeling compared to men. Moreover, Schmidhuber et al. (2017) showed that male web users show higher OG platform activity than women.

In this sense, prior research showed that men tend to be more active in political affairs, whereas women are equally or more active in community activities and grassroots movements (Enns et al., 2008). Kim and Lee (2019) found that men who perceive greater instrumental value of e-Participation are more likely to use e-Participation actively. However, women were more likely to use e-Participation

when they were connected to offline social groups, because they use them as supplementary channels. Based on this prior knowledge, we test the following hypothesis:

H7. The gender could influence on the participation management models adopted.

Immigrant population

Several studies showed that the presence of immigrant population negatively influences the finances of local governments (Choi & Song, 2020; Rodríguez-Bolívar et al., 2021), which could make citizenship to demand more information to know how the public resources are managed. On the other hand, Maya-Jariego et al. (2009) highlighted that new technologies could play a key role in promoting social cohesion, by involving immigrants in the current society in which they live to adapt as soon as possible to the language, culture, customs, so on.

Indeed, Internet can help remove social, cultural, or racial barriers, since it is a user-friendly mass media (Paganoni, 2012), fostering immigrants to share their experiences with others in meeting places where knowledge is transferred (such as libraries), where they could have access to computers through which to receive online training, reducing social exclusion and engaging in society by increasing their chances of finding employment (Der Meer & Winden, 2003).

In short, the existence of immigrant citizenship could increase the demand for information by resident citizens, playing the ICTs a key role not only in this regard, but also in favoring the integration of immigrants into the community. Therefore, immigrants would also be interested in learning about government decisions and the promotion of public policies that could be of interest to them. All this causing a greater demand for participation channels by the citizens. Based on these assumptions, we propose the following hypothesis:

H8. The percentage of immigrant population could influence on the participation management models adopted.

Civil Status of population

Contrary to married people, Wolfinger and Wolfinger (2008) found that single people are less likely to vote and that single parents were light voters in the case of offline participation, because they consider that their interests may receive less representation in policy formulation. Moreover, their findings indicated that the participation is lower whose marriages have ended, either by death, divorce, or separation. By contrast, regarding online participation, Gértrudix et al. (2016) found no significant evidence related to civil status.

On the other hand, Gaboy et al. (2020) and Marcial (2017) found that civil status has a negatively related to using software application, since the single and younger people are more likely to using different applications and softwares. Marcial (2017) found that single people have higher ICTs skills. In addition, married couples without children or lower number of children are more confident in using ICT equipment and tools. Nonetheless, there is a lack of evidence concerning how marital status could influence participation management models. That's why we propose the following hypothesis:

H9. The civil status of population could influence on the participation management models adopted

3.4. Empirical Research

3.4.1. Sample selection

In recent years, the great deterioration in public finances of Spanish regional and local governments has jeopardised the financial sustainability of public services and led to hard management cutbacks (Rodríguez-Bolívar et al., 2021). All this added to the continuous cases of corruption have increased distrust towards institutions and political leaders, especially at the local government level (Cifuentes-Faura et al., 2022). Hence, SLGs have undertaken OG initiatives and projects to favour citizen participation in public policies by disclosing a greater amount of information (Alcaide-Muñoz et al., 2022b) which could increase citizenry's trust in public institutions (Wirtz et al., 2019).

In this context, recent studies have confirmed that SLGs are the most likely to adopt emerging technologies and innovations in the provision of public services (Alcaide-Muñoz et al., 2022b; Criado & Zarate-Alcarazo, 2022). In addition, Spain has carried out a greater number of smart initiatives (Rodríguez-Bolívar & Alcaide-Muñoz, 2019), whose technological environment favours the provision of innovative online services, a greater openness of public institutions and citizen's participation in the development of public policies. This way, the central government of Spain launched an ambitious OG strategy, adopting the OG Partnership philosophy in 2011, following the Recommendations of OECD on the Digital Strategies of the Government (OECD, 2014). To date, this strategy has been implemented in several phases and is made up of four action plans (www.transparencia.gob.es). In brief, SLGs could fit well with the aim of our research, and the empirical evidence collected

could also be useful and interesting for governments in other countries with similar settings around the world.

Concretely, our study focuses on SLGs with a population over 50,000 inhabitants because these local governments assume a series of competencies and responsibilities to deliver complex and efficient public services (Law 7/1985, Regulation of the bases of local regimes) and their public policies influence on the daily life of their citizens. In addition, they are usually among the first to adopt new technologies (Criado & Zarate-Alcarazo, 2022) and are called to be key players in creating a participatory environment and an interactive urban environment based on information (Rodríguez-Bolívar, 2015b).

The sample data for this research was collected in two stages (during May and June 2022). Firstly, we searched local governments of areas with more than 50,000 inhabitants in the Spanish National Institute of Statistics (INE) database. This search provided 145 local governments, which represent more than 50% of the Spanish population (<https://www.ine.es/>). Secondly, we collected data regarding Spanish smart cities, for which, we take as reference two widely accepted world rankings according to the characteristics required by these rankings: 1) a European project sponsored by Asset One Immobilienentwicklungs AG (<http://www.smart-cities.eu>) - we collected seven municipalities from this ranking with a large population classified as SCs); and 2) the EUROCITIES network (<http://www.eurocities.eu>) - we collected five municipalities from this ranking with a large population classified as SCs).

3.4.2. Dependent variable

We analysed the SLGs' official websites using an item of participation steps based on Arnstein's ladder of citizen participation (Arnstein, 2019)-see Table 3.1-. As previously mentioned, we focus on the steps which included participation (the last two approaches -tokenism and citizen power degrees).

The first subitem is related to the Step 5 "Placation Phase" where citizens begin to have more influence but retain for power-holders the right to judge the legitimacy of feasibility of the advice (Arnstein, 2019), i.e. the information flows in a bidirectional way (consultation), through surveys carried out through social networks, web pages, where the citizens can give their opinions and be aware of what is happening, but ultimately, does not directly influence on government decisions (Nabatchi, 2012).

The second subitem is related to the Step 6 “Partnership” where power is redistributed through negotiation between citizens and power-holders. They agree to share planning and decision-making responsibilities through such structures as planning committees, assemblies, associations, and so on, where resolve emphases (Arnstein, 2019). In this way, this kind of structures play a function as channels for information exchange and knowledge sharing, facilitating citizen participation of their members represented in them (Liao & Ma, 2019). Although it can be affirmed that there is participation, it is still insufficient and citizen influence on public decisions continues to be indirect, demonstrating a slight authority of citizens (Miller et al., 2019).

A practical example could be when there is a conflict in a specific neighbourhood, and a community spokesman (for example neighbourhood association’s president) sends the complaints of the neighbours so that the public managers deal with them and start the negotiation. In this sense, community participation is also exercised through associations, where power is delegated to their representatives in municipal plenary sessions, who are associated for common purposes.

The third subitem is related to the Step 7 “Delegated Power” where negotiations between citizens and public officials can result in citizens achieving dominant decision-making authority over a particular plan or program (Arnstein, 2019). In this ladder, powerholders need to start the bargaining process rather than respond to pressure from the other end. In this research, this subitem is referred to the participation of citizens in person in the municipal plenary sessions (online). Hence, the participation process is opened through online channels (by the municipalities) so that citizens in a particular way can participate and present their complaints, suggestions, problems, etc., using different online channels (participation platforms, social networks, and apps).

The last subitem is related to the Step 8 “Citizen Control”, where the citizens are simply demanding that degree of power which guarantees that participants or residents can govern a program or an institution (Arnstein, 2019). At this stage, the role of citizens in the governance process is strengthened by public policies (Routzouni et al., 2019). For this, it can negotiate the conditions under which outsiders may change them. At this rung, the municipality offers different online channels so that a discussion between equals is possible (between public managers and citizenship).

Table 3.1: Item of Participation Steps

| QUESTIONS | | PERCENTAGE |
|---|---|---------------|
| SUB-ITEM 1.- ARNSTEIN'S LADDER STEP 5 "PLACATION" | Σ 1 and 2 | 100.00 |
| 1. Allows online citizens to participate in consultations (opinion)? | Online | |
| a. By participation platform | 0/1 | 33.33 |
| b. By social networks | Σ b.1. + b.2 + b.3 | 33.33 |
| b.1 Facebook | 0/1 | 11.11 |
| b.2 Twitter | 0/1 | 11.11 |
| b.3 Blogs | 0/1 | 11.11 |
| c. Apps | 0/1 | 33.33 |
| SUB-ITEM 2.- ARNSTEIN'S LADDER STEP 6 "PARTNERSHIP" | | 100.00 |
| 2. Are citizens allowed to participate to the municipal plenary sessions? | Offline | |
| a. In person offline | 0/1 | 50.00 |
| b. Through assemblies, district meetings, associations, etc. offline | 0/1 | 50.00 |
| SUB-ITEM 3.- ARNSTEIN'S LADDER STEP 7 "DELEGATED POWER" | | 100.00 |
| 3. Are citizens allowed to participate to the municipal plenary sessions online? | Online | |
| a. By participation platform | 0/1 | 33.00 |
| b. By social networks | Σ b.1. + b.2 + b.3 | 33.00 |
| b.1 Facebook | 0/1 | 11.11 |
| b.2 Twitter | 0/1 | 11.11 |
| b.3 Blogs | 0/1 | 11.11 |
| c. Apps | 0/1 | 33.00 |
| SUB-ITEM 4.- ARNSTEIN'S LADDER STEP 8 "CITIZEN CONTROL" | | 100.00 |
| 4. Are online discussions held? | Online | |
| a. By participation platform | 0/1 | 33.00 |
| b. By social networks | Σ b.1. + b.2 + b.3 | 33.00 |
| b.1 Facebook | 0/1 | 11.11 |
| b.2 Twitter | 0/1 | 11.11 |
| b.3 Blogs | 0/1 | 11.11 |
| c. By Apps | 0/1 | 33.00 |
| TOTAL | Σ Items 1,2,3 and 4 divided by 4 | |

Source: Own Elaboration

3.4.3. Independent variables and methodology research

We selected nine variables as factors linked to the hypotheses defined in the previous section. All information about the variable acronyms, their descriptions, and calculation is detailed in Table 3.2.

To achieve the objective of this study, the data analysis was performed in two steps. To begin with, based on prior research that has demonstrated the influence of demographic profile on both the citizens' intention to participate in public affairs and the e-Participation tools used by local governments (Choi & Song, 2020; Guillamón et al., 2016; Kim & Lee, 2019), the first step consists of carrying out a hierarchical cluster analysis with the intention of grouping those municipalities that have an identifying demographic profile. Specifically, we carried out the Ward Method (or minimum inertia loss method) (Ward, 1963), which links cases together to minimize variance within each group. The results of cluster analysis is displayed in the Table 3.3.

In the second step, we tried to identify the variables that could act as determining factors in the level of citizen participation and that explained why a municipality was in one cluster and not in another. To do this, a difference test was carried out. Firstly, we carried out U Mann-Whitney and t-Student (depending on the distribution of the variable -see Kolmogorow Smirnov normality test in Table 3.4-) difference tests inside the clusters to determine the main factors that influence on the municipal e-Participation models -see Table 3.5-. Secondly, we carried out Kruskal-Wallis and ANOVA difference tests between the different cluster to determine the factors that further define the characteristics of a municipality related to the municipal e-Participation models -see Table 3.6-.

Unlike previous research (Choi & Song, 2020; Guillamón et al., 2016; Kim & Lee, 2019), these analyses will allow defining homogeneous groups based on demographic variables, as well as define the profile of the cities that show homogeneous behaviour in the implementation of e-Participation tools. In addition, it will allow us to define which are the demographic variables that could play a role as drivers in the management of the different e-Participation models by the municipalities.

Table 3.2: Definition of variables and descriptive statistics

| Variables | Acronym | Description | Calculation | Mean | Median | Std. Dev. | Min. | Max. |
|----------------------------|-----------|--|--|------------|-----------|------------|-----------|--------------|
| Placation Step | %S5 | Consultation Step by Arnstein's Ladder | Item 1 in Table 1 | 51.00 | 44.00 | 18.00 | 0.00 | 94.00 |
| Partnership Step | %S6 | Partnership Step by Arnstein's Ladder | Item 2 in Table 1 | 38.00 | 50.00 | 21.00 | 0.00 | 50.00 |
| Delegated Power Step | %S7 | Delegated Power Step by Arnstein's Ladder | Item 3 in Table 1 | 2.00 | 0.00 | 7.00 | 0.00 | 33.00 |
| Citizen Control Step | %S8 | Collaboration Step by Arnstein's Ladder | Item 4 in Table 1 | 21.00 | 33.00 | 19.00 | 0.00 | 78.00 |
| Dependent variables | | | | | | | | |
| Population | POP | ¹ Population residing in the Region | Number of inhabitants residing in the Region | 170,706.20 | 88,592.00 | 312,049.60 | 50,728.00 | 3,266,126.00 |
| Population Density | PDEN | ¹ Population residing in the municipality per km ² | Population divided by km ² | 2.502 | 1.478 | 3.130 | 55 | 18,895 |
| | %Age_1830 | ¹ Percentage of inhabitants from 18 to 30 years old | Number of inhabitants from 18 to 30 years old / total population | 15.68 | 15.34 | 1.62 | 10.20 | 21.69 |
| | %Age_3140 | ¹ Percentage of inhabitants from 31 to 40 years old | Number of inhabitants from 31 to 40 years old / total population | 17.36 | 17.21 | 3.52 | 2.81 | 49.09 |
| | %Age_4150 | ¹ Percentage of inhabitants from 41 to 50 years old | Number of inhabitants from 41 to 50 years old / total population | 15.49 | 15.49 | 0.87 | 12.60 | 17.96 |
| | %Age_5164 | ¹ Percentage of inhabitants from 51 to 64 years old | Number of inhabitants from 51 to 64 years old / total population | 17.76 | 17.60 | 2.57 | 10.49 | 24.68 |
| | %Age+64 | ¹ Percentage of inhabitants more 64 years old | Number of inhabitants more 64 years old / total population | 15.33 | 15.15 | 4.47 | 3.98 | 26.74 |
| Smart City | SC | ³ Municipalities that are Smart Cities | 0 = No Smart City 1 = Smart City | 0.12 | 0.00 | 0.32 | 0.00 | 1.00 |
| Electoral Participation | ELEP | ² Percentage of participation in elections | Percentage of participation in the last municipal's elections | 33.00 | 33.00 | 8.00 | 15.00 | 60.00 |
| Education Level | %SEC | ¹ Number of inhabitant with secondary studies | Number of inhabitants with secondary studies / total population | 1.77 | 0.63 | 3.06 | 0.14 | 16.70 |
| | %SUP | ¹ Number of inhabitant with university studies | Number of inhabitants with university studies / total population | 3.64 | 1.18 | 6.32 | 0.15 | 36.50 |
| Gender | %GEN | ¹ Number of female inhabitants | Number of female inhabitants / total population | 51.45 | 51.26 | 1.24 | 47.82 | 54.70 |
| Immigrant | %IMMI | ¹ Number of immigrant inhabitants | Number of immigrant inhabitants / total population | 11.28 | 9.57 | 7.78 | 1.21 | 39.85 |
| | %SING | ¹ Number of single inhabitants | Number of single inhabitants / total population | 46.72 | 47.06 | 2.95 | 39.51 | 53.47 |
| | %MARR | ¹ Number of married inhabitants | Number of married inhabitants / total population | 46.84 | 46.90 | 2.41 | 40.34 | 52.03 |
| | %WIDOW | ¹ Number of widowed inhabitants | Number of widowed inhabitants / total population | 5.09 | 5.32 | 1.27 | 1.41 | 7.83 |
| | %SEPA | ¹ Number of separated inhabitants | Number of single inhabitants / total population | 1.35 | 1.26 | 0.54 | 0.40 | 3.30 |

Source: Own elaboration ¹ INE (Statistic Institute of Spain) www.ine.es; ² Ministry of Interior (<http://www.infoelectoral.mic.es/>); ³ IESE Business School (<http://citiesinmotion.tese.edu/indicecm/>) and Eurocities (<http://members.eurocities.eu/eurocities/members/membersmap>) We have collected all variables in March and April 2022.

Table 3.3: Estimation results of the model

| Cluster | Phases | Descriptive statistics | Pob_miles | Age of the population | | | | | Den_Pob | Sc | % Elec_particip | Level of Education | | % Men | Civil Status | | | |
|----------|--------|------------------------|--------------------------|-----------------------|----------------|---------------|---------------|---------------|----------------------|--------------|-----------------|--------------------|----------------|---------------|---------------|--------------|--------------|-------------|
| | | | | % Age 18_30 | % Age 31_40 | % Age 41_50 | % Age 51_64 | % Age +65 | | | | % Sec_educ | % Supe_educ | | % Single | % Married | % Widowed | % Separated |
| 1 60% | S5 | Median Std. Dev | 75,119.00 21,107.38 | 15.45 4.77 | 16.79 4.71 | 15.99 5.13 | 17.63 5.69 | 14.51 6.50 | 872.03 2,400.71 | 0.00 0.00 | 38.15 9.26 | 0.32 0.55 | 0.46 1.18 | 48.85 1.31 | 47.99 3.54 | 5.39 2.75 | 1.04 0.51 | |
| | S8 | Median Std. Dev | 78,182.00 54,219.17 | 15.62 1.45 | 17.17 8.20 | 15.50 0.95 | 17.40 2.86 | 15.20 4.29 | 1,218.49 2,101.71 | 0.00 0.00 | 32.38 10.05 | 0.72 1.22 | 1.52 2.30 | 48.86 1.13 | 47.76 2.73 | 5.18 2.40 | 1.43 0.74 | |
| 2 20% | S5 | Median Std. Dev | 88,150.00 71,472.56 | 15.34 1.55 | 17.27 3.28 | 15.43 0.90 | 17.62 2.47 | 14.77 4.39 | 1,499.80 3,206.71 | 0.00 0.00 | 32.41 7.12 | 0.47 1.06 | 0.96 2.19 | 48.72 1.22 | 46.91 2.79 | 5.22 1.23 | 1.27 0.50 | |
| | S6 | Median Std. Dev | 90,700.50 65,559.35 | 16.09 1.67 | 17.06 2.82 | 15.51 0.99 | 17.88 2.83 | 15.14 5.07 | 1,597.81 1,681.87 | 0.00 0.00 | 34.31 7.70 | 0.61 1.16 | 1.22 2.38 | 48.44 1.41 | 47.34 2.59 | 5.12 2.14 | 1.10 0.39 | |
| 3 4% | S8 | Median Std. Dev | 88,150.00 76,516.91 | 15.24 1.38 | 17.42 15.53 | 15.27 0.84 | 17.19 2.06 | 14.77 3.74 | 1,243.20 4,057.73 | 0.00 0.00 | 32.01 6.52 | 0.42 0.96 | 0.95 2.03 | 48.89 0.94 | 46.35 2.91 | 5.23 1.17 | 1.33 0.56 | |
| | S5 | Median Std. Dev | 109,228.50 58,837.62 | 16.16 1.11 | 18.10 1.04 | 15.48 0.75 | 15.79 1.17 | 11.81 2.12 | 615.73 932.03 | 0.00 0.00 | 0.33 0.08 | 0.30 0.33 | 0.29 0.80 | 49.17 0.59 | 49.04 3.57 | 4.47 2.74 | 0.95 0.69 | |
| 4 16% | S6 | Median Std. Dev | 84,489.00 60,457.19 | 16.12 1.19 | 17.71 1.08 | 15.46 0.64 | 15.42 0.88 | 11.58 1.50 | 404.71 990.23 | 0.00 0.00 | 0.34 0.07 | 0.23 0.18 | 0.23 0.18 | 49.20 0.48 | 49.12 2.83 | 4.18 2.20 | 0.94 0.77 | |
| | S7 | Median Std. Dev | 84,489.00 76,847.74 | 16.19 0.72 | 17.39 1.47 | 15.46 0.76 | 15.42 1.15 | 11.58 1.65 | 263.89 1,133.91 | 0.00 0.00 | 34.12 2.55 | 0.23 0.23 | 0.23 0.23 | 49.65 0.62 | 51.94 2.20 | 4.76 1.62 | 0.75 0.25 | |
| 4 16% | S8 | Median Std. Dev | 133,968.00 52,430.40 | 16.12 1.47 | 18.50 0.69 | 15.49 0.91 | 16.16 1.36 | 12.05 2.88 | 1,558.17 871.04 | 0.00 0.00 | 29.65 12.10 | 0.37 0.44 | 0.36 1.15 | 49.14 0.46 | 46.21 2.60 | 4.18 1.68 | 1.25 0.79 | |
| | S5 | Median Std. Dev | 271,780.00 719,591.11 | 15.04 1.76 | 17.04 1.21 | 15.45 0.71 | 18.36 2.59 | 18.55 4.81 | 4,275.74 3,691.93 | 1.00 0.40 | 0.34 0.06 | 5.19 5.21 | 13.52 10.62 | 47.45 1.32 | 46.16 3.14 | 6.10 1.37 | 1.50 0.45 | |
| 4 16% | S6 | Median Std. Dev | 151,136.00 54,892.97 | 18.88 2.47 | 17.32 1.57 | 15.81 0.95 | 18.75 2.52 | 10.78 5.19 | 4,275.74 1,586.88 | 0.00 0.58 | 45.24 5.61 | 13.30 7.39 | 19.20 13.85 | 49.26 1.59 | 48.44 3.14 | 5.68 2.28 | 1.32 0.22 | |
| | S8 | Median Std. Dev | 322,627.50 760,497.28 | 15.01 1.33 | 16.95 1.18 | 15.39 0.68 | 18.33 2.67 | 18.93 4.28 | 3,923.11 3,957.58 | 1.00 0.32 | 32.04 5.57 | 5.04 4.95 | 13.40 10.46 | 47.41 1.20 | 45.79 3.13 | 6.36 2.51 | 1.63 0.47 | |

3.5. Analysis of the Results

3.5.1. Descriptive analysis

In Table 3.2, we can see the descriptive results of all the variables considered in the study. In the case of the dependent variables, the step S5 – Placation reaches the highest mean scores whereas the step S6 – Partnership reaches the highest median scores, which could make us initially think that these rungs are of high-developed by sample municipalities. Nonetheless, standard deviation are high in both cases. By contrast, step S7 – Delegated Power reaches the lowest mean and median scores, showing the lowest dispersion of the data (std. dev. 7.00). Finally, the step S8 – Citizen Control reaches a high score, but the data show dispersion (std. dev. 19.00).

When we focus our attention on the independent variables, we can see that, sample municipalities are equally distributed according to the population age, the marital status (single/married) and the genre of the citizens and are considered ‘non-smart cities’. Also, although sample municipalities are over 50,000 inhabitants, population size, population density show high dispersion. The rest of the variables considered in the studies show low dispersions -see Table 3.2-.

3.5.2. Cluster analysis

The results of cluster analysis can be seen in the Table 3.3, which show that 60% of sample municipalities are grouped into cluster 1. These municipalities only offer citizen participation tools to consult (S5 – Consultation), or different channels for citizen collaboration (S8 – Collaboration), but no other different participation rungs are considered. Also, these municipalities do not reach a high level of development in these two rungs (S5 and S8), which makes us think that improvements need to be made.

Municipalities in cluster 1 are usually medium-sized municipalities, with more than 75,000 inhabitants and a high average population density. Likewise, level of citizen participation is average, although citizens have low levels of education in both secondary and higher education -greater levels in municipalities with initiatives in S8 level (Collaboration)-. Finally, a high percentage of foreign citizens usually live in these municipalities, being this percentage higher when higher levels of development in participation are reached.

Municipalities grouped into cluster 2 (20% of sample municipalities) have a full accomplishment of level S5 – Consultation. To reach S8 – Collaboration, they pass by S6 – Partnership, although it is poorly developed. Population size and density in municipalities in this cluster are higher than those included in cluster 1 (average population over 88,000 inhabitants). Similarly, educational levels are usually higher, especially in superior education, with a large percentage of immigrant population.

As for municipalities grouped into cluster 3 (4% of sample municipalities) have been advancing in their participation strategies passing by all the rungs analyzed (from S5 to S8). These municipalities reach a high accomplishment level in S5 – Consultation and S6 – Partnership, but they need to put higher attention to advance in the accomplishment of rungs S7 – Delegated power and S8 – Collaboration (they reach the 50% of accomplishment). Municipalities reaching the S7 rung are characterized by large population (an average population over 80,000 inhabitants) but low population density, low level of education and low percentage of immigrants. As for municipalities reaching the S8 rung are characterized by large population (average population over 130,000 inhabitants), high population density and high percentage of immigrant population.

Finally, sample municipalities grouped into cluster 4 (16% of sample municipalities) are characterized by their concentration on rung S5 – Consultation or on rung S8 – Collaboration (only a few of them undertake initiatives at level S6 – Partnership). Although results could be very similar to those displayed by cluster 2, municipalities in cluster 4 reach highest level of accomplishment of rung S8 – Collaboration, while the level of accomplishment of rung S6 – Partnership is derisory. In addition, these municipalities are larger (an average population over 270,000 inhabitants), with a high population density (over 3,900 inhabitants per km²) and higher level of education (especially in superior education). They are also municipalities considered Smart Cities that have high percentages of immigrant population.

3.5.3. Analysis of the Statistical Difference Tests

Table 3.4 shows the normality tests displaying that all analyzed variables have nonnormal distribution, except for citizens over 64 years, electoral participation, and single and married citizens.

Secondly, first difference test was performed -see Table 3.5 - to determine which of the variables considered in our study cause differences within the cluster, allowing us to identify determining factors that could influence on the e-participation models implemented by the municipalities.

Table 3.4: Results of Kolmogorov Smirnov Test

| Variables | Kolmogorov Smirnov Statistical | Variables | Kolmogorov Smirnov Statistical |
|-----------|--------------------------------|-----------|--------------------------------|
| POP | 0.350 ^{***} | %SEC | 0.290 ^{***} |
| %AGE_1830 | 0.110 ^{***} | %SUP | 0.284 ^{***} |
| %AGE_3140 | 0.206 ^{***} | %GEN | 0.079 ^{**} |
| %AGE_4150 | 0.186 ^{***} | %IMMI | 0.138 ^{***} |
| %AGE_5164 | 0.085 ^{**} | %SING | 0.053 |
| %AGE+64 | 0.050 | %MARR | 0.039 |
| POPDEN | 0.217 ^{***} | %WIDOW | 0.084 ^{**} |
| SC | 0.514 ^{***} | %SEPA | 0.096 ^{**} |
| ELEP | 0.037 | | |

Source: Owner elaboration from information of STATA17 software;
 Sig. ^{***}1%; ^{**}5% and ^{*}10%.

Table 3.5: Estimation results of Mann-Whitney and t-Student Difference Tests

| Variables | Statistical Test | | | |
|----------------------|----------------------|-----------|---------------------|---------------------|
| | Cluster 1 | Cluster 2 | Cluster 3 | Cluster 4 |
| POP | 888.00 | 87.00 | 4.00 | 5.00 ^{**} |
| %AGE_1830 | 730.50 | 109.00 | 4.00 | 9.00 |
| %AGE_3140 | 900.50 | 115.50 | 4.00 | 19.00 |
| %AGE_4150 | 898.00 | 102.00 | 4.00 | 17.50 |
| %AGE_5164 | 807.50 | 119.00 | 4.00 | 26.50 |
| %AGE+64 ¹ | -0.849 ^{**} | -0.712 | 0.060 | 0.064 |
| POPDEN | 917.00 | 92.00 | 0.00 | 27.00 |
| SC | - | - | - | 12.00 ^{**} |
| ELEP ¹ | -1.358 | 0.886 | 0.092 ^{**} | -2.819 |
| %SEC | 817.50 | 82.00 | 4.00 | 21.00 |
| %SUP | 884.50 | 84.00 | 4.00 | 24.00 |
| %GEN | 691.00 ^{**} | 113.00 | 2.00 | 10.00 [*] |
| %IMMI | 651.00 ^{**} | 94.00 | 2.00 | 23.00 |
| %SING ¹ | -1.566 | -0.096 | -2.642 | -1.034 |
| %MARR ¹ | 1.425 | 0.582 | 3.199 | -0.012 |
| %WIDOW | 917.00 | 112.00 | 4.00 | 10.00 |
| %SEPA | 742.00 | 80.00 | 1.00 | 15.00 |

Source: Owner elaboration from information of STATA17 software;
 Sig. ^{***}1%and ^{**}5%. **NOTE:** ¹These statistics are t-students because these variables show a normal distribution.

In cluster 1, we can see that the age of citizenship causes differences, especially, when the municipality have an aging population (%AGE+64; $p>0.05$). Therefore, we cannot reject H2. This finding confirms prior research (Novo Vázquez & Vicente, 2019) that demonstrate that the higher aging population, the probability of offered e-Participation tools by municipalities are lower due to the digital divide (younger population are more prone to use ICTs due to their greater technological capacity).

In addition, both the gender of the population and the percentage of immigrants could also cause differences in the e-participation models implemented, because both are significant at 5% . So, we cannot reject H7 and H8. Prior research has also showed that the participation channels used depend on the gender of the participant (Ahmad & Khalid, 2017; Kim & Lee, 2019; Schmidhuber et al., 2017). Also, when there is a high percentage of immigrants living into a city, citizens are more prone to use ICTs both to be informed and to participate in public affairs (Choi & Song, 2020).

Finally, our results show that participation levels and participation models are higher in smart cities. In cluster 4, this variable (smart city) is significant at 5%. Therefore, we cannot reject H4. It means that the technological environment that surrounds a Smart City encourages the democratic model to be more participatory and collaborative.

Finally, this research shows the results of the second difference test -see Table 3.6-. Results indicate that all variables, except for the age of citizenship and the percentage of immigrants, influence on the e-participation models implemented by the municipalities (we can reject H2 and H8). In the case of civil status, we can observe that the percentage of widowed and separated citizens could influence on the participation models. Therefore, we cannot reject H9.

On another hand, statistical test confirms that population size and population density have a relationship with e-Participation models, given that politicians and public managers feel pressured from citizenship to offer better technologies and channels with the aim at promoting citizen participation (Alcaide-Muñoz et al., 2022b). As mentioned before, the technological environment of a Smart City offers greater opportunities to have better infrastructures, technologies, and resources to undertake e-Participatory initiatives. Also, cities with a politically active population and a high educational level will demand more technological tools to both collect their opinions and participate in public affairs. Finally, the gender and civil status of the population are factors that could lead to municipalities offering different models of e-Participation.

Table 3.6: Estimation results of Kruskal-Wallis and ANOVA Difference Tests

| Variables | Cluster 2 – Cluster 1 | Cluster 2 – Cluster 3 | Cluster 2 – Cluster 4 | Cluster 1 – Cluster 3 | Cluster 1 – Cluster 4 | Cluster 3 – Cluster 4 | Accept H0 / Reject H0 |
|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| POP | 14.067 | -24.688 | -68.307*** | -10.621 | -54.240*** | -43.619** | Reject H0*** |
| POPDEN | 11.541 | 13.683 | -42.293*** | 25.224 | -30.752** | -55.976** | Reject H0*** |
| %AGE_1830 | -4.355 | -0.903 | 13.954 | -5.259 | 9.599 | 14.857 | Accept H0 |
| %AGE_3140 | 11.397 | -43.156** | -1.370 | -31.759** | 10.027 | 41.786** | Accept H0 |
| %AGE_4150 | -20.562** | 23.188 | 28.022** | 2.626 | 7.460 | 4.833 | Accept H0 |
| %AGE_5164 | 0.031 | 31.452 | -12.644 | 31.483 | -12.612 | -44.095** | Accept H0 |
| %AGE+64 ¹ | - | - | - | - | - | - | 0.680 |
| SC ¹ | - | - | - | - | - | - | 4.203*** |
| ELEP ¹ | - | - | - | - | - | - | 3.909*** |
| %SEC | 5.436 | 14.489 | 62.249*** | 19.925 | -56.813*** | -76.738*** | Reject H0*** |
| %SUP | 6.788 | 28.758 | -61.171*** | 35.546 | -54.383*** | -89.929*** | Reject H0*** |
| %GEN | 1.828 | 21.677 | -28.465** | 23.506 | -26.637*** | -50.143** | Reject H0** |
| %IMMI | 8.099 | 18.763 | -5.665 | 26.862 | 2.433 | -24.429 | Accept H0 |
| %SING ¹ | - | - | - | - | - | - | 1.091 |
| %MARR ¹ | - | - | - | - | - | - | 0.189 |
| %WIDOW | -2.808 | 20.285 | 35.025*** | 17.477 | -37.833*** | -55.310*** | Reject H0*** |
| %SEPA | 3.585 | 18.145 | -27.307** | 21.730 | -23.722** | -45.452** | Reject H0** |

Source: Owner elaboration from information of STATA17 software. Sig.***1% and **5%.

NOTE: ¹These statistics are ANOVA (F-Snedecor) test because these variables show a normal distribution, or it is a dichotomous variable.

3.6. Discussions and conclusions

This study contributes to understanding the e-participation models offered by large cities (with more than 50,000 inhabitants) and deepens the knowledge of the determining factors based on the city profile that influences on the existence of different e-participation models.

This research seems to demonstrate that public managers have been under pressure to modify participation tools due to the rapid population growth in cities (mainly higher population density and reception of immigrants). These trends have made OG initiatives proliferate around the world, favoring the transparency and providing participation tools (Alcaide-Muñoz et al., 2022b; Coelho et al., 2022). Therefore, politicians and public managers should carry out OG projects, offering interactive participation tools, given that favor the collaboration and co-creation initiatives, which improve public services delivery and have an influence in the citizens' quality of life (Rodríguez-Bolívar, 2020).

Most of the e-Participation initiatives developed are at the S5 – Placation level. However, the e-Participation initiatives that favor S6 - Partnership are scarcely undertaken and the S7 – Delegated power is partially non-existent. It means that our research shows that, although opinions are gathered from citizens through consultations or perhaps through a participatory budget platform -voting for the project they consider most appropriate for their region-, power remains in the hands

of politicians and public managers. Our findings thus seem to confirm the use of ICT by policymakers to increase the legitimacy of public actions making citizens to feel that their opinions are heard, but they do not end up delegating some power to the citizenry.

Large cities branding as ‘Smart Cities’, with a high population density and high qualified citizenship are the ones that offer tools favoring rung S8 – Citizen control. This could be a reaction to the citizen pressure on policymakers, with the increasing urban challenges due to rapid urban population growth, seeking to adopt structures, and legitimate and socially acceptable practices for being accountable to citizens (legitimacy theory - (Weber, 2018)).

Findings of the difference tests confirm the pronouncements of stakeholders’ theory (Jensen & Meckling, 1976), showing a relationship between both population size and population density with e-Participation models and levels of citizen participation -see Table 3.6-. This evidence is consistent with prior research (Alcaide-Muñoz et al., 2022b) since politicians and public managers feel greater pressure from citizens to be more transparent and therefore offer better two-way communication channels, allowing fluidity and participation in public affairs. Hence, it is the largest cities with higher densities that have opted to undertake OG initiatives and offer greater development of them.

Moreover, our findings are coherent with other studies (Rodríguez-Bolívar, 2019), given that the technological environment offered by a Smart City is a catalytic vehicle for e-Participation projects to flow and develop in better conditions, fostering co-creation and collective intelligence (Khan & Krishnan, 2021). Similarly, e-Participation initiatives are more developed in those cities where citizens have the necessary knowledge and capacities to use them, since our research indicates that the higher percentage of citizens with a higher educational level, the greater number of tools to favour greater level of participation.

Our research also has practical implications. Firstly, findings seem to indicate that city governments need to improve e-Participation initiatives and use emerging technologies, but the way they are implemented is affected by the city profile. The vast majority of SLGs are positioned on rung S5 – Placation and require significant improvements not only to foster citizen participation, but also to delegate greater power to citizens when making decisions on public policies. In fact, the city profile can help us to understand how the e-Participation models are managed by politicians and public managers. With the identification of the city profile and the development e-Participation model, public managers could know which municipalities are most advanced in these initiatives and be interested in how they have been carried out,

and even attend congresses or hold workshops where these municipalities present their initiatives to learn from their mistakes and successes and undertake initiatives more efficiently.

Local government in municipalities with larger population density, higher immigrant population, and citizen with higher educational level usually make more efforts in the design of e-Participation platforms or offer social media as channel communication, facilitating citizenship to participate in public affairs. This finding suggests public managers and politicians to analyse these attributes because they are main factors to adopt open initiatives and policies.

In brief, our findings about large SLGs indicate that they are not using the ICTs, technological tools, and emerging technologies to enhance citizen participation in public affairs. Therefore, possible questions for future research are: a) Do small-size municipalities have the needed resources (financial, organizational, human, technological, etc.) to undertake open initiatives? b) Does the administrative culture have influence on the low level of development of e-Participation initiatives in Spain (bureaucratic model)? c) Do citizens living in cities with more advanced e-Participation models really consider that there is effective participation in public management? d) Do more developed levels of e-Participation really result in greater citizen collaboration and co-creation in public services? e) Are there other factors, such as political, organizational, institutional, and so on, that better explain the different e-participation models? Future studies should consider these questions to be analyzed and thus, we can better understand to e-Participation initiatives and their implementations, and to really know both the environment and the context that foster the development of these initiatives and if these initiatives are considered effective by the citizens, by delegating power to the citizens.

Conclusiones y principales aportaciones

1. Conclusiones y principales aportaciones

Esta sección analiza y expone las principales aportaciones de los resultados de nuestra investigación, así como su impacto en las políticas públicas. En este sentido, se ha visto que el auge de las TICs en las últimas décadas ha marcado un antes y un después en la forma de interactuar de los ciudadanos y los gobiernos, los cuales, poniéndose a la vanguardia de estos avances, han implementado nuevas estrategias no solo en la manera de gestionar y ofrecer servicios públicos a sus ciudadanos, sino en permitir que estos puedan interactuar e involucrarse en los procesos democráticos y de gestión, agregando valor público.

En consecuencia, en la introducción de esta tesis doctoral se ha podido identificar a través de una revisión sistemática de literatura llevada a cabo en el período comprendido entre los años 2011 a junio 2022, que a la par de este auge en la forma en que los gobiernos ejercen su gestión, implantando políticas de GA, esto también se ha traducido en una gran cantidad de estudios de producción científica sobre temas de GA, los cuales han sido publicados en revistas JCR de gran prestigio y proyección internacional. En este sentido, los resultados indican que la mayoría de los estudios sobre GA se publican en el área de Ciencias de la Información (55,34%) y que el tópico más examinado es el de datos de gobierno abierto/transparencia, con una cantidad de artículos que constituyen el 51,06% del total de la muestra en ambas áreas de conocimiento: Administración Pública y Ciencias de la información (Wirtz et al., 2019).

Además, hemos observado una progresión creciente en la cantidad de publicaciones de artículos sobre GA, con un punto máximo en 2020 y una disminución en 2021 y 2022. En cuanto al impacto de estos resultados en las políticas públicas, se ha visto que el auge de las TICs en las últimas décadas ha permitido que los gobiernos implementen nuevas estrategias de gestión y ofrezcan servicios públicos de manera más efectiva. Sin embargo, es importante mencionar que el GA es una disciplina multidimensional que incluye tres pilares fundamentales: transparencia, participación y

colaboración. Aunque el tópico de datos de gobierno abierto/transparencia ha sido el tópico más investigado, otros temas como la participación electrónica entre gobierno y ciudadanos y la colaboración y co-creación que permite que los ciudadanos puedan interactuar e involucrarse en los procesos democráticos y de gestión, han recibido menor atención. Esto como indica (Tai, 2021) podría obstaculizar la comprensión completa de los impactos de la implementación del GA y como se relaciona con todos sus pilares fundamentales. Es importante seguir investigando estos temas para tener una visión más completa del GA y como puede ser implementado de manera efectiva. Con esto en mente, la revisión sistemática de literatura presentada en este trabajo de tesis doctoral demuestra que el tema de GA es un área de estudio en constante crecimiento y que sus resultados tienen un impacto significativo en las políticas públicas.

Seguidamente pasamos a analizar los objetivos de nuestra investigación mencionados en la introducción, se han realizado tres estudios basados en una muestra de 145 gobiernos locales españoles con más de 50.000 habitantes. En este sentido, los resultados obtenidos en los capítulos 1 y 2 de esta tesis doctoral proporcionan nuevos y valiosos conocimientos sobre los principales factores que influyen en el acceso a los proyectos de GA en los sitios web oficiales municipales, así como en el contenido de la información y el formato de los datos publicados. También se analizan los diferentes componentes de transparencia gubernamental que ofrecen los sitios web oficiales de los gobiernos locales españoles, y cómo estos componentes pueden ser influenciados por la estrategia de GA adoptada por cada gobierno local. Además, de como la adopción de estas estrategias pueden verse influenciada por factores institucionales, organizacionales y/o contextuales.

En general, los resultados de estas investigaciones muestran que, independientemente de sus características y perfiles, los municipios de las ciudades tienen diferentes niveles de desarrollo de estrategias de GA. La transparencia informativa en la función pública así como la participación ciudadana, siguen teniendo un carácter principalmente legitimador (Weber, 2018) en la adopción de políticas de GA, debido a que la mayor parte de la información divulgada en las secciones y proyectos DAG y que son correspondientes a la fase inicial e incipiente de experimentación en la implementación de estrategias de GA, se publica principalmente en formato pdf, lo que hace que sea difícilmente transferible y editable, lo que a su vez dificulta la toma de decisiones y la participación de los ciudadanos en los asuntos públicos.

Por lo tanto, esto sugiere que, aunque las TICs son una herramienta valiosa para la transparencia informativa, los administradores públicos no están aprovechando plenamente su potencial para generar valor público a partir de la información divulgada,

contrario a lo que establece la teoría del establecimiento de objetivos (Jochimsen y Thomasius, 2014).

Además, estos estudios destacan que la implementación de políticas de GA varía en función del contexto. Los resultados muestran que los municipios cuyos ciudadanos tienen un mayor nivel económico, educativo y una mayor presión fiscal son más exigentes en términos de información pública, con el objetivo de monitorear las políticas públicas implementadas por el gobierno. Esto ejerce mayor presión sobre las administraciones públicas de los grandes municipios, que deben ofrecer mayor transparencia informativa para satisfacer estas demandas, de acuerdo con la teoría de la agencia (Jensen y Meckling, 1976).

En resumen, los estudios mencionados sugieren que las TICs son una herramienta prometedora para mejorar la transparencia gubernamental y la participación ciudadana en los asuntos públicos. Sin embargo, la mayoría de los gobiernos locales parecen estar en una etapa temprana de adopción de estrategias de GA, y aunque la presión fiscal y el nivel educativo de los ciudadanos parecen estar relacionados con la adopción de diferentes estrategias de GA, las mismas parecen estar más relacionadas con la creencia en el potencial de las TICs para mejorar la gobernanza y la transparencia que con factores políticos a diferencia de lo que señalan otros estudios como (Tejedo-Romero y Araujo, 2018, 2020).

Además, se encontró que la estabilidad política es el único factor político que tiene una relación negativa y significativa con la forma en que los ciudadanos pueden acceder a los proyectos de GA, lo que sugiere que los políticos y los gobernantes que ganan elecciones y llegan a dirigir el municipio son más propensos a implementar iniciativas de GA. Esta evidencia es contraria a la teoría del establecimiento de metas (Jochimsen y Thomasius, 2014).

Asimismo, en el Capítulo 3 se ha comprobado que los municipios españoles tienen diferentes modelos de gestión de participación electrónica. El estudio del perfil de ciudad en el análisis de la participación electrónica de cada ciudad que ha sido objeto de la muestra y sus condicionantes han permitido determinar los distintos modelos de participación ciudadana observado en las mencionadas ciudades. Se ha observado que la mayor densidad de población y la presencia de inmigrantes han impulsado a los administradores públicos a implementar herramientas que faciliten la participación ciudadana, promoviendo la co-creación y mejorando la calidad de los servicios públicos y la vida de los ciudadanos (Rodríguez-Bolívar, 2020).

Además, es importante resaltar que los resultados alcanzados en este último estudio coinciden con los obtenidos en los capítulos 1 y 2 de nuestra investigación, lo

que sugiere que las iniciativas de e-participación tienen un mayor desarrollo en ciudades donde los ciudadanos poseen los conocimientos y habilidades necesarios para utilizarlas. En este sentido, un mayor porcentaje de ciudadanos con un nivel educativo superior se relaciona con un mayor número de herramientas para fomentar una participación más activa en la vida pública. Este hallazgo enfatiza la importancia de la educación y la formación ciudadana para impulsar su participación en los procesos de toma de decisiones de interés público.

Por otro lado, los resultados del estudio indican que la mayoría de las ciudades de la muestra se encuentran en el nivel S5 de consulta, seguidas por las de asociación, mientras que apenas alcanzan el nivel S7 de poder delegado, que es prácticamente inexistente. Esto refleja el carácter principalmente consultivo de la participación ciudadana, ya que, aunque se recogen las opiniones de los ciudadanos a través de consultas o plataformas que permiten votar por el mejor proyecto, el poder de decisión sigue siendo liderado por políticos y gestores públicos. Esto confirma lo señalado por la teoría de la legitimidad (Powell y DiMaggio, 2012), que sostiene que los hacedores de políticas implementan herramientas de participación principalmente con el objetivo de legitimar sus acciones, sin realmente delegar poder a la ciudadanía.

Además, este estudio ha demostrado que las ciudades catalogadas como Ciudades Inteligentes, con mayor densidad de población y ciudadanos educados, son las que mediante las herramientas de participación que ofrecen, alcanzan el nivel S8 de control ciudadano, lo que refleja la gran presión que ejercen estas grandes ciudades sobre los gobiernos para adoptar estructuras y prácticas socialmente aceptables y responder a las demandas de los ciudadanos (Weber, 2018). Por tanto, las iniciativas de e-participación están más desarrolladas en este tipo de ciudades, ya que el entorno tecnológico que ofrece una Ciudad Inteligente impulsa el desarrollo de proyectos de e-participación que pueden aprovechar las mejores condiciones tecnológicas y de gestión, fomentando la co-creación y la inteligencia colectiva (Khan y Krishnan, 2021; Rodríguez-Bolívar, 2019).

En general, los resultados obtenidos en esta tesis doctoral indican que los grandes municipios españoles no están utilizando plenamente las TICs, las herramientas tecnológicas y las nuevas tecnologías emergentes para impulsar la participación ciudadana en los asuntos públicos, ya que la mayoría de los gobiernos locales españoles se concentran en la fase de experimentación en la implementación de estrategias de GA y se ubican en el nivel S5 de consulta. Por lo tanto, conocer el perfil de ciudad puede ayudar a comprender como los modelos de e-participación son gestionados por políticos y gestores públicos, y permitir aprender de las mejores

prácticas y emprender iniciativas de manera diferente en aquellos municipios que estén más avanzados en estas iniciativas.

Finalmente, las consideraciones anteriores nos llevan a suponer que, a pesar de los esfuerzos realizados por las administraciones públicas para implementar políticas de GA, estas todavía se encuentran en una etapa temprana de desarrollo. Esto se refleja tanto en la revisión sistemática de literatura, que muestra la actual tendencia de investigación y evidencia un mayor número de publicaciones relacionadas con el tópico de datos de gobierno abierto/transparencia. Del mismo modo los resultados de los estudios empíricos recogidos en los capítulos 1, 2 y 3 de esta tesis doctoral ponen en evidencia la tendencia legitimadora (Powell y DiMaggio, 2012) del gobierno a la hora de implementar políticas de GA en los gobiernos locales españoles, dejando de lado el enfoque democrático que permita a los ciudadanos puedan interactuar e involucrarse en los procesos democráticos y de gestión, agregando valor público.

Además, estos estudios ponen en evidencia que tanto los atributos del municipio como el contexto institucional son aspectos importantes por considerar por parte de los políticos y administradores públicos al momento de diseñar e implementar iniciativas de GA que promuevan el nivel de participación ciudadana, para poder establecer nuevos modelos de gobernanza colaborativa.

No, obstante, se observa un gran avance en las denominadas Ciudades Inteligentes, las cuales han demostrado un mayor desarrollo tanto en el aspecto de datos de gobierno abierto/transparencia, así como el aspecto de participación electrónica. Sería interesante analizar si en futuras investigaciones, las demás ciudades podrían seguir en ese camino, tomando en consideración la teoría institucional (Jensen y Meckling, 1976; Powell y DiMaggio, 2012) y adquirir un isomorfismo mimético en la implementación de políticas de GA.

2. Futuras líneas de investigación

Aunque en anteriores capítulos hemos identificado tendencias y futuras líneas de investigación, vamos a hacer una pequeña recopilación en este epígrafe. En este sentido, hemos visto como los estudios existentes en la literatura se han centrado en el análisis y estudios de caso que evalúan los resultados de proyectos e iniciativas de GA. Por tanto, según el análisis llevado a cabo en la revisión sistemática de literatura de esta tesis doctoral, y conocer la evolución de la investigación actual, para futuras investigaciones sería interesante conocer el avance de la investigación en este sentido de manera a conocer la tendencia de investigación en esta materia de estudio. En

consecuencia, sería de especial importancia también analizar en futuras revisiones sistemáticas si la cantidad de publicaciones sigue esta tendencia decreciente en investigaciones relacionadas al GA y poder visualizar el horizonte de la nueva investigación. Por otro lado, se podría investigar el motivo por el cual esta visión compartida sobre el aspecto conceptual del GA entre los investigadores y académicos, no se ve reflejado de la misma manera en los procesos de implementación de iniciativas de GA.

Por otro lado, sería importante también analizar si el nivel de implantación de iniciativas de GA se encuentra en una etapa incipiente, o si los resultados se ven afectados por el contexto de estudio (España), donde existe un modelo burocrático. Del mismo modo también conocer si las iniciativas de GA están aportando valor público para la sociedad o si existen diferencias en el nivel de divulgación de información entre la sección de transparencia de un gobierno, en comparación con los proyectos DAG, o si estas iniciativas van afectadas por los mismos factores. Por otro lado, averiguar si las iniciativas del portal de GA influyen en iniciativas de participación ciudadana que permita el intercambio bidireccional entre gobierno y ciudadano, lo que permitirá modelos más colaborativos de gobernanza en las ciudades, especialmente las mencionadas ciudades inteligentes, las cuales de acuerdo a la investigación ha demostrado ser un terreno fértil para la implementación de políticas de GA.

En el campo de la participación electrónica y la democracia, es importante examinar si los municipios pequeños tienen los recursos necesarios (financieros, organizacionales, humanos, tecnológicos, etc.) para implementar iniciativas abiertas. También es relevante considerar si la cultura administrativa influye en el bajo nivel de desarrollo de las iniciativas de e-Participación en España (modelo burocrático). Otro factor a considerar es si los ciudadanos que viven en ciudades con modelos de e-Participación más avanzados realmente sienten que hay una participación efectiva en la gestión pública. Además, es importante evaluar si los niveles más desarrollados de e-Participación resultan en una mayor colaboración ciudadana y co-creación en los servicios públicos. También sería útil explorar otros factores, como políticos, organizativos, institucionales, etc., que puedan explicar mejor los diferentes modelos de e-participación. Al considerar estas y otras cuestiones, podemos entender mejor las iniciativas de e-participación actuales y sus implementaciones, y determinar los contextos que determinan el desarrollo de estas iniciativas.

Además, tomando en consideración los estudios presentados en esta tesis doctoral se sugiere que el tema de análisis de cómo las tecnologías emergentes pueden impulsar la evolución y desarrollo del GA en relación a la transparencia gubernamental y las

estrategias adoptadas por las organizaciones gubernamentales representa una línea de investigación prometedora. Se sugiere explorar el impacto de las tecnologías emergentes en la implementación de políticas de GA y cómo éstas pueden mejorar la calidad de la información y la participación ciudadana en la gestión pública.

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